Annual Report
April 1, 2021 to March 31, 2022
Hokes Bluff MS4
Hokes Bluff, Etowah County, Alabama
S&ME Project No. 215660D

PREPARED FOR:

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

PREPARED BY:

S&ME, Inc.
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May 31, 2022

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May 31, 2022

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

Attention: Mayor Scott Reeves

Reference: **Annual Report: April 1, 2021 to March 31, 2022**
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. 22820105, dated April 22, 2022 and authorized on May 2, 2022. The Annual Report covers the April 1, 2021 to March 31, 2022 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. 22820105, dated April 22, 2022 and authorized on May 2, 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, 2022.

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.

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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 May 31, 2022.

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

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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

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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 previous SWMPP, dated January 1, 2017.

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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 2021-2022 Annual Report:

Ms. Lisa Johnson
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Questions concerning the 2021-2022 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

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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 Hokes Bluff 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
- Sanitary sewer overflows

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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 2021-2022 reporting period, the City completed 43 out of 45 planned strategies and 24 additional strategies. The number of completed activities (67) demonstrates the City's commitment to implement the SWMPP and Phase II Permit by going beyond the strategies they committed to in the 2017 SWMPP.

1. Revised the Storm Water Management Program Plan

Following the issuance of the 2021 MS4 permit, the City of Hokes Bluff contracted S&ME to develop a revised SWMPP meeting the requirements of the new permit. The new SWMPP is specific to the City of Hokes Bluff and incorporates many of the strategies employed by the City under the 2017 joint SWMPP that was prepared for the full urbanized area. The new SWMPP became effective on April 1, 2022 and is expected to further strengthen the Program.

2. 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.

3. Prevented improper disposal

To prevent improper disposal into the MS4, the City provides brush, limb, and large-item pickup and recycling. Approximately 100 tons 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.

4. Performed outfall inspections

The City of Hokes Bluff continued to perform outfall inspections as required by the MS4 permit. During the 2021-2022 reporting period, 19 outfalls were inspected, including two major outfalls. Eleven outfalls were observed with dry weather flow and were screened in accordance with the procedures outlined in the 2017 IDDE Plan. No suspect discharges were discovered.

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5. 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 promotion of storm water awareness at high school sporting events is an invaluable strategy to reach a significant portion of Hokes Bluff residents. The purchase of advertisements at ball fields, on TV, and in the yearbook also allowed the City to continue promoting storm water awareness, even when indoor public gatherings were restricted during the Covid 19 pandemic.

Even though the City has a limited number of construction projects, the City has been diligent in enforcing the provisions of their Ordinances and the Alabama Construction General Permit at qualifying sites. There has been a significant adjustment of expectations within the City and the City has worked closely with engineers and developers to educate them on the requirements of the Construction General Permit.

Another strength is the completion of the Storm Water System Map with the identification of 97 outfalls and 9.16 miles of streams. Additionally, the City has created an Interactive GIS database system to store illicit discharge information. This GIS database provides a significant advantage in tracking illicit discharge investigations.

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 revised SWMPP will be incorporated into future operations and activities for the upcoming period.

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.

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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 2017 SWMPP appears to have been effective in meeting the objectives and requirements of the 2016 Phase II Permit.

4.5 Measurable Goals Not Performed

The City was unable to perform two of the planned activities due to the Covid-19 pandemic. The 2022 Etowah County Water Festival (Activity 6) was held virtually in 2022, and the City did not participate in the virtual event. The Annual Community Cleanup Day (Activity 7) was canceled in the interest of public health due to a covid case surge. The City plans to participate in the 2023 Etowah County Water Festival, and the Community Cleanup Day was rescheduled for May 21, 2022.

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 2017 Storm Water Monitoring Plan, including monitoring parameters, monitoring locations, field documentation, and sampling procedures, is described in Section 2 of the SWMPP dated January 1, 2017. A revised *Gadsden-Etowah Wet Weather Monitoring Plan* was included in the SWMPP submitted to ADEM on April 1, 2022. The changes identified in the 2022 Monitoring Plan will be implemented beginning with the 2022 second quarter monitoring event.

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

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MS4 Reporting Period	Monitoring Event	Date(s) Monitoring Conducted
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
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

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MS4 Reporting Period	Monitoring Event	Date(s) Monitoring Conducted
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

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, 2021 to March 31, 2022 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 will be 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.**

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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 Monitoring Results

A total of 37 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.

5.4.1 *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 SME 7 was first sampled in December 2020, and a total of six monitoring events have been completed.

Nitrate-nitrite and ortho-phosphate decreased between SME 7 and AT 5 in five out of the last six monitoring events, and total phosphorus has decreased between the two points in the last six events. These results indicate 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. This further indicates that the urbanized area is not contributing additional pollution to the waterbody.

The Gadsden-Etowah MS4 will continue to monitor points SME 7 and AT 5 during the April 1, 2022 to March 31, 2023 reporting period.

5.4.2 *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 37 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. These results seem to indicate that a reduction in pollutant concentrations is occurring in Big Wills Creek before the combined flow from AT 5, GD 8, and RC 2 discharges to the Coosa River. A portion of that reduction 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, 2022 to March 31, 2023 reporting period.

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5.4.3 *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, 2022 to March 31, 2023 monitoring period.

5.4.4 *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 six monitoring events have been completed since, with the exception of SME 4 which was not sampled in September 2021.

Over the past six monitoring events, turbidity increased between monitoring points SME 4 and SME 6 three times and decreased twice, with one event not sampled. Total nitrogen increased in three of the six monitoring events and TSS increased in four of the six events. Ortho-phosphate and total phosphorous were not detected in the five events. There is currently insufficient data to fully assess the impacts of discharges from the urbanized area on the Coosa River.

The Gadsden-Etowah MS4 will continue to monitor points SME 4, SME 5, and SME 6 during the April 1, 2022 to March 31, 2023 reporting period.

5.5 Statistical Analysis

5.5.1 *Overview*

Statistical analysis was performed on the cumulative monitoring data 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 4.0 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.

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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**.

5.5.2 *Approach to Statistical Analysis*

Essentially, there are two sets of data to be compared during this statistical evaluation. 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.

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. Sen's slope estimates were produced for points for which an SSI was observed.

The following field and laboratory parameters were evaluated in the statistical analysis:

- Turbidity
- pH
- DO
- Temperature
- Total Suspended Solids (TSS)
- Total Phosphorous
- Orthophosphate
- Nitrate-Nitrite
- Total Kjeldahl Nitrogen (TKN)

5.5.3 *Results and Discussion of Statistical Evaluation*

Table 5-2 below reports the statistical evaluation for each analyte for a summary of compared monitoring points.

Table 5-2 Summary of Results of Statistical Analysis

Upstream Monitoring Point	Downstream Monitoring Point	Downstream Monitoring Point SSI Identified	Parameters w/ SSI	Sen's Slope Estimator
SME 4	SME 6	No	-	-
SME 7	AT 5	No	-	-
AT 5	SME 1	Yes	pH	Downward
SME 7	SME 1	No	-	-

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Upstream Monitoring Point	Downstream Monitoring Point	Downstream Monitoring Point SSI Identified	Parameters w/ SSI	Sen's Slope Estimator
RC 2	SME 1	Yes	Ortho-phosphate	No Trend
			pH	Downward
			Total Phosphorus	No Trend
			TSS	No Trend
GD 8	SME 1	Yes	Ortho-phosphate	No Trend
			Total Phosphorus	No Trend
			TSS	No Trend
			Turbidity	No Trend
SME 4	SME 1	Yes	Ortho-phosphate	No Trend

In the past, monitoring point AT 5 (Big Wills Creek) has shown elevated concentrations of pollutants. Monitoring point SME 7 was added upstream to be a background point for AT 5. The results of the statistical analysis indicate that there is no SSI at AT 5 from SME 7, meaning that values recorded at SME 7 were not consistently higher than those at AT 5. This seems to indicate that dilution is occurring as Big Wills Creek flows through the urbanized area and that the Attalla, Etowah County, and Gadsden MS4s do not appear to be contributing to an increase in pollutants in Big Wills Creek.

Monitoring point SME 1 is located downstream of the confluence of Big Wills Creek, Horton Creek, and Black Creek. Of the monitored parameters, only pH was observed to have an SSI between AT 5 (Big Wills Creek) and SME 1 for pH. An SSI was observed for ortho-phosphate, pH, total phosphorus, and TSS between RC 2 (Horton's Creek) and SME 1. An SSI was observed for ortho-phosphate, total phosphorus, TSS, and turbidity between GD 8 (Black Creek) and SME 1. The increase in pollutants from the upstream points to the point where all three waterbodies converge is an expected observation. There is no trend in the data at SME 1 except for a downward trend in pH, indicating that the observed pollutants are not increasing over time.

No SSI for ortho-phosphate or total phosphorus was indicated from AT 5 to SME 1, while SME 1 was consistently higher than RC 2 and GB 8. The results of the statistical analysis seem to indicate that the majority of the pollutants observed at SME 1 can be attributed to Big Wills Creek.

An SSI was observed for ortho-phosphate between SME 4 where the Coosa enters the MS4 and SME 1 where Big Wills Creek/Black Creek meets the Coosa, meaning that ortho-phosphate concentrations from Big Wills Creek are consistently higher than those observed in the main channel upstream of the urbanized area. However, an SSI was not observed between SME 4 and SME 6 in the Coosa. This seems to indicate that sufficient dilution is occurring in the urbanized area to offset pollutants being transported in Big Wills Creek, Horton Creek, and Black Creek and that the urbanized area is not contributing additional pollution to the waterbodies; however, there is currently insufficient data to fully assess the impacts of discharges from the urbanized area on the Coosa River.

The SSIs observed between points within the Coosa River and points on tributaries to the river indicate that concentrations of certain pollutants in the tributaries are higher than those in the river. Based on the past six

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monitoring events, no SSI was observed between the monitoring point upstream of the urbanized area (SME 4) and the point downstream of the urbanized area (SME 6), indicating that discharges from the tributaries and the urbanized area are not significantly affecting water quality in the Coosa. Additional monitoring is needed to fully assess the impacts of discharges from the urbanized area on the Coosa River.

The detailed results of the statistical analysis obtained from the ChemStat software are provided in **Appendix B**.

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 will go into effect April 2022. The Gadsden-Etowah MS4 entities plan to continue the watershed approach and proposes the following revisions to the Storm Water Monitoring Plan.

- Addition of monitoring points SME 9 and SME 10
- Removal of monitoring points SME 2 and SME 8

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, 2021 to March 31, 2022 reporting period, the City of Hokes Bluff completed nine (9) of the eleven (11) Public Education and Public Involvement strategies identified in the previous Annual Report and the 2017 SWMPP.

- The *Etowah County Water Festival* was held virtually in 2022. The City did not participate in the virtual event (Activity 6).
- The Annual Community Cleanup Day was delayed to the next reporting period due to a Covid-19 outbreak (Activity 7).

The City of Hokes Bluff also completed nineteen (19) strategies beyond those proposed in the previous Annual Report and the 2017 SWMPP. These strategies included:

- Purchasing an advertisement within the Hokes Bluff High School Football Program (Activity 12)
- Maintaining a sign at the Softball and Football fields that included a storm water education slogan (Activity 13)
- Announcing ways to protect storm water on radio during ball games (Activity 14)

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- Announcing ways to protect storm water on the TV during ball games (Activity 15)
- Purchasing an advertisement at the high school gym that included a storm water education slogan (Activity 16)
- Providing drink huggers with a storm water awareness slogan to attendees of sporting events at the high school (Activity 17)
- Purchasing half-page storm water awareness advertisements in the Hokes Bluff High School Yearbook (Activity 18)
- Placing door hangers on residents to make them aware of storm water problems/issues at their property (Activity 19)
- Maintaining two Pet Waste Stations (Activity 20)
- Celebrating Earth Day by using the electronic sign to remind citizens to recognize the day by learning to conserve, recycle and avoid pollution (Activity 21)
- Maintaining Ferry Landing and utilizing part time labor during the months of May through October to clean up the area (Activity 22)
- Maintaining Mill Pond Park and utilizing part time labor during the months of May through October to clean up the area (Activity 23)
- Enforcing a Litter Ordinance (Activity 24)
- Providing brush pickup to residents (Activity 25)
- Managing a drop-off facility for used oil and scrap metal (Activity 26)
- Providing curbside garbage pickup and a collection can to residents (Activity 27)
- Providing dumpsters for customers of garbage pickup to dispose of large items (Activity 28)
- Sponsoring a hole in the Etowah County Sherriff's Charity Golf Tournament with Storm water Awareness (Activity 29)
- Providing educational materials for the Library Summer Reading Activities (Activity 30)

A table identifying each Public Education and Public Involvement strategy planned for the 2021-2022 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, 2022 to March 31, 2023 Reporting Period*

The City of Hokes Bluff renewed its permit during the reporting period. The new permit went into effect October 1, 2021 with an expiration date of September 30, 2026. The City prepared and submitted a revised SWMPP meeting the requirements of the re-issued permit. The 2022 SWMPP became effective on April 1, 2022.

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 2022-2023 reporting period.

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 2016 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.

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6.1.4 *Proposed Changes*

Revisions to the Public Education and Public Involvement strategies were incorporated into the revised SWMPP submitted to ADEM on April 1, 2022.

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, 2021 to March 31, 2022 reporting period, the City of Hokes Bluff completed seventeen (17) of the seventeen (17) Illicit Discharge Detection and Elimination strategies identified in the previous Annual Report and the 2017 SWMPP.

The City of Hokes Bluff also completed one (1) strategy beyond those proposed in the previous Annual Report and the 2017 SWMPP. This strategy was:

- Educating the public on stormwater issues and concerns by placing door hangers on residents to make them aware of storm water problems/issues at their property (Activity 18)

A table identifying each Illicit Discharge Detection and Elimination strategy planned for the 2021-2022 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, 2022 to March 31, 2023 Reporting Period*

The City of Hokes Bluff renewed its permit during the reporting period. The new permit went into effect October 1, 2021 with an expiration date of September 30, 2026. The City prepared and submitted a revised SWMPP meeting the requirements of the re-issued permit. The 2022 SWMPP became effective on April 1, 2022.

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 2022-2023 reporting period.

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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 2016 permit. The strategies are adequate to prevent or correct illicit discharges to the Gadsden-Etowah MS4.

6.2.4 *Proposed Changes*

Revisions to the Illicit Discharge Detection and Elimination strategies were incorporated into the revised SWMPP submitted to ADEM on April 1, 2022.

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, 2021 to March 31, 2022 reporting period, the City of Hokes Bluff completed six (6) of the six (6) Construction Site Storm Water Runoff strategies identified in the previous Annual Report and the 2017 SWMPP.

A table identifying each Construction Site Storm Water Runoff strategy planned for the 2021-2022 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, 2022 to March 31, 2023 Reporting Period*

The City of Gadsden renewed its permit during the reporting period. The new permit went into effect October 1, 2021 with an expiration date of September 30, 2026. The City prepared and submitted a revised SWMPP meeting the requirements of the re-issued permit. The 2022 SWMPP became effective on April 1, 2022.

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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 2022-2023 reporting period.

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 2016 permit. The strategies are adequate to monitor, and control pollutants associated with land disturbing activities.

6.3.4 *Proposed Changes*

Revisions to the Construction Site Storm Water Runoff strategies were incorporated into the revised SWMPP submitted to ADEM on April 1, 2022.

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, 2021 to March 31, 2022 reporting period, the City of Hokes Bluff completed seven (7) of the seven (7) Post-Construction Storm Water Management strategies identified in the previous Annual Report and the 2017 SWMPP.

A table identifying each Post-Construction Storm Water Management strategy planned for the 2021-2022 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, 2022 to March 31, 2023 Reporting Period*

The City of Hokes Bluff renewed its permit during the reporting period. The new permit went into effect October 1, 2021 with an expiration date of September 30, 2026. The City prepared and submitted a revised SWMPP meeting the requirements of the re-issued permit. The 2022 SWMPP became effective on April 1, 2022.

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 2022-2023 reporting period.

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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 2016 permit. The strategies are adequate to address post-construction storm water runoff from new development and re-development.

6.4.4 *Proposed Changes*

Revisions to the Post-construction Storm Water Management strategies were incorporated into the revised SWMPP submitted to ADEM on April 1, 2022.

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, 2021 to March 31, 2022 reporting period, the City of Hokes Bluff completed eight (8) of the eight (8) Pollution Prevention and Good Housekeeping for Municipal Operations strategies identified in the previous Annual Report and the 2017 SWMPP.

The City of Hokes Bluff also completed four (4) strategies beyond those proposed in the previous Annual Report and the 2017 SWMPP. These strategies included:

- Maintaining Ferry Landing and utilizing part time labor during the months of May through October to clean up the area (Activity 9)
- Collecting litter from known problem areas (Activity 10)
- Providing curbside garbage pickup and a collection can to residents (Activity 11)
- Providing dumpsters for customers of garbage pickup to dispose of large items (Activity 12)

A table identifying each Pollution Prevention and Good Housekeeping for Municipal Operations strategy planned for the 2021-2022 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, 2022 to March 31, 2023 Reporting Period*

The City of Hokes Bluff renewed its permit during the reporting period. The new permit went into effect October 1, 2021 with an expiration date of September 30, 2026. The City prepared and submitted a revised SWMPP meeting the requirements of the re-issued permit. The 2022 SWMPP became effective on April 1, 2022.

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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 2022-2023 reporting period.

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 2016 permit. The strategies are adequate to address storm water pollution prevention from municipal operations.

6.5.4 *Proposed Changes*

Revisions to the Pollution Prevention and Good Housekeeping for Municipal Operations strategies were incorporated into the revised SWMPP submitted to ADEM on April 1, 2022.

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 remaining 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.

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Table 7-1 MS4 Storm Water Steering Committee

Entity	Contact	Phone Number	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	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 Johnson	256-492-2414	hbcity@cityofhokesbluff.net
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 consist 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, 2023.

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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

5/31/2022
Date

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Appendices

ADEM Watermark

Appendix A – Figures

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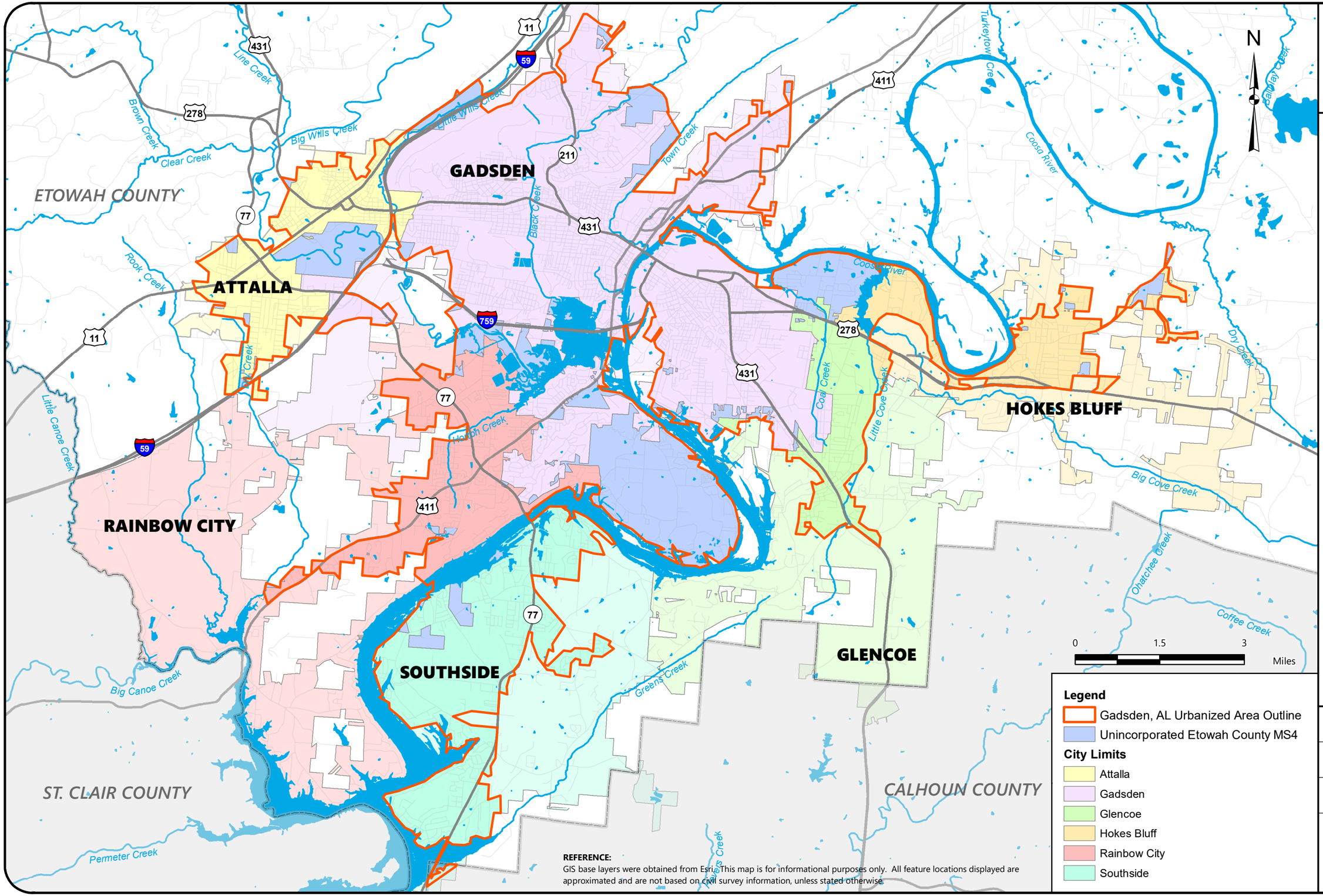

REFERENCE:
GIS base layers were obtained from Esri. This map is for informational purposes only. All feature locations displayed are approximated and are not based on civil survey information, unless stated otherwise.

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:
02/18/2022

PROJECT NUMBER
215660

FIGURE NO.
1

ADEM Watermark

REFERENCE:
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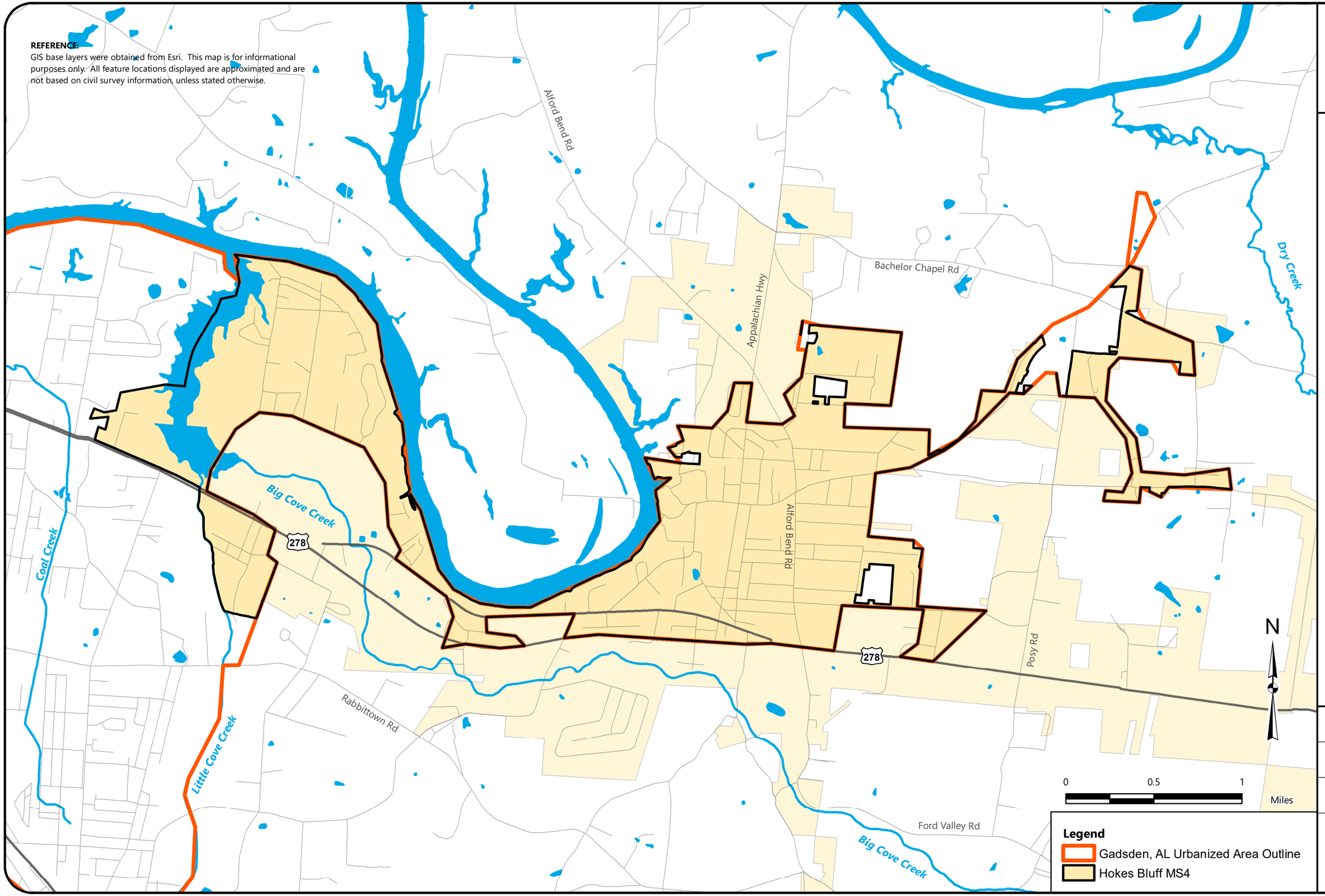
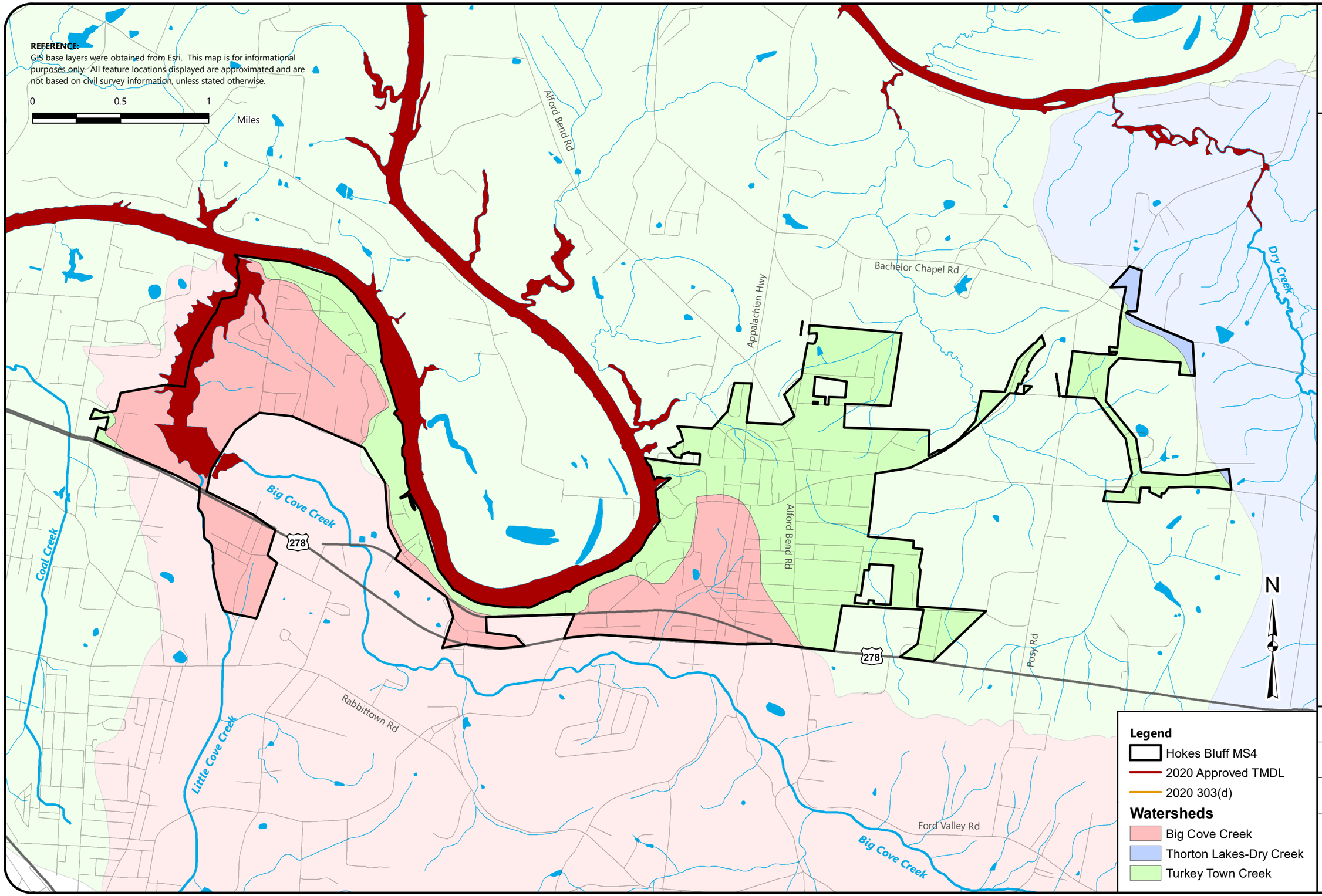


HOKES BLUFF MS4 BOUNDARIES

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

ADEM Watermark



HOKES BLUFF MS4 IMPAIRMENTS

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.	3

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Appendix B – Charts and Statistics

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CHART 1 - TURBIDITY ANALYTICAL DATA

GADSDEN-ETOWAH MS4 MONITORING
NPDES PERMIT NO. ALR040009

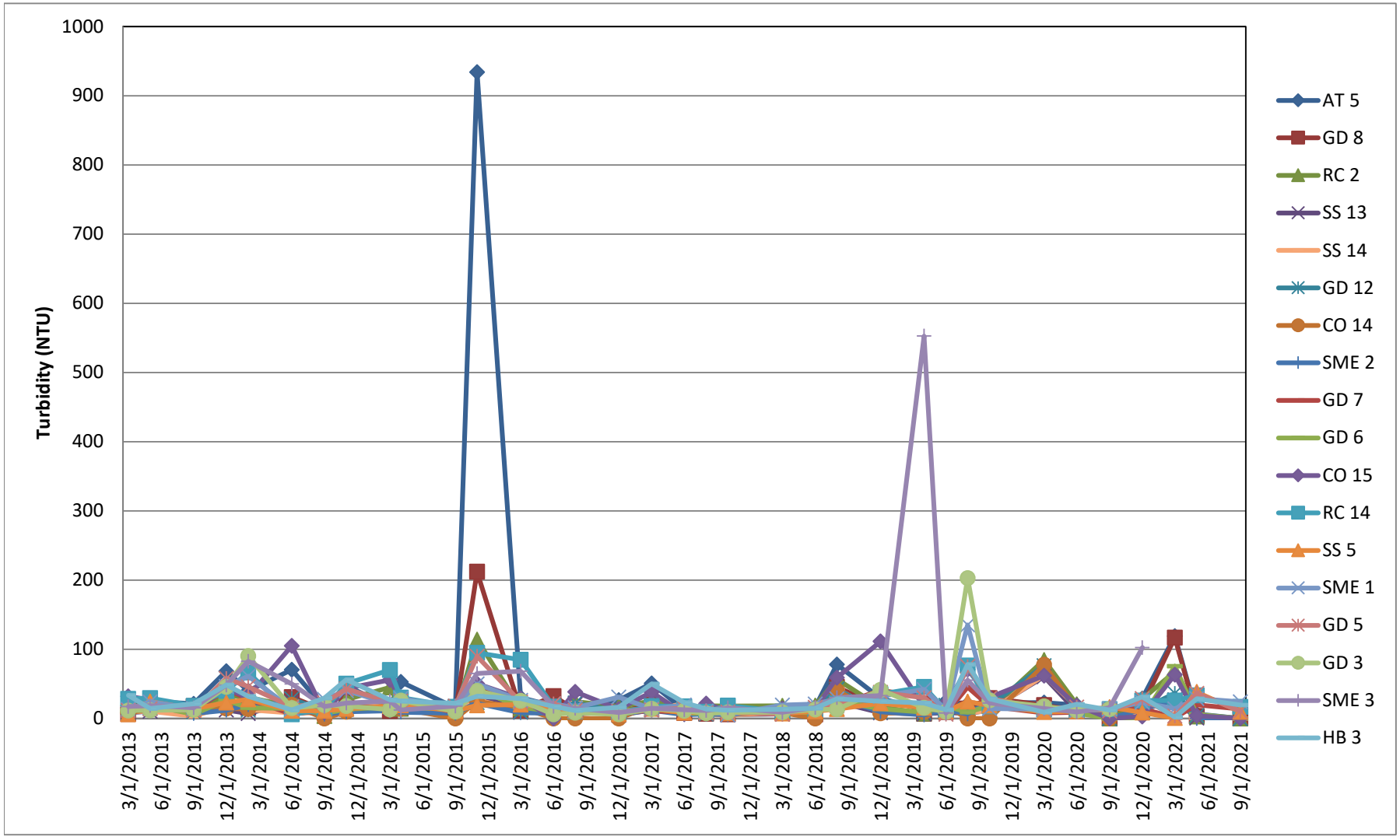

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CHART 2 - pH ANALYTICAL DATA

GADSDEN-ETOWAH MS4 MONITORING
NPDES PERMIT NO. ALR040009

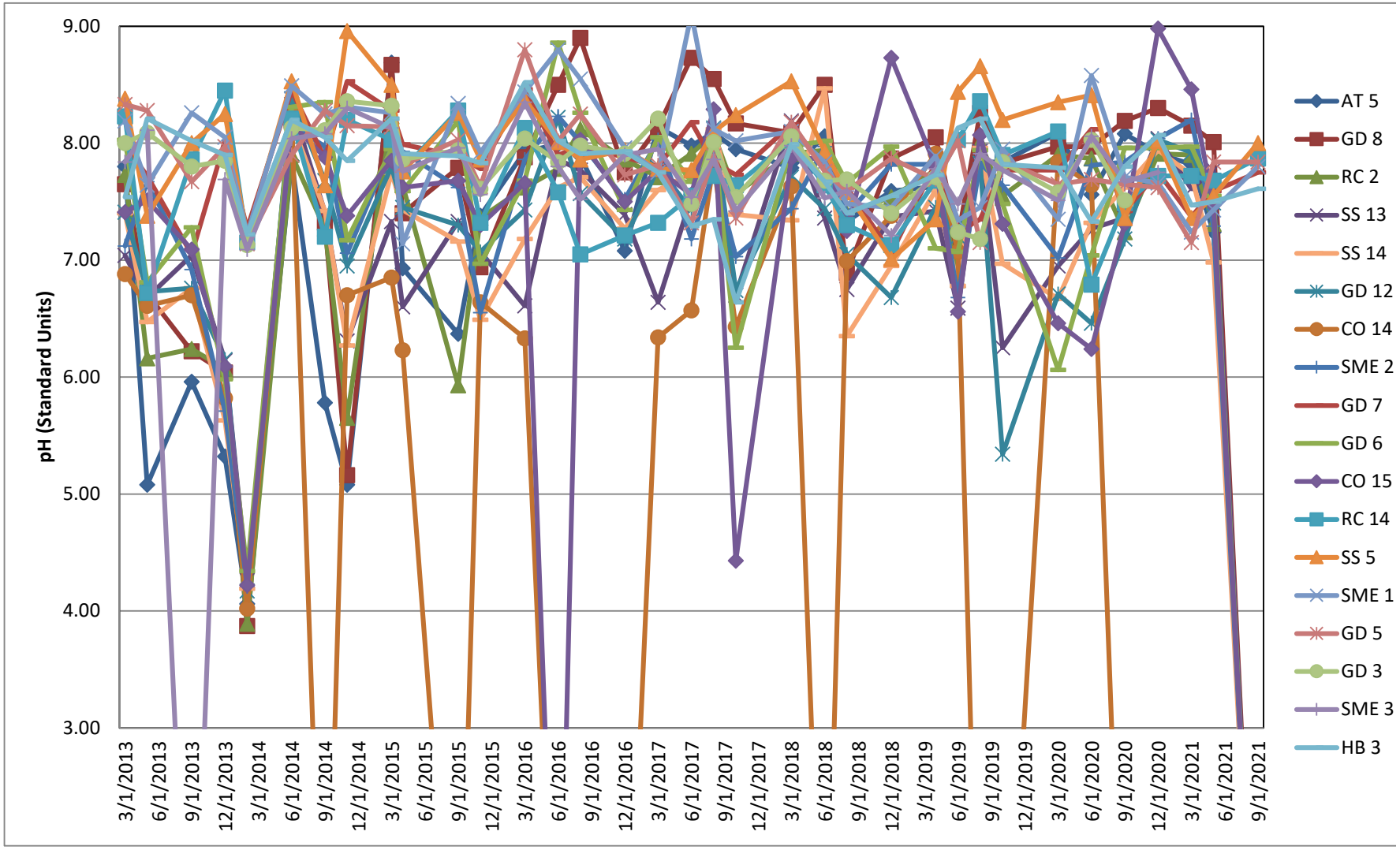

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CHART 3 - DISSOLVED OXYGEN ANALYTICAL DATA

GADSDEN-ETOWAH MS4 MONITORING
NPDES PERMIT NO. ALR040009

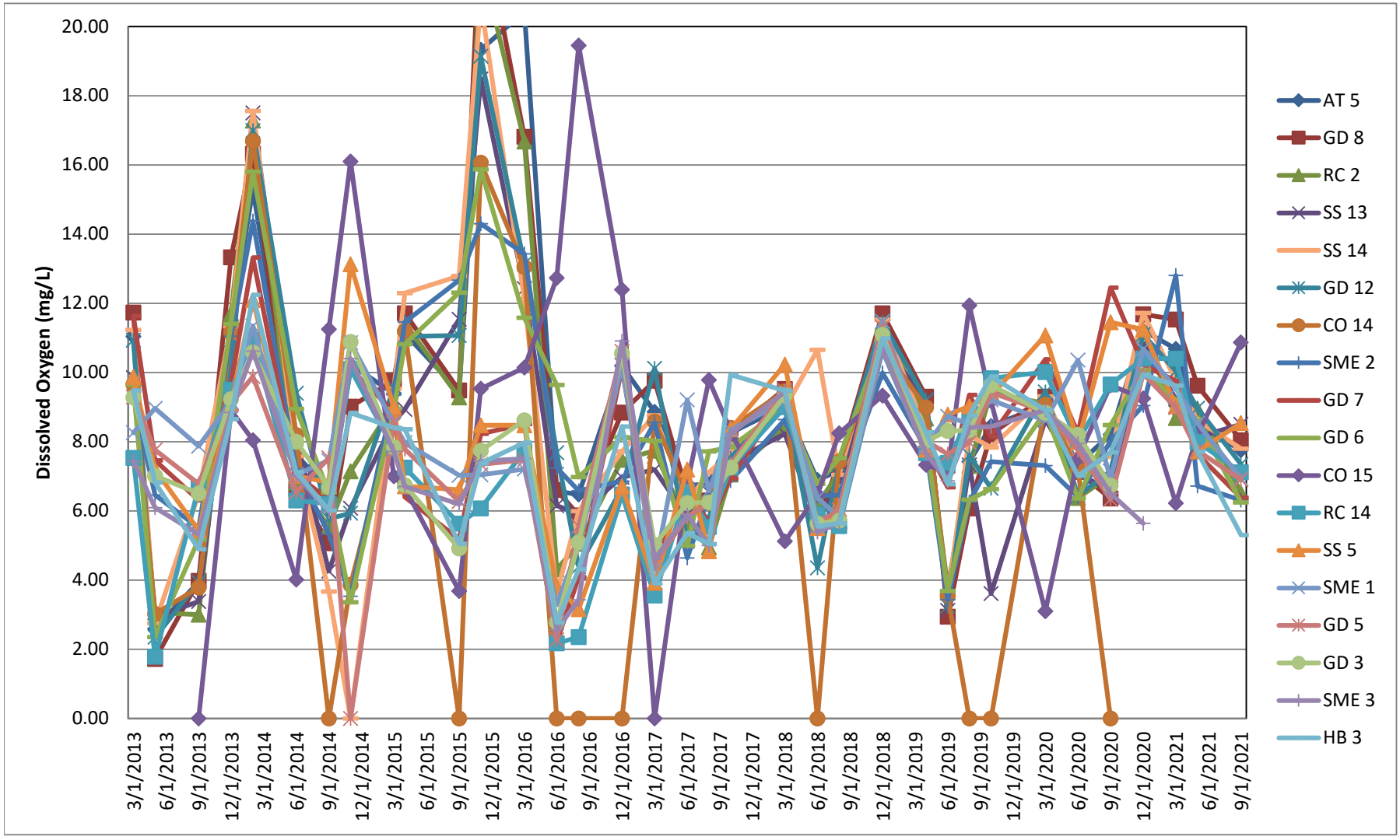

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CHART 4 - TEMPERATURE ANALYTICAL DATA

GADSDEN-ETOWAH MS4 MONITORING
NPDES PERMIT NO. ALR040009

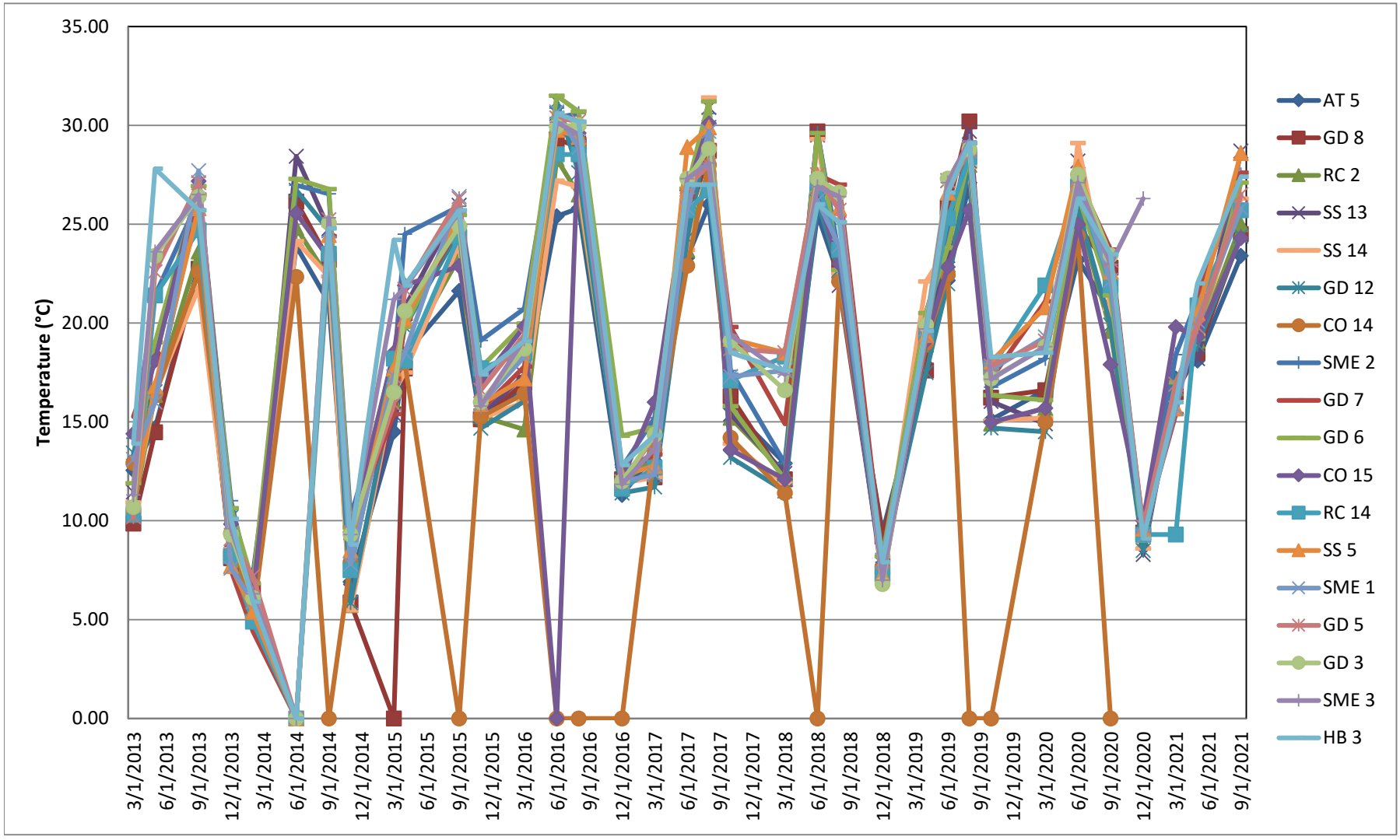

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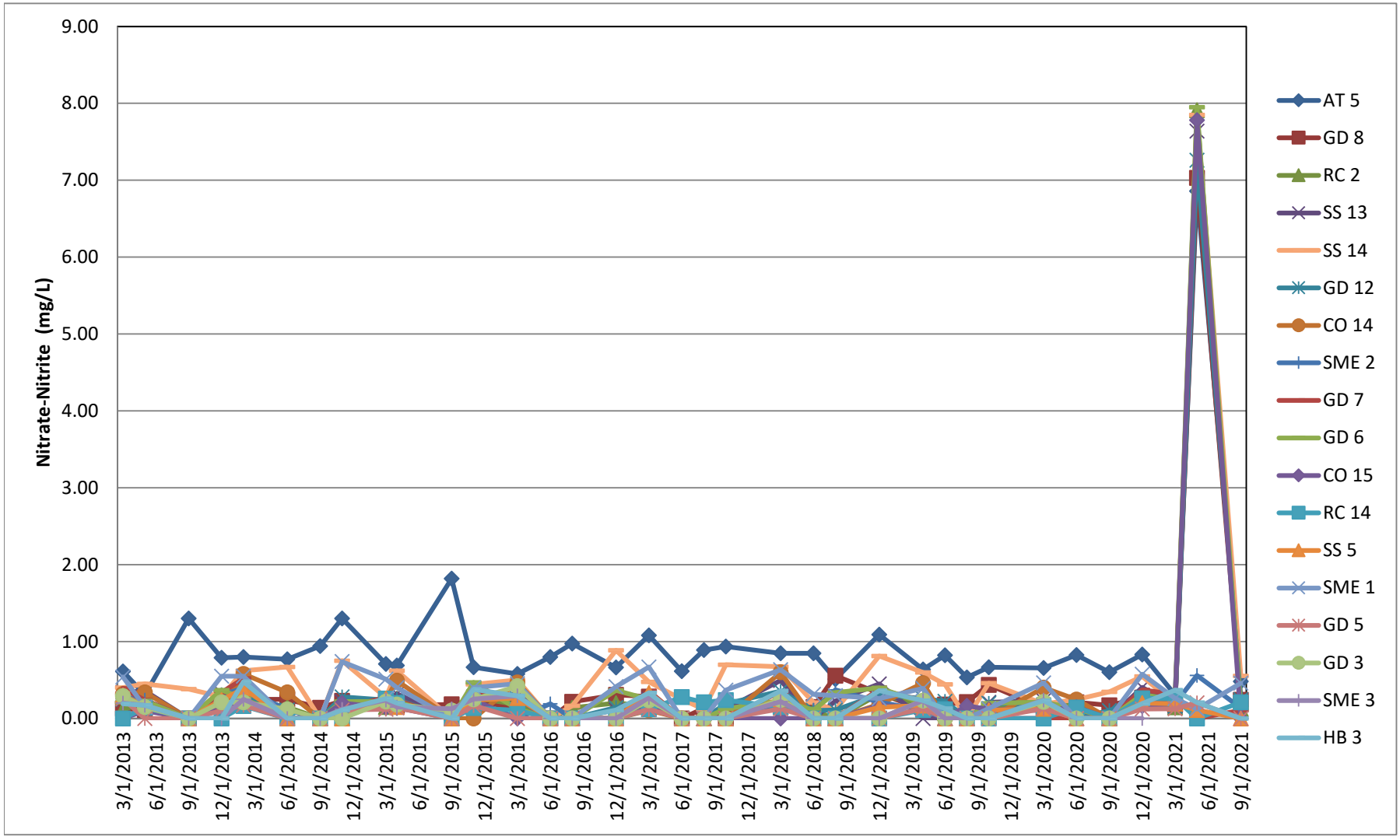
CHART 5 - NITRATE-NITRITE ANALYTICAL DATA

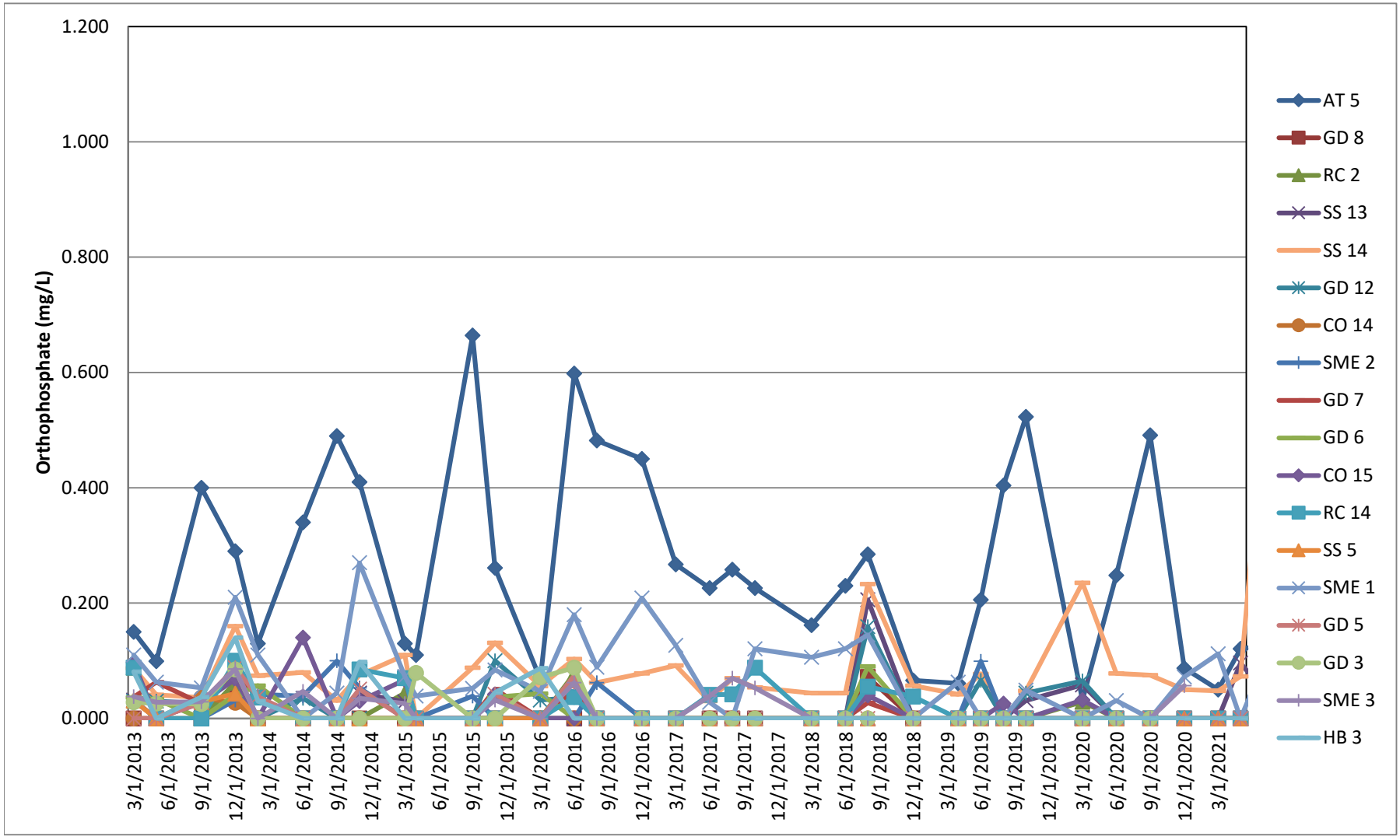
GADSDEN-ETOWAH MS4 MONITORING
NPDES PERMIT NO. ALR040009



ADEM Watermark

CHART 6 - ORTHOPHOSPHATE ANALYTICAL DATA

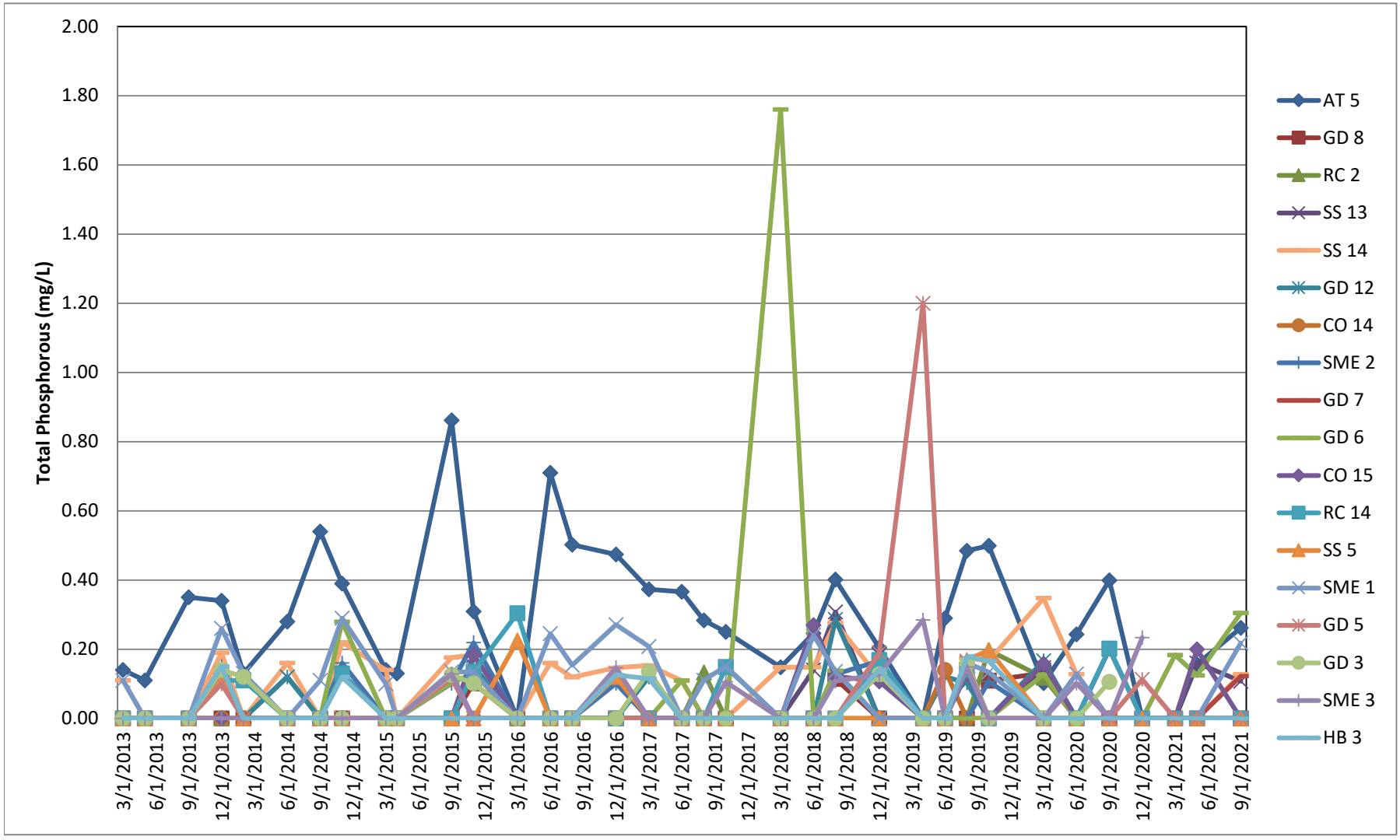
GADSDEN-ETOWAH MS4 MONITORING
NPDES PERMIT NO. ALR040009



ADEM Watermark

CHART 7 - TOTAL PHOSPHOROUS ANALYTICAL DATA

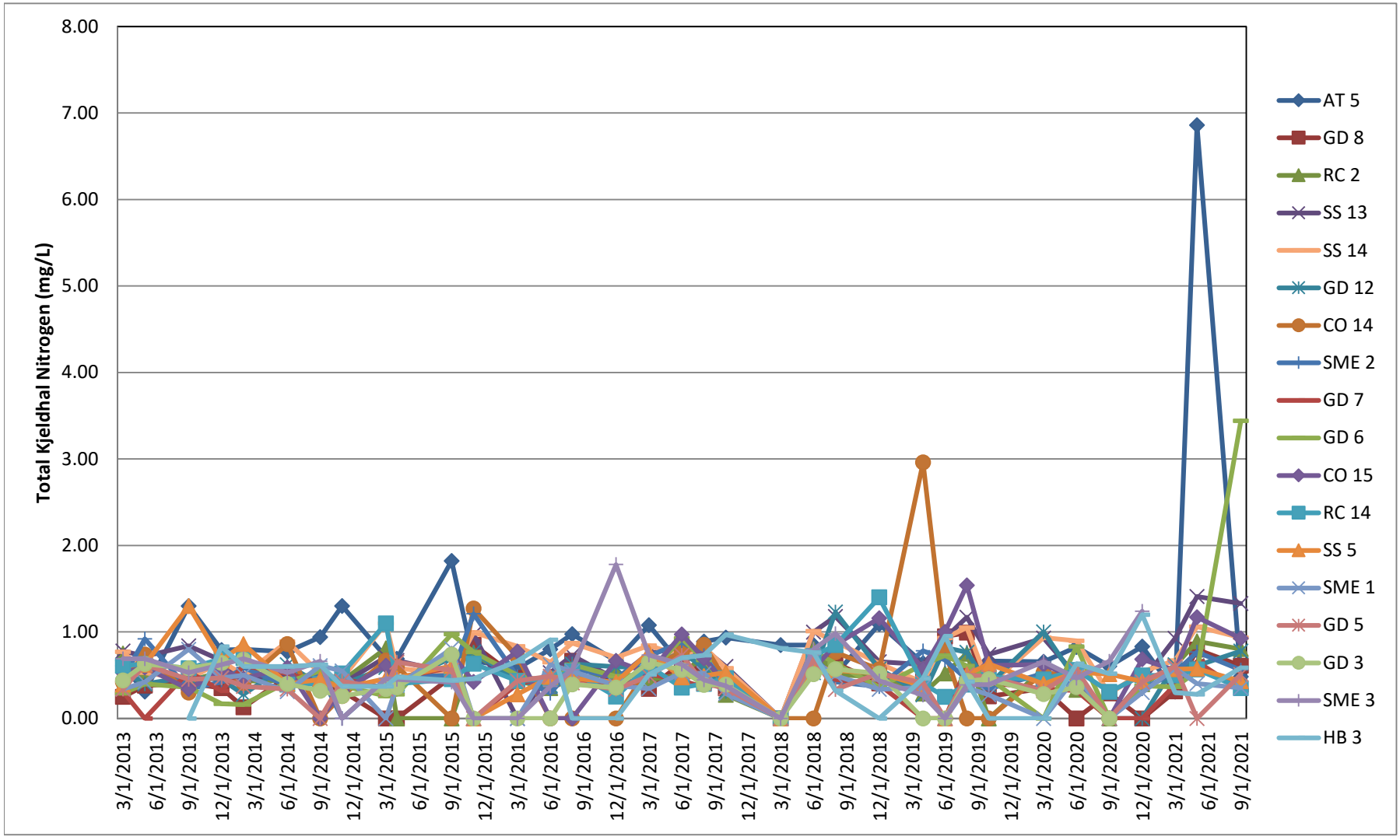
GADSDEN-ETOWAH MS4 MONITORING
NPDES PERMIT NO. ALR040009



ADEM Watermark

CHART 8 - TOTAL KJELDAHL NITROGEN ANALYTICAL DATA

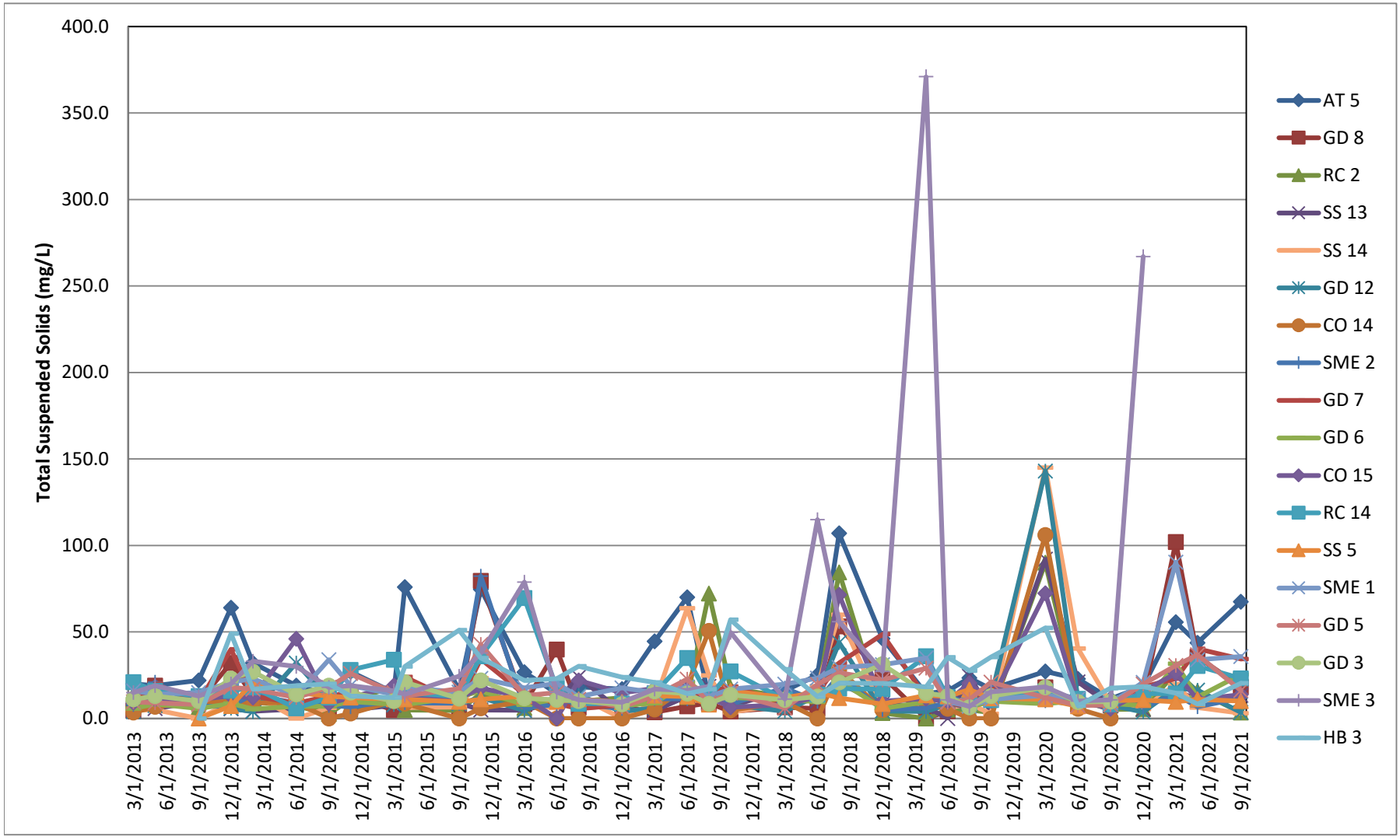
GADSDEN-ETOWAH MS4 MONITORING
NPDES PERMIT NO. ALR040009



ADEM Watermark

CHART 9 - TOTAL SUSPENDED SOLIDS ANALYTICAL DATA

GADSDEN-ETOWAH MS4 MONITORING
NPDES PERMIT NO. ALR040009



ADEM Watermark

Basic Statistics

Parameter: DO

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	74
Total Non-Detects	0 (0%)
Pooled Mean	8.74013
Pooled Std Dev	2.89442
Compliance Meas.	37
Compliance Mean	8.2973
Compliance Std Dev	1.96453
Background Meas.	37
Background Mean	9.18297
Background Std Dev	3.56729

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
AT 5	37	0	0	339.77

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
AT 5	9.18297	3.56729	1.48751	1456	39.3514

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 1	37	0	0	307

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 1	8.2973	1.96453	-0.88567	0.669508	1319	35.6486

Analysis of Variance Statistics

SS Wells	14.5116
SS Total	611.569

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	1456
Background Rank Mean	39.3514
H Statistic	0.5484
H Adjusted for Ties	0.5484

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: DO

Location: SME 1

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
AT 5	3/12/2013	11.04	62
	5/8/2013	2.59	1
	9/23/2013	3.9498	4
	12/10/2013	11.43	69
	2/6/2014	15.29	72
	6/26/2014	7.61	26
	9/30/2014	6.63	12
	11/19/2014	10.23	56
	3/23/2015	9.39	51
	4/22/2015	11.13	64
	9/30/2015	9.45	52
	11/19/2015	19.33	73
	3/15/2016	20.43	74
	6/29/2016	6.57	10
	8/9/2016	6.47	9
	12/7/2016	10.19	54
	3/2/2017	8.86	42
	6/21/2017	6.74	13
	8/17/2017	6.77	14
	10/26/2017	8.25	32
	3/27/2018	9.03	45
	6/26/2018	6.89	15
	8/1/2018	7.16	21
	12/11/2018	10.73	60
	4/17/2019	8.99	44
	6/11/2019	3.48	3
	8/28/2019	7.42	24
	10/28/2019	8.45	35
	3/31/2020	9.07	46
	6/10/2020	7.35	23
	9/21/2020	8.21	31
	12/17/2020	11.21	65
	3/18/2021	10.68	58
	5/5/2021	8.45	36
	9/2/2021	7.75	27
	11/23/2021	11.09	63
	1/10/2022	11.46	70
SME 1	3/12/2013	8.26	33
	5/8/2013	8.96	43
	9/23/2013	7.87	28
	12/10/2013	9.15	47
	2/6/2014	11.34	67
	6/26/2014	7.05	20
	9/30/2014	7.46	25

ADEM Watermark

11/19/2014	10.86	61
3/23/2015	8.52	38
4/22/2015	7.97	30
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	55
3/2/2017	4.31	5
6/29/2017	9.21	49
8/16/2017	6.58	11
10/25/2017	8.32	34
3/28/2018	9.18	48
6/29/2018	6.37	8
8/2/2018	5.82	7
12/10/2018	11.48	71
4/15/2019	7.89	29
6/12/2019	8.73	41
8/27/2019	8.51	37
10/29/2019	9.21	50
3/30/2020	8.61	40
6/16/2020	10.36	57
9/21/2020	6.92	16
12/17/2020	10.68	59
3/18/2021	9.54	53
5/5/2021	8.53	39
9/2/2021	6.93	17
11/23/2021	11.34	68
1/11/2022	11.29	66

The Wilcoxon Statistic is 616
The Expected value is is 684.5
The Standard Deviation is 92.5
The Z Score is -0.745946
The Standard Deviation adjusted for ties is 92.5
The Z Score adjusted for ties is -0.745946
-0.745946 < 2.326 indicating no statistical significance at 1% level
-0.745946 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Nitrate-nitrite

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	74
Total Non-Detects	13 (17.5676%)
Pooled Mean	0.712554
Pooled Std Dev	1.20618
Compliance Meas.	37
Compliance Mean	0.482378
Compliance Std Dev	1.32604
Background Meas.	37
Background Mean	0.94273
Background Std Dev	1.04061

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
AT 5	37	0	0	34.881

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
AT 5	0.94273	1.04061	0.431504	1938	52.3784

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 1	37	13	35.1351	17.848

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 1	0.482378	1.32604	-0.460351	0.277112	837	22.6216

Analysis of Variance Statistics

SS Wells	3.92058
SS Total	106.206

Kruskal-Wallis Statistics

Non-Detect Rank	7
Background Rank Sum	1938
Background Rank Mean	52.3784
H Statistic	35.4186
H Adjusted for Ties	35.6105

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Nitrate-nitrite

Location: SME 1

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 13
Non detect rank is 7

Wilcoxon Ranks

Location	Date	Conc.	Rank
AT 5	3/12/2013	0.61	42
	5/8/2013	0.31	20
	9/23/2013	1.3	70
	12/10/2013	0.79	56
	2/6/2014	0.8	57
	6/26/2014	0.77	55
	9/30/2014	0.94	66
	11/19/2014	1.3	71
	3/23/2015	0.71	52
	4/22/2015	0.69	51
	9/30/2015	1.82	72
	11/19/2015	0.666	49
	3/15/2016	0.578	40
	6/29/2016	0.8	58
	8/9/2016	0.975	67
	12/7/2016	0.663	47
	3/2/2017	1.08	68
	6/21/2017	0.616	43
	8/17/2017	0.89	64
	10/26/2017	0.936	65
	3/27/2018	0.849	62
	6/26/2018	0.849	63
	8/1/2018	0.51	33
	12/11/2018	1.09	69
	4/17/2019	0.638	45
	6/11/2019	0.822	59
	8/28/2019	0.534	35
	10/28/2019	0.665	48
	3/31/2020	0.657	46
	6/10/2020	0.825	60
	9/21/2020	0.603	41
	12/17/2020	0.831	61
	3/18/2021	0.31	21
	5/5/2021	6.86	73
	9/2/2021	0.482	32
	11/23/2021	0.343	23
	1/10/2022	0.769	54
SME 1	3/12/2013	0.54	36
	5/8/2013	0.15	16
	9/23/2013	ND<0	7
	12/10/2013	0.55	37
	2/6/2014	0.55	38
	6/26/2014	ND<0	7
	9/30/2014	ND<0	7

ADEM Watermark

11/19/2014	0.74	53
3/23/2015	0.51	34
4/22/2015	0.4	26
9/30/2015	ND<0	7
11/19/2015	0.401	27
3/15/2016	0.454	29
6/29/2016	ND<0	7
8/9/2016	ND<0	7
12/7/2016	0.413	28
3/2/2017	0.671	50
6/29/2017	ND<0	7
8/16/2017	ND<0	7
10/25/2017	0.368	24
3/28/2018	0.633	44
6/29/2018	0.312	22
8/2/2018	0.296	19
12/10/2018	0.259	17
4/15/2019	0.39	25
6/12/2019	ND<0	7
8/27/2019	ND<0	7
10/29/2019	0.129	15
3/30/2020	0.462	31
6/16/2020	ND<0	7
9/21/2020	ND<0	7
12/17/2020	0.577	39
3/18/2021	0.263	18
5/5/2021	0.122	14
9/2/2021	0.458	30
11/23/2021	ND<0	7
1/11/2022	8.2	74

The Wilcoxon Statistic is 134
The Expected value is is 684.5
The Standard Deviation is 92.5
The Z Score is -5.95676
The Standard Deviation adjusted for ties is 92.2503
The Z Score adjusted for ties is -5.97288
-5.95676 < 2.326 indicating no statistical significance at 1% level
-5.97288 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Ortho-phosphate

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	74
Total Non-Detects	10 (13.5135%)
Pooled Mean	0.163351
Pooled Std Dev	0.157683
Compliance Meas.	37
Compliance Mean	0.0761081
Compliance Std Dev	0.0695576
Background Meas.	37
Background Mean	0.250595
Background Std Dev	0.173016

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
AT 5	37	1	2.7027	9.272

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
AT 5	0.250595	0.173016	0.0747923	1848.5	49.9595

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 1	37	9	24.3243	2.816

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 1	0.0761081	0.0695576	-0.174486	0.0306563	926.5	25.0405

Analysis of Variance Statistics

SS Wells	0.563242
SS Total	1.81506

Kruskal-Wallis Statistics

Non-Detect Rank	5.5
Background Rank Sum	1848.5
Background Rank Mean	49.9595
H Statistic	24.8381
H Adjusted for Ties	24.8989

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Ortho-phosphate

Location: SME 1

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 10
Non detect rank is 5.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
AT 5	3/12/2013	0.15	47
	5/8/2013	0.099	33
	9/23/2013	0.4	65
	12/10/2013	0.29	63
	2/6/2014	0.13	43
	6/26/2014	0.34	64
	9/30/2014	0.49	70
	11/19/2014	0.41	67
	3/23/2015	0.13	44
	4/22/2015	0.11	35
	9/30/2015	0.664	74
	11/19/2015	0.261	59
	3/15/2016	0.068	26
	6/29/2016	0.598	73
	8/9/2016	0.482	69
	12/7/2016	0.45	68
	3/2/2017	0.267	60
	6/21/2017	0.226	54
	8/17/2017	0.258	58
	10/26/2017	0.226	55
	3/27/2018	0.162	48
	6/26/2018	0.23	56
	8/1/2018	0.285	62
	12/11/2018	0.066	25
	4/17/2019	0.061	22
	6/11/2019	0.206	51
	8/28/2019	0.404	66
	10/28/2019	0.523	72
	3/31/2020	0.032	13
	6/10/2020	0.248	57
	9/21/2020	0.491	71
	12/17/2020	0.087	31
	3/18/2021	0.05	18
	5/5/2021	0.121	38
	9/2/2021	0.131	45
	11/23/2021	ND<0	5.5
	1/10/2022	0.126	41
SME 1	3/12/2013	0.11	36
	5/8/2013	0.063	23
	9/23/2013	0.053	20
	12/10/2013	0.21	53
	2/6/2014	0.11	37
	6/26/2014	ND<0	5.5
	9/30/2014	0.044	15

ADEM Watermark

11/19/2014	0.27	61
3/23/2015	0.073	28
4/22/2015	0.039	14
9/30/2015	0.052	19
11/19/2015	0.084	30
3/15/2016	0.047	16
6/29/2016	0.18	49
8/9/2016	0.089	32
12/7/2016	0.209	52
3/2/2017	0.127	42
6/29/2017	0.028	11
8/16/2017	ND<0	5.5
10/25/2017	0.121	39
3/28/2018	0.106	34
6/29/2018	0.121	40
8/2/2018	0.145	46
12/10/2018	ND<0	5.5
4/15/2019	0.063	24
6/12/2019	ND<0	5.5
8/27/2019	ND<0	5.5
10/29/2019	0.049	17
3/30/2020	ND<0	5.5
6/16/2020	0.031	12
9/21/2020	ND<0	5.5
12/17/2020	0.072	27
3/18/2021	ND<0	5.5
5/5/2021	ND<0	5.5
9/2/2021	0.19	50
11/23/2021	0.076	29
1/11/2022	0.054	21

The Wilcoxon Statistic is 223.5
The Expected value is is 684.5
The Standard Deviation is 92.5
The Z Score is -4.98919
The Standard Deviation adjusted for ties is 92.3869
The Z Score adjusted for ties is -4.9953
-4.98919 < 2.326 indicating no statistical significance at 1% level
-4.9953 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: pH

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	73
Total Non-Detects	0 (0%)
Pooled Mean	7.62164
Pooled Std Dev	0.872815
Compliance Meas.	37
Compliance Mean	7.93378
Compliance Std Dev	0.469334
Background Meas.	36
Background Mean	7.30083
Background Std Dev	1.06382

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
AT 5	36	0	0	262.83

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
AT 5	7.30083	1.06382	0.507098	1091	30.3056

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 1	37	0	0	293.55

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 1	7.93378	0.469334	0.63295	0.191562	1610	43.5135

Analysis of Variance Statistics

SS Wells	7.31006
SS Total	54.85

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	1091
Background Rank Mean	30.3056
H Statistic	7.07098
H Adjusted for Ties	7.07098

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: pH

Location: SME 1

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
AT 5	3/12/2013	7.8	33
	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	39
	9/30/2014	5.78	5
	11/19/2014	5.08	3
	3/23/2015	8.69	71
	4/22/2015	6.93	8
	9/30/2015	6.37	7
	11/19/2015	7.38	18
	3/15/2016	7.93	45
	6/29/2016	7.99	50
	8/9/2016	7.89	40
	12/7/2016	7.08	9
	3/2/2017	8.14	60
	6/21/2017	7.98	49
	8/17/2017	8.09	55
	10/26/2017	7.95	46
	3/27/2018	7.79	32
	6/26/2018	8.06	53
	8/1/2018	7.33	15
	12/11/2018	7.59	26
	4/17/2019	7.63	27
	6/11/2019	7.18	11
	8/28/2019	7.84	36
	10/28/2019	7.84	37
	3/31/2020	8.09	56
	6/10/2020	7.56	25
	9/21/2020	8.08	54
	12/17/2020	7.91	42
	3/18/2021	7.82	35
	5/5/2021	7.24	13
	11/23/2021	8.13	59
	1/10/2022	7.39	19
SME 1	3/12/2013	8.19	61
	5/8/2013	7.64	28
	9/23/2013	8.26	63
	12/10/2013	8.05	52
	2/6/2014	7.22	12
	6/26/2014	8.49	68
	9/30/2014	8.25	62
	11/19/2014	8.31	65

ADEM Watermark

3/23/2015	8.26	64
4/22/2015	7.14	10
9/30/2015	8.34	66
11/19/2015	7.92	44
3/15/2016	8.44	67
6/29/2016	8.8	72
8/9/2016	8.55	69
12/7/2016	7.96	48
3/2/2017	7.75	31
6/29/2017	9.11	73
8/16/2017	8.12	58
10/25/2017	8.02	51
3/28/2018	8.1	57
6/29/2018	7.84	38
8/2/2018	7.48	23
12/10/2018	7.45	21
4/15/2019	7.89	41
6/12/2019	7.34	16
8/27/2019	7.45	22
10/29/2019	7.95	47
3/30/2020	7.35	17
6/16/2020	8.58	70
9/21/2020	7.71	30
12/17/2020	7.66	29
3/18/2021	7.24	14
5/5/2021	7.43	20
9/2/2021	7.8	34
11/23/2021	7.91	43
1/11/2022	7.55	24

The Wilcoxon Statistic is 907
The Expected value is is 666
The Standard Deviation is 90.6311
The Z Score is 2.65361
The Standard Deviation adjusted for ties is 90.6311
The Z Score adjusted for ties is 2.65361
2.65361 > 2.326 indicating statistical significance at 1% level
2.65361 > 2.326 indicating statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Temperature

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	73
Total Non-Detects	0 (0%)
Pooled Mean	18.2932
Pooled Std Dev	6.61803
Compliance Meas.	36
Compliance Mean	19.0758
Compliance Std Dev	7.27336
Background Meas.	37
Background Mean	17.5316
Background Std Dev	5.91233

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
AT 5	37	0	0	648.67

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
AT 5	17.5316	5.91233	2.53876	1266	34.2162

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 1	36	0	0	686.73

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 1	19.0758	7.27336	1.54421	1.54938	1435	39.8611

Analysis of Variance Statistics

SS Wells	43.5106
SS Total	3153.48

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	1266
Background Rank Mean	34.2162
H Statistic	1.29158
H Adjusted for Ties	1.29158

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Temperature

Location: SME 1

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
AT 5	3/12/2013	12.55	17
	5/8/2013	14.69	23
	9/23/2013	22.88	51
	12/10/2013	8.21	7
	2/6/2014	7.28	3
	6/26/2014	23.89	55
	9/30/2014	21.03	46
	11/19/2014	6.91	2
	3/23/2015	14.5	22
	4/22/2015	18.4	40
	9/30/2015	21.63	47
	11/19/2015	14.98	24
	3/15/2016	16.86	31
	6/29/2016	25.4	58
	8/9/2016	25.8	60
	12/7/2016	11.3	13
	3/2/2017	13.4	21
	6/21/2017	23.3	53
	8/17/2017	26	63
	10/26/2017	15.7	26
	3/27/2018	12.9	18
	6/26/2018	25.5	59
	8/1/2018	22.3	50
	12/11/2018	9.4	9
	4/17/2019	17.9	37
	6/11/2019	22.16	48
	8/28/2019	27.1	67
	10/28/2019	15.1	25
	3/31/2020	16.6	30
	6/10/2020	23.2	52
	9/21/2020	20.6	45
	12/17/2020	9.6	10
	3/18/2021	17.2	32
	5/5/2021	18.1	38
	9/2/2021	23.4	54
	11/23/2021	12.9	19
	1/10/2022	10	11
SME 1	3/12/2013	13.1	20
	5/8/2013	16	29
	9/23/2013	27.7	69
	12/10/2013	7.6	4
	2/6/2014	5.9	1
	9/30/2014	24.67	57
	11/19/2014	7.8	5

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3/23/2015	17.3	33
4/22/2015	18.5	41
9/30/2015	26.4	65
11/19/2015	15.9	28
3/15/2016	18.3	39
6/29/2016	30.67	73
8/9/2016	28.87	71
12/7/2016	11.98	14
3/2/2017	12.34	15
6/29/2017	25.8	61
8/16/2017	29.7	72
10/25/2017	17.3	34
3/28/2018	17.6	35
6/29/2018	26.2	64
8/2/2018	23.9	56
12/10/2018	8	6
4/15/2019	19.7	43
6/12/2019	27.2	68
8/27/2019	28.8	70
10/29/2019	17.6	36
3/30/2020	19.3	42
6/16/2020	27	66
9/21/2020	22.2	49
12/17/2020	9.2	8
3/18/2021	15.7	27
5/5/2021	20.1	44
9/2/2021	25.8	62
11/23/2021	12.4	16
1/11/2022	10.2	12

The Wilcoxon Statistic is 769
The Expected value is is 666
The Standard Deviation is 90.6311
The Z Score is 1.13096
The Standard Deviation adjusted for ties is 90.6311
The Z Score adjusted for ties is 1.13096
1.13096 < 2.326 indicating no statistical significance at 1% level
1.13096 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: TKN

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	74
Total Non-Detects	23 (31.0811%)
Pooled Mean	0.387986
Pooled Std Dev	0.369645
Compliance Meas.	37
Compliance Mean	0.400649
Compliance Std Dev	0.330604
Background Meas.	37
Background Mean	0.375324
Background Std Dev	0.409197

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
AT 5	37	15	40.5405	13.887

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
AT 5	0.375324	0.409197	0.215842	1325	35.8108

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 1	37	8	21.6216	14.824

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 1	0.400649	0.330604	0.0253243	0.0864841	1450	39.1892

Analysis of Variance Statistics

SS Wells	0.0118644
SS Total	9.97455

Kruskal-Wallis Statistics

Non-Detect Rank	12
Background Rank Sum	1325
Background Rank Mean	35.8108
H Statistic	0.456538
H Adjusted for Ties	0.470645

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: TKN

Location: SME 1

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 23
Non detect rank is 12

Wilcoxon Ranks

Location	Date	Conc.	Rank
AT 5	3/12/2013	0.37	38
	5/8/2013	0.56	58
	9/23/2013	0.37	39
	12/10/2013	0.97	70
	2/6/2014	0.35	34
	6/26/2014	0.38	41
	9/30/2014	ND<0	12
	11/19/2014	0.5	50
	3/23/2015	0.27	25
	4/22/2015	ND<0	12
	9/30/2015	ND<0	12
	11/19/2015	1.47	73
	3/15/2016	0.772	66
	6/29/2016	ND<0	12
	8/9/2016	0.268	24
	12/7/2016	ND<0	12
	3/2/2017	0.529	53
	6/21/2017	0.544	55
	8/17/2017	0.69	65
	10/26/2017	ND<0	12
	3/27/2018	ND<0	12
	6/26/2018	0.411	44
	8/1/2018	0.68	64
	12/11/2018	0.579	59
	4/17/2019	ND<0	12
	6/11/2019	0.486	48
	8/28/2019	1.07	71
	10/28/2019	ND<0	12
	3/31/2020	ND<0	12
	6/10/2020	ND<0	12
	9/21/2020	ND<0	12
	12/17/2020	ND<0	12
	3/18/2021	ND<0	12
	5/5/2021	1.37	72
	9/2/2021	0.969	69
	11/23/2021	ND<0	12
	1/10/2022	0.279	27
SME 1	3/12/2013	0.34	32
	5/8/2013	0.42	45
	9/23/2013	0.8	67
	12/10/2013	0.47	46
	2/6/2014	0.5	51
	6/26/2014	0.31	30
	9/30/2014	0.61	61

ADEM Watermark

11/19/2014	0.55	57
3/23/2015	ND<0	12
4/22/2015	0.38	42
9/30/2015	0.807	68
11/19/2015	ND<0	12
3/15/2016	ND<0	12
6/29/2016	0.62	62
8/9/2016	0.547	56
12/7/2016	0.378	40
3/2/2017	0.345	33
6/29/2017	0.53	54
8/16/2017	0.52	52
10/25/2017	0.288	28
3/28/2018	ND<0	12
6/29/2018	0.67	63
8/2/2018	0.495	49
12/10/2018	0.336	31
4/15/2019	0.36	37
6/12/2019	ND<0	12
8/27/2019	0.356	36
10/29/2019	0.272	26
3/30/2020	ND<0	12
6/16/2020	0.485	47
9/21/2020	ND<0	12
12/17/2020	0.3	29
3/18/2021	0.58	60
5/5/2021	0.402	43
9/2/2021	0.353	35
11/23/2021	ND<0	12
1/11/2022	1.8	74

The Wilcoxon Statistic is 747
The Expected value is is 684.5
The Standard Deviation is 92.5
The Z Score is 0.67027
The Standard Deviation adjusted for ties is 91.1032
The Z Score adjusted for ties is 0.680547
0.67027 < 2.326 indicating no statistical significance at 1% level
0.680547 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Total Phosphorus

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	74
Total Non-Detects	19 (25.6757%)
Pooled Mean	0.192662
Pooled Std Dev	0.17771
Compliance Meas.	37
Compliance Mean	0.100135
Compliance Std Dev	0.0954429
Background Meas.	37
Background Mean	0.285189
Background Std Dev	0.193214

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
AT 5	37	4	10.8108	10.552

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
AT 5	0.285189	0.193214	0.0836099	1806	48.8108

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 1	37	15	40.5405	3.705

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 1	0.100135	0.0954429	-0.185054	0.0354282	969	26.1892

Analysis of Variance Statistics

SS Wells	0.633533
SS Total	2.30541

Kruskal-Wallis Statistics

Non-Detect Rank	10
Background Rank Sum	1806
Background Rank Mean	48.8108
H Statistic	20.4695
H Adjusted for Ties	20.821

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Total Phosphorus

Location: SME 1

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 19
Non detect rank is 10

Wilcoxon Ranks

Location	Date	Conc.	Rank
AT 5	3/12/2013	0.14	35
	5/8/2013	0.11	22
	9/23/2013	0.35	62
	12/10/2013	0.34	61
	2/6/2014	0.13	28
	6/26/2014	0.28	56
	9/30/2014	0.54	72
	11/19/2014	0.39	65
	3/23/2015	0.14	36
	4/22/2015	0.13	29
	9/30/2015	0.862	74
	11/19/2015	0.309	60
	3/15/2016	ND<0	10
	6/29/2016	0.71	73
	8/9/2016	0.502	71
	12/7/2016	0.474	68
	3/2/2017	0.373	64
	6/21/2017	0.366	63
	8/17/2017	0.283	57
	10/26/2017	0.25	51
	3/27/2018	0.148	37
	6/26/2018	0.246	50
	8/1/2018	0.401	67
	12/11/2018	0.204	44
	4/17/2019	ND<0	10
	6/11/2019	0.29	58
	8/28/2019	0.485	69
	10/28/2019	0.499	70
	3/31/2020	0.102	21
	6/10/2020	0.243	48
	9/21/2020	0.399	66
	12/17/2020	ND<0	10
	3/18/2021	ND<0	10
	5/5/2021	0.157	40
	9/2/2021	0.262	54
	11/23/2021	0.253	52
	1/10/2022	0.184	43
SME 1	3/12/2013	0.11	23
	5/8/2013	ND<0	10
	9/23/2013	ND<0	10
	12/10/2013	0.26	53
	2/6/2014	0.13	30
	6/26/2014	ND<0	10
	9/30/2014	0.11	24

ADEM Watermark

11/19/2014	0.29	59
3/23/2015	0.1	20
4/22/2015	ND<0	10
9/30/2015	0.135	33
11/19/2015	0.134	31
3/15/2016	ND<0	10
6/29/2016	0.245	49
8/9/2016	0.154	39
12/7/2016	0.271	55
3/2/2017	0.208	45
6/29/2017	ND<0	10
8/16/2017	0.111	25
10/25/2017	0.151	38
3/28/2018	ND<0	10
6/29/2018	0.241	47
8/2/2018	0.136	34
12/10/2018	ND<0	10
4/15/2019	ND<0	10
6/12/2019	ND<0	10
8/27/2019	0.161	41
10/29/2019	0.134	32
3/30/2020	ND<0	10
6/16/2020	0.129	27
9/21/2020	ND<0	10
12/17/2020	ND<0	10
3/18/2021	0.112	26
5/5/2021	ND<0	10
9/2/2021	0.218	46
11/23/2021	0.165	42
1/11/2022	ND<0	10

The Wilcoxon Statistic is 266
The Expected value is is 684.5
The Standard Deviation is 92.5
The Z Score is -4.52973
The Standard Deviation adjusted for ties is 91.7159
The Z Score adjusted for ties is -4.56846
-4.52973 < 2.326 indicating no statistical significance at 1% level
-4.56846 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Total Suspended Solids

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	74
Total Non-Detects	0 (0%)
Pooled Mean	25.9849
Pooled Std Dev	19.9621
Compliance Meas.	37
Compliance Mean	20.7451
Compliance Std Dev	13.9911
Background Meas.	37
Background Mean	31.2246
Background Std Dev	23.5765

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
AT 5	37	0	0	1155.31

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
AT 5	31.2246	23.5765	10.8551	1578	42.6486

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 1	37	0	0	767.57

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 1	20.7451	13.9911	-10.4795	4.50706	1197	32.3514

Analysis of Variance Statistics

SS Wells	2031.65
SS Total	29089.4

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	1578
Background Rank Mean	42.6486
H Statistic	4.24137
H Adjusted for Ties	4.24137

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Total Suspended Solids

Location: SME 1

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
AT 5	3/12/2013	20	42
	5/8/2013	19	38
	9/23/2013	22	46
	12/10/2013	64	68
	2/6/2014	32	59
	6/26/2014	19	39
	9/30/2014	14	15
	11/19/2014	27	54
	3/23/2015	15	20
	4/22/2015	76	72
	9/30/2015	16.4	27
	11/19/2015	74.6	71
	3/15/2016	26.7	53
	6/29/2016	14.5	19
	8/9/2016	18.3	35
	12/7/2016	16.9	28
	3/2/2017	44.6	65
	6/21/2017	70	70
	8/17/2017	12	9
	10/26/2017	9.41	4
	3/27/2018	15.9	24
	6/26/2018	25.2	52
	8/1/2018	107	74
	12/11/2018	46.2	66
	4/17/2019	14.4	18
	6/11/2019	15.9	25
	8/28/2019	23.5	51
	10/28/2019	17	30
	3/31/2020	27.1	55
	6/10/2020	22.8	47
	9/21/2020	11.3	7
	12/17/2020	18.6	37
	3/18/2021	55.6	67
	5/5/2021	43.7	64
	9/2/2021	67.4	69
	11/23/2021	2.6	1
	1/10/2022	29.7	57
SME 1	3/12/2013	16	26
	5/8/2013	14	16
	9/23/2013	15	21
	12/10/2013	21	45
	2/6/2014	23	48
	6/26/2014	13	13
	9/30/2014	34	60

ADEM Watermark

11/19/2014	19	40
3/23/2015	14	17
4/22/2015	18	34
9/30/2015	15.3	23
11/19/2015	23.2	49
3/15/2016	17.7	32
6/29/2016	20.3	43
8/9/2016	12.6	10
12/7/2016	17.7	33
3/2/2017	15	22
6/29/2017	18.3	36
8/16/2017	12.7	11
10/25/2017	16.9	29
3/28/2018	19.8	41
6/29/2018	23.3	50
8/2/2018	29.5	56
12/10/2018	31	58
4/15/2019	35	62
6/12/2019	9.67	5
8/27/2019	7.1	2
10/29/2019	11	6
3/30/2020	13.3	14
6/16/2020	11.4	8
9/21/2020	9	3
12/17/2020	20.9	44
3/18/2021	90.4	73
5/5/2021	34	61
9/2/2021	35.8	63
11/23/2021	12.7	12
1/11/2022	17	31

The Wilcoxon Statistic is 494
The Expected value is is 684.5
The Standard Deviation is 92.5
The Z Score is -2.06486
The Standard Deviation adjusted for ties is 92.5
The Z Score adjusted for ties is -2.06486
-2.06486 < 2.326 indicating no statistical significance at 1% level
-2.06486 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Turbidity

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	73
Total Non-Detects	2 (2.73973%)
Pooled Mean	41.6785
Pooled Std Dev	109.475
Compliance Meas.	37
Compliance Mean	30.0305
Compliance Std Dev	31.2149
Background Meas.	36
Background Mean	53.65
Background Std Dev	152.844

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
AT 5	36	2	5.55556	1931.4

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
AT 5	53.65	152.844	69.4508	1354	37.6111

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 1	37	0	0	1111.13

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 1	30.0305	31.2149	-23.6195	25.6556	1347	36.4054

Analysis of Variance Statistics

SS Wells	10179.4
SS Total	862897

Kruskal-Wallis Statistics

Non-Detect Rank	1.5
Background Rank Sum	1354
Background Rank Mean	37.6111
H Statistic	0.0589238
H Adjusted for Ties	0.0589247

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Turbidity

Location: SME 1

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 2
Non detect rank is 1.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
AT 5	3/12/2013	15.4	24
	5/8/2013	25.3	46
	9/23/2013	21.3	39
	12/10/2013	68.4	67
	2/6/2014	39.8	58
	6/26/2014	70.4	68
	9/30/2014	14.9	21
	11/19/2014	47.1	62
	3/23/2015	17.1	27
	4/22/2015	52.8	65
	9/30/2015	15.4	25
	11/19/2015	934	73
	3/15/2016	30.2	55
	6/29/2016	18.1	29
	8/9/2016	17.1	28
	12/7/2016	26.5	48
	3/2/2017	50.8	64
	6/21/2017	11.7	9
	8/17/2017	9.5	5
	10/26/2017	9.8	6
	3/27/2018	14.5	19
	6/26/2018	16.4	26
	8/1/2018	77.9	69
	12/11/2018	29.2	54
	4/17/2019	12.2	10
	6/11/2019	24.6	45
	8/28/2019	20.7	34
	10/28/2019	22.5	40
	3/31/2020	23.1	41
	6/10/2020	19.4	33
	9/21/2020	ND<0.3	1.5
	12/17/2020	28.7	51
	3/18/2021	119	70
	5/5/2021	6.5	4
	11/23/2021	ND<0	1.5
	1/10/2022	20.8	36
SME 1	3/12/2013	13.1	12
	5/8/2013	24	44
	9/23/2013	14.2	18
	12/10/2013	46.3	61
	2/6/2014	61	66
	6/26/2014	14	15
	9/30/2014	27.6	49
	11/19/2014	40.1	59

ADEM Watermark

3/23/2015	21	37
4/22/2015	29	53
9/30/2015	15	22
11/19/2015	50	63
3/15/2016	26.2	47
6/29/2016	21.2	38
8/9/2016	15.3	23
12/7/2016	31	56
3/2/2017	14	16
6/29/2017	19.2	31
8/16/2017	10.6	7
10/25/2017	5.4	3
3/28/2018	19.3	32
6/29/2018	20.7	35
8/2/2018	28.5	50
12/10/2018	32	57
4/15/2019	42.2	60
6/12/2019	12.2	11
8/27/2019	135.2	71
10/29/2019	14.5	20
3/30/2020	13.3	13
6/16/2020	11.6	8
9/21/2020	13.8	14
12/17/2020	23.19	42
3/18/2021	14.1	17
5/5/2021	28.83	52
9/2/2021	23.89	43
11/23/2021	18.42	30
1/11/2022	161.2	72

The Wilcoxon Statistic is 644
The Expected value is is 666
The Standard Deviation is 90.6311
The Z Score is -0.248259
The Standard Deviation adjusted for ties is 90.6304
The Z Score adjusted for ties is -0.248261
-0.248259 < 2.326 indicating no statistical significance at 1% level
-0.248261 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: DO

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	74
Total Non-Detects	0 (0%)
Pooled Mean	8.70832
Pooled Std Dev	3.17504
Compliance Meas.	37
Compliance Mean	8.2973
Compliance Std Dev	1.96453
Background Meas.	37
Background Mean	9.11935
Background Std Dev	4.02928

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
GD 8	37	0	0	337.416

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
GD 8	9.11935	4.02928	0	1458	39.4054

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 1	37	0	0	307

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 1	8.2973	1.96453	-0.822051	0.736949	1317	35.5946

Analysis of Variance Statistics

SS Wells	12.5017
SS Total	735.903

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	1458
Background Rank Mean	39.4054
H Statistic	0.580891
H Adjusted for Ties	0.580891

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: DO

Location: SME 1

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
GD 8	3/12/2013	11.73	70
	5/8/2013	1.72	1
	9/23/2013	3.9759	4
	12/10/2013	13.33	71
	2/6/2014	16.32	72
	6/26/2014	6.64	18
	9/30/2014	5.06	7
	11/19/2014	9.01	43
	3/23/2015	9.76	54
	4/22/2015	11.71	68
	9/30/2015	9.48	50
	11/19/2015	23.3	74
	3/15/2016	16.81	73
	6/29/2016	6.6	17
	8/9/2016	5.87	10
	12/7/2016	8.84	41
	3/2/2017	9.76	55
	6/21/2017	6.5	15
	8/17/2017	6.3	12
	10/26/2017	8.25	33
	3/27/2018	9.52	51
	6/26/2018	5.74	8
	8/1/2018	7.39	26
	12/11/2018	11.71	69
	4/17/2019	9.3	48
	6/11/2019	2.94	2
	8/28/2019	6.07	11
	10/28/2019	8.22	32
	3/31/2020	9.3	49
	6/10/2020	7.13	24
	9/21/2020	6.36	13
	12/17/2020	11.68	67
	3/18/2021	11.53	66
	5/5/2021	9.62	53
	9/2/2021	7.75	28
	11/23/2021	10.73	59
	1/10/2022	11.46	64
SME 1	3/12/2013	8.26	34
	5/8/2013	8.96	42
	9/23/2013	7.87	29
	12/10/2013	9.15	44
	2/6/2014	11.34	62
	6/26/2014	7.05	23
	9/30/2014	7.46	27

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11/19/2014	10.86	60
3/23/2015	8.52	37
4/22/2015	7.97	31
9/30/2015	7.03	21
11/19/2015	7.04	22
3/15/2016	7.21	25
6/29/2016	3.29	3
8/9/2016	4.98	6
12/7/2016	10.2	56
3/2/2017	4.31	5
6/29/2017	9.21	46
8/16/2017	6.58	16
10/25/2017	8.32	35
3/28/2018	9.18	45
6/29/2018	6.37	14
8/2/2018	5.82	9
12/10/2018	11.48	65
4/15/2019	7.89	30
6/12/2019	8.73	40
8/27/2019	8.51	36
10/29/2019	9.21	47
3/30/2020	8.61	39
6/16/2020	10.36	57
9/21/2020	6.92	19
12/17/2020	10.68	58
3/18/2021	9.54	52
5/5/2021	8.53	38
9/2/2021	6.93	20
11/23/2021	11.34	63
1/11/2022	11.29	61

The Wilcoxon Statistic is 614
The Expected value is is 684.5
The Standard Deviation is 92.5
The Z Score is -0.767568
The Standard Deviation adjusted for ties is 92.5
The Z Score adjusted for ties is -0.767568
-0.767568 < 2.326 indicating no statistical significance at 1% level
-0.767568 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Nitrate-nitrite

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	74
Total Non-Detects	18 (24.3243%)
Pooled Mean	0.436527
Pooled Std Dev	1.22512
Compliance Meas.	37
Compliance Mean	0.482378
Compliance Std Dev	1.32604
Background Meas.	37
Background Mean	0.390676
Background Std Dev	1.13173

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
GD 8	37	5	13.5135	14.455

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
GD 8	0.390676	1.13173	0	1313.5	35.5

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 1	37	13	35.1351	17.848

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 1	0.482378	1.32604	0.0917027	0.286602	1461.5	39.5

Analysis of Variance Statistics

SS Wells	0.155574
SS Total	109.567

Kruskal-Wallis Statistics

Non-Detect Rank	9.5
Background Rank Sum	1313.5
Background Rank Mean	35.5
H Statistic	0.64
H Adjusted for Ties	0.649318

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Nitrate-nitrite

Location: SME 1

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 18
Non detect rank is 9.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
GD 8	3/12/2013	0.13	23
	5/8/2013	0.11	19
	9/23/2013	ND<0	9.5
	12/10/2013	0.28	48
	2/6/2014	0.25	43
	6/26/2014	0.25	44
	9/30/2014	0.14	27
	11/19/2014	0.23	40
	3/23/2015	0.22	39
	4/22/2015	0.16	30
	9/30/2015	0.184	34
	11/19/2015	0.233	41
	3/15/2016	0.131	24
	6/29/2016	ND<0	9.5
	8/9/2016	0.217	38
	12/7/2016	0.308	51
	3/2/2017	0.284	49
	6/21/2017	ND<0	9.5
	8/17/2017	0.132	25
	10/26/2017	ND<0	9.5
	3/27/2018	0.215	37
	6/26/2018	0.15	28
	8/1/2018	0.556	67
	12/11/2018	0.326	53
	4/17/2019	0.115	20
	6/11/2019	0.181	33
	8/28/2019	0.212	36
	10/28/2019	0.435	59
	3/31/2020	0.133	26
	6/10/2020	0.211	35
	9/21/2020	0.171	31
	12/17/2020	0.273	47
	3/18/2021	0.178	32
	5/5/2021	7.03	73
	9/2/2021	0.241	42
	11/23/2021	ND<0	9.5
	1/10/2022	0.769	72
SME 1	3/12/2013	0.54	64
	5/8/2013	0.15	29
	9/23/2013	ND<0	9.5
	12/10/2013	0.55	65
	2/6/2014	0.55	66
	6/26/2014	ND<0	9.5
	9/30/2014	ND<0	9.5

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11/19/2014	0.74	71
3/23/2015	0.51	63
4/22/2015	0.4	56
9/30/2015	ND<0	9.5
11/19/2015	0.401	57
3/15/2016	0.454	60
6/29/2016	ND<0	9.5
8/9/2016	ND<0	9.5
12/7/2016	0.413	58
3/2/2017	0.671	70
6/29/2017	ND<0	9.5
8/16/2017	ND<0	9.5
10/25/2017	0.368	54
3/28/2018	0.633	69
6/29/2018	0.312	52
8/2/2018	0.296	50
12/10/2018	0.259	45
4/15/2019	0.39	55
6/12/2019	ND<0	9.5
8/27/2019	ND<0	9.5
10/29/2019	0.129	22
3/30/2020	0.462	62
6/16/2020	ND<0	9.5
9/21/2020	ND<0	9.5
12/17/2020	0.577	68
3/18/2021	0.263	46
5/5/2021	0.122	21
9/2/2021	0.458	61
11/23/2021	ND<0	9.5
1/11/2022	8.2	74

The Wilcoxon Statistic is 758.5
The Expected value is is 684.5
The Standard Deviation is 92.5
The Z Score is 0.794595
The Standard Deviation adjusted for ties is 91.8339
The Z Score adjusted for ties is 0.800358
0.794595 < 2.326 indicating no statistical significance at 1% level
0.800358 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Ortho-phosphate

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	74
Total Non-Detects	43 (58.1081%)
Pooled Mean	0.0412703
Pooled Std Dev	0.0624959
Compliance Meas.	37
Compliance Mean	0.0761081
Compliance Std Dev	0.0695576
Background Meas.	37
Background Mean	0.00643243
Background Std Dev	0.0242264

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
GD 8	37	34	91.8919	0.238

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
GD 8	0.00643243	0.0242264	0	918	24.8108

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 1	37	9	24.3243	2.816

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 1	0.0761081	0.0695576	0.0696757	0.0121089	1857	50.1892

Analysis of Variance Statistics

SS Wells	0.0898119
SS Total	0.285119

Kruskal-Wallis Statistics

Non-Detect Rank	22
Background Rank Sum	918
Background Rank Mean	24.8108
H Statistic	25.7625
H Adjusted for Ties	32.0483

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Ortho-phosphate

Location: SME 1

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 43
Non detect rank is 22

Wilcoxon Ranks

Location	Date	Conc.	Rank
GD 8	3/12/2013	ND<0	22
	5/8/2013	ND<0	22
	9/23/2013	ND<0	22
	12/10/2013	0.04	47
	2/6/2014	ND<0	22
	6/26/2014	ND<0	22
	9/30/2014	ND<0	22
	11/19/2014	ND<0	22
	3/23/2015	ND<0	22
	4/22/2015	ND<0	22
	9/30/2015	ND<0	22
	11/19/2015	ND<0	22
	3/15/2016	ND<0	22
	6/29/2016	ND<0	22
	8/9/2016	ND<0	22
	12/7/2016	ND<0	22
	3/2/2017	ND<0	22
	6/21/2017	ND<0	22
	8/17/2017	ND<0	22
	10/26/2017	ND<0	22
	3/27/2018	ND<0	22
	6/26/2018	ND<0	22
	8/1/2018	0.072	56
	12/11/2018	ND<0	22
	4/17/2019	ND<0	22
	6/11/2019	ND<0	22
	8/28/2019	ND<0	22
	10/28/2019	ND<0	22
	3/31/2020	ND<0	22
	6/10/2020	ND<0	22
	9/21/2020	ND<0	22
	12/17/2020	ND<0	22
	3/18/2021	ND<0	22
	5/5/2021	ND<0	22
	9/2/2021	ND<0	22
	11/23/2021	ND<0	22
	1/10/2022	0.126	67
SME 1	3/12/2013	0.11	63
	5/8/2013	0.063	54
	9/23/2013	0.053	52
	12/10/2013	0.21	73
	2/6/2014	0.11	64
	6/26/2014	ND<0	22
	9/30/2014	0.044	48

ADEM Watermark

11/19/2014	0.27	74
3/23/2015	0.073	58
4/22/2015	0.039	46
9/30/2015	0.052	51
11/19/2015	0.084	60
3/15/2016	0.047	49
6/29/2016	0.18	70
8/9/2016	0.089	61
12/7/2016	0.209	72
3/2/2017	0.127	68
6/29/2017	0.028	44
8/16/2017	ND<0	22
10/25/2017	0.121	65
3/28/2018	0.106	62
6/29/2018	0.121	66
8/2/2018	0.145	69
12/10/2018	ND<0	22
4/15/2019	0.063	55
6/12/2019	ND<0	22
8/27/2019	ND<0	22
10/29/2019	0.049	50
3/30/2020	ND<0	22
6/16/2020	0.031	45
9/21/2020	ND<0	22
12/17/2020	0.072	57
3/18/2021	ND<0	22
5/5/2021	ND<0	22
9/2/2021	0.19	71
11/23/2021	0.076	59
1/11/2022	0.054	53

The Wilcoxon Statistic is 1154
The Expected value is is 684.5
The Standard Deviation is 92.5
The Z Score is 5.07027
The Standard Deviation adjusted for ties is 82.9341
The Z Score adjusted for ties is 5.65509
5.07027 > 2.326 indicating statistical significance at 1% level
5.65509 > 2.326 indicating statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: pH

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	73
Total Non-Detects	0 (0%)
Pooled Mean	7.79918
Pooled Std Dev	0.802058
Compliance Meas.	37
Compliance Mean	7.93378
Compliance Std Dev	0.469334
Background Meas.	36
Background Mean	7.66083
Background Std Dev	1.02856

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
GD 8	36	0	0	275.79

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
GD 8	7.66083	1.02856	0	1293	35.9167

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 1	37	0	0	293.55

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 1	7.93378	0.469334	0.27295	0.186287	1408	38.0541

Analysis of Variance Statistics

SS Wells	1.35941
SS Total	46.3174

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	1293
Background Rank Mean	35.9167
H Statistic	0.185172
H Adjusted for Ties	0.185172

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: pH

Location: SME 1

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
GD 8	3/12/2013	7.65	23
	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	51
	9/30/2014	7.32	12
	11/19/2014	5.16	2
	3/23/2015	8.67	69
	4/22/2015	7.4	15
	9/30/2015	7.79	28
	11/19/2015	6.94	7
	3/15/2016	7.88	33
	6/29/2016	8.5	64
	8/9/2016	8.9	72
	12/7/2016	7.75	26
	3/2/2017	8.14	49
	6/21/2017	8.73	70
	8/17/2017	8.55	66
	10/26/2017	8.17	50
	3/27/2018	8.09	46
	6/26/2018	8.5	65
	8/1/2018	6.89	6
	12/11/2018	7.87	32
	4/17/2019	8.05	44
	6/11/2019	7.19	9
	8/28/2019	8.26	55
	10/28/2019	7.83	30
	3/31/2020	7.97	39
	6/10/2020	7.97	40
	9/21/2020	8.19	52
	12/17/2020	8.3	58
	3/18/2021	8.45	62
	5/5/2021	8.01	41
	11/23/2021	8.04	43
	1/10/2022	7.6	21
SME 1	3/12/2013	8.19	53
	5/8/2013	7.64	22
	9/23/2013	8.26	56
	12/10/2013	8.05	45
	2/6/2014	7.22	10
	6/26/2014	8.49	63
	9/30/2014	8.25	54
	11/19/2014	8.31	59

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3/23/2015	8.26	57
4/22/2015	7.14	8
9/30/2015	8.34	60
11/19/2015	7.92	36
3/15/2016	8.44	61
6/29/2016	8.8	71
8/9/2016	8.55	67
12/7/2016	7.96	38
3/2/2017	7.75	27
6/29/2017	9.11	73
8/16/2017	8.12	48
10/25/2017	8.02	42
3/28/2018	8.1	47
6/29/2018	7.84	31
8/2/2018	7.48	19
12/10/2018	7.45	17
4/15/2019	7.89	34
6/12/2019	7.34	13
8/27/2019	7.45	18
10/29/2019	7.95	37
3/30/2020	7.35	14
6/16/2020	8.58	68
9/21/2020	7.71	25
12/17/2020	7.66	24
3/18/2021	7.24	11
5/5/2021	7.43	16
9/2/2021	7.8	29
11/23/2021	7.91	35
1/11/2022	7.55	20

The Wilcoxon Statistic is 705
The Expected value is is 666
The Standard Deviation is 90.6311
The Z Score is 0.424799
The Standard Deviation adjusted for ties is 90.6311
The Z Score adjusted for ties is 0.424799
0.424799 < 2.326 indicating no statistical significance at 1% level
0.424799 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Temperature

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	72
Total Non-Detects	0 (0%)
Pooled Mean	18.7453
Pooled Std Dev	7.24714
Compliance Meas.	36
Compliance Mean	19.0758
Compliance Std Dev	7.27336
Background Meas.	36
Background Mean	18.4147
Background Std Dev	7.30864

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
GD 8	36	0	0	662.93

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
GD 8	18.4147	7.30864	0	1268	35.2222

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 1	36	0	0	686.73

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 1	19.0758	7.27336	0.661111	1.71851	1360	37.7778

Analysis of Variance Statistics

SS Wells	7.86722
SS Total	3729

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	1268
Background Rank Mean	35.2222
H Statistic	0.268392
H Adjusted for Ties	0.268392

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Temperature

Location: SME 1

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
GD 8	3/12/2013	9.85	11
	5/8/2013	14.47	22
	9/23/2013	22.74	45
	12/10/2013	8.1	7
	2/6/2014	6.48	3
	6/26/2014	26.15	58
	9/30/2014	23.19	48
	11/19/2014	5.87	1
	4/22/2015	17.7	37
	9/30/2015	24.33	50
	11/19/2015	15.13	23
	3/15/2016	16.98	31
	6/29/2016	29.3	68
	8/9/2016	28.9	67
	12/7/2016	12.1	15
	3/2/2017	12.2	17
	6/21/2017	25	54
	8/17/2017	28.7	64
	10/26/2017	16.3	28
	3/27/2018	12.1	16
	6/26/2018	29.7	69
	8/1/2018	22.9	47
	12/11/2018	9.2	8
	4/17/2019	17.6	34
	6/11/2019	25.84	57
	8/28/2019	30.2	71
	10/28/2019	16.2	27
	3/31/2020	16.6	30
	6/10/2020	24.9	53
	9/21/2020	22.8	46
	12/17/2020	9.4	10
	3/18/2021	16.5	29
	5/5/2021	18.5	39
	9/2/2021	24.5	51
	11/23/2021	12.5	20
	1/10/2022	10	12
SME 1	3/12/2013	13.1	21
	5/8/2013	16	26
	9/23/2013	27.7	63
	12/10/2013	7.6	4
	2/6/2014	5.9	2
	9/30/2014	24.67	52
	11/19/2014	7.8	5
	3/23/2015	17.3	32

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4/22/2015	18.5	40
9/30/2015	26.4	60
11/19/2015	15.9	25
3/15/2016	18.3	38
6/29/2016	30.67	72
8/9/2016	28.87	66
12/7/2016	11.98	14
3/2/2017	12.34	18
6/29/2017	25.8	55
8/16/2017	29.7	70
10/25/2017	17.3	33
3/28/2018	17.6	35
6/29/2018	26.2	59
8/2/2018	23.9	49
12/10/2018	8	6
4/15/2019	19.7	42
6/12/2019	27.2	62
8/27/2019	28.8	65
10/29/2019	17.6	36
3/30/2020	19.3	41
6/16/2020	27	61
9/21/2020	22.2	44
12/17/2020	9.2	9
3/18/2021	15.7	24
5/5/2021	20.1	43
9/2/2021	25.8	56
11/23/2021	12.4	19
1/11/2022	10.2	13

The Wilcoxon Statistic is 694
The Expected value is is 648
The Standard Deviation is 88.7919
The Z Score is 0.512434
The Standard Deviation adjusted for ties is 88.7919
The Z Score adjusted for ties is 0.512434
0.512434 < 2.326 indicating no statistical significance at 1% level
0.512434 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: TKN

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	74
Total Non-Detects	14 (18.9189%)
Pooled Mean	0.402081
Pooled Std Dev	0.29664
Compliance Meas.	37
Compliance Mean	0.400649
Compliance Std Dev	0.330604
Background Meas.	37
Background Mean	0.403514
Background Std Dev	0.262928

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
GD 8	37	6	16.2162	14.93

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
GD 8	0.403514	0.262928	0	1402	37.8919

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 1	37	8	21.6216	14.824

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 1	0.400649	0.330604	-0.00286486	0.0694438	1373	37.1081

Analysis of Variance Statistics

SS Wells	0.000151838
SS Total	6.42365

Kruskal-Wallis Statistics

Non-Detect Rank	7.5
Background Rank Sum	1402
Background Rank Mean	37.8919
H Statistic	0.0245727
H Adjusted for Ties	0.0247394

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: TKN

Location: SME 1

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 14
Non detect rank is 7.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
GD 8	3/12/2013	0.25	16
	5/8/2013	0.38	37
	9/23/2013	0.41	42
	12/10/2013	0.35	32
	2/6/2014	0.13	15
	6/26/2014	0.48	49
	9/30/2014	0.42	43
	11/19/2014	0.32	25
	3/23/2015	ND<0	7.5
	4/22/2015	ND<0	7.5
	9/30/2015	0.483	50
	11/19/2015	0.852	71
	3/15/2016	0.47	47
	6/29/2016	0.45	46
	8/9/2016	0.668	65
	12/7/2016	0.409	41
	3/2/2017	0.342	28
	6/21/2017	0.642	64
	8/17/2017	0.541	56
	10/26/2017	0.347	30
	3/27/2018	ND<0	7.5
	6/26/2018	0.67	66
	8/1/2018	0.641	63
	12/11/2018	0.406	40
	4/17/2019	0.437	45
	6/11/2019	0.948	72
	8/28/2019	0.992	73
	10/28/2019	0.255	17
	3/31/2020	0.348	31
	6/10/2020	ND<0	7.5
	9/21/2020	0.29	21
	12/17/2020	ND<0	7.5
	3/18/2021	0.312	24
	5/5/2021	0.796	68
	9/2/2021	0.611	61
	11/23/2021	ND<0	7.5
	1/10/2022	0.28	19
SME 1	3/12/2013	0.34	27
	5/8/2013	0.42	44
	9/23/2013	0.8	69
	12/10/2013	0.47	48
	2/6/2014	0.5	53
	6/26/2014	0.31	23
	9/30/2014	0.61	60

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11/19/2014	0.55	58
3/23/2015	ND<0	7.5
4/22/2015	0.38	38
9/30/2015	0.807	70
11/19/2015	ND<0	7.5
3/15/2016	ND<0	7.5
6/29/2016	0.62	62
8/9/2016	0.547	57
12/7/2016	0.378	36
3/2/2017	0.345	29
6/29/2017	0.53	55
8/16/2017	0.52	54
10/25/2017	0.288	20
3/28/2018	ND<0	7.5
6/29/2018	0.67	67
8/2/2018	0.495	52
12/10/2018	0.336	26
4/15/2019	0.36	35
6/12/2019	ND<0	7.5
8/27/2019	0.356	34
10/29/2019	0.272	18
3/30/2020	ND<0	7.5
6/16/2020	0.485	51
9/21/2020	ND<0	7.5
12/17/2020	0.3	22
3/18/2021	0.58	59
5/5/2021	0.402	39
9/2/2021	0.353	33
11/23/2021	ND<0	7.5
1/11/2022	1.8	74

The Wilcoxon Statistic is 670
The Expected value is is 684.5
The Standard Deviation is 92.5
The Z Score is -0.162162
The Standard Deviation adjusted for ties is 92.1878
The Z Score adjusted for ties is -0.162711
-0.162162 < 2.326 indicating no statistical significance at 1% level
-0.162711 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Total Phosphorus

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	74
Total Non-Detects	47 (63.5135%)
Pooled Mean	0.0587027
Pooled Std Dev	0.0852144
Compliance Meas.	37
Compliance Mean	0.100135
Compliance Std Dev	0.0954429
Background Meas.	37
Background Mean	0.0172703
Background Std Dev	0.0456804

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
GD 8	37	32	86.4865	0.639

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
GD 8	0.0172703	0.0456804	0	1046	28.2703

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 1	37	15	40.5405	3.705

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 1	0.100135	0.0954429	0.0828649	0.0173953	1729	46.7297

Analysis of Variance Statistics

SS Wells	0.127032
SS Total	0.530089

Kruskal-Wallis Statistics

Non-Detect Rank	24
Background Rank Sum	1046
Background Rank Mean	28.2703
H Statistic	13.6301
H Adjusted for Ties	18.3235

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Total Phosphorus

Location: SME 1

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 47
Non detect rank is 24

Wilcoxon Ranks

Location	Date	Conc.	Rank
GD 8	3/12/2013	ND<0	24
	5/8/2013	ND<0	24
	9/23/2013	ND<0	24
	12/10/2013	ND<0	24
	2/6/2014	ND<0	24
	6/26/2014	ND<0	24
	9/30/2014	ND<0	24
	11/19/2014	ND<0	24
	3/23/2015	ND<0	24
	4/22/2015	ND<0	24
	9/30/2015	ND<0	24
	11/19/2015	0.1	48
	3/15/2016	ND<0	24
	6/29/2016	ND<0	24
	8/9/2016	ND<0	24
	12/7/2016	ND<0	24
	3/2/2017	ND<0	24
	6/21/2017	ND<0	24
	8/17/2017	ND<0	24
	10/26/2017	ND<0	24
	3/27/2018	ND<0	24
	6/26/2018	ND<0	24
	8/1/2018	0.114	55
	12/11/2018	ND<0	24
	4/17/2019	ND<0	24
	6/11/2019	ND<0	24
	8/28/2019	ND<0	24
	10/28/2019	0.109	50
	3/31/2020	0.132	58
	6/10/2020	ND<0	24
	9/21/2020	ND<0	24
	12/17/2020	ND<0	24
	3/18/2021	ND<0	24
	5/5/2021	ND<0	24
	9/2/2021	ND<0	24
	11/23/2021	ND<0	24
	1/10/2022	0.184	67
SME 1	3/12/2013	0.11	51
	5/8/2013	ND<0	24
	9/23/2013	ND<0	24
	12/10/2013	0.26	72
	2/6/2014	0.13	57
	6/26/2014	ND<0	24
	9/30/2014	0.11	52

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11/19/2014	0.29	74
3/23/2015	0.1	49
4/22/2015	ND<0	24
9/30/2015	0.135	61
11/19/2015	0.134	59
3/15/2016	ND<0	24
6/29/2016	0.245	71
8/9/2016	0.154	64
12/7/2016	0.271	73
3/2/2017	0.208	68
6/29/2017	ND<0	24
8/16/2017	0.111	53
10/25/2017	0.151	63
3/28/2018	ND<0	24
6/29/2018	0.241	70
8/2/2018	0.136	62
12/10/2018	ND<0	24
4/15/2019	ND<0	24
6/12/2019	ND<0	24
8/27/2019	0.161	65
10/29/2019	0.134	60
3/30/2020	ND<0	24
6/16/2020	0.129	56
9/21/2020	ND<0	24
12/17/2020	ND<0	24
3/18/2021	0.112	54
5/5/2021	ND<0	24
9/2/2021	0.218	69
11/23/2021	0.165	66
1/11/2022	ND<0	24

The Wilcoxon Statistic is 1026
The Expected value is is 684.5
The Standard Deviation is 92.5
The Z Score is 3.68649
The Standard Deviation adjusted for ties is 79.7787
The Z Score adjusted for ties is 4.27433
3.68649 > 2.326 indicating statistical significance at 1% level
4.27433 > 2.326 indicating statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Total Suspended Solids

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	74
Total Non-Detects	2 (2.7027%)
Pooled Mean	19.0132
Pooled Std Dev	18.0978
Compliance Meas.	37
Compliance Mean	20.7451
Compliance Std Dev	13.9911
Background Meas.	37
Background Mean	17.2814
Background Std Dev	21.4998

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
GD 8	37	2	5.40541	639.41

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
GD 8	17.2814	21.4998	0	1091	29.4865

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 1	37	0	0	767.57

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 1	20.7451	13.9911	3.46378	4.21707	1684	45.5135

Analysis of Variance Statistics

SS Wells	221.959
SS Total	23909.8

Kruskal-Wallis Statistics

Non-Detect Rank	1.5
Background Rank Sum	1091
Background Rank Mean	29.4865
H Statistic	10.2746
H Adjusted for Ties	10.2748

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Total Suspended Solids

Location: SME 1

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 2
Non detect rank is 1.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
GD 8	3/12/2013	4.5	7
	5/8/2013	19	51
	9/23/2013	9.6	22
	12/10/2013	32	64
	2/6/2014	13	32
	6/26/2014	7.3	17
	9/30/2014	6	10
	11/19/2014	13	33
	3/23/2015	4.8	8
	4/22/2015	15	38
	9/30/2015	6.77	13
	11/19/2015	79.6	72
	3/15/2016	8.3	19
	6/29/2016	39.8	70
	8/9/2016	6.3	11
	12/7/2016	7	14
	3/2/2017	3.6	4
	6/21/2017	7	15
	8/17/2017	8.9	20
	10/26/2017	3.98	5
	3/27/2018	6.5	12
	6/26/2018	5.76	9
	8/1/2018	53.2	71
	12/11/2018	24.4	60
	4/17/2019	ND<0	1.5
	6/11/2019	4.1	6
	8/28/2019	11.8	27
	10/28/2019	12.9	31
	3/31/2020	18	47
	6/10/2020	ND<0	1.5
	9/21/2020	7.4	18
	12/17/2020	11.5	26
	3/18/2021	102	74
	5/5/2021	35.7	68
	9/2/2021	18.3	49
	11/23/2021	2.7	3
	1/10/2022	29.7	62
SME 1	3/12/2013	16	42
	5/8/2013	14	36
	9/23/2013	15	39
	12/10/2013	21	56
	2/6/2014	23	57
	6/26/2014	13	34
	9/30/2014	34	65

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11/19/2014	19	52
3/23/2015	14	37
4/22/2015	18	48
9/30/2015	15.3	41
11/19/2015	23.2	58
3/15/2016	17.7	45
6/29/2016	20.3	54
8/9/2016	12.6	28
12/7/2016	17.7	46
3/2/2017	15	40
6/29/2017	18.3	50
8/16/2017	12.7	29
10/25/2017	16.9	43
3/28/2018	19.8	53
6/29/2018	23.3	59
8/2/2018	29.5	61
12/10/2018	31	63
4/15/2019	35	67
6/12/2019	9.67	23
8/27/2019	7.1	16
10/29/2019	11	24
3/30/2020	13.3	35
6/16/2020	11.4	25
9/21/2020	9	21
12/17/2020	20.9	55
3/18/2021	90.4	73
5/5/2021	34	66
9/2/2021	35.8	69
11/23/2021	12.7	30
1/11/2022	17	44

The Wilcoxon Statistic is 981
The Expected value is is 684.5
The Standard Deviation is 92.5
The Z Score is 3.2
The Standard Deviation adjusted for ties is 92.4993
The Z Score adjusted for ties is 3.20002
3.2 > 2.326 indicating statistical significance at 1% level
3.20002 > 2.326 indicating statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Turbidity

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	74
Total Non-Detects	2 (2.7027%)
Pooled Mean	27.8858
Pooled Std Dev	41.9256
Compliance Meas.	37
Compliance Mean	33.0116
Compliance Std Dev	45.9016
Background Meas.	37
Background Mean	22.76
Background Std Dev	37.4616

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
GD 8	37	2	5.40541	842.12

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
GD 8	22.76	37.4616	0	1111	30.027

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 1	37	0	0	1221.43

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 1	33.0116	45.9016	10.2516	9.74032	1664	44.973

Analysis of Variance Statistics

SS Wells	1944.27
SS Total	128316

Kruskal-Wallis Statistics

Non-Detect Rank	1.5
Background Rank Sum	1111
Background Rank Mean	30.027
H Statistic	8.93525
H Adjusted for Ties	8.93538

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Turbidity

Location: SME 1

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 2
Non detect rank is 1.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
GD 8	3/12/2013	6.6	8
	5/8/2013	18.7	40
	9/23/2013	17.8	38
	12/10/2013	30.7	60
	2/6/2014	15.5	35
	6/26/2014	30.8	61
	9/30/2014	11.9	21
	11/19/2014	25.3	53
	3/23/2015	10.6	16
	4/22/2015	20.2	46
	9/30/2015	8.99	13
	11/19/2015	212	73
	3/15/2016	11.4	19
	6/29/2016	32.5	64
	8/9/2016	12.7	23
	12/7/2016	10.1	15
	3/2/2017	19.7	45
	6/21/2017	7.9	11
	8/17/2017	6.8	10
	10/26/2017	6.1	7
	3/27/2018	8.9	12
	6/26/2018	5.8	6
	8/1/2018	45.8	67
	12/11/2018	16	36
	4/17/2019	6.7	9
	6/11/2019	9.43	14
	8/28/2019	14.2	30
	10/28/2019	29.6	59
	3/31/2020	19.3	43
	6/10/2020	10.8	18
	9/21/2020	ND<0.7	1.5
	12/17/2020	17.5	37
	3/18/2021	117	71
	5/5/2021	3.7	4
	9/2/2021	1.5	3
	11/23/2021	ND<0	1.5
	1/10/2022	18.9	41
SME 1	3/12/2013	13.1	24
	5/8/2013	24	52
	9/23/2013	14.2	31
	12/10/2013	46.3	68
	2/6/2014	61	70
	6/26/2014	14	27
	9/30/2014	27.6	55

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11/19/2014	40.1	65
3/23/2015	21	48
4/22/2015	29	58
9/30/2015	15	33
11/19/2015	50	69
3/15/2016	26.2	54
6/29/2016	21.2	49
8/9/2016	15.3	34
12/7/2016	31	62
3/2/2017	14	28
6/29/2017	19.2	42
8/16/2017	10.6	17
10/25/2017	5.4	5
3/28/2018	19.3	44
6/29/2018	20.7	47
8/2/2018	28.5	56
12/10/2018	32	63
4/15/2019	42.2	66
6/12/2019	12.2	22
8/27/2019	135.2	72
10/29/2019	14.5	32
3/30/2020	13.3	25
6/16/2020	11.6	20
9/21/2020	13.8	26
12/17/2020	23.19	50
3/18/2021	14.1	29
5/5/2021	28.83	57
9/2/2021	23.89	51
11/23/2021	18.42	39
1/11/2022	271.5	74

The Wilcoxon Statistic is 961
The Expected value is is 684.5
The Standard Deviation is 92.5
The Z Score is 2.98378
The Standard Deviation adjusted for ties is 92.4993
The Z Score adjusted for ties is 2.98381
2.98378 > 2.326 indicating statistical significance at 1% level
2.98381 > 2.326 indicating statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: DO

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

Total Measurements	74
Total Non-Detects	0 (0%)
Pooled Mean	8.40743
Pooled Std Dev	3.05383
Compliance Meas.	37
Compliance Mean	8.2973
Compliance Std Dev	1.96453
Background Meas.	37
Background Mean	8.51757
Background Std Dev	3.8764

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
RC 2	37	0	0	315.15

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
RC 2	8.51757	3.8764	0	1343	36.2973

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 1	37	0	0	307

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 1	8.2973	1.96453	-0.22027	0.714443	1432	38.7027

Analysis of Variance Statistics

SS Wells	0.897601
SS Total	680.789

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	1343
Background Rank Mean	36.2973
H Statistic	0.231439
H Adjusted for Ties	0.231439

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: DO

Location: SME 1

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
RC 2	3/12/2013	9.83	58
	5/8/2013	3.06	2
	9/23/2013	3	1
	12/10/2013	11.71	71
	2/6/2014	17.28	73
	6/26/2014	6.81	18
	9/30/2014	5.55	10
	11/19/2014	7.14	26
	3/23/2015	9.07	49
	4/22/2015	11.42	68
	9/30/2015	9.28	55
	11/19/2015	21.94	74
	3/15/2016	16.67	72
	6/29/2016	4.31	5
	8/9/2016	5.05	9
	12/7/2016	7.47	31
	3/2/2017	7.74	32
	6/21/2017	5.61	11
	8/17/2017	4.94	7
	10/26/2017	7.05	23
	3/27/2018	8.43	39
	6/26/2018	6.19	13
	8/1/2018	7.1	25
	12/11/2018	11.41	67
	4/17/2019	8.67	44
	6/11/2019	3.78	4
	8/28/2019	7.3	29
	10/28/2019	9.42	56
	3/31/2020	9.1	50
	6/10/2020	6.37	14
	9/21/2020	7.24	28
	12/17/2020	11.23	63
	3/18/2021	8.68	45
	5/5/2021	8.95	47
	9/2/2021	6.52	16
	11/23/2021	8.33	38
	1/10/2022	11.5	70
SME 1	3/12/2013	8.26	36
	5/8/2013	8.96	48
	9/23/2013	7.87	33
	12/10/2013	9.15	51
	2/6/2014	11.34	65
	6/26/2014	7.05	24
	9/30/2014	7.46	30

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11/19/2014	10.86	62
3/23/2015	8.52	41
4/22/2015	7.97	35
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	59
3/2/2017	4.31	6
6/29/2017	9.21	53
8/16/2017	6.58	17
10/25/2017	8.32	37
3/28/2018	9.18	52
6/29/2018	6.37	15
8/2/2018	5.82	12
12/10/2018	11.48	69
4/15/2019	7.89	34
6/12/2019	8.73	46
8/27/2019	8.51	40
10/29/2019	9.21	54
3/30/2020	8.61	43
6/16/2020	10.36	60
9/21/2020	6.92	19
12/17/2020	10.68	61
3/18/2021	9.54	57
5/5/2021	8.53	42
9/2/2021	6.93	20
11/23/2021	11.34	66
1/11/2022	11.29	64

The Wilcoxon Statistic is 729
The Expected value is is 684.5
The Standard Deviation is 92.5
The Z Score is 0.475676
The Standard Deviation adjusted for ties is 92.5
The Z Score adjusted for ties is 0.475676
0.475676 < 2.326 indicating no statistical significance at 1% level
0.475676 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Nitrate-nitrite

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	74
Total Non-Detects	24 (32.4324%)
Pooled Mean	0.407838
Pooled Std Dev	1.29818
Compliance Meas.	37
Compliance Mean	0.482378
Compliance Std Dev	1.32604
Background Meas.	37
Background Mean	0.333297
Background Std Dev	1.28357

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
RC 2	37	11	29.7297	12.332

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
RC 2	0.333297	1.28357	0	1198.5	32.3919

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 1	37	13	35.1351	17.848

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 1	0.482378	1.32604	0.149081	0.303402	1576.5	42.6081

Analysis of Variance Statistics

SS Wells	0.411166
SS Total	123.025

Kruskal-Wallis Statistics

Non-Detect Rank	12.5
Background Rank Sum	1198.5
Background Rank Mean	32.3919
H Statistic	4.17484
H Adjusted for Ties	4.32206

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Nitrate-nitrite

Location: SME 1

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 24
Non detect rank is 12.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
RC 2	3/12/2013	0.12	27
	5/8/2013	0.19	44
	9/23/2013	ND<0	12.5
	12/10/2013	0.11	26
	2/6/2014	0.26	50
	6/26/2014	0.15	36
	9/30/2014	ND<0	12.5
	11/19/2014	0.17	41
	3/23/2015	0.15	37
	4/22/2015	0.26	51
	9/30/2015	ND<0	12.5
	11/19/2015	0.271	53
	3/15/2016	0.181	42
	6/29/2016	ND<0	12.5
	8/9/2016	0.14	33
	12/7/2016	0.2	46
	3/2/2017	0.166	40
	6/21/2017	ND<0	12.5
	8/17/2017	ND<0	12.5
	10/26/2017	ND<0	12.5
	3/27/2018	0.146	35
	6/26/2018	0.101	25
	8/1/2018	ND<0	12.5
	12/11/2018	0.316	56
	4/17/2019	0.165	39
	6/11/2019	ND<0	12.5
	8/28/2019	ND<0	12.5
	10/28/2019	0.132	32
	3/31/2020	0.19	45
	6/10/2020	0.21	47
	9/21/2020	ND<0	12.5
	12/17/2020	0.218	48
	3/18/2021	0.145	34
	5/5/2021	7.91	73
	9/2/2021	0.122	28
	11/23/2021	0.124	30
	1/10/2022	0.185	43
SME 1	3/12/2013	0.54	66
	5/8/2013	0.15	38
	9/23/2013	ND<0	12.5
	12/10/2013	0.55	67
	2/6/2014	0.55	68
	6/26/2014	ND<0	12.5
	9/30/2014	ND<0	12.5

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11/19/2014	0.74	72
3/23/2015	0.51	65
4/22/2015	0.4	59
9/30/2015	ND<0	12.5
11/19/2015	0.401	60
3/15/2016	0.454	62
6/29/2016	ND<0	12.5
8/9/2016	ND<0	12.5
12/7/2016	0.413	61
3/2/2017	0.671	71
6/29/2017	ND<0	12.5
8/16/2017	ND<0	12.5
10/25/2017	0.368	57
3/28/2018	0.633	70
6/29/2018	0.312	55
8/2/2018	0.296	54
12/10/2018	0.259	49
4/15/2019	0.39	58
6/12/2019	ND<0	12.5
8/27/2019	ND<0	12.5
10/29/2019	0.129	31
3/30/2020	0.462	64
6/16/2020	ND<0	12.5
9/21/2020	ND<0	12.5
12/17/2020	0.577	69
3/18/2021	0.263	52
5/5/2021	0.122	29
9/2/2021	0.458	63
11/23/2021	ND<0	12.5
1/11/2022	8.2	74

The Wilcoxon Statistic is 873.5
The Expected value is is 684.5
The Standard Deviation is 92.5
The Z Score is 2.03784
The Standard Deviation adjusted for ties is 90.911
The Z Score adjusted for ties is 2.07346
2.03784 < 2.326 indicating no statistical significance at 1% level
2.07346 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Ortho-phosphate

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	74
Total Non-Detects	41 (55.4054%)
Pooled Mean	0.0421081
Pooled Std Dev	0.0616645
Compliance Meas.	37
Compliance Mean	0.0761081
Compliance Std Dev	0.0695576
Background Meas.	37
Background Mean	0.00810811
Background Std Dev	0.0222745

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
RC 2	37	32	86.4865	0.3

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
RC 2	0.00810811	0.0222745	0	934	25.2432

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 1	37	9	24.3243	2.816

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 1	0.0761081	0.0695576	0.068	0.0120072	1841	49.7568

Analysis of Variance Statistics

SS Wells	0.085544
SS Total	0.277583

Kruskal-Wallis Statistics

Non-Detect Rank	21
Background Rank Sum	934
Background Rank Mean	25.2432
H Statistic	24.0365
H Adjusted for Ties	28.96

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Ortho-phosphate

Location: SME 1

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 41
Non detect rank is 21

Wilcoxon Ranks

Location	Date	Conc.	Rank
RC 2	3/12/2013	0.088	61
	5/8/2013	ND<0	21
	9/23/2013	ND<0	21
	12/10/2013	0.062	53
	2/6/2014	ND<0	21
	6/26/2014	ND<0	21
	9/30/2014	ND<0	21
	11/19/2014	ND<0	21
	3/23/2015	0.044	46
	4/22/2015	ND<0	21
	9/30/2015	ND<0	21
	11/19/2015	ND<0	21
	3/15/2016	ND<0	21
	6/29/2016	0.077	59
	8/9/2016	ND<0	21
	12/7/2016	ND<0	21
	3/2/2017	ND<0	21
	6/21/2017	ND<0	21
	8/17/2017	ND<0	21
	10/26/2017	ND<0	21
	3/27/2018	ND<0	21
	6/26/2018	ND<0	21
	8/1/2018	ND<0	21
	12/11/2018	ND<0	21
	4/17/2019	ND<0	21
	6/11/2019	ND<0	21
	8/28/2019	ND<0	21
	10/28/2019	ND<0	21
	3/31/2020	0.029	43
	6/10/2020	ND<0	21
	9/21/2020	ND<0	21
	12/17/2020	ND<0	21
	3/18/2021	ND<0	21
	5/5/2021	ND<0	21
	9/2/2021	ND<0	21
	11/23/2021	ND<0	21
	1/10/2022	ND<0	21
SME 1	3/12/2013	0.11	64
	5/8/2013	0.063	54
	9/23/2013	0.053	51
	12/10/2013	0.21	73
	2/6/2014	0.11	65
	6/26/2014	ND<0	21
	9/30/2014	0.044	47

ADEM Watermark

11/19/2014	0.27	74
3/23/2015	0.073	57
4/22/2015	0.039	45
9/30/2015	0.052	50
11/19/2015	0.084	60
3/15/2016	0.047	48
6/29/2016	0.18	70
8/9/2016	0.089	62
12/7/2016	0.209	72
3/2/2017	0.127	68
6/29/2017	0.028	42
8/16/2017	ND<0	21
10/25/2017	0.121	66
3/28/2018	0.106	63
6/29/2018	0.121	67
8/2/2018	0.145	69
12/10/2018	ND<0	21
4/15/2019	0.063	55
6/12/2019	ND<0	21
8/27/2019	ND<0	21
10/29/2019	0.049	49
3/30/2020	ND<0	21
6/16/2020	0.031	44
9/21/2020	ND<0	21
12/17/2020	0.072	56
3/18/2021	ND<0	21
5/5/2021	ND<0	21
9/2/2021	0.19	71
11/23/2021	0.076	58
1/11/2022	0.054	52

The Wilcoxon Statistic is 1138
The Expected value is is 684.5
The Standard Deviation is 92.5
The Z Score is 4.8973
The Standard Deviation adjusted for ties is 84.2709
The Z Score adjusted for ties is 5.37552
4.8973 > 2.326 indicating statistical significance at 1% level
5.37552 > 2.326 indicating statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: pH

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	72
Total Non-Detects	0 (0%)
Pooled Mean	7.65333
Pooled Std Dev	0.764
Compliance Meas.	37
Compliance Mean	7.93378
Compliance Std Dev	0.469334
Background Meas.	35
Background Mean	7.35686
Background Std Dev	0.89977

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
RC 2	35	0	0	257.49

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
RC 2	7.35686	0.89977	0	1008	28.8

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 1	37	0	0	293.55

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 1	7.93378	0.469334	0.576927	0.167813	1620	43.7838

Analysis of Variance Statistics

SS Wells	5.98658
SS Total	41.4424

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	1008
Background Rank Mean	28.8
H Statistic	9.21947
H Adjusted for Ties	9.21947

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: pH

Location: SME 1

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
RC 2	3/12/2013	7.73	33
	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	42
	9/30/2014	7.27	11
	11/19/2014	5.65	2
	3/23/2015	8.23	61
	4/22/2015	7.64	27
	9/30/2015	5.93	3
	11/19/2015	7.36	16
	3/15/2016	7.62	26
	6/29/2016	7.78	36
	8/9/2016	8.12	58
	12/7/2016	7.86	39
	3/2/2017	7.71	31
	6/21/2017	7.91	45
	8/17/2017	8.08	56
	10/26/2017	7.57	25
	3/27/2018	7.91	46
	6/26/2018	7.94	50
	8/1/2018	7.4	17
	12/11/2018	7.54	22
	4/17/2019	7.77	35
	6/11/2019	6.83	7
	8/2/2019	8.01	53
	10/28/2019	7.55	23
	3/31/2020	7.9	43
	6/10/2020	7.87	40
	12/17/2020	7.91	47
	3/18/2021	7.9	44
	5/5/2021	7.31	13
	11/23/2021	7.66	29
	1/10/2022	7.27	12
SME 1	3/12/2013	8.19	60
	5/8/2013	7.64	28
	9/23/2013	8.26	63
	12/10/2013	8.05	55
	2/6/2014	7.22	9
	6/26/2014	8.49	68
	9/30/2014	8.25	62
	11/19/2014	8.31	65
	3/23/2015	8.26	64

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4/22/2015	7.14	8
9/30/2015	8.34	66
11/19/2015	7.92	49
3/15/2016	8.44	67
6/29/2016	8.8	71
8/9/2016	8.55	69
12/7/2016	7.96	52
3/2/2017	7.75	34
6/29/2017	9.11	72
8/16/2017	8.12	59
10/25/2017	8.02	54
3/28/2018	8.1	57
6/29/2018	7.84	38
8/2/2018	7.48	21
12/10/2018	7.45	19
4/15/2019	7.89	41
6/12/2019	7.34	14
8/27/2019	7.45	20
10/29/2019	7.95	51
3/30/2020	7.35	15
6/16/2020	8.58	70
9/21/2020	7.71	32
12/17/2020	7.66	30
3/18/2021	7.24	10
5/5/2021	7.43	18
9/2/2021	7.8	37
11/23/2021	7.91	48
1/11/2022	7.55	24

The Wilcoxon Statistic is 917
The Expected value is is 647.5
The Standard Deviation is 88.7576
The Z Score is 3.03073
The Standard Deviation adjusted for ties is 88.7576
The Z Score adjusted for ties is 3.03073
3.03073 > 2.326 indicating statistical significance at 1% level
3.03073 > 2.326 indicating statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Temperature

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	73
Total Non-Detects	0 (0%)
Pooled Mean	18.2292
Pooled Std Dev	7.14579
Compliance Meas.	36
Compliance Mean	19.0758
Compliance Std Dev	7.27336
Background Meas.	37
Background Mean	17.4054
Background Std Dev	7.01982

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
RC 2	37	0	0	644

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
RC 2	17.4054	7.01982	0	1266	34.2162

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 1	36	0	0	686.73

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 1	19.0758	7.27336	1.67043	1.67289	1435	39.8611

Analysis of Variance Statistics

SS Wells	50.914
SS Total	3676.48

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	1266
Background Rank Mean	34.2162
H Statistic	1.29158
H Adjusted for Ties	1.29158

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Temperature

Location: SME 1

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
RC 2	3/12/2013	10.53	14
	5/8/2013	16.36	32
	9/23/2013	23.61	51
	12/10/2013	8.38	9
	2/6/2014	5.62	1
	6/26/2014	24.81	55
	9/30/2014	22.25	47
	11/19/2014	5.72	2
	3/23/2015	16	30
	4/22/2015	18.4	39
	9/30/2015	23.33	50
	11/19/2015	15.29	26
	3/15/2016	14.61	23
	6/29/2016	28.3	69
	8/9/2016	26.5	62
	12/7/2016	12	16
	3/2/2017	13.1	21
	6/21/2017	23.7	52
	8/17/2017	27.9	67
	10/26/2017	15.2	25
	3/27/2018	12.4	19
	6/26/2018	26.5	63
	8/1/2018	22.4	48
	12/11/2018	7.7	6
	4/17/2019	18.9	41
	6/11/2019	22.96	49
	8/28/2019	28	68
	10/28/2019	14.9	24
	3/31/2020	15.7	27
	6/10/2020	25.6	57
	9/21/2020	7.03	4
	12/17/2020	8.9	11
	3/18/2021	16.7	33
	5/5/2021	19.1	42
	9/2/2021	25	56
	11/23/2021	12.2	17
	1/10/2022	8.4	10
SME 1	3/12/2013	13.1	22
	5/8/2013	16	31
	9/23/2013	27.7	66
	12/10/2013	7.6	5
	2/6/2014	5.9	3
	9/30/2014	24.67	54
	11/19/2014	7.8	7

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3/23/2015	17.3	34
4/22/2015	18.5	40
9/30/2015	26.4	61
11/19/2015	15.9	29
3/15/2016	18.3	38
6/29/2016	30.67	73
8/9/2016	28.87	71
12/7/2016	11.98	15
3/2/2017	12.34	18
6/29/2017	25.8	58
8/16/2017	29.7	72
10/25/2017	17.3	35
3/28/2018	17.6	36
6/29/2018	26.2	60
8/2/2018	23.9	53
12/10/2018	8	8
4/15/2019	19.7	44
6/12/2019	27.2	65
8/27/2019	28.8	70
10/29/2019	17.6	37
3/30/2020	19.3	43
6/16/2020	27	64
9/21/2020	22.2	46
12/17/2020	9.2	12
3/18/2021	15.7	28
5/5/2021	20.1	45
9/2/2021	25.8	59
11/23/2021	12.4	20
1/11/2022	10.2	13

The Wilcoxon Statistic is 769
The Expected value is is 666
The Standard Deviation is 90.6311
The Z Score is 1.13096
The Standard Deviation adjusted for ties is 90.6311
The Z Score adjusted for ties is 1.13096
1.13096 < 2.326 indicating no statistical significance at 1% level
1.13096 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: TKN

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	74
Total Non-Detects	13 (17.5676%)
Pooled Mean	0.430568
Pooled Std Dev	0.289291
Compliance Meas.	37
Compliance Mean	0.400649
Compliance Std Dev	0.330604
Background Meas.	37
Background Mean	0.460486
Background Std Dev	0.242001

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
RC 2	37	5	13.5135	17.038

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
RC 2	0.460486	0.242001	0	1527	41.2703

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 1	37	8	21.6216	14.824

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 1	0.400649	0.330604	-0.0598378	0.0673562	1248	33.7297

Analysis of Variance Statistics

SS Wells	0.0662405
SS Total	6.10933

Kruskal-Wallis Statistics

Non-Detect Rank	7
Background Rank Sum	1527
Background Rank Mean	41.2703
H Statistic	2.27439
H Adjusted for Ties	2.28672

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: TKN

Location: SME 1

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 13
Non detect rank is 7

Wilcoxon Ranks

Location	Date	Conc.	Rank
RC 2	3/12/2013	0.75	66
	5/8/2013	0.55	56
	9/23/2013	0.43	35
	12/10/2013	0.54	54
	2/6/2014	0.43	36
	6/26/2014	0.44	39
	9/30/2014	0.4	32
	11/19/2014	0.43	37
	3/23/2015	0.81	72
	4/22/2015	ND<0	7
	9/30/2015	ND<0	7
	11/19/2015	0.753	67
	3/15/2016	0.432	38
	6/29/2016	0.35	25
	8/9/2016	0.454	41
	12/7/2016	0.532	53
	3/2/2017	0.445	40
	6/21/2017	0.505	48
	8/17/2017	0.724	64
	10/26/2017	0.274	15
	3/27/2018	ND<0	7
	6/26/2018	0.802	69
	8/1/2018	0.506	49
	12/11/2018	0.479	43
	4/17/2019	0.288	16
	6/11/2019	0.52	50
	8/28/2019	0.748	65
	10/28/2019	ND<0	7
	3/31/2020	0.574	58
	6/10/2020	0.33	20
	9/21/2020	ND<0	7
	12/17/2020	0.396	31
	3/18/2021	0.611	61
	5/5/2021	0.892	73
	9/2/2021	0.802	70
	11/23/2021	0.34	22
	1/10/2022	0.501	47
SME 1	3/12/2013	0.34	23
	5/8/2013	0.42	34
	9/23/2013	0.8	68
	12/10/2013	0.47	42
	2/6/2014	0.5	46
	6/26/2014	0.31	19
	9/30/2014	0.61	60

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11/19/2014	0.55	57
3/23/2015	ND<0	7
4/22/2015	0.38	30
9/30/2015	0.807	71
11/19/2015	ND<0	7
3/15/2016	ND<0	7
6/29/2016	0.62	62
8/9/2016	0.547	55
12/7/2016	0.378	29
3/2/2017	0.345	24
6/29/2017	0.53	52
8/16/2017	0.52	51
10/25/2017	0.288	17
3/28/2018	ND<0	7
6/29/2018	0.67	63
8/2/2018	0.495	45
12/10/2018	0.336	21
4/15/2019	0.36	28
6/12/2019	ND<0	7
8/27/2019	0.356	27
10/29/2019	0.272	14
3/30/2020	ND<0	7
6/16/2020	0.485	44
9/21/2020	ND<0	7
12/17/2020	0.3	18
3/18/2021	0.58	59
5/5/2021	0.402	33
9/2/2021	0.353	26
11/23/2021	ND<0	7
1/11/2022	1.8	74

The Wilcoxon Statistic is 545
The Expected value is is 684.5
The Standard Deviation is 92.5
The Z Score is -1.51351
The Standard Deviation adjusted for ties is 92.2503
The Z Score adjusted for ties is -1.51761
-1.51351 < 2.326 indicating no statistical significance at 1% level
-1.51761 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Total Phosphorus

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	74
Total Non-Detects	48 (64.8649%)
Pooled Mean	0.0579595
Pooled Std Dev	0.0859795
Compliance Meas.	37
Compliance Mean	0.100135
Compliance Std Dev	0.0954429
Background Meas.	37
Background Mean	0.0157838
Background Std Dev	0.0471653

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
RC 2	37	33	89.1892	0.584

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
RC 2	0.0157838	0.0471653	0	1044.5	28.2297

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 1	37	15	40.5405	3.705

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 1	0.100135	0.0954429	0.0843514	0.0175021	1730.5	46.7703

Analysis of Variance Statistics

SS Wells	0.13163
SS Total	0.539651

Kruskal-Wallis Statistics

Non-Detect Rank	24.5
Background Rank Sum	1044.5
Background Rank Mean	28.2297
H Statistic	13.7501
H Adjusted for Ties	18.9095

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Total Phosphorus

Location: SME 1

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 48
Non detect rank is 24.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
RC 2	3/12/2013	ND<0	24.5
	5/8/2013	ND<0	24.5
	9/23/2013	ND<0	24.5
	12/10/2013	ND<0	24.5
	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	ND<0	24.5
	4/22/2015	ND<0	24.5
	9/30/2015	ND<0	24.5
	11/19/2015	0.133	57
	3/15/2016	ND<0	24.5
	6/29/2016	ND<0	24.5
	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	0.133	58
	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	0.2	67
	3/31/2020	0.118	54
	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
SME 1	3/12/2013	0.11	50
	5/8/2013	ND<0	24.5
	9/23/2013	ND<0	24.5
	12/10/2013	0.26	72
	2/6/2014	0.13	56
	6/26/2014	ND<0	24.5
	9/30/2014	0.11	51

ADEM Watermark

11/19/2014	0.29	74
3/23/2015	0.1	49
4/22/2015	ND<0	24.5
9/30/2015	0.135	61
11/19/2015	0.134	59
3/15/2016	ND<0	24.5
6/29/2016	0.245	71
8/9/2016	0.154	64
12/7/2016	0.271	73
3/2/2017	0.208	68
6/29/2017	ND<0	24.5
8/16/2017	0.111	52
10/25/2017	0.151	63
3/28/2018	ND<0	24.5
6/29/2018	0.241	70
8/2/2018	0.136	62
12/10/2018	ND<0	24.5
4/15/2019	ND<0	24.5
6/12/2019	ND<0	24.5
8/27/2019	0.161	65
10/29/2019	0.134	60
3/30/2020	ND<0	24.5
6/16/2020	0.129	55
9/21/2020	ND<0	24.5
12/17/2020	ND<0	24.5
3/18/2021	0.112	53
5/5/2021	ND<0	24.5
9/2/2021	0.218	69
11/23/2021	0.165	66
1/11/2022	ND<0	24.5

The Wilcoxon Statistic is 1027.5
The Expected value is is 684.5
The Standard Deviation is 92.5
The Z Score is 3.7027
The Standard Deviation adjusted for ties is 78.8778
The Z Score adjusted for ties is 4.34216
3.7027 > 2.326 indicating statistical significance at 1% level
4.34216 > 2.326 indicating statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Total Suspended Solids

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	74
Total Non-Detects	1 (1.35135%)
Pooled Mean	18.1415
Pooled Std Dev	17.8605
Compliance Meas.	37
Compliance Mean	20.7451
Compliance Std Dev	13.9911
Background Meas.	37
Background Mean	15.5378
Background Std Dev	20.9086

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
RC 2	37	1	2.7027	574.9

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
RC 2	15.5378	20.9086	0	987	26.6757

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 1	37	0	0	767.57

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 1	20.7451	13.9911	5.2073	4.13594	1788	48.3243

Analysis of Variance Statistics

SS Wells	501.645
SS Total	23286.8

Kruskal-Wallis Statistics

Non-Detect Rank	1
Background Rank Sum	987
Background Rank Mean	26.6757
H Statistic	18.7466
H Adjusted for Ties	18.7466

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Total Suspended Solids

Location: SME 1

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 1
Non detect rank is 1

Wilcoxon Ranks

Location	Date	Conc.	Rank
RC 2	3/12/2013	14	38
	5/8/2013	12	29
	9/23/2013	6.3	13
	12/10/2013	10	22
	2/6/2014	9.6	19
	6/26/2014	7.2	15
	9/30/2014	2.5	2
	11/19/2014	11	25
	3/23/2015	18	52
	4/22/2015	4.8	7
	9/30/2015	4.6	6
	11/19/2015	14.4	41
	3/15/2016	6	12
	6/29/2016	10.9	24
	8/9/2016	9.9	21
	12/7/2016	11.9	28
	3/2/2017	8	16
	6/21/2017	12.3	30
	8/17/2017	72.2	71
	10/26/2017	17.5	49
	3/27/2018	12.5	31
	6/26/2018	13	35
	8/1/2018	84.4	72
	12/11/2018	3.1	3
	4/17/2019	ND<0	1
	6/11/2019	5.2	9
	8/28/2019	4.8	8
	10/28/2019	3.4	4
	3/31/2020	90	73
	6/10/2020	10.8	23
	9/21/2020	5.2	10
	12/17/2020	5.4	11
	3/18/2021	26.8	64
	5/5/2021	15.6	45
	9/2/2021	3.4	5
	11/23/2021	19.2	56
	1/10/2022	9	17
SME 1	3/12/2013	16	46
	5/8/2013	14	39
	9/23/2013	15	42
	12/10/2013	21	60
	2/6/2014	23	61
	6/26/2014	13	36
	9/30/2014	34	67

ADEM Watermark

11/19/2014	19	55
3/23/2015	14	40
4/22/2015	18	53
9/30/2015	15.3	44
11/19/2015	23.2	62
3/15/2016	17.7	50
6/29/2016	20.3	58
8/9/2016	12.6	32
12/7/2016	17.7	51
3/2/2017	15	43
6/29/2017	18.3	54
8/16/2017	12.7	33
10/25/2017	16.9	47
3/28/2018	19.8	57
6/29/2018	23.3	63
8/2/2018	29.5	65
12/10/2018	31	66
4/15/2019	35	69
6/12/2019	9.67	20
8/27/2019	7.1	14
10/29/2019	11	26
3/30/2020	13.3	37
6/16/2020	11.4	27
9/21/2020	9	18
12/17/2020	20.9	59
3/18/2021	90.4	74
5/5/2021	34	68
9/2/2021	35.8	70
11/23/2021	12.7	34
1/11/2022	17	48

The Wilcoxon Statistic is 1085
The Expected value is is 684.5
The Standard Deviation is 92.5
The Z Score is 4.32432
The Standard Deviation adjusted for ties is 92.5
The Z Score adjusted for ties is 4.32432
4.32432 > 2.326 indicating statistical significance at 1% level
4.32432 > 2.326 indicating statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Turbidity

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	74
Total Non-Detects	2 (2.7027%)
Pooled Mean	28.5686
Pooled Std Dev	36.4472
Compliance Meas.	37
Compliance Mean	33.0116
Compliance Std Dev	45.9016
Background Meas.	37
Background Mean	24.1257
Background Std Dev	23.3699

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
RC 2	37	2	5.40541	892.65

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
RC 2	24.1257	23.3699	0	1277	34.5135

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 1	37	0	0	1221.43

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 1	33.0116	45.9016	8.88595	8.46793	1498	40.4865

Analysis of Variance Statistics

SS Wells	1460.76
SS Total	96972.9

Kruskal-Wallis Statistics

Non-Detect Rank	1.5
Background Rank Sum	1277
Background Rank Mean	34.5135
H Statistic	1.42706
H Adjusted for Ties	1.42708

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Turbidity

Location: SME 1

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 2
Non detect rank is 1.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
RC 2	3/12/2013	29.1	57
	5/8/2013	18.9	38
	9/23/2013	11.4	10
	12/10/2013	33.6	62
	2/6/2014	30.4	58
	6/26/2014	17.6	32
	9/30/2014	3.37	4
	11/19/2014	27.4	51
	3/23/2015	45	65
	4/22/2015	14.1	20
	9/30/2015	7.08	8
	11/19/2015	114	72
	3/15/2016	14.5	26
	6/29/2016	12.1	13
	8/9/2016	24.5	48
	12/7/2016	17.2	31
	3/2/2017	25.3	49
	6/21/2017	14.2	22
	8/17/2017	18.2	34
	10/26/2017	18.1	33
	3/27/2018	18.2	35
	6/26/2018	18.8	37
	8/1/2018	56.8	68
	12/11/2018	16	30
	4/17/2019	7	7
	6/11/2019	14.3	24
	8/28/2019	14.4	25
	10/28/2019	11.4	11
	3/31/2020	84.5	71
	6/10/2020	20.5	41
	9/21/2020	ND<0.7	1.5
	12/17/2020	28.1	53
	3/18/2021	67.5	70
	5/5/2021	2.8	3
	9/2/2021	ND<0	1.5
	11/23/2021	3.5	5
	1/10/2022	32.1	61
SME 1	3/12/2013	13.1	15
	5/8/2013	24	47
	9/23/2013	14.2	23
	12/10/2013	46.3	66
	2/6/2014	61	69
	6/26/2014	14	18
	9/30/2014	27.6	52

ADEM Watermark

11/19/2014	40.1	63
3/23/2015	21	43
4/22/2015	29	56
9/30/2015	15	28
11/19/2015	50	67
3/15/2016	26.2	50
6/29/2016	21.2	44
8/9/2016	15.3	29
12/7/2016	31	59
3/2/2017	14	19
6/29/2017	19.2	39
8/16/2017	10.6	9
10/25/2017	5.4	6
3/28/2018	19.3	40
6/29/2018	20.7	42
8/2/2018	28.5	54
12/10/2018	32	60
4/15/2019	42.2	64
6/12/2019	12.2	14
8/27/2019	135.2	73
10/29/2019	14.5	27
3/30/2020	13.3	16
6/16/2020	11.6	12
9/21/2020	13.8	17
12/17/2020	23.19	45
3/18/2021	14.1	21
5/5/2021	28.83	55
9/2/2021	23.89	46
11/23/2021	18.42	36
1/11/2022	271.5	74

The Wilcoxon Statistic is 795
The Expected value is is 684.5
The Standard Deviation is 92.5
The Z Score is 1.18919
The Standard Deviation adjusted for ties is 92.4993
The Z Score adjusted for ties is 1.1892
1.18919 < 2.326 indicating no statistical significance at 1% level
1.1892 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: DO

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	41
Total Non-Detects	0 (0%)
Pooled Mean	9.23878
Pooled Std Dev	3.21869
Compliance Meas.	36
Compliance Mean	9.14444
Compliance Std Dev	3.39624
Background Meas.	5
Background Mean	9.918
Background Std Dev	1.41999

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	0	0	49.59

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	9.918	1.41999	0	129	25.8

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
CO 15	36	0	0	329.2

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
CO 15	9.14444	3.39624	-0.773556	1.55078	732	20.3333

Analysis of Variance Statistics

SS Wells	2.62707
SS Total	414.398

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	129
Background Rank Mean	25.8
H Statistic	0.914286
H Adjusted for Ties	0.914286

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: DO

Location: CO 15

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	10.82	31
	3/18/2021	9.2	22
	5/5/2021	7.81	13
	11/23/2021	10.41	29
	1/11/2022	11.35	34
CO 15	3/12/2013	8.91	19
	5/8/2013	8.04	15
	9/23/2013	4.01	3
	12/10/2013	11.25	33
	2/6/2014	16.1	40
	6/26/2014	7	9
	9/30/2014	6.67	7
	11/19/2014	3.68	2
	3/23/2015	9.53	25
	4/22/2015	10.14	28
	9/30/2015	12.73	38
	11/19/2015	19.45	41
	3/15/2016	12.39	37
	8/9/2016	6.78	8
	12/7/2016	9.78	27
	3/2/2017	8.32	18
	6/21/2017	5.12	4
	8/17/2017	6.47	6
	10/26/2017	8.24	17
	3/27/2018	9.33	24
	6/26/2018	7.33	11
	8/1/2018	7.12	10
	12/11/2018	11.94	36
	4/17/2019	9.17	21
	6/11/2019	3.1	1
	8/28/2019	7.52	12
	10/28/2019	9.63	26
	3/31/2020	9.25	23
	6/10/2020	6.22	5
	9/21/2020	8.18	16
	12/17/2020	10.87	32
	3/18/2021	15.75	39
	5/5/2021	9.06	20
	9/2/2021	7.81	14
	11/23/2021	10.67	30
	1/10/2022	11.64	35

The Wilcoxon Statistic is 66

ADEM Watermark

The Expected value is is 90
The Standard Deviation is 25.0998
The Z Score is -0.976103
The Standard Deviation adjusted for ties is 25.0998
The Z Score adjusted for ties is -0.976103
-0.976103 < 2.326 indicating no statistical significance at 1% level
-0.976103 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Nitrate-nitrite

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	41
Total Non-Detects	18 (43.9024%)
Pooled Mean	0.294171
Pooled Std Dev	1.20383
Compliance Meas.	36
Compliance Mean	0.292722
Compliance Std Dev	1.28635
Background Meas.	5
Background Mean	0.3046
Background Std Dev	0.115639

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	0	0	1.523

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	0.3046	0.115639	0	181	36.2

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
CO 15	36	18	50	10.538

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
CO 15	0.292722	1.28635	-0.0118778	0.581856	680	18.8889

Analysis of Variance Statistics

SS Wells	0.000619383
SS Total	57.9681

Kruskal-Wallis Statistics

Non-Detect Rank	9.5
Background Rank Sum	181
Background Rank Mean	36.2
H Statistic	9.16825
H Adjusted for Ties	10.0135

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Nitrate-nitrite

Location: CO 15

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 18
Non detect rank is 9.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	0.387	39
	3/18/2021	0.319	38
	5/5/2021	0.213	36
	11/23/2021	0.164	28
	1/11/2022	0.44	40
CO 15	3/12/2013	ND<0	9.5
	5/8/2013	0.1	19
	9/23/2013	ND<0	9.5
	12/10/2013	0.18	31
	2/6/2014	0.21	35
	6/26/2014	ND<0	9.5
	9/30/2014	ND<0	9.5
	11/19/2014	0.2	34
	3/23/2015	0.14	22
	4/22/2015	0.14	23
	9/30/2015	ND<0	9.5
	11/19/2015	0.238	37
	3/15/2016	ND<0	9.5
	8/9/2016	ND<0	9.5
	12/7/2016	ND<0	9.5
	3/2/2017	0.152	26
	6/21/2017	ND<0	9.5
	8/17/2017	ND<0	9.5
	10/26/2017	ND<0	9.5
	3/27/2018	ND<0	9.5
	6/26/2018	ND<0	9.5
	8/1/2018	ND<0	9.5
	12/11/2018	0.168	30
	4/17/2019	0.144	24
	6/11/2019	ND<0	9.5
	8/28/2019	0.166	29
	10/28/2019	0.12	21
	3/31/2020	0.102	20
	6/10/2020	0.148	25
	9/21/2020	ND<0	9.5
	12/17/2020	0.161	27
	3/18/2021	0.193	32
	5/5/2021	7.78	41
	9/2/2021	ND<0	9.5
	11/23/2021	ND<0	9.5
	1/10/2022	0.196	33

The Wilcoxon Statistic is 14

ADEM Watermark

The Expected value is is 90
The Standard Deviation is 25.0998
The Z Score is -3.04783
The Standard Deviation adjusted for ties is 24.0171
The Z Score adjusted for ties is -3.18522
-3.04783 < 2.326 indicating no statistical significance at 1% level
-3.18522 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Ortho-phosphate

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	41
Total Non-Detects	31 (75.6098%)
Pooled Mean	0.013878
Pooled Std Dev	0.0303803
Compliance Meas.	36
Compliance Mean	0.0158056
Compliance Std Dev	0.0319918
Background Meas.	5
Background Mean	0
Background Std Dev	0

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	5	100	0

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	0	0	0	80	16

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
CO 15	36	26	72.2222	0.569

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
CO 15	0.0158056	0.0319918	0.0158056	0.0144643	781	21.6944

Analysis of Variance Statistics

SS Wells	0.00109675
SS Total	0.0369184

Kruskal-Wallis Statistics

Non-Detect Rank	16
Background Rank Sum	80
Background Rank Mean	16
H Statistic	0.992063
H Adjusted for Ties	1.74676

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Ortho-phosphate

Location: CO 15

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 31
Non detect rank is 16

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	ND<0	16
	3/18/2021	ND<0	16
	5/5/2021	ND<0	16
	11/23/2021	ND<0	16
	1/11/2022	ND<0	16
CO 15	3/12/2013	0.097	40
	5/8/2013	ND<0	16
	9/23/2013	0.027	33
	12/10/2013	0.068	39
	2/6/2014	ND<0	16
	6/26/2014	0.14	41
	9/30/2014	ND<0	16
	11/19/2014	0.03	34
	3/23/2015	0.067	38
	4/22/2015	ND<0	16
	9/30/2015	ND<0	16
	11/19/2015	0.042	37
	3/15/2016	ND<0	16
	8/9/2016	ND<0	16
	12/7/2016	ND<0	16
	3/2/2017	ND<0	16
	6/21/2017	ND<0	16
	8/17/2017	ND<0	16
	10/26/2017	ND<0	16
	3/27/2018	ND<0	16
	6/26/2018	ND<0	16
	8/1/2018	0.04	36
	12/11/2018	ND<0	16
	4/17/2019	ND<0	16
	6/11/2019	ND<0	16
	8/28/2019	0.026	32
	10/28/2019	ND<0	16
	3/31/2020	0.032	35
	6/10/2020	ND<0	16
	9/21/2020	ND<0	16
	12/17/2020	ND<0	16
	3/18/2021	ND<0	16
	5/5/2021	ND<0	16
	9/2/2021	ND<0	16
	11/23/2021	ND<0	16
	1/10/2022	ND<0	16

The Wilcoxon Statistic is 115

ADEM Watermark

The Expected value is is 90
The Standard Deviation is 25.0998
The Z Score is 0.976103
The Standard Deviation adjusted for ties is 18.9157
The Z Score adjusted for ties is 1.29522
0.976103 < 2.326 indicating no statistical significance at 1% level
1.29522 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: pH

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	40
Total Non-Detects	0 (0%)
Pooled Mean	7.43525
Pooled Std Dev	0.927495
Compliance Meas.	35
Compliance Mean	7.41657
Compliance Std Dev	0.98837
Background Meas.	5
Background Mean	7.566
Background Std Dev	0.243988

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	0	0	37.83

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	7.566	0.243988	0	95	19

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
CO 15	35	0	0	259.58

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
CO 15	7.41657	0.98837	-0.149429	0.448569	725	20.7143

Analysis of Variance Statistics

SS Wells	0.0976889
SS Total	33.5496

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	95
Background Rank Mean	19
H Statistic	0.0940767
H Adjusted for Ties	0.0940767

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: pH

Location: CO 15

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	7.69	24
	3/18/2021	7.25	8
	5/5/2021	7.86	28
	11/23/2021	7.64	21
	1/11/2022	7.39	14
CO 15	3/12/2013	7.41	15
	5/8/2013	7.51	18
	9/23/2013	7.09	7
	12/10/2013	6.09	3
	2/6/2014	4.22	1
	6/26/2014	8.16	36
	9/30/2014	7.88	32
	11/19/2014	7.38	13
	3/23/2015	7.85	27
	4/22/2015	7.62	20
	9/30/2015	7.68	23
	11/19/2015	7.3	10
	3/15/2016	7.66	22
	8/9/2016	8.03	34
	12/7/2016	7.5	17
	3/2/2017	7.77	25
	6/21/2017	7.56	19
	8/17/2017	8.29	37
	10/26/2017	4.43	2
	3/27/2018	7.87	29
	6/26/2018	7.87	30
	8/1/2018	7.25	9
	12/11/2018	8.73	39
	4/17/2019	7.8	26
	6/11/2019	6.56	6
	8/28/2019	8.07	35
	10/28/2019	7.31	11
	3/31/2020	6.46	5
	6/10/2020	6.24	4
	9/21/2020	7.31	12
	12/17/2020	8.98	40
	3/18/2021	8.46	38
	5/5/2021	7.47	16
	11/23/2021	7.87	31
	1/10/2022	7.9	33

The Wilcoxon Statistic is 95
The Expected value is is 87.5

ADEM Watermark

The Standard Deviation is 24.4523
The Z Score is 0.286271
The Standard Deviation adjusted for ties is 24.4523
The Z Score adjusted for ties is 0.286271
0.286271 < 2.326 indicating no statistical significance at 1% level
0.286271 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Temperature

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	41
Total Non-Detects	0 (0%)
Pooled Mean	18.1188
Pooled Std Dev	6.43001
Compliance Meas.	36
Compliance Mean	18.6242
Compliance Std Dev	6.52037
Background Meas.	5
Background Mean	14.48
Background Std Dev	4.7531

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	0	0	72.4

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	14.48	4.7531	0	69	13.8

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
CO 15	36	0	0	670.47

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
CO 15	18.6242	6.52037	4.14417	3.03621	792	22

Analysis of Variance Statistics

SS Wells	75.3986
SS Total	1653.8

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	69
Background Rank Mean	13.8
H Statistic	2.05714
H Adjusted for Ties	2.05714

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Temperature

Location: CO 15

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	9.8	4
	3/18/2021	17.6	19
	5/5/2021	21	27
	11/23/2021	10.6	8
	1/11/2022	13.4	11
CO 15	3/12/2013	14.4	13
	5/8/2013	18.1	21
	9/23/2013	27.18	39
	12/10/2013	9.83	6
	2/6/2014	6.28	1
	6/26/2014	25.55	35
	9/30/2014	23.28	32
	11/19/2014	9.43	3
	3/23/2015	18.5	22
	4/22/2015	21.9	28
	9/30/2015	22.88	30
	11/19/2015	16.98	18
	3/15/2016	19.83	26
	8/9/2016	29.6	40
	12/7/2016	12.1	9
	3/2/2017	16	17
	6/21/2017	26.7	38
	8/17/2017	30.1	41
	10/26/2017	13.6	12
	3/27/2018	12.1	10
	6/26/2018	26.5	37
	8/1/2018	23	31
	12/11/2018	7	2
	4/17/2019	19.1	23
	6/11/2019	22.83	29
	8/28/2019	25.7	36
	10/28/2019	15	14
	3/31/2020	15.7	16
	6/10/2020	25	34
	9/21/2020	17.9	20
	12/17/2020	10	7
	3/18/2021	19.8	25
	5/5/2021	19.3	24
	9/2/2021	24.3	33
	11/23/2021	15.2	15
	1/10/2022	9.8	5

The Wilcoxon Statistic is 126

ADEM Watermark

The Expected value is is 90
The Standard Deviation is 25.0998
The Z Score is 1.41435
The Standard Deviation adjusted for ties is 25.0998
The Z Score adjusted for ties is 1.41435
1.41435 < 2.326 indicating no statistical significance at 1% level
1.41435 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: TKN

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	41
Total Non-Detects	7 (17.0732%)
Pooled Mean	0.540268
Pooled Std Dev	0.36011
Compliance Meas.	36
Compliance Mean	0.571861
Compliance Std Dev	0.348963
Background Meas.	5
Background Mean	0.3128
Background Std Dev	0.396992

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	2	40	1.564

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	0.3128	0.396992	0	63	12.6

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
CO 15	36	5	13.8889	20.587

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
CO 15	0.571861	0.348963	0.259061	0.16904	798	22.1667

Analysis of Variance Statistics

SS Wells	0.294641
SS Total	5.18718

Kruskal-Wallis Statistics

Non-Detect Rank	4
Background Rank Sum	63
Background Rank Mean	12.6
H Statistic	2.8
H Adjusted for Ties	2.81373

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: TKN

Location: CO 15

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 7
Non detect rank is 4

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	0.263	8
	3/18/2021	0.331	11
	5/5/2021	ND<0	4
	11/23/2021	ND<0	4
	1/11/2022	0.97	36
CO 15	3/12/2013	0.53	19
	5/8/2013	0.59	24
	9/23/2013	0.34	12
	12/10/2013	0.56	21
	2/6/2014	0.46	17
	6/26/2014	0.59	25
	9/30/2014	ND<0	4
	11/19/2014	0.32	10
	3/23/2015	0.61	26
	4/22/2015	0.4	14
	9/30/2015	0.749	32
	11/19/2015	0.423	15
	3/15/2016	0.775	33
	8/9/2016	ND<0	4
	12/7/2016	0.665	29
	3/2/2017	0.521	18
	6/21/2017	0.973	37
	8/17/2017	0.693	31
	10/26/2017	0.393	13
	3/27/2018	ND<0	4
	6/26/2018	0.573	22
	8/1/2018	0.852	34
	12/11/2018	1.16	39
	4/17/2019	0.574	23
	6/11/2019	1	38
	8/28/2019	1.54	41
	10/28/2019	0.61	27
	3/31/2020	0.625	28
	6/10/2020	0.456	16
	9/21/2020	ND<0	4
	12/17/2020	0.685	30
	3/18/2021	0.554	20
	5/5/2021	1.17	40
	9/2/2021	0.926	35
	11/23/2021	0.27	9
	1/10/2022	ND<0	4

The Wilcoxon Statistic is 132

ADEM Watermark

The Expected value is is 90
The Standard Deviation is 25.0998
The Z Score is 1.6534
The Standard Deviation adjusted for ties is 25.0385
The Z Score adjusted for ties is 1.65745
1.6534 < 2.326 indicating no statistical significance at 1% level
1.65745 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Total Phosphorus

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	41
Total Non-Detects	34 (82.9268%)
Pooled Mean	0.0285366
Pooled Std Dev	0.0673049
Compliance Meas.	36
Compliance Mean	0.0325
Compliance Std Dev	0.0710253
Background Meas.	5
Background Mean	0
Background Std Dev	0

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	5	100	0

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	0	0	0	87.5	17.5

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
CO 15	36	29	80.5556	1.17

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
CO 15	0.0325	0.0710253	0.0325	0.0321123	773.5	21.4861

Analysis of Variance Statistics

SS Wells	0.0046372
SS Total	0.181198

Kruskal-Wallis Statistics

Non-Detect Rank	17.5
Background Rank Sum	87.5
Background Rank Mean	17.5
H Statistic	0.486111
H Adjusted for Ties	1.13081

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Total Phosphorus

Location: CO 15

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 34
Non detect rank is 17.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	ND<0	17.5
	3/18/2021	ND<0	17.5
	5/5/2021	ND<0	17.5
	11/23/2021	ND<0	17.5
	1/11/2022	ND<0	17.5
CO 15	3/12/2013	ND<0	17.5
	5/8/2013	ND<0	17.5
	9/23/2013	ND<0	17.5
	12/10/2013	ND<0	17.5
	2/6/2014	ND<0	17.5
	6/26/2014	ND<0	17.5
	9/30/2014	ND<0	17.5
	11/19/2014	ND<0	17.5
	3/23/2015	ND<0	17.5
	4/22/2015	ND<0	17.5
	9/30/2015	ND<0	17.5
	11/19/2015	0.183	39
	3/15/2016	ND<0	17.5
	8/9/2016	ND<0	17.5
	12/7/2016	ND<0	17.5
	3/2/2017	ND<0	17.5
	6/21/2017	ND<0	17.5
	8/17/2017	ND<0	17.5
	10/26/2017	ND<0	17.5
	3/27/2018	ND<0	17.5
	6/26/2018	0.27	41
	8/1/2018	0.122	36
	12/11/2018	0.107	35
	4/17/2019	ND<0	17.5
	6/11/2019	ND<0	17.5
	8/28/2019	0.13	37
	10/28/2019	ND<0	17.5
	3/31/2020	0.158	38
	6/10/2020	ND<0	17.5
	9/21/2020	ND<0	17.5
	12/17/2020	ND<0	17.5
	3/18/2021	ND<0	17.5
	5/5/2021	0.2	40
	9/2/2021	ND<0	17.5
	11/23/2021	ND<0	17.5
	1/10/2022	ND<0	17.5

The Wilcoxon Statistic is 107.5

ADEM Watermark

The Expected value is is 90
The Standard Deviation is 25.0998
The Z Score is 0.677296
The Standard Deviation adjusted for ties is 16.4567
The Z Score adjusted for ties is 1.03301
0.677296 < 2.326 indicating no statistical significance at 1% level
1.03301 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Total Suspended Solids

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	41
Total Non-Detects	0 (0%)
Pooled Mean	17.5939
Pooled Std Dev	14.4181
Compliance Meas.	36
Compliance Mean	17.4903
Compliance Std Dev	15.2374
Background Meas.	5
Background Mean	18.34
Background Std Dev	6.81674

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	0	0	91.7

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	18.34	6.81674	0	134	26.8

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
CO 15	36	0	0	629.65

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
CO 15	17.4903	15.2374	-0.849722	6.96754	727	20.1944

Analysis of Variance Statistics

SS Wells	3.16988
SS Total	8315.3

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	134
Background Rank Mean	26.8
H Statistic	1.33492
H Adjusted for Ties	1.33492

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Total Suspended Solids

Location: CO 15

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	17.8	30
	3/18/2021	21.6	34
	5/5/2021	27.5	38
	11/23/2021	9.2	6
	1/11/2022	15.6	26
CO 15	3/12/2013	9	5
	5/8/2013	11	13
	9/23/2013	11	14
	12/10/2013	13	23
	2/6/2014	12	18
	6/26/2014	46	39
	9/30/2014	8.6	4
	11/19/2014	12	19
	3/23/2015	19	32
	4/22/2015	11	15
	9/30/2015	11.8	17
	11/19/2015	17.5	29
	3/15/2016	12.4	20
	8/9/2016	22	35
	12/7/2016	14.8	25
	3/2/2017	17.4	28
	6/21/2017	18.3	31
	8/17/2017	12.4	21
	10/26/2017	6.4	2
	3/27/2018	8	3
	6/26/2018	12.4	22
	8/1/2018	71.5	40
	12/11/2018	10.1	9
	4/17/2019	11.5	16
	6/11/2019	9.75	8
	8/28/2019	20.4	33
	10/28/2019	10.2	10
	3/31/2020	72.4	41
	6/10/2020	10.4	11
	9/21/2020	5.6	1
	12/17/2020	15.6	27
	3/18/2021	26	37
	5/5/2021	10.9	12
	9/2/2021	13.8	24
	11/23/2021	25.9	36
	1/10/2022	9.6	7

The Wilcoxon Statistic is 61

ADEM Watermark

The Expected value is is 90
The Standard Deviation is 25.0998
The Z Score is -1.17531
The Standard Deviation adjusted for ties is 25.0998
The Z Score adjusted for ties is -1.17531
-1.17531 < 2.326 indicating no statistical significance at 1% level
-1.17531 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Turbidity

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	40
Total Non-Detects	1 (2.5%)
Pooled Mean	30.741
Pooled Std Dev	25.872
Compliance Meas.	35
Compliance Mean	32.1117
Compliance Std Dev	26.8127
Background Meas.	5
Background Mean	21.146
Background Std Dev	16.8499

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	0	0	105.73

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	21.146	16.8499	0	84	16.8

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
CO 15	35	1	2.85714	1123.91

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
CO 15	32.1117	26.8127	10.9657	12.404	736	21.0286

Analysis of Variance Statistics

SS Wells	526.08
SS Total	26105

Kruskal-Wallis Statistics

Non-Detect Rank	1
Background Rank Sum	84
Background Rank Mean	16.8
H Statistic	0.572404
H Adjusted for Ties	0.572404

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Turbidity

Location: CO 15

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 1
Non detect rank is 1

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	17.7	16
	3/18/2021	2.2	3
	5/5/2021	20.02	18
	11/23/2021	48.51	32
	1/11/2022	17.3	15
CO 15	3/12/2013	32	27
	5/8/2013	27.1	23
	9/23/2013	13.4	9
	12/10/2013	42	30
	2/6/2014	31.6	26
	6/26/2014	105	39
	9/30/2014	8.41	7
	11/19/2014	43.5	31
	3/23/2015	55.7	34
	4/22/2015	26.3	22
	9/30/2015	14.8	13
	11/19/2015	50.2	33
	3/15/2016	28.9	24
	8/9/2016	38.3	29
	12/7/2016	13.6	10
	3/2/2017	38.2	28
	6/21/2017	6.4	6
	8/17/2017	21.7	19
	10/26/2017	10.8	8
	3/27/2018	14.5	12
	6/26/2018	13.8	11
	8/1/2018	58.8	35
	12/11/2018	111.3	40
	4/17/2019	17	14
	6/11/2019	21.9	20
	8/28/2019	70.8	38
	10/28/2019	30.7	25
	3/31/2020	61.8	36
	6/10/2020	18.7	17
	9/21/2020	ND<0.7	1
	12/17/2020	2.8	4
	3/18/2021	63.1	37
	5/5/2021	3.8	5
	11/23/2021	2	2
	1/10/2022	24.3	21

The Wilcoxon Statistic is 106
The Expected value is is 87.5

ADEM Watermark

The Standard Deviation is 24.4523
The Z Score is 0.736126
The Standard Deviation adjusted for ties is 24.4523
The Z Score adjusted for ties is 0.736126
0.736126 < 2.326 indicating no statistical significance at 1% level
0.736126 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: DO

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	41
Total Non-Detects	0 (0%)
Pooled Mean	8.07439
Pooled Std Dev	2.03519
Compliance Meas.	36
Compliance Mean	7.81833
Compliance Std Dev	1.98752
Background Meas.	5
Background Mean	9.918
Background Std Dev	1.41999

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	0	0	49.59

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	9.918	1.41999	0	164	32.8

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
GD 5	36	0	0	281.46

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
GD 5	7.81833	1.98752	-2.09967	0.924446	697	19.3611

Analysis of Variance Statistics

SS Wells	19.3548
SS Total	165.679

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	164
Background Rank Mean	32.8
H Statistic	5.5254
H Adjusted for Ties	5.5254

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: DO

Location: GD 5

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	10.82	38
	3/18/2021	9.2	29
	5/5/2021	7.81	22
	11/23/2021	10.41	35
	1/11/2022	11.35	40
GD 5	3/13/2013	9.29	30
	5/20/2013	7.76	20
	9/23/2013	6.78	11
	12/10/2013	9.1	28
	2/6/2014	9.88	33
	6/26/2014	6.54	10
	9/30/2014	7.53	16
	3/23/2015	8.58	25
	4/22/2015	7.78	21
	9/30/2015	6.27	8
	11/19/2015	7.34	13
	3/15/2016	7.47	15
	6/29/2016	2.27	1
	8/9/2016	5.55	3
	12/7/2016	10.61	37
	3/2/2017	4.49	2
	7/5/2017	5.83	5
	8/16/2017	6.22	7
	10/25/2017	7.35	14
	3/28/2018	9.47	32
	6/29/2018	5.66	4
	8/2/2018	6.02	6
	12/10/2018	11.3	39
	4/15/2019	8.02	24
	6/12/2019	7.64	17
	8/27/2019	7.98	23
	10/29/2019	9.42	31
	3/30/2020	8.86	26
	6/16/2020	7.75	19
	9/21/2020	6.33	9
	12/17/2020	9.96	34
	3/18/2021	8.98	27
	5/5/2021	7.74	18
	9/2/2021	6.9	12
	11/23/2021	10.54	36
	1/11/2022	12.25	41

The Wilcoxon Statistic is 31

ADEM Watermark

The Expected value is is 90
The Standard Deviation is 25.0998
The Z Score is -2.37054
The Standard Deviation adjusted for ties is 25.0998
The Z Score adjusted for ties is -2.37054
-2.37054 < 2.326 indicating no statistical significance at 1% level
-2.37054 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Nitrate-nitrite

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	42
Total Non-Detects	22 (52.381%)
Pooled Mean	0.0915952
Pooled Std Dev	0.118097
Compliance Meas.	37
Compliance Mean	0.0628108
Compliance Std Dev	0.0851172
Background Meas.	5
Background Mean	0.3046
Background Std Dev	0.115639

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	0	0	1.523

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	0.3046	0.115639	0	193	38.6

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
GD 5	37	22	59.4595	2.324

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
GD 5	0.0628108	0.0851172	-0.241789	0.0422363	710	19.1892

Analysis of Variance Statistics

SS Wells	0.257511
SS Total	0.571818

Kruskal-Wallis Statistics

Non-Detect Rank	11.5
Background Rank Sum	193
Background Rank Mean	38.6
H Statistic	11.0274
H Adjusted for Ties	12.875

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Nitrate-nitrite

Location: GD 5

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 22
Non detect rank is 11.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	0.387	41
	3/18/2021	0.319	40
	5/5/2021	0.213	37
	11/23/2021	0.164	33
	1/11/2022	0.44	42
GD 5	3/13/2013	0.26	38
	5/20/2013	ND<0	11.5
	9/23/2013	ND<0	11.5
	12/10/2013	0.1	23
	2/6/2014	0.17	35
	6/26/2014	ND<0	11.5
	9/30/2014	ND<0	11.5
	11/19/2014	0.11	24
	3/23/2015	0.12	26
	4/22/2015	0.14	32
	9/30/2015	ND<0	11.5
	11/19/2015	0.168	34
	3/15/2016	ND<0	11.5
	6/29/2016	ND<0	11.5
	8/9/2016	ND<0	11.5
	12/7/2016	ND<0	11.5
	3/2/2017	0.118	25
	7/5/2017	ND<0	11.5
	8/16/2017	ND<0	11.5
	10/25/2017	ND<0	11.5
	3/28/2018	0.127	28
	6/29/2018	ND<0	11.5
	8/2/2018	ND<0	11.5
	12/10/2018	ND<0	11.5
	4/15/2019	0.128	30
	6/12/2019	ND<0	11.5
	8/27/2019	ND<0	11.5
	10/29/2019	ND<0	11.5
	3/30/2020	0.13	31
	6/16/2020	ND<0	11.5
	9/21/2020	ND<0	11.5
	12/17/2020	0.122	27
	3/18/2021	0.127	29
	5/5/2021	0.204	36
	9/2/2021	ND<0	11.5
	11/23/2021	ND<0	11.5
	1/11/2022	0.3	39

ADEM Watermark

The Wilcoxon Statistic is 7
The Expected value is is 92.5
The Standard Deviation is 25.7472
The Z Score is -3.34017
The Standard Deviation adjusted for ties is 23.8282
The Z Score adjusted for ties is -3.60916
-3.34017 < 2.326 indicating no statistical significance at 1% level
-3.60916 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Ortho-phosphate

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	42
Total Non-Detects	36 (85.7143%)
Pooled Mean	0.00761905
Pooled Std Dev	0.0205533
Compliance Meas.	37
Compliance Mean	0.00864865
Compliance Std Dev	0.0217246
Background Meas.	5
Background Mean	0
Background Std Dev	0

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	5	100	0

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	0	0	0	92.5	18.5

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
GD 5	37	31	83.7838	0.32

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
GD 5	0.00864865	0.0217246	0.00864865	0.00981999	810.5	21.9054

Analysis of Variance Statistics

SS Wells	0.000329472
SS Total	0.0173199

Kruskal-Wallis Statistics

Non-Detect Rank	18.5
Background Rank Sum	92.5
Background Rank Mean	18.5
H Statistic	0.339409
H Adjusted for Ties	0.916353

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Ortho-phosphate

Location: GD 5

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 36
Non detect rank is 18.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	ND<0	18.5
	3/18/2021	ND<0	18.5
	5/5/2021	ND<0	18.5
	11/23/2021	ND<0	18.5
	1/11/2022	ND<0	18.5
GD 5	3/13/2013	ND<0	18.5
	5/20/2013	ND<0	18.5
	9/23/2013	0.027	37
	12/10/2013	0.088	42
	2/6/2014	0.038	38
	6/26/2014	ND<0	18.5
	9/30/2014	ND<0	18.5
	11/19/2014	0.051	40
	3/23/2015	ND<0	18.5
	4/22/2015	ND<0	18.5
	9/30/2015	ND<0	18.5
	11/19/2015	0.042	39
	3/15/2016	ND<0	18.5
	6/29/2016	0.074	41
	8/9/2016	ND<0	18.5
	12/7/2016	ND<0	18.5
	3/2/2017	ND<0	18.5
	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	ND<0	18.5
	4/15/2019	ND<0	18.5
	6/12/2019	ND<0	18.5
	8/27/2019	ND<0	18.5
	10/29/2019	ND<0	18.5
	3/30/2020	ND<0	18.5
	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

ADEM Watermark

The Wilcoxon Statistic is 107.5
The Expected value is is 92.5
The Standard Deviation is 25.7472
The Z Score is 0.563169
The Standard Deviation adjusted for ties is 15.6697
The Z Score adjusted for ties is 0.925354
0.563169 < 2.326 indicating no statistical significance at 1% level
0.925354 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: pH

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	42
Total Non-Detects	0 (0%)
Pooled Mean	7.78262
Pooled Std Dev	0.356693
Compliance Meas.	37
Compliance Mean	7.81189
Compliance Std Dev	0.361784
Background Meas.	5
Background Mean	7.566
Background Std Dev	0.243988

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	0	0	37.83

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	7.566	0.243988	0	67	13.4

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
GD 5	37	0	0	289.04

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
GD 5	7.81189	0.361784	0.245892	0.167616	836	22.5946

Analysis of Variance Statistics

SS Wells	0.266324
SS Total	5.21641

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	67
Background Rank Mean	13.4
H Statistic	2.47429
H Adjusted for Ties	2.47429

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: pH

Location: GD 5

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	7.69	16
	3/18/2021	7.25	4
	5/5/2021	7.86	27
	11/23/2021	7.64	12
	1/11/2022	7.39	8
GD 5	3/13/2013	8.33	41
	5/20/2013	8.28	39
	9/23/2013	7.67	15
	12/10/2013	7.97	31
	2/6/2014	7.14	1
	6/26/2014	7.9	30
	9/30/2014	8.28	40
	11/19/2014	8.15	36
	3/23/2015	8.14	35
	4/22/2015	7.81	22
	9/30/2015	8.03	34
	11/19/2015	7.63	11
	3/15/2016	8.8	42
	6/29/2016	8.02	32
	8/9/2016	8.25	38
	12/7/2016	7.73	20
	3/2/2017	7.81	23
	7/5/2017	7.32	6
	8/16/2017	7.89	29
	10/25/2017	7.36	7
	3/28/2018	8.18	37
	6/29/2018	7.76	21
	8/2/2018	7.59	9
	12/10/2018	7.87	28
	4/15/2019	7.69	17
	6/12/2019	8.02	33
	8/27/2019	7.15	2
	10/29/2019	7.85	26
	3/30/2020	7.65	13
	6/16/2020	7.69	18
	9/21/2020	7.65	14
	12/17/2020	7.62	10
	3/18/2021	7.15	3
	5/5/2021	7.84	24
	9/2/2021	7.84	25
	11/23/2021	7.7	19
	1/11/2022	7.28	5

ADEM Watermark

The Wilcoxon Statistic is 133
The Expected value is is 92.5
The Standard Deviation is 25.7472
The Z Score is 1.55357
The Standard Deviation adjusted for ties is 25.7472
The Z Score adjusted for ties is 1.55357
1.55357 < 2.326 indicating no statistical significance at 1% level
1.55357 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Temperature

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	41
Total Non-Detects	0 (0%)
Pooled Mean	19.0076
Pooled Std Dev	7.16118
Compliance Meas.	36
Compliance Mean	19.6364
Compliance Std Dev	7.2589
Background Meas.	5
Background Mean	14.48
Background Std Dev	4.7531

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	0	0	72.4

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	14.48	4.7531	0	69	13.8

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
GD 5	36	0	0	706.91

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
GD 5	19.6364	7.2589	5.15639	3.36137	792	22

Analysis of Variance Statistics

SS Wells	116.729
SS Total	2051.3

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	69
Background Rank Mean	13.8
H Statistic	2.05714
H Adjusted for Ties	2.05714

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Temperature

Location: GD 5

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	9.8	6
	3/18/2021	17.6	17
	5/5/2021	21	25
	11/23/2021	10.6	9
	1/11/2022	13.4	12
GD 5	3/13/2013	10.2	8
	5/20/2013	22.6	27
	9/23/2013	27.1	34
	12/10/2013	9.1	3
	2/6/2014	7.2	1
	9/30/2014	25.22	29
	11/19/2014	9.4	4
	3/23/2015	15.9	14
	4/22/2015	21.7	26
	9/30/2015	26.3	31
	11/19/2015	16.6	15
	3/15/2016	19.4	23
	6/29/2016	30.37	41
	8/9/2016	30.2	40
	12/7/2016	11.96	11
	3/2/2017	14.26	13
	7/5/2017	26.9	33
	8/16/2017	28	38
	10/25/2017	18.7	20
	3/28/2018	18.5	19
	6/29/2018	27.5	37
	8/2/2018	25.7	30
	12/10/2018	7.3	2
	4/15/2019	19.3	22
	6/12/2019	27.2	35
	8/27/2019	28.7	39
	10/29/2019	17.8	18
	3/30/2020	19.1	21
	6/16/2020	27.2	36
	9/21/2020	23.2	28
	12/17/2020	9.7	5
	3/18/2021	16.9	16
	5/5/2021	19.8	24
	9/2/2021	26.5	32
	11/23/2021	11.3	10
	1/11/2022	10.1	7

The Wilcoxon Statistic is 126

ADEM Watermark

The Expected value is is 90
The Standard Deviation is 25.0998
The Z Score is 1.41435
The Standard Deviation adjusted for ties is 25.0998
The Z Score adjusted for ties is 1.41435
1.41435 < 2.326 indicating no statistical significance at 1% level
1.41435 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: TKN

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	42
Total Non-Detects	9 (21.4286%)
Pooled Mean	0.372333
Pooled Std Dev	0.234928
Compliance Meas.	37
Compliance Mean	0.380378
Compliance Std Dev	0.211628
Background Meas.	5
Background Mean	0.3128
Background Std Dev	0.396992

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	2	40	1.564

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	0.3128	0.396992	0	74	14.8

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
GD 5	37	7	18.9189	14.074

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
GD 5	0.380378	0.211628	0.0675784	0.112823	829	22.4054

Analysis of Variance Statistics

SS Wells	0.0201158
SS Total	2.26284

Kruskal-Wallis Statistics

Non-Detect Rank	5
Background Rank Sum	74
Background Rank Mean	14.8
H Statistic	1.6929
H Adjusted for Ties	1.70952

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: TKN

Location: GD 5

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 9
Non detect rank is 5

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	0.263	10
	3/18/2021	0.331	12
	5/5/2021	ND<0	5
	11/23/2021	ND<0	5
	1/11/2022	0.97	42
GD 5	3/13/2013	0.34	15
	5/20/2013	0.62	38
	9/23/2013	0.45	26
	12/10/2013	0.47	27
	2/6/2014	0.37	19
	6/26/2014	0.34	16
	9/30/2014	ND<0	5
	11/19/2014	0.43	24
	3/23/2015	0.34	17
	4/22/2015	0.65	39
	9/30/2015	0.557	35
	11/19/2015	ND<0	5
	3/15/2016	0.435	25
	6/29/2016	0.49	29
	8/9/2016	0.412	22
	12/7/2016	0.337	14
	3/2/2017	0.491	30
	7/5/2017	0.73	41
	8/16/2017	0.404	20
	10/25/2017	0.347	18
	3/28/2018	ND<0	5
	6/29/2018	0.689	40
	8/2/2018	0.332	13
	12/10/2018	0.523	34
	4/15/2019	0.411	21
	6/12/2019	ND<0	5
	8/27/2019	0.506	31
	10/29/2019	0.477	28
	3/30/2020	0.32	11
	6/16/2020	0.561	36
	9/21/2020	ND<0	5
	12/17/2020	0.422	23
	3/18/2021	0.6	37
	5/5/2021	ND<0	5
	9/2/2021	0.51	32
	11/23/2021	ND<0	5
	1/11/2022	0.51	33

ADEM Watermark

The Wilcoxon Statistic is 126
The Expected value is is 92.5
The Standard Deviation is 25.7472
The Z Score is 1.28169
The Standard Deviation adjusted for ties is 25.6217
The Z Score adjusted for ties is 1.28797
1.28169 < 2.326 indicating no statistical significance at 1% level
1.28797 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Total Phosphorus

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	42
Total Non-Detects	36 (85.7143%)
Pooled Mean	0.0449524
Pooled Std Dev	0.188455
Compliance Meas.	37
Compliance Mean	0.051027
Compliance Std Dev	0.200323
Background Meas.	5
Background Mean	0
Background Std Dev	0

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	5	100	0

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	0	0	0	92.5	18.5

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
GD 5	37	31	83.7838	1.888

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
GD 5	0.051027	0.200323	0.051027	0.0905505	810.5	21.9054

Analysis of Variance Statistics

SS Wells	0.0114689
SS Total	1.45612

Kruskal-Wallis Statistics

Non-Detect Rank	18.5
Background Rank Sum	92.5
Background Rank Mean	18.5
H Statistic	0.339409
H Adjusted for Ties	0.916353

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Total Phosphorus

Location: GD 5

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 36
Non detect rank is 18.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	ND<0	18.5
	3/18/2021	ND<0	18.5
	5/5/2021	ND<0	18.5
	11/23/2021	ND<0	18.5
	1/11/2022	ND<0	18.5
GD 5	3/13/2013	ND<0	18.5
	5/20/2013	ND<0	18.5
	9/23/2013	ND<0	18.5
	12/10/2013	0.1	37
	2/6/2014	ND<0	18.5
	6/26/2014	ND<0	18.5
	9/30/2014	ND<0	18.5
	11/19/2014	ND<0	18.5
	3/23/2015	ND<0	18.5
	4/22/2015	ND<0	18.5
	9/30/2015	0.115	39
	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	ND<0	18.5
	3/2/2017	ND<0	18.5
	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	0.19	41
	4/15/2019	1.2	42
	6/12/2019	ND<0	18.5
	8/27/2019	0.17	40
	10/29/2019	ND<0	18.5
	3/30/2020	ND<0	18.5
	6/16/2020	ND<0	18.5
	9/21/2020	ND<0	18.5
	12/17/2020	0.113	38
	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

ADEM Watermark

The Wilcoxon Statistic is 107.5
The Expected value is is 92.5
The Standard Deviation is 25.7472
The Z Score is 0.563169
The Standard Deviation adjusted for ties is 15.6697
The Z Score adjusted for ties is 0.925354
0.563169 < 2.326 indicating no statistical significance at 1% level
0.925354 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Total Suspended Solids

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	42
Total Non-Detects	0 (0%)
Pooled Mean	16.6402
Pooled Std Dev	8.31462
Compliance Meas.	37
Compliance Mean	16.4105
Compliance Std Dev	8.55079
Background Meas.	5
Background Mean	18.34
Background Std Dev	6.81674

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	0	0	91.7

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	18.34	6.81674	0	130	26

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
GD 5	37	0	0	607.19

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
GD 5	16.4105	8.55079	-1.92946	3.99929	773	20.8919

Analysis of Variance Statistics

SS Wells	16.3981
SS Total	2834.45

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	130
Background Rank Mean	26
H Statistic	0.763671
H Adjusted for Ties	0.763671

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Total Suspended Solids

Location: GD 5

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	17.8	27
	3/18/2021	21.6	33
	5/5/2021	27.5	38
	11/23/2021	9.2	9
	1/11/2022	15.6	23
GD 5	3/13/2013	9.6	11
	5/20/2013	9	7
	9/23/2013	8	5
	12/10/2013	18	28
	2/6/2014	17	25
	6/26/2014	12	14
	9/30/2014	18	29
	11/19/2014	26	36
	3/23/2015	15	21
	4/22/2015	13	17
	9/30/2015	17.3	26
	11/19/2015	42.8	42
	3/15/2016	13.2	19
	6/29/2016	15	22
	8/9/2016	11	13
	12/7/2016	6.8	2
	3/2/2017	13	18
	7/5/2017	22.7	35
	8/16/2017	9	8
	10/25/2017	14.6	20
	3/28/2018	6.06	1
	6/29/2018	19.6	30
	8/2/2018	26.4	37
	12/10/2018	22.3	34
	4/15/2019	29	39
	6/12/2019	9.33	10
	8/27/2019	10.9	12
	10/29/2019	21	32
	3/30/2020	12.1	15
	6/16/2020	7.4	3
	9/21/2020	7.9	4
	12/17/2020	19.8	31
	3/18/2021	30.6	40
	5/5/2021	36.8	41
	9/2/2021	16.1	24
	11/23/2021	8.8	6
	1/11/2022	12.1	16

ADEM Watermark

The Wilcoxon Statistic is 70
The Expected value is is 92.5
The Standard Deviation is 25.7472
The Z Score is -0.893302
The Standard Deviation adjusted for ties is 25.7472
The Z Score adjusted for ties is -0.893302
-0.893302 < 2.326 indicating no statistical significance at 1% level
-0.893302 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Turbidity

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	42
Total Non-Detects	0 (0%)
Pooled Mean	23.5743
Pooled Std Dev	18.3342
Compliance Meas.	37
Compliance Mean	23.9024
Compliance Std Dev	18.7177
Background Meas.	5
Background Mean	21.146
Background Std Dev	16.8499

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	0	0	105.73

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	21.146	16.8499	0	105	21

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
GD 5	37	0	0	884.39

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
GD 5	23.9024	18.7177	2.75643	8.83354	798	21.5676

Analysis of Variance Statistics

SS Wells	33.467
SS Total	13781.9

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	105
Background Rank Mean	21
H Statistic	0.00942803
H Adjusted for Ties	0.00942803

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Turbidity

Location: GD 5

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	17.7	21
	3/18/2021	2.2	1
	5/5/2021	20.02	24
	11/23/2021	48.51	39
	1/11/2022	17.3	20
GD 5	3/13/2013	11.6	11
	5/20/2013	14	14
	9/23/2013	11.5	10
	12/10/2013	57.9	40
	2/6/2014	45.9	38
	6/26/2014	17	19
	9/30/2014	22.5	26
	11/19/2014	42.9	37
	3/23/2015	24	28
	4/22/2015	25	29
	9/30/2015	18	22
	11/19/2015	90	42
	3/15/2016	23.7	27
	6/29/2016	21	25
	8/9/2016	11.8	12
	12/7/2016	10	7
	3/2/2017	12.3	13
	7/5/2017	15	16
	8/16/2017	8	5
	10/25/2017	9.2	6
	3/28/2018	6.1	4
	6/29/2018	16.3	17
	8/2/2018	18.4	23
	12/10/2018	37.7	36
	4/15/2019	29.7	34
	6/12/2019	6	3
	8/27/2019	75.2	41
	10/29/2019	29	33
	3/30/2020	14.5	15
	6/16/2020	16.4	18
	9/21/2020	10.8	9
	12/17/2020	28.7	32
	3/18/2021	3.4	2
	5/5/2021	36.1	35
	9/2/2021	10.3	8
	11/23/2021	27.69	31
	1/11/2022	26.8	30

ADEM Watermark

The Wilcoxon Statistic is 95
The Expected value is is 92.5
The Standard Deviation is 25.7472
The Z Score is 0.0776784
The Standard Deviation adjusted for ties is 25.7472
The Z Score adjusted for ties is 0.0776784
0.0776784 < 2.326 indicating no statistical significance at 1% level
0.0776784 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: DO

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	42
Total Non-Detects	0 (0%)
Pooled Mean	8.60048
Pooled Std Dev	2.79546
Compliance Meas.	37
Compliance Mean	8.42243
Compliance Std Dev	2.89867
Background Meas.	5
Background Mean	9.918
Background Std Dev	1.41999

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	0	0	49.59

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	9.918	1.41999	0	145	29

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
GD 6	37	0	0	311.63

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
GD 6	8.42243	2.89867	-1.49557	1.32762	758	20.4865

Analysis of Variance Statistics

SS Wells	9.85223
SS Total	320.4

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	145
Background Rank Mean	29
H Statistic	2.12131
H Adjusted for Ties	2.12131

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: DO

Location: GD 6

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	10.82	34
	3/18/2021	9.2	27
	5/5/2021	7.81	15
	11/23/2021	10.41	32
	1/11/2022	11.35	37
GD 6	3/12/2013	9.65	30
	5/8/2013	2.35	1
	9/23/2013	5.17	5
	12/10/2013	11.41	38
	2/6/2014	15.8	41
	6/26/2014	8.95	24
	9/30/2014	6.53	9
	11/19/2014	3.36	2
	3/23/2015	8.95	25
	4/22/2015	10.82	35
	9/30/2015	12.31	40
	11/19/2015	15.87	42
	3/15/2016	11.58	39
	6/29/2016	9.64	29
	8/9/2016	6.98	12
	12/7/2016	8.13	19
	3/2/2017	8.02	18
	6/21/2017	4.99	4
	8/17/2017	7.72	14
	10/26/2017	7.84	16
	3/27/2018	9	26
	6/26/2018	6.78	11
	8/1/2018	7.52	13
	12/11/2018	10.92	36
	4/17/2019	8	17
	6/11/2019	3.68	3
	8/28/2019	6.32	7
	10/28/2019	6.63	10
	3/31/2020	8.86	23
	6/10/2020	6.36	8
	9/21/2020	8.48	21
	12/17/2020	10.08	31
	3/18/2021	9.21	28
	5/5/2021	8.62	22
	9/2/2021	6.24	6
	11/23/2021	8.28	20
	1/10/2022	10.58	33

ADEM Watermark

The Wilcoxon Statistic is 55
The Expected value is is 92.5
The Standard Deviation is 25.7472
The Z Score is -1.47589
The Standard Deviation adjusted for ties is 25.7472
The Z Score adjusted for ties is -1.47589
-1.47589 < 2.326 indicating no statistical significance at 1% level
-1.47589 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Nitrate-nitrite

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	42
Total Non-Detects	11 (26.1905%)
Pooled Mean	0.366738
Pooled Std Dev	1.20655
Compliance Meas.	37
Compliance Mean	0.375135
Compliance Std Dev	1.2868
Background Meas.	5
Background Mean	0.3046
Background Std Dev	0.115639

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	0	0	1.523

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	0.3046	0.115639	0	153	30.6

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
GD 6	37	11	29.7297	13.88

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
GD 6	0.375135	1.2868	0.0705351	0.581922	750	20.2703

Analysis of Variance Statistics

SS Wells	0.0219146
SS Total	59.6859

Kruskal-Wallis Statistics

Non-Detect Rank	6
Background Rank Sum	153
Background Rank Mean	30.6
H Statistic	3.12294
H Adjusted for Ties	3.17962

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Nitrate-nitrite

Location: GD 6

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 11
Non detect rank is 6

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	0.387	38
	3/18/2021	0.319	34
	5/5/2021	0.213	23
	11/23/2021	0.164	18
	1/11/2022	0.44	40
GD 6	3/12/2013	0.21	21
	5/8/2013	0.23	27
	9/23/2013	ND<0	6
	12/10/2013	0.37	37
	2/6/2014	0.26	32
	6/26/2014	ND<0	6
	9/30/2014	ND<0	6
	11/19/2014	0.22	24
	3/23/2015	0.22	25
	4/22/2015	0.22	26
	9/30/2015	ND<0	6
	11/19/2015	0.468	41
	3/15/2016	0.124	13
	6/29/2016	ND<0	6
	8/9/2016	ND<0	6
	12/7/2016	0.365	36
	3/2/2017	0.25	31
	6/21/2017	ND<0	6
	8/17/2017	ND<0	6
	10/26/2017	0.126	14
	3/27/2018	0.233	28
	6/26/2018	0.108	12
	8/1/2018	0.335	35
	12/11/2018	0.397	39
	4/17/2019	0.198	19
	6/11/2019	ND<0	6
	8/28/2019	ND<0	6
	10/28/2019	0.198	20
	3/31/2020	0.212	22
	6/10/2020	0.127	15
	9/21/2020	ND<0	6
	12/17/2020	0.309	33
	3/18/2021	0.241	30
	5/5/2021	7.95	42
	9/2/2021	0.139	17
	11/23/2021	0.132	16
	1/10/2022	0.238	29

ADEM Watermark

The Wilcoxon Statistic is 47
The Expected value is is 92.5
The Standard Deviation is 25.7472
The Z Score is -1.7866
The Standard Deviation adjusted for ties is 25.5166
The Z Score adjusted for ties is -1.80275
-1.7866 < 2.326 indicating no statistical significance at 1% level
-1.80275 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Ortho-phosphate

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	42
Total Non-Detects	34 (80.9524%)
Pooled Mean	0.00890476
Pooled Std Dev	0.0201649
Compliance Meas.	37
Compliance Mean	0.0101081
Compliance Std Dev	0.0212273
Background Meas.	5
Background Mean	0
Background Std Dev	0

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	5	100	0

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	0	0	0	87.5	17.5

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
GD 6	37	29	78.3784	0.374

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
GD 6	0.0101081	0.0212273	0.0101081	0.00959523	815.5	22.0405

Analysis of Variance Statistics

SS Wells	0.000450051
SS Total	0.0166716

Kruskal-Wallis Statistics

Non-Detect Rank	17.5
Background Rank Sum	87.5
Background Rank Mean	17.5
H Statistic	0.603394
H Adjusted for Ties	1.28476

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Ortho-phosphate

Location: GD 6

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 34
Non detect rank is 17.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	ND<0	17.5
	3/18/2021	ND<0	17.5
	5/5/2021	ND<0	17.5
	11/23/2021	ND<0	17.5
	1/11/2022	ND<0	17.5
GD 6	3/12/2013	0.036	36
	5/8/2013	0.033	35
	9/23/2013	ND<0	17.5
	12/10/2013	0.041	39
	2/6/2014	0.057	41
	6/26/2014	ND<0	17.5
	9/30/2014	ND<0	17.5
	11/19/2014	ND<0	17.5
	3/23/2015	ND<0	17.5
	4/22/2015	ND<0	17.5
	9/30/2015	ND<0	17.5
	11/19/2015	0.037	37
	3/15/2016	0.043	40
	6/29/2016	ND<0	17.5
	8/9/2016	ND<0	17.5
	12/7/2016	ND<0	17.5
	3/2/2017	ND<0	17.5
	6/21/2017	ND<0	17.5
	8/17/2017	ND<0	17.5
	10/26/2017	ND<0	17.5
	3/27/2018	ND<0	17.5
	6/26/2018	ND<0	17.5
	8/1/2018	0.09	42
	12/11/2018	ND<0	17.5
	4/17/2019	ND<0	17.5
	6/11/2019	ND<0	17.5
	8/28/2019	ND<0	17.5
	10/28/2019	ND<0	17.5
	3/31/2020	ND<0	17.5
	6/10/2020	ND<0	17.5
	9/21/2020	ND<0	17.5
	12/17/2020	ND<0	17.5
	3/18/2021	ND<0	17.5
	5/5/2021	ND<0	17.5
	9/2/2021	ND<0	17.5
	11/23/2021	ND<0	17.5
	1/10/2022	0.037	38

ADEM Watermark

The Wilcoxon Statistic is 112.5
The Expected value is is 92.5
The Standard Deviation is 25.7472
The Z Score is 0.757365
The Standard Deviation adjusted for ties is 17.6449
The Z Score adjusted for ties is 1.10514
0.757365 < 2.326 indicating no statistical significance at 1% level
1.10514 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: pH

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	41
Total Non-Detects	0 (0%)
Pooled Mean	7.52268
Pooled Std Dev	0.789734
Compliance Meas.	36
Compliance Mean	7.51667
Compliance Std Dev	0.840041
Background Meas.	5
Background Mean	7.566
Background Std Dev	0.243988

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	0	0	37.83

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	7.566	0.243988	0	90	18

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
GD 6	36	0	0	270.6

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
GD 6	7.51667	0.840041	-0.0493333	0.381629	771	21.4167

Analysis of Variance Statistics

SS Wells	0.0106849
SS Total	24.9472

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	90
Background Rank Mean	18
H Statistic	0.357143
H Adjusted for Ties	0.357143

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: pH

Location: GD 6

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	7.69	23
	3/18/2021	7.25	11
	5/5/2021	7.86	24
	11/23/2021	7.64	19
	1/11/2022	7.39	13
GD 6	3/12/2013	8.03	34
	5/8/2013	6.81	5
	9/23/2013	7.28	12
	12/10/2013	5.98	2
	2/6/2014	4.34	1
	6/26/2014	8.31	39
	9/30/2014	8.35	40
	11/19/2014	7.17	10
	3/23/2015	7.95	26
	4/22/2015	7.59	17
	9/30/2015	8.19	37
	11/19/2015	6.97	6
	3/15/2016	7.68	22
	6/29/2016	8.86	41
	8/9/2016	8.26	38
	12/7/2016	7.43	14
	3/2/2017	8.05	35
	6/21/2017	7.67	21
	8/17/2017	8.02	32
	10/26/2017	6.25	4
	3/27/2018	7.97	29
	6/26/2018	8.02	33
	8/1/2018	7.66	20
	12/11/2018	7.97	30
	4/17/2019	7.1	9
	6/11/2019	7.07	8
	8/28/2019	7.94	25
	10/28/2019	7.48	15
	3/31/2020	6.06	3
	6/10/2020	7.04	7
	9/21/2020	7.96	27
	12/17/2020	7.96	28
	3/18/2021	7.97	31
	5/5/2021	7.55	16
	11/23/2021	7.61	18
	1/10/2022	8.05	36

The Wilcoxon Statistic is 105

ADEM Watermark

The Expected value is is 90
The Standard Deviation is 25.0998
The Z Score is 0.577694
The Standard Deviation adjusted for ties is 25.0998
The Z Score adjusted for ties is 0.577694
0.577694 < 2.326 indicating no statistical significance at 1% level
0.577694 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Temperature

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	42
Total Non-Detects	0 (0%)
Pooled Mean	19.0733
Pooled Std Dev	7.14468
Compliance Meas.	37
Compliance Mean	19.6941
Compliance Std Dev	7.23185
Background Meas.	5
Background Mean	14.48
Background Std Dev	4.7531

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	0	0	72.4

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	14.48	4.7531	0	70	14

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
GD 6	37	0	0	728.68

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
GD 6	19.6941	7.23185	5.21405	3.34649	833	22.5135

Analysis of Variance Statistics

SS Wells	119.749
SS Total	2092.91

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	70
Background Rank Mean	14
H Statistic	2.12131
H Adjusted for Ties	2.12131

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Temperature

Location: GD 6

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	9.8	6
	3/18/2021	17.6	19
	5/5/2021	21	27
	11/23/2021	10.6	7
	1/11/2022	13.4	11
GD 6	3/12/2013	11.9	9
	5/8/2013	19.02	22
	9/23/2013	26.93	35
	12/10/2013	10.64	8
	2/6/2014	6.85	1
	6/26/2014	27.29	37
	9/30/2014	26.78	33
	11/19/2014	9.67	5
	3/23/2015	18.4	21
	4/22/2015	19.8	24
	9/30/2015	25.47	31
	11/19/2015	17.75	20
	3/15/2016	19.98	25
	6/29/2016	31.5	42
	8/9/2016	30.7	40
	12/7/2016	14.3	12
	3/2/2017	14.7	13
	6/21/2017	26.8	34
	8/17/2017	31.2	41
	10/26/2017	15.8	15
	3/27/2018	12.1	10
	6/26/2018	29.6	39
	8/1/2018	22.7	29
	12/11/2018	8.2	2
	4/17/2019	20.5	26
	6/11/2019	23.8	30
	8/28/2019	28.5	38
	10/28/2019	16.4	17
	3/31/2020	16.1	16
	6/10/2020	26.5	32
	9/21/2020	21.4	28
	12/17/2020	9	3
	3/18/2021	17	18
	5/5/2021	19.2	23
	9/2/2021	27.1	36
	11/23/2021	15.6	14
	1/10/2022	9.5	4

ADEM Watermark

The Wilcoxon Statistic is 130
The Expected value is is 92.5
The Standard Deviation is 25.7472
The Z Score is 1.43705
The Standard Deviation adjusted for ties is 25.7472
The Z Score adjusted for ties is 1.43705
1.43705 < 2.326 indicating no statistical significance at 1% level
1.43705 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: TKN

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	42
Total Non-Detects	5 (11.9048%)
Pooled Mean	0.52369
Pooled Std Dev	0.533139
Compliance Meas.	37
Compliance Mean	0.552189
Compliance Std Dev	0.546984
Background Meas.	5
Background Mean	0.3128
Background Std Dev	0.396992

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	2	40	1.564

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	0.3128	0.396992	0	68	13.6

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
GD 6	37	3	8.10811	20.431

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
GD 6	0.552189	0.546984	0.239389	0.254382	835	22.5676

Analysis of Variance Statistics

SS Wells	0.252425
SS Total	11.6537

Kruskal-Wallis Statistics

Non-Detect Rank	3
Background Rank Sum	68
Background Rank Mean	13.6
H Statistic	2.35361
H Adjusted for Ties	2.35743

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: TKN

Location: GD 6

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 5
Non detect rank is 3

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	0.263	9
	3/18/2021	0.331	13
	5/5/2021	ND<0	3
	11/23/2021	ND<0	3
	1/11/2022	0.97	40
GD 6	3/12/2013	0.29	11
	5/8/2013	0.4	20
	9/23/2013	0.36	14
	12/10/2013	0.17	7
	2/6/2014	0.16	6
	6/26/2014	0.42	22
	9/30/2014	0.55	28
	11/19/2014	0.38	18
	3/23/2015	0.26	8
	4/22/2015	0.28	10
	9/30/2015	0.974	41
	11/19/2015	0.768	35
	3/15/2016	0.5	25
	6/29/2016	0.4	21
	8/9/2016	0.621	30
	12/7/2016	0.485	24
	3/2/2017	0.509	26
	6/21/2017	0.926	39
	8/17/2017	0.677	33
	10/26/2017	0.385	19
	3/27/2018	ND<0	3
	6/26/2018	0.782	36
	8/1/2018	0.636	32
	12/11/2018	0.362	15
	4/17/2019	0.624	31
	6/11/2019	0.728	34
	8/28/2019	0.607	29
	10/28/2019	0.467	23
	3/31/2020	ND<0	3
	6/10/2020	0.832	37
	9/21/2020	ND<0	3
	12/17/2020	0.377	17
	3/18/2021	0.364	16
	5/5/2021	0.542	27
	9/2/2021	3.44	42
	11/23/2021	0.305	12
	1/10/2022	0.85	38

ADEM Watermark

The Wilcoxon Statistic is 132
The Expected value is is 92.5
The Standard Deviation is 25.7472
The Z Score is 1.51473
The Standard Deviation adjusted for ties is 25.7263
The Z Score adjusted for ties is 1.51596
1.51473 < 2.326 indicating no statistical significance at 1% level
1.51596 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Total Phosphorus

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	42
Total Non-Detects	30 (71.4286%)
Pooled Mean	0.0835714
Pooled Std Dev	0.276371
Compliance Meas.	37
Compliance Mean	0.0948649
Compliance Std Dev	0.293067
Background Meas.	5
Background Mean	0
Background Std Dev	0

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	5	100	0

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	0	0	0	77.5	15.5

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
GD 6	37	25	67.5676	3.51

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
GD 6	0.0948649	0.293067	0.0948649	0.132473	825.5	22.3108

Analysis of Variance Statistics

SS Wells	0.03964
SS Total	3.13161

Kruskal-Wallis Statistics

Non-Detect Rank	15.5
Background Rank Sum	77.5
Background Rank Mean	15.5
H Statistic	1.35764
H Adjusted for Ties	2.13543

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Total Phosphorus

Location: GD 6

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 30
Non detect rank is 15.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	ND<0	15.5
	3/18/2021	ND<0	15.5
	5/5/2021	ND<0	15.5
	11/23/2021	ND<0	15.5
	1/11/2022	ND<0	15.5
GD 6	3/12/2013	ND<0	15.5
	5/8/2013	ND<0	15.5
	9/23/2013	ND<0	15.5
	12/10/2013	ND<0	15.5
	2/6/2014	ND<0	15.5
	6/26/2014	ND<0	15.5
	9/30/2014	ND<0	15.5
	11/19/2014	0.28	40
	3/23/2015	ND<0	15.5
	4/22/2015	ND<0	15.5
	9/30/2015	0.103	32
	11/19/2015	0.131	36
	3/15/2016	ND<0	15.5
	6/29/2016	ND<0	15.5
	8/9/2016	ND<0	15.5
	12/7/2016	ND<0	15.5
	3/2/2017	ND<0	15.5
	6/21/2017	0.11	33
	8/17/2017	ND<0	15.5
	10/26/2017	ND<0	15.5
	3/27/2018	1.76	42
	6/26/2018	ND<0	15.5
	8/1/2018	0.138	37
	12/11/2018	ND<0	15.5
	4/17/2019	ND<0	15.5
	6/11/2019	ND<0	15.5
	8/28/2019	ND<0	15.5
	10/28/2019	ND<0	15.5
	3/31/2020	0.127	35
	6/10/2020	ND<0	15.5
	9/21/2020	ND<0	15.5
	12/17/2020	ND<0	15.5
	3/18/2021	0.183	39
	5/5/2021	0.124	34
	9/2/2021	0.305	41
	11/23/2021	0.102	31
	1/10/2022	0.147	38

ADEM Watermark

The Wilcoxon Statistic is 122.5
The Expected value is is 92.5
The Standard Deviation is 25.7472
The Z Score is 1.14576
The Standard Deviation adjusted for ties is 20.5295
The Z Score adjusted for ties is 1.43696
1.14576 < 2.326 indicating no statistical significance at 1% level
1.43696 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Total Suspended Solids

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	42
Total Non-Detects	0 (0%)
Pooled Mean	11.7981
Pooled Std Dev	6.19795
Compliance Meas.	37
Compliance Mean	10.9141
Compliance Std Dev	5.64266
Background Meas.	5
Background Mean	18.34
Background Std Dev	6.81674

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	0	0	91.7

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	18.34	6.81674	0	168	33.6

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
GD 6	37	0	0	403.82

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
GD 6	10.9141	5.64266	-7.42595	2.74965	735	19.8649

Analysis of Variance Statistics

SS Wells	242.899
SS Total	1575

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	168
Background Rank Mean	33.6
H Statistic	5.52143
H Adjusted for Ties	5.52143

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Total Suspended Solids

Location: GD 6

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	17.8	36
	3/18/2021	21.6	38
	5/5/2021	27.5	41
	11/23/2021	9.2	19
	1/11/2022	15.6	34
GD 6	3/12/2013	5.8	2
	5/8/2013	8.3	13
	9/23/2013	5.8	3
	12/10/2013	8.6	16
	2/6/2014	5.5	1
	6/26/2014	7	6
	9/30/2014	7	7
	11/19/2014	9.8	22
	3/23/2015	8.2	12
	4/22/2015	8	11
	9/30/2015	12.4	31
	11/19/2015	16	35
	3/15/2016	7.89	10
	6/29/2016	11.2	28
	8/9/2016	10.3	25
	12/7/2016	7.5	9
	3/2/2017	8.96	18
	6/21/2017	21	37
	8/17/2017	13.2	33
	10/26/2017	12	29
	3/27/2018	10.9	27
	6/26/2018	9.57	20
	8/1/2018	21.9	39
	12/11/2018	5.8	4
	4/17/2019	9.6	21
	6/11/2019	12.4	32
	8/28/2019	6.5	5
	10/28/2019	9.9	23
	3/31/2020	8.4	14
	6/10/2020	10.4	26
	9/21/2020	8.6	17
	12/17/2020	7.4	8
	3/18/2021	31.6	42
	5/5/2021	12.3	30
	9/2/2021	25.4	40
	11/23/2021	8.5	15
	1/10/2022	10.2	24

ADEM Watermark

The Wilcoxon Statistic is 32
The Expected value is is 92.5
The Standard Deviation is 25.7472
The Z Score is -2.36919
The Standard Deviation adjusted for ties is 25.7472
The Z Score adjusted for ties is -2.36919
-2.36919 < 2.326 indicating no statistical significance at 1% level
-2.36919 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Turbidity

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	41
Total Non-Detects	2 (4.87805%)
Pooled Mean	15.1976
Pooled Std Dev	13.5416
Compliance Meas.	36
Compliance Mean	14.3714
Compliance Std Dev	13.0907
Background Meas.	5
Background Mean	21.146
Background Std Dev	16.8499

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	0	0	105.73

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	21.146	16.8499	0	143	28.6

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
GD 6	36	2	5.55556	517.37

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
GD 6	14.3714	13.0907	-6.77461	6.45466	718	19.9444

Analysis of Variance Statistics

SS Wells	201.492
SS Total	7334.96

Kruskal-Wallis Statistics

Non-Detect Rank	1.5
Background Rank Sum	143
Background Rank Mean	28.6
H Statistic	2.29206
H Adjusted for Ties	2.29226

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Turbidity

Location: GD 6

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 2
Non detect rank is 1.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	17.7	32
	3/18/2021	2.2	4
	5/5/2021	20.02	36
	11/23/2021	48.51	40
	1/11/2022	17.3	31
GD 6	3/12/2013	10.3	16
	5/8/2013	18.5	35
	9/23/2013	6	6
	12/10/2013	26.4	38
	2/6/2014	15.5	27
	6/26/2014	14.4	25
	9/30/2014	7.07	8
	11/19/2014	13.4	20
	3/23/2015	16.5	30
	4/22/2015	14.9	26
	9/30/2015	14.1	22
	11/19/2015	42.5	39
	3/15/2016	16.1	29
	6/29/2016	10.4	17
	8/9/2016	10.4	18
	12/7/2016	11.5	19
	3/2/2017	14.3	24
	6/21/2017	7.7	10
	8/17/2017	7	7
	10/26/2017	8.3	12
	3/27/2018	10.1	15
	6/26/2018	8	11
	8/1/2018	25.4	37
	12/11/2018	13.8	21
	4/17/2019	9	13
	6/11/2019	17.9	33
	8/28/2019	9.1	14
	10/28/2019	18.4	34
	3/31/2020	16	28
	6/10/2020	7.4	9
	9/21/2020	ND<1	1.5
	12/17/2020	0.5	3
	3/18/2021	75.6	41
	5/5/2021	5.7	5
	11/23/2021	ND<0	1.5
	1/10/2022	14.2	23

The Wilcoxon Statistic is 52

ADEM Watermark

The Expected value is is 90
The Standard Deviation is 25.0998
The Z Score is -1.53388
The Standard Deviation adjusted for ties is 25.0987
The Z Score adjusted for ties is -1.53394
-1.53388 < 2.326 indicating no statistical significance at 1% level
-1.53394 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: DO

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	42
Total Non-Detects	0 (0%)
Pooled Mean	8.36095
Pooled Std Dev	2.50041
Compliance Meas.	37
Compliance Mean	8.15054
Compliance Std Dev	2.55228
Background Meas.	5
Background Mean	9.918
Background Std Dev	1.41999

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	0	0	49.59

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	9.918	1.41999	0	150	30

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
GD 7	37	0	0	301.57

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
GD 7	8.15054	2.55228	-1.76746	1.17336	753	20.3514

Analysis of Variance Statistics

SS Wells	13.7601
SS Total	256.335

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	150
Background Rank Mean	30
H Statistic	2.7247
H Adjusted for Ties	2.7247

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: DO

Location: GD 7

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	10.82	35
	3/18/2021	9.2	25
	5/5/2021	7.81	18
	11/23/2021	10.41	34
	1/11/2022	11.35	38
GD 7	3/12/2013	11.63	39
	5/8/2013	7.46	16
	9/23/2013	6.31	8
	12/10/2013	9.68	28
	2/6/2014	13.32	42
	6/26/2014	7.04	15
	9/30/2014	6.32	9
	11/19/2014	10.1	30
	3/23/2015	8.87	24
	4/22/2015	6.4	11
	9/30/2015	5.18	4
	11/19/2015	8.23	21
	3/15/2016	8.51	23
	6/29/2016	2.22	1
	8/9/2016	4.08	2
	12/7/2016	10.14	31
	3/2/2017	4.57	3
	6/29/2017	6.59	12
	8/16/2017	5.66	7
	10/25/2017	6.93	14
	3/28/2018	9.33	26
	6/29/2018	5.56	6
	8/2/2018	5.51	5
	12/10/2018	11.05	36
	4/15/2019	7.85	19
	6/12/2019	6.68	13
	8/27/2019	9.35	27
	10/29/2019	8.14	20
	3/30/2020	10.38	33
	6/16/2020	8.25	22
	9/21/2020	12.45	40
	12/17/2020	10.21	32
	3/18/2021	9.75	29
	5/5/2021	7.64	17
	9/2/2021	6.38	10
	11/23/2021	11.21	37
	1/11/2022	12.59	41

ADEM Watermark

The Wilcoxon Statistic is 50
The Expected value is is 92.5
The Standard Deviation is 25.7472
The Z Score is -1.67009
The Standard Deviation adjusted for ties is 25.7472
The Z Score adjusted for ties is -1.67009
-1.67009 < 2.326 indicating no statistical significance at 1% level
-1.67009 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Nitrate-nitrite

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	42
Total Non-Detects	18 (42.8571%)
Pooled Mean	0.169381
Pooled Std Dev	0.168397
Compliance Meas.	37
Compliance Mean	0.151108
Compliance Std Dev	0.167116
Background Meas.	5
Background Mean	0.3046
Background Std Dev	0.115639

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	0	0	1.523

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	0.3046	0.115639	0	156	31.2

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
GD 7	37	18	48.6486	5.591

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
GD 7	0.151108	0.167116	-0.153492	0.0775236	747	20.1892

Analysis of Variance Statistics

SS Wells	0.103775
SS Total	1.16266

Kruskal-Wallis Statistics

Non-Detect Rank	9.5
Background Rank Sum	156
Background Rank Mean	31.2
H Statistic	3.54833
H Adjusted for Ties	3.85069

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Nitrate-nitrite

Location: GD 7

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 18
Non detect rank is 9.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	0.387	38
	3/18/2021	0.319	31
	5/5/2021	0.213	24
	11/23/2021	0.164	22
	1/11/2022	0.44	41
GD 7	3/12/2013	0.39	39
	5/8/2013	0.24	26
	9/23/2013	ND<0	9.5
	12/10/2013	0.34	32
	2/6/2014	0.52	42
	6/26/2014	ND<0	9.5
	9/30/2014	ND<0	9.5
	11/19/2014	0.14	21
	3/23/2015	0.27	29
	4/22/2015	0.24	27
	9/30/2015	ND<0	9.5
	11/19/2015	0.344	33
	3/15/2016	0.261	28
	6/29/2016	ND<0	9.5
	8/9/2016	ND<0	9.5
	12/7/2016	ND<0	9.5
	3/2/2017	0.357	35
	6/29/2017	ND<0	9.5
	8/16/2017	ND<0	9.5
	10/25/2017	ND<0	9.5
	3/28/2018	0.35	34
	6/29/2018	ND<0	9.5
	8/2/2018	ND<0	9.5
	12/10/2018	0.378	37
	4/15/2019	0.23	25
	6/12/2019	0.132	20
	8/27/2019	ND<0	9.5
	10/29/2019	ND<0	9.5
	3/30/2020	ND<0	9.5
	6/16/2020	ND<0	9.5
	9/21/2020	ND<0	9.5
	12/17/2020	0.373	36
	3/18/2021	0.312	30
	5/5/2021	ND<0	9.5
	9/2/2021	0.107	19
	11/23/2021	0.197	23
	1/11/2022	0.41	40

ADEM Watermark

The Wilcoxon Statistic is 44
The Expected value is is 92.5
The Standard Deviation is 25.7472
The Z Score is -1.90312
The Standard Deviation adjusted for ties is 24.7157
The Z Score adjusted for ties is -1.98255
-1.90312 < 2.326 indicating no statistical significance at 1% level
-1.98255 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Ortho-phosphate

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	42
Total Non-Detects	34 (80.9524%)
Pooled Mean	0.00880952
Pooled Std Dev	0.0201219
Compliance Meas.	37
Compliance Mean	0.01
Compliance Std Dev	0.021187
Background Meas.	5
Background Mean	0
Background Std Dev	0

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	5	100	0

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	0	0	0	87.5	17.5

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
GD 7	37	29	78.3784	0.37

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
GD 7	0.01	0.021187	0.01	0.009577	815.5	22.0405

Analysis of Variance Statistics

SS Wells	0.000440476
SS Total	0.0166005

Kruskal-Wallis Statistics

Non-Detect Rank	17.5
Background Rank Sum	87.5
Background Rank Mean	17.5
H Statistic	0.603394
H Adjusted for Ties	1.28476

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Ortho-phosphate

Location: GD 7

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 34
Non detect rank is 17.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	ND<0	17.5
	3/18/2021	ND<0	17.5
	5/5/2021	ND<0	17.5
	11/23/2021	ND<0	17.5
	1/11/2022	ND<0	17.5
GD 7	3/12/2013	0.037	38
	5/8/2013	0.063	41
	9/23/2013	0.026	35
	12/10/2013	0.084	42
	2/6/2014	0.034	37
	6/26/2014	ND<0	17.5
	9/30/2014	ND<0	17.5
	11/19/2014	ND<0	17.5
	3/23/2015	ND<0	17.5
	4/22/2015	ND<0	17.5
	9/30/2015	ND<0	17.5
	11/19/2015	0.051	40
	3/15/2016	ND<0	17.5
	6/29/2016	0.048	39
	8/9/2016	ND<0	17.5
	12/7/2016	ND<0	17.5
	3/2/2017	ND<0	17.5
	6/29/2017	ND<0	17.5
	8/16/2017	ND<0	17.5
	10/25/2017	ND<0	17.5
	3/28/2018	ND<0	17.5
	6/29/2018	ND<0	17.5
	8/2/2018	0.027	36
	12/10/2018	ND<0	17.5
	4/15/2019	ND<0	17.5
	6/12/2019	ND<0	17.5
	8/27/2019	ND<0	17.5
	10/29/2019	ND<0	17.5
	3/30/2020	ND<0	17.5
	6/16/2020	ND<0	17.5
	9/21/2020	ND<0	17.5
	12/17/2020	ND<0	17.5
	3/18/2021	ND<0	17.5
	5/5/2021	ND<0	17.5
	9/2/2021	ND<0	17.5
	11/23/2021	ND<0	17.5
	1/11/2022	ND<0	17.5

ADEM Watermark

The Wilcoxon Statistic is 112.5
The Expected value is is 92.5
The Standard Deviation is 25.7472
The Z Score is 0.757365
The Standard Deviation adjusted for ties is 17.6449
The Z Score adjusted for ties is 1.10514
0.757365 < 2.326 indicating no statistical significance at 1% level
1.10514 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: pH

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	42
Total Non-Detects	0 (0%)
Pooled Mean	7.76214
Pooled Std Dev	0.355017
Compliance Meas.	37
Compliance Mean	7.78865
Compliance Std Dev	0.361749
Background Meas.	5
Background Mean	7.566
Background Std Dev	0.243988

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	0	0	37.83

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	7.566	0.243988	0	69	13.8

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
GD 7	37	0	0	288.18

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
GD 7	7.78865	0.361749	0.222649	0.1676	834	22.5405

Analysis of Variance Statistics

SS Wells	0.218355
SS Total	5.16751

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	69
Background Rank Mean	13.8
H Statistic	2.23595
H Adjusted for Ties	2.23595

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: pH

Location: GD 7

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	7.69	15
	3/18/2021	7.25	4
	5/5/2021	7.86	27
	11/23/2021	7.64	14
	1/11/2022	7.39	9
GD 7	3/12/2013	7.98	33
	5/8/2013	7.72	16
	9/23/2013	7.05	1
	12/10/2013	8.02	35
	2/6/2014	7.27	5
	6/26/2014	8.45	40
	9/30/2014	7.87	28
	11/19/2014	8.53	42
	3/23/2015	8.28	39
	4/22/2015	7.99	34
	9/30/2015	7.89	30
	11/19/2015	7.78	22
	3/15/2016	8.46	41
	6/29/2016	7.9	31
	8/9/2016	7.97	32
	12/7/2016	7.88	29
	3/2/2017	7.8	24
	6/29/2017	8.18	38
	8/16/2017	7.84	26
	10/25/2017	7.73	17
	3/28/2018	8.16	37
	6/29/2018	7.79	23
	8/2/2018	7.62	12
	12/10/2018	7.06	2
	4/15/2019	7.83	25
	6/12/2019	7.24	3
	8/27/2019	7.35	6
	10/29/2019	7.77	20
	3/30/2020	7.77	21
	6/16/2020	8.12	36
	9/21/2020	7.42	10
	12/17/2020	7.75	18
	3/18/2021	7.37	7
	5/5/2021	7.59	11
	9/2/2021	7.75	19
	11/23/2021	7.62	13
	1/11/2022	7.38	8

ADEM Watermark

The Wilcoxon Statistic is 131
The Expected value is is 92.5
The Standard Deviation is 25.7472
The Z Score is 1.47589
The Standard Deviation adjusted for ties is 25.7472
The Z Score adjusted for ties is 1.47589
1.47589 < 2.326 indicating no statistical significance at 1% level
1.47589 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Temperature

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	41
Total Non-Detects	0 (0%)
Pooled Mean	18.7861
Pooled Std Dev	7.28042
Compliance Meas.	36
Compliance Mean	19.3842
Compliance Std Dev	7.41471
Background Meas.	5
Background Mean	14.48
Background Std Dev	4.7531

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	0	0	72.4

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	14.48	4.7531	0	71	14.2

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
GD 7	36	0	0	697.83

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
GD 7	19.3842	7.41471	4.90417	3.43018	790	21.9444

Analysis of Variance Statistics

SS Wells	105.589
SS Total	2120.18

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	71
Background Rank Mean	14.2
H Statistic	1.83492
H Adjusted for Ties	1.83492

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Temperature

Location: GD 7

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	9.8	7
	3/18/2021	17.6	19
	5/5/2021	21	25
	11/23/2021	10.6	8
	1/11/2022	13.4	12
GD 7	3/12/2013	15.27	14
	5/8/2013	18.4	21
	9/23/2013	26.5	32
	12/10/2013	7.5	2
	2/6/2014	4.4	1
	9/30/2014	24.39	29
	11/19/2014	9.6	5
	3/23/2015	15.4	15
	4/22/2015	20.2	24
	9/30/2015	24.9	30
	11/19/2015	15.6	17
	3/15/2016	17.8	20
	6/29/2016	30.32	41
	8/9/2016	29.31	40
	12/7/2016	12.39	10
	3/2/2017	13.35	11
	6/29/2017	26.4	31
	8/16/2017	29	38
	10/25/2017	19.8	23
	3/28/2018	14.9	13
	6/29/2018	27.5	36
	8/2/2018	27	33
	12/10/2018	8	3
	4/15/2019	19.2	22
	6/12/2019	27.2	34
	8/27/2019	29.1	39
	10/29/2019	17.2	18
	3/30/2020	21.1	26
	6/16/2020	27.3	35
	9/21/2020	23.7	28
	12/17/2020	9.3	4
	3/18/2021	15.4	16
	5/5/2021	21.4	27
	9/2/2021	27.6	37
	11/23/2021	11.7	9
	1/11/2022	9.7	6

The Wilcoxon Statistic is 124

ADEM Watermark

The Expected value is is 90
The Standard Deviation is 25.0998
The Z Score is 1.33467
The Standard Deviation adjusted for ties is 25.0998
The Z Score adjusted for ties is 1.33467
1.33467 < 2.326 indicating no statistical significance at 1% level
1.33467 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: TKN

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	42
Total Non-Detects	11 (26.1905%)
Pooled Mean	0.335833
Pooled Std Dev	0.236103
Compliance Meas.	37
Compliance Mean	0.338946
Compliance Std Dev	0.214224
Background Meas.	5
Background Mean	0.3128
Background Std Dev	0.396992

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	2	40	1.564

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	0.3128	0.396992	0	83	16.6

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
GD 7	37	9	24.3243	12.541

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
GD 7	0.338946	0.214224	0.0261459	0.113819	820	22.1622

Analysis of Variance Statistics

SS Wells	0.00301114
SS Total	2.28553

Kruskal-Wallis Statistics

Non-Detect Rank	6
Background Rank Sum	83
Background Rank Mean	16.6
H Statistic	0.905468
H Adjusted for Ties	0.921903

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: TKN

Location: GD 7

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 11
Non detect rank is 6

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	0.263	12
	3/18/2021	0.331	17
	5/5/2021	ND<0	6
	11/23/2021	ND<0	6
	1/11/2022	0.97	42
GD 7	3/12/2013	0.31	13
	5/8/2013	ND<0	6
	9/23/2013	0.54	36
	12/10/2013	0.32	14
	2/6/2014	0.61	39
	6/26/2014	0.52	35
	9/30/2014	0.41	25
	11/19/2014	0.46	30
	3/23/2015	0.35	19
	4/22/2015	0.47	31
	9/30/2015	0.59	37
	11/19/2015	ND<0	6
	3/15/2016	0.397	24
	6/29/2016	0.49	33
	8/9/2016	0.471	32
	12/7/2016	0.355	20
	3/2/2017	0.514	34
	6/29/2017	0.44	28
	8/16/2017	0.358	21
	10/25/2017	0.416	27
	3/28/2018	ND<0	6
	6/29/2018	0.625	40
	8/2/2018	0.45	29
	12/10/2018	0.39	23
	4/15/2019	ND<0	6
	6/12/2019	ND<0	6
	8/27/2019	0.604	38
	10/29/2019	0.414	26
	3/30/2020	0.343	18
	6/16/2020	0.322	15
	9/21/2020	ND<0	6
	12/17/2020	ND<0	6
	3/18/2021	0.387	22
	5/5/2021	0.661	41
	9/2/2021	0.324	16
	11/23/2021	ND<0	6
	1/11/2022	ND<0	6

ADEM Watermark

The Wilcoxon Statistic is 117
The Expected value is is 92.5
The Standard Deviation is 25.7472
The Z Score is 0.932141
The Standard Deviation adjusted for ties is 25.5166
The Z Score adjusted for ties is 0.940563
0.932141 < 2.326 indicating no statistical significance at 1% level
0.940563 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Total Phosphorus

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	42
Total Non-Detects	37 (88.0952%)
Pooled Mean	0.015881
Pooled Std Dev	0.0441252
Compliance Meas.	37
Compliance Mean	0.018027
Compliance Std Dev	0.0466658
Background Meas.	5
Background Mean	0
Background Std Dev	0

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	5	100	0

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	0	0	0	95	19

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
GD 7	37	32	86.4865	0.667

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
GD 7	0.018027	0.0466658	0.018027	0.021094	808	21.8378

Analysis of Variance Statistics

SS Wells	0.00143143
SS Total	0.0798284

Kruskal-Wallis Statistics

Non-Detect Rank	19
Background Rank Sum	95
Background Rank Mean	19
H Statistic	0.235701
H Adjusted for Ties	0.744887

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Total Phosphorus

Location: GD 7

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 37
Non detect rank is 19

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	ND<0	19
	3/18/2021	ND<0	19
	5/5/2021	ND<0	19
	11/23/2021	ND<0	19
	1/11/2022	ND<0	19
GD 7	3/12/2013	ND<0	19
	5/8/2013	ND<0	19
	9/23/2013	ND<0	19
	12/10/2013	0.11	38
	2/6/2014	ND<0	19
	6/26/2014	ND<0	19
	9/30/2014	ND<0	19
	11/19/2014	0.13	40
	3/23/2015	ND<0	19
	4/22/2015	ND<0	19
	9/30/2015	ND<0	19
	11/19/2015	ND<0	19
	3/15/2016	ND<0	19
	6/29/2016	ND<0	19
	8/9/2016	ND<0	19
	12/7/2016	ND<0	19
	3/2/2017	ND<0	19
	6/29/2017	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	0.149	41
	4/15/2019	ND<0	19
	6/12/2019	ND<0	19
	8/27/2019	0.156	42
	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	0.122	39
	11/23/2021	ND<0	19
	1/11/2022	ND<0	19

ADEM Watermark

The Wilcoxon Statistic is 105
The Expected value is is 92.5
The Standard Deviation is 25.7472
The Z Score is 0.466071
The Standard Deviation adjusted for ties is 14.4832
The Z Score adjusted for ties is 0.828546
0.466071 < 2.326 indicating no statistical significance at 1% level
0.828546 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Total Suspended Solids

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	42
Total Non-Detects	0 (0%)
Pooled Mean	17.0655
Pooled Std Dev	10.2464
Compliance Meas.	37
Compliance Mean	16.8932
Compliance Std Dev	10.6842
Background Meas.	5
Background Mean	18.34
Background Std Dev	6.81674

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	0	0	91.7

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	18.34	6.81674	0	135	27

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
GD 7	37	0	0	625.05

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
GD 7	16.8932	10.6842	-1.44676	4.93751	768	20.7568

Analysis of Variance Statistics

SS Wells	9.21963
SS Total	4304.57

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	135
Background Rank Mean	27
H Statistic	1.14079
H Adjusted for Ties	1.14079

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Total Suspended Solids

Location: GD 7

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	17.8	29
	3/18/2021	21.6	33
	5/5/2021	27.5	36
	11/23/2021	9.2	10
	1/11/2022	15.6	27
GD 7	3/12/2013	8.8	7
	5/8/2013	20	32
	9/23/2013	9.6	12
	12/10/2013	40	40
	2/6/2014	13	18
	6/26/2014	8.7	6
	9/30/2014	13	19
	11/19/2014	15	24
	3/23/2015	10	14
	4/22/2015	24	35
	9/30/2015	9.1	8
	11/19/2015	34.3	38
	3/15/2016	13.9	21
	6/29/2016	8.6	5
	8/9/2016	5.73	1
	12/7/2016	7.75	3
	3/2/2017	14.4	22
	6/29/2017	13.4	20
	8/16/2017	15.3	26
	10/25/2017	18.4	31
	3/28/2018	9.19	9
	6/29/2018	14.6	23
	8/2/2018	32.1	37
	12/10/2018	48.7	42
	4/15/2019	12	16
	6/12/2019	9.29	11
	8/27/2019	6.3	2
	10/29/2019	17	28
	3/30/2020	12.8	17
	6/16/2020	8.29	4
	9/21/2020	9.6	13
	12/17/2020	18.2	30
	3/18/2021	23	34
	5/5/2021	40.3	41
	9/2/2021	34.4	39
	11/23/2021	11.1	15
	1/11/2022	15.2	25

ADEM Watermark

The Wilcoxon Statistic is 65
The Expected value is is 92.5
The Standard Deviation is 25.7472
The Z Score is -1.0875
The Standard Deviation adjusted for ties is 25.7472
The Z Score adjusted for ties is -1.0875
-1.0875 < 2.326 indicating no statistical significance at 1% level
-1.0875 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Turbidity

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	42
Total Non-Detects	0 (0%)
Pooled Mean	18.309
Pooled Std Dev	12.7893
Compliance Meas.	37
Compliance Mean	17.9257
Compliance Std Dev	12.3882
Background Meas.	5
Background Mean	21.146
Background Std Dev	16.8499

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	0	0	105.73

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	21.146	16.8499	0	127	25.4

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
GD 7	37	0	0	663.25

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
GD 7	17.9257	12.3882	-3.22032	6.1484	776	20.973

Analysis of Variance Statistics

SS Wells	45.6795
SS Total	6706.18

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	127
Background Rank Mean	25.4
H Statistic	0.573602
H Adjusted for Ties	0.573602

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Turbidity

Location: GD 7

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	17.7	27
	3/18/2021	2.2	2
	5/5/2021	20.02	31
	11/23/2021	48.51	42
	1/11/2022	17.3	25
GD 7	3/12/2013	9.7	13
	5/8/2013	26.1	33
	9/23/2013	10.9	17
	12/10/2013	41.9	38
	2/6/2014	28	34
	6/26/2014	6.2	3
	9/30/2014	11.9	18
	11/19/2014	19.6	29
	3/23/2015	13	19
	4/22/2015	28	35
	9/30/2015	8.3	8
	11/19/2015	45	39
	3/15/2016	17.2	24
	6/29/2016	10.7	15
	8/9/2016	6.54	4
	12/7/2016	9.5	12
	3/2/2017	10.82	16
	6/29/2017	9.4	11
	8/16/2017	8.5	9
	10/25/2017	9.9	14
	3/28/2018	7.6	6
	6/29/2018	14.2	22
	8/2/2018	18.5	28
	12/10/2018	40.8	37
	4/15/2019	30.1	36
	6/12/2019	7.4	5
	8/27/2019	45.3	40
	10/29/2019	17.6	26
	3/30/2020	7.8	7
	6/16/2020	9.1	10
	9/21/2020	13.6	21
	12/17/2020	14.4	23
	3/18/2021	1.2	1
	5/5/2021	19.74	30
	9/2/2021	13.57	20
	11/23/2021	25.18	32
	1/11/2022	46	41

ADEM Watermark

The Wilcoxon Statistic is 73
The Expected value is is 92.5
The Standard Deviation is 25.7472
The Z Score is -0.776784
The Standard Deviation adjusted for ties is 25.7472
The Z Score adjusted for ties is -0.776784
-0.776784 < 2.326 indicating no statistical significance at 1% level
-0.776784 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: DO

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	37
Total Non-Detects	0 (0%)
Pooled Mean	7.80432
Pooled Std Dev	2.34086
Compliance Meas.	32
Compliance Mean	7.47406
Compliance Std Dev	2.29566
Background Meas.	5
Background Mean	9.918
Background Std Dev	1.41999

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	0	0	49.59

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	9.918	1.41999	0	144	28.8

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
GD 9	32	0	0	239.17

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
GD 9	7.47406	2.29566	-2.44394	1.06429	559	17.4688

Analysis of Variance Statistics

SS Wells	25.8285
SS Total	197.266

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	144
Background Rank Mean	28.8
H Statistic	4.73882
H Adjusted for Ties	4.73882

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: DO

Location: GD 9

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	10.82	33
	3/18/2021	9.2	27
	5/5/2021	7.81	18
	11/23/2021	10.41	30
	1/11/2022	11.35	36
GD 9	2/6/2014	11.27	35
	6/26/2014	6.08	10
	9/30/2014	6.93	14
	11/19/2014	9.38	28
	3/23/2015	7.58	16
	4/22/2015	5.58	8
	9/30/2015	5.37	5
	3/15/2016	7.66	17
	6/29/2016	1.76	1
	8/9/2016	4.14	2
	12/7/2016	8.01	20
	3/2/2017	4.26	3
	6/29/2017	5.85	9
	8/16/2017	5.52	7
	10/25/2017	6.68	13
	3/28/2018	9.75	29
	6/29/2018	5.45	6
	8/2/2018	5.17	4
	12/10/2018	11.05	34
	4/15/2019	8.09	21
	6/12/2019	8.61	24
	8/27/2019	8.22	22
	10/29/2019	8.91	26
	3/30/2020	8.54	23
	6/16/2020	7.94	19
	9/21/2020	6.41	12
	12/17/2020	10.62	31
	3/18/2021	8.83	25
	5/5/2021	7.08	15
	9/2/2021	6.29	11
	11/23/2021	10.71	32
	1/11/2022	11.43	37

The Wilcoxon Statistic is 31
The Expected value is is 80
The Standard Deviation is 22.5093
The Z Score is -2.1991
The Standard Deviation adjusted for ties is 22.5093

ADEM Watermark

The Z Score adjusted for ties is -2.1991
-2.1991 < 2.326 indicating no statistical significance at 1% level
-2.1991 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Nitrate-nitrite

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	38
Total Non-Detects	15 (39.4737%)
Pooled Mean	0.147237
Pooled Std Dev	0.142596
Compliance Meas.	33
Compliance Mean	0.123394
Compliance Std Dev	0.131848
Background Meas.	5
Background Mean	0.3046
Background Std Dev	0.115639

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	0	0	1.523

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	0.3046	0.115639	0	154	30.8

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
GD 9	33	15	45.4545	4.072

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
GD 9	0.123394	0.131848	-0.181206	0.0624572	587	17.7879

Analysis of Variance Statistics

SS Wells	0.142576
SS Total	0.752349

Kruskal-Wallis Statistics

Non-Detect Rank	8
Background Rank Sum	154
Background Rank Mean	30.8
H Statistic	5.95291
H Adjusted for Ties	6.34149

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Nitrate-nitrite

Location: GD 9

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 15
Non detect rank is 8

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	0.387	36
	3/18/2021	0.319	32
	5/5/2021	0.213	26
	11/23/2021	0.164	22
	1/11/2022	0.44	38
GD 9	2/6/2014	0.4	37
	6/26/2014	ND<0	8
	9/30/2014	ND<0	8
	11/19/2014	0.16	21
	3/23/2015	0.15	19
	4/22/2015	0.15	20
	9/30/2015	ND<0	8
	11/19/2015	0.254	29
	3/15/2016	0.33	33
	6/29/2016	ND<0	8
	8/9/2016	ND<0	8
	12/7/2016	ND<0	8
	3/2/2017	0.269	30
	6/29/2017	ND<0	8
	8/16/2017	ND<0	8
	10/25/2017	ND<0	8
	3/28/2018	0.23	27
	6/29/2018	ND<0	8
	8/2/2018	0.11	16
	12/10/2018	0.292	31
	4/15/2019	0.194	25
	6/12/2019	0.116	18
	8/27/2019	ND<0	8
	10/29/2019	ND<0	8
	3/30/2020	0.243	28
	6/16/2020	ND<0	8
	9/21/2020	ND<0	8
	12/17/2020	0.336	34
	3/18/2021	0.189	24
	5/5/2021	0.176	23
	9/2/2021	ND<0	8
	11/23/2021	0.113	17
	1/11/2022	0.36	35

The Wilcoxon Statistic is 26
The Expected value is is 82.5
The Standard Deviation is 23.1571
The Z Score is -2.46145

ADEM Watermark

The Standard Deviation adjusted for ties is 22.4364
The Z Score adjusted for ties is -2.54052
-2.46145 < 2.326 indicating no statistical significance at 1% level
-2.54052 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Ortho-phosphate

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	38
Total Non-Detects	28 (73.6842%)
Pooled Mean	0.0137632
Pooled Std Dev	0.0261301
Compliance Meas.	33
Compliance Mean	0.0158485
Compliance Std Dev	0.0274842
Background Meas.	5
Background Mean	0
Background Std Dev	0

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	5	100	0

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	0	0	0	72.5	14.5

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
GD 9	33	23	69.697	0.523

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
GD 9	0.0158485	0.0274842	0.0158485	0.0124353	668.5	20.2576

Analysis of Variance Statistics

SS Wells	0.00109063
SS Total	0.0252629

Kruskal-Wallis Statistics

Non-Detect Rank	14.5
Background Rank Sum	72.5
Background Rank Mean	14.5
H Statistic	1.1655
H Adjusted for Ties	1.94194

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Ortho-phosphate

Location: GD 9

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 28
Non detect rank is 14.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	ND<0	14.5
	3/18/2021	ND<0	14.5
	5/5/2021	ND<0	14.5
	11/23/2021	ND<0	14.5
	1/11/2022	ND<0	14.5
GD 9	2/6/2014	0.063	35
	6/26/2014	0.029	30
	9/30/2014	ND<0	14.5
	11/19/2014	0.082	37
	3/23/2015	ND<0	14.5
	4/22/2015	ND<0	14.5
	9/30/2015	ND<0	14.5
	11/19/2015	0.096	38
	3/15/2016	0.044	33
	6/29/2016	ND<0	14.5
	8/9/2016	ND<0	14.5
	12/7/2016	ND<0	14.5
	3/2/2017	ND<0	14.5
	6/29/2017	ND<0	14.5
	8/16/2017	ND<0	14.5
	10/25/2017	0.025	29
	3/28/2018	ND<0	14.5
	6/29/2018	ND<0	14.5
	8/2/2018	0.067	36
	12/10/2018	0.047	34
	4/15/2019	0.034	31
	6/12/2019	ND<0	14.5
	8/27/2019	ND<0	14.5
	10/29/2019	ND<0	14.5
	3/30/2020	ND<0	14.5
	6/16/2020	ND<0	14.5
	9/21/2020	ND<0	14.5
	12/17/2020	ND<0	14.5
	3/18/2021	ND<0	14.5
	5/5/2021	0.036	32
	9/2/2021	ND<0	14.5
	11/23/2021	ND<0	14.5
	1/11/2022	ND<0	14.5

The Wilcoxon Statistic is 107.5
The Expected value is is 82.5
The Standard Deviation is 23.1571
The Z Score is 1.05799

ADEM Watermark

The Standard Deviation adjusted for ties is 17.94
The Z Score adjusted for ties is 1.36566
1.05799 < 2.326 indicating no statistical significance at 1% level
1.36566 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: pH

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	38
Total Non-Detects	0 (0%)
Pooled Mean	7.76684
Pooled Std Dev	0.347634
Compliance Meas.	33
Compliance Mean	7.79727
Compliance Std Dev	0.3536
Background Meas.	5
Background Mean	7.566
Background Std Dev	0.243988

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	0	0	37.83

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	7.566	0.243988	0	67	13.4

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
GD 9	33	0	0	257.31

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
GD 9	7.79727	0.3536	0.231273	0.164679	674	20.4242

Analysis of Variance Statistics

SS Wells	0.232247
SS Total	4.47142

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	67
Background Rank Mean	13.4
H Statistic	1.73473
H Adjusted for Ties	1.73473

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: pH

Location: GD 9

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	7.69	17
	3/18/2021	7.25	4
	5/5/2021	7.86	25
	11/23/2021	7.64	14
	1/11/2022	7.39	7
GD 9	2/6/2014	7.2	1
	6/26/2014	8.22	35
	9/30/2014	8.3	36
	11/19/2014	8.13	30
	3/23/2015	8.16	32
	4/22/2015	7.58	13
	9/30/2015	7.93	27
	11/19/2015	7.67	15
	3/15/2016	8.49	38
	6/29/2016	8.2	33
	8/9/2016	8.07	29
	12/7/2016	7.99	28
	3/2/2017	7.7	18
	6/29/2017	8.37	37
	8/16/2017	7.82	23
	10/25/2017	7.5	9
	3/28/2018	8.21	34
	6/29/2018	7.73	20
	8/2/2018	7.55	11
	12/10/2018	7.9	26
	4/15/2019	7.51	10
	6/12/2019	7.21	2
	8/27/2019	7.81	22
	10/29/2019	7.35	5
	3/30/2020	7.56	12
	6/16/2020	8.15	31
	9/21/2020	7.38	6
	12/17/2020	7.71	19
	3/18/2021	7.24	3
	5/5/2021	7.68	16
	9/2/2021	7.73	21
	11/23/2021	7.84	24
	1/11/2022	7.42	8

The Wilcoxon Statistic is 113
The Expected value is is 82.5
The Standard Deviation is 23.1571
The Z Score is 1.2955

ADEM Watermark

The Standard Deviation adjusted for ties is 23.1571
The Z Score adjusted for ties is 1.2955
1.2955 < 2.326 indicating no statistical significance at 1% level
1.2955 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Temperature

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	37
Total Non-Detects	0 (0%)
Pooled Mean	19.0614
Pooled Std Dev	7.09815
Compliance Meas.	32
Compliance Mean	19.7772
Compliance Std Dev	7.18894
Background Meas.	5
Background Mean	14.48
Background Std Dev	4.7531

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	0	0	72.4

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	14.48	4.7531	0	61	12.2

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
GD 9	32	0	0	632.87

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
GD 9	19.7772	7.18894	5.29719	3.34401	642	20.0625

Analysis of Variance Statistics

SS Wells	121.341
SS Total	1813.82

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	61
Background Rank Mean	12.2
H Statistic	2.28158
H Adjusted for Ties	2.28158

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Temperature

Location: GD 9

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	9.8	5
	3/18/2021	17.6	17
	5/5/2021	21	23
	11/23/2021	10.6	7
	1/11/2022	13.4	9
GD 9	2/6/2014	5.5	1
	9/30/2014	24.61	26
	11/19/2014	9.3	3
	3/23/2015	15.8	13
	4/22/2015	20.7	22
	9/30/2015	25.7	27
	11/19/2015	16.5	15
	3/15/2016	17.3	16
	6/29/2016	29.77	37
	8/9/2016	29	35
	12/7/2016	11.99	8
	3/2/2017	13.6	10
	6/29/2017	26.4	29
	8/16/2017	29.6	36
	10/25/2017	18.9	20
	3/28/2018	15.8	14
	6/29/2018	27.6	32
	8/2/2018	26	28
	12/10/2018	7.9	2
	4/15/2019	20	21
	6/12/2019	27	30
	8/27/2019	28.8	34
	10/29/2019	17.9	18
	3/30/2020	18.4	19
	6/16/2020	27.1	31
	9/21/2020	23.3	25
	12/17/2020	9.7	4
	3/18/2021	15.5	12
	5/5/2021	21	24
	9/2/2021	27.9	33
	11/23/2021	13.9	11
	1/11/2022	10.4	6

The Wilcoxon Statistic is 114
The Expected value is is 80
The Standard Deviation is 22.5093
The Z Score is 1.48828
The Standard Deviation adjusted for ties is 22.5093

ADEM Watermark

The Z Score adjusted for ties is 1.48828
1.48828 < 2.326 indicating no statistical significance at 1% level
1.48828 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: TKN

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	38
Total Non-Detects	10 (26.3158%)
Pooled Mean	0.380079
Pooled Std Dev	0.2752
Compliance Meas.	33
Compliance Mean	0.390273
Compliance Std Dev	0.258947
Background Meas.	5
Background Mean	0.3128
Background Std Dev	0.396992

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	2	40	1.564

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	0.3128	0.396992	0	76	15.2

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
GD 9	33	8	24.2424	12.879

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
GD 9	0.390273	0.258947	0.0774727	0.133266	665	20.1515

Analysis of Variance Statistics

SS Wells	0.0260614
SS Total	2.80219

Kruskal-Wallis Statistics

Non-Detect Rank	5.5
Background Rank Sum	76
Background Rank Mean	15.2
H Statistic	0.862005
H Adjusted for Ties	0.877854

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: TKN

Location: GD 9

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 10
Non detect rank is 5.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	0.263	12
	3/18/2021	0.331	15
	5/5/2021	ND<0	5.5
	11/23/2021	ND<0	5.5
	1/11/2022	0.97	38
GD 9	2/6/2014	0.6	28
	6/26/2014	0.41	21
	9/30/2014	0.3	13
	11/19/2014	0.74	36
	3/23/2015	0.64	30
	4/22/2015	0.65	32
	9/30/2015	0.64	31
	11/19/2015	ND<0	5.5
	3/15/2016	ND<0	5.5
	6/29/2016	0.65	33
	8/9/2016	0.468	23
	12/7/2016	0.378	18
	3/2/2017	0.673	34
	6/29/2017	0.722	35
	8/16/2017	0.384	19
	10/25/2017	0.375	17
	3/28/2018	ND<0	5.5
	6/29/2018	0.507	25
	8/2/2018	0.6	29
	12/10/2018	0.442	22
	4/15/2019	ND<0	5.5
	6/12/2019	ND<0	5.5
	8/27/2019	0.385	20
	10/29/2019	0.491	24
	3/30/2020	ND<0	5.5
	6/16/2020	0.352	16
	9/21/2020	ND<0	5.5
	12/17/2020	0.261	11
	3/18/2021	0.576	27
	5/5/2021	0.564	26
	9/2/2021	0.311	14
	11/23/2021	ND<0	5.5
	1/11/2022	0.76	37

The Wilcoxon Statistic is 104
The Expected value is is 82.5
The Standard Deviation is 23.1571
The Z Score is 0.90685

ADEM Watermark

The Standard Deviation adjusted for ties is 22.9471
The Z Score adjusted for ties is 0.915149
0.90685 < 2.326 indicating no statistical significance at 1% level
0.915149 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Total Phosphorus

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	38
Total Non-Detects	29 (76.3158%)
Pooled Mean	0.0360789
Pooled Std Dev	0.0703391
Compliance Meas.	33
Compliance Mean	0.0415455
Compliance Std Dev	0.0740705
Background Meas.	5
Background Mean	0
Background Std Dev	0

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	5	100	0

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	0	0	0	75	15

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
GD 9	33	24	72.7273	1.371

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
GD 9	0.0415455	0.0740705	0.0415455	0.0335134	666	20.1818

Analysis of Variance Statistics

SS Wells	0.00749458
SS Total	0.183061

Kruskal-Wallis Statistics

Non-Detect Rank	15
Background Rank Sum	75
Background Rank Mean	15
H Statistic	0.944056
H Adjusted for Ties	1.69871

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Total Phosphorus

Location: GD 9

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 29
Non detect rank is 15

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	ND<0	15
	3/18/2021	ND<0	15
	5/5/2021	ND<0	15
	11/23/2021	ND<0	15
	1/11/2022	ND<0	15
GD 9	2/6/2014	0.12	31
	6/26/2014	0.12	32
	9/30/2014	ND<0	15
	11/19/2014	0.25	38
	3/23/2015	ND<0	15
	4/22/2015	ND<0	15
	9/30/2015	ND<0	15
	11/19/2015	0.116	30
	3/15/2016	ND<0	15
	6/29/2016	ND<0	15
	8/9/2016	ND<0	15
	12/7/2016	0.13	35
	3/2/2017	ND<0	15
	6/29/2017	ND<0	15
	8/16/2017	ND<0	15
	10/25/2017	ND<0	15
	3/28/2018	ND<0	15
	6/29/2018	ND<0	15
	8/2/2018	ND<0	15
	12/10/2018	0.244	37
	4/15/2019	ND<0	15
	6/12/2019	ND<0	15
	8/27/2019	0.146	36
	10/29/2019	ND<0	15
	3/30/2020	0.121	33
	6/16/2020	ND<0	15
	9/21/2020	ND<0	15
	12/17/2020	ND<0	15
	3/18/2021	ND<0	15
	5/5/2021	ND<0	15
	9/2/2021	ND<0	15
	11/23/2021	0.124	34
	1/11/2022	ND<0	15

The Wilcoxon Statistic is 105
The Expected value is is 82.5
The Standard Deviation is 23.1571
The Z Score is 0.950034

ADEM Watermark

The Standard Deviation adjusted for ties is 17.2633
The Z Score adjusted for ties is 1.27438
0.950034 < 2.326 indicating no statistical significance at 1% level
1.27438 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Total Suspended Solids

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	38
Total Non-Detects	0 (0%)
Pooled Mean	23.7589
Pooled Std Dev	27.951
Compliance Meas.	33
Compliance Mean	24.58
Compliance Std Dev	29.8704
Background Meas.	5
Background Mean	18.34
Background Std Dev	6.81674

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	0	0	91.7

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	18.34	6.81674	0	99	19.8

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
GD 9	33	0	0	811.14

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
GD 9	24.58	29.8704	6.24	13.5589	642	19.4545

Analysis of Variance Statistics

SS Wells	169.071
SS Total	28906.6

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	99
Background Rank Mean	19.8
H Statistic	0.0041958
H Adjusted for Ties	0.0041958

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Total Suspended Solids

Location: GD 9

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	17.8	22
	3/18/2021	21.6	27
	5/5/2021	27.5	30
	11/23/2021	9.2	2
	1/11/2022	15.6	18
GD 9	2/6/2014	14	13
	6/26/2014	34	35
	9/30/2014	15	15
	11/19/2014	15	16
	3/23/2015	18	23
	4/22/2015	14	14
	9/30/2015	10.8	5
	11/19/2015	16.7	21
	3/15/2016	12.1	8
	6/29/2016	67.2	37
	8/9/2016	9.44	4
	12/7/2016	38.3	36
	3/2/2017	11.2	6
	6/29/2017	15.7	19
	8/16/2017	18.2	24
	10/25/2017	29.7	33
	3/28/2018	12.4	9
	6/29/2018	13.9	12
	8/2/2018	20.8	26
	12/10/2018	22.8	28
	4/15/2019	178	38
	6/12/2019	29	31
	8/27/2019	9.3	3
	10/29/2019	15	17
	3/30/2020	16.4	20
	6/16/2020	11.5	7
	9/21/2020	9	1
	12/17/2020	13.1	10
	3/18/2021	18.6	25
	5/5/2021	29	32
	9/2/2021	25.8	29
	11/23/2021	33.9	34
	1/11/2022	13.3	11

The Wilcoxon Statistic is 81
The Expected value is is 82.5
The Standard Deviation is 23.1571
The Z Score is -0.0863667

ADEM Watermark

The Standard Deviation adjusted for ties is 23.1571
The Z Score adjusted for ties is -0.0863667
-0.0863667 < 2.326 indicating no statistical significance at 1% level
-0.0863667 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Turbidity

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	38
Total Non-Detects	0 (0%)
Pooled Mean	33.0529
Pooled Std Dev	53.3783
Compliance Meas.	33
Compliance Mean	34.857
Compliance Std Dev	56.8634
Background Meas.	5
Background Mean	21.146
Background Std Dev	16.8499

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	0	0	105.73

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	21.146	16.8499	0	97	19.4

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
GD 9	33	0	0	1150.28

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
GD 9	34.857	56.8634	13.711	25.8688	644	19.5152

Analysis of Variance Statistics

SS Wells	816.275
SS Total	105422

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	97
Background Rank Mean	19.4
H Statistic	0.0004662
H Adjusted for Ties	0.0004662

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Turbidity

Location: GD 9

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	17.7	19
	3/18/2021	2.2	2
	5/5/2021	20.02	23
	11/23/2021	48.51	35
	1/11/2022	17.3	18
GD 9	2/6/2014	33.6	30
	6/26/2014	45	34
	9/30/2014	12.4	13
	11/19/2014	22.8	25
	3/23/2015	25	27
	4/22/2015	18	20
	9/30/2015	9.6	4
	11/19/2015	40	32
	3/15/2016	14.8	16
	6/29/2016	43.7	33
	8/9/2016	11	7
	12/7/2016	26	28
	3/2/2017	10.72	6
	6/29/2017	15.8	17
	8/16/2017	11.3	9
	10/25/2017	18.9	22
	3/28/2018	10.2	5
	6/29/2018	11	8
	8/2/2018	13	14
	12/10/2018	26.4	29
	4/15/2019	221.5	37
	6/12/2019	7.3	3
	8/27/2019	76.5	36
	10/29/2019	22.3	24
	3/30/2020	18.3	21
	6/16/2020	11.4	10
	9/21/2020	11.6	11
	12/17/2020	12.33	12
	3/18/2021	1.7	1
	5/5/2021	23.76	26
	9/2/2021	13.46	15
	11/23/2021	39.41	31
	1/11/2022	271.5	38

The Wilcoxon Statistic is 83
The Expected value is is 82.5
The Standard Deviation is 23.1571
The Z Score is 0

ADEM Watermark

The Standard Deviation adjusted for ties is 23.1571
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

ADEM Watermark

Basic Statistics

Parameter: DO

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	42
Total Non-Detects	0 (0%)
Pooled Mean	8.79167
Pooled Std Dev	3.34868
Compliance Meas.	37
Compliance Mean	8.63946
Compliance Std Dev	3.51384
Background Meas.	5
Background Mean	9.918
Background Std Dev	1.41999

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	0	0	49.59

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	9.918	1.41999	0	138	27.6

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
GD 12	37	0	0	319.66

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
GD 12	8.63946	3.51384	-1.27854	1.60268	765	20.6757

Analysis of Variance Statistics

SS Wells	7.20031
SS Total	459.76

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	138
Background Rank Mean	27.6
H Statistic	1.40327
H Adjusted for Ties	1.40327

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: DO

Location: GD 12

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	10.82	31
	3/18/2021	9.2	21
	5/5/2021	7.81	19
	11/23/2021	10.41	30
	1/11/2022	11.35	37
GD 12	3/12/2013	10.93	32
	5/8/2013	2.35	1
	9/23/2013	3.94	3
	12/10/2013	10.09	28
	2/6/2014	16.99	41
	6/26/2014	9.4	24
	9/30/2014	5.77	7
	11/19/2014	5.93	9
	3/23/2015	9.56	26
	4/22/2015	11.04	33
	9/30/2015	11.07	34
	11/19/2015	19.14	42
	3/15/2016	13.14	40
	6/29/2016	7.68	18
	8/9/2016	4.39	5
	12/7/2016	6.65	11
	3/2/2017	10.12	29
	6/21/2017	5.12	6
	8/17/2017	5.8	8
	10/26/2017	7.53	16
	3/27/2018	9.24	23
	6/26/2018	4.35	4
	8/1/2018	7.33	14
	12/11/2018	11.46	38
	4/17/2019	9.2	22
	6/11/2019	3.25	2
	8/28/2019	7.61	17
	10/28/2019	6.65	12
	3/31/2020	9.44	25
	6/10/2020	6.44	10
	9/21/2020	7.15	13
	12/17/2020	11.1	35
	3/18/2021	10.04	27
	5/5/2021	8.97	20
	9/2/2021	7.34	15
	11/23/2021	11.27	36
	1/10/2022	12.18	39

ADEM Watermark

The Wilcoxon Statistic is 62
The Expected value is is 92.5
The Standard Deviation is 25.7472
The Z Score is -1.20402
The Standard Deviation adjusted for ties is 25.7472
The Z Score adjusted for ties is -1.20402
-1.20402 < 2.326 indicating no statistical significance at 1% level
-1.20402 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Nitrate-nitrite

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	42
Total Non-Detects	10 (23.8095%)
Pooled Mean	0.344881
Pooled Std Dev	1.09984
Compliance Meas.	37
Compliance Mean	0.350324
Compliance Std Dev	1.17299
Background Meas.	5
Background Mean	0.3046
Background Std Dev	0.115639

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	0	0	1.523

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	0.3046	0.115639	0	158	31.6

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
GD 12	37	10	27.027	12.962

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
GD 12	0.350324	1.17299	0.0457243	0.530503	745	20.1351

Analysis of Variance Statistics

SS Wells	0.0092091
SS Total	49.5952

Kruskal-Wallis Statistics

Non-Detect Rank	5.5
Background Rank Sum	158
Background Rank Mean	31.6
H Statistic	3.84701
H Adjusted for Ties	3.89915

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Nitrate-nitrite

Location: GD 12

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 10
Non detect rank is 5.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	0.387	40
	3/18/2021	0.319	38
	5/5/2021	0.213	22
	11/23/2021	0.164	17
	1/11/2022	0.44	41
GD 12	3/12/2013	0.25	29
	5/8/2013	0.21	21
	9/23/2013	ND<0	5.5
	12/10/2013	0.22	23
	2/6/2014	0.31	36
	6/26/2014	0.11	14
	9/30/2014	ND<0	5.5
	11/19/2014	0.28	34
	3/23/2015	0.24	27
	4/22/2015	0.25	30
	9/30/2015	ND<0	5.5
	11/19/2015	0.281	35
	3/15/2016	0.254	31
	6/29/2016	ND<0	5.5
	8/9/2016	ND<0	5.5
	12/7/2016	0.142	15
	3/2/2017	0.223	24
	6/21/2017	ND<0	5.5
	8/17/2017	ND<0	5.5
	10/26/2017	0.19	19
	3/27/2018	0.356	39
	6/26/2018	0.102	11
	8/1/2018	0.108	13
	12/11/2018	0.313	37
	4/17/2019	0.257	32
	6/11/2019	0.223	25
	8/28/2019	ND<0	5.5
	10/28/2019	0.197	20
	3/31/2020	0.177	18
	6/10/2020	ND<0	5.5
	9/21/2020	0.103	12
	12/17/2020	0.268	33
	3/18/2021	0.163	16
	5/5/2021	7.26	42
	9/2/2021	0.245	28
	11/23/2021	ND<0	5.5
	1/10/2022	0.23	26

ADEM Watermark

The Wilcoxon Statistic is 42
The Expected value is is 92.5
The Standard Deviation is 25.7472
The Z Score is -1.9808
The Standard Deviation adjusted for ties is 25.5745
The Z Score adjusted for ties is -1.99418
-1.9808 < 2.326 indicating no statistical significance at 1% level
-1.99418 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Ortho-phosphate

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	41
Total Non-Detects	30 (73.1707%)
Pooled Mean	0.0146829
Pooled Std Dev	0.0313133
Compliance Meas.	36
Compliance Mean	0.0167222
Compliance Std Dev	0.0329472
Background Meas.	5
Background Mean	0
Background Std Dev	0

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	5	100	0

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	0	0	0	77.5	15.5

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
GD 12	36	25	69.4444	0.602

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
GD 12	0.0167222	0.0329472	0.0167222	0.0148962	783.5	21.7639

Analysis of Variance Statistics

SS Wells	0.00122766
SS Total	0.0392209

Kruskal-Wallis Statistics

Non-Detect Rank	15.5
Background Rank Sum	77.5
Background Rank Mean	15.5
H Statistic	1.2004
H Adjusted for Ties	1.97288

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Ortho-phosphate

Location: GD 12

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 30
Non detect rank is 15.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	ND<0	15.5
	3/18/2021	ND<0	15.5
	5/5/2021	ND<0	15.5
	11/23/2021	ND<0	15.5
	1/11/2022	ND<0	15.5
GD 12	3/12/2013	0.03	32
	5/8/2013	0.03	33
	9/23/2013	0.026	31
	12/10/2013	0.079	40
	2/6/2014	ND<0	15.5
	6/26/2014	0.035	35
	9/30/2014	ND<0	15.5
	11/19/2014	ND<0	15.5
	3/23/2015	ND<0	15.5
	4/22/2015	ND<0	15.5
	9/30/2015	ND<0	15.5
	3/15/2016	0.032	34
	6/29/2016	0.036	36
	8/9/2016	ND<0	15.5
	12/7/2016	ND<0	15.5
	3/2/2017	ND<0	15.5
	6/21/2017	ND<0	15.5
	8/17/2017	ND<0	15.5
	10/26/2017	ND<0	15.5
	3/27/2018	ND<0	15.5
	6/26/2018	ND<0	15.5
	8/1/2018	0.159	41
	12/11/2018	ND<0	15.5
	4/17/2019	ND<0	15.5
	6/11/2019	0.066	39
	8/28/2019	ND<0	15.5
	10/28/2019	0.044	37
	3/31/2020	0.065	38
	6/10/2020	ND<0	15.5
	9/21/2020	ND<0	15.5
	12/17/2020	ND<0	15.5
	3/18/2021	ND<0	15.5
	5/5/2021	ND<0	15.5
	9/2/2021	ND<0	15.5
	11/23/2021	ND<0	15.5
	1/10/2022	ND<0	15.5

The Wilcoxon Statistic is 117.5

ADEM Watermark

The Expected value is is 90
The Standard Deviation is 25.0998
The Z Score is 1.07571
The Standard Deviation adjusted for ties is 19.5786
The Z Score adjusted for ties is 1.37905
1.07571 < 2.326 indicating no statistical significance at 1% level
1.37905 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: pH

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	41
Total Non-Detects	0 (0%)
Pooled Mean	7.2622
Pooled Std Dev	0.763402
Compliance Meas.	36
Compliance Mean	7.22
Compliance Std Dev	0.802631
Background Meas.	5
Background Mean	7.566
Background Std Dev	0.243988

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	0	0	37.83

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	7.566	0.243988	0	129	25.8

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
GD 12	36	0	0	259.92

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
GD 12	7.22	0.802631	-0.346	0.3648	732	20.3333

Analysis of Variance Statistics

SS Wells	0.525582
SS Total	23.3113

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	129
Background Rank Mean	25.8
H Statistic	0.914286
H Adjusted for Ties	0.914286

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: pH

Location: GD 12

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	7.69	30
	3/18/2021	7.25	16
	5/5/2021	7.86	36
	11/23/2021	7.64	28
	1/11/2022	7.39	19
GD 12	3/12/2013	7.41	20
	5/8/2013	6.73	7
	9/23/2013	6.76	9
	12/10/2013	6.15	3
	2/6/2014	4.17	1
	6/26/2014	8.38	41
	9/30/2014	7.68	29
	11/19/2014	6.95	10
	3/23/2015	7.8	33
	4/22/2015	7.45	24
	9/30/2015	7.3	18
	11/19/2015	7.07	12
	3/15/2016	7.43	21
	6/29/2016	8.22	40
	8/9/2016	7.57	27
	12/7/2016	7.18	13
	3/2/2017	7.79	32
	6/21/2017	7.43	22
	8/17/2017	8.13	39
	10/26/2017	6.74	8
	3/27/2018	7.71	31
	6/26/2018	7.44	23
	8/1/2018	7.05	11
	12/11/2018	6.68	5
	4/17/2019	7.45	25
	6/11/2019	7.2	15
	8/28/2019	7.83	35
	10/28/2019	5.34	2
	3/31/2020	6.71	6
	6/10/2020	6.46	4
	9/21/2020	7.18	14
	12/17/2020	8.03	38
	3/18/2021	7.92	37
	5/5/2021	7.49	26
	11/23/2021	7.8	34
	1/10/2022	7.29	17

The Wilcoxon Statistic is 66

ADEM Watermark

The Expected value is is 90
The Standard Deviation is 25.0998
The Z Score is -0.976103
The Standard Deviation adjusted for ties is 25.0998
The Z Score adjusted for ties is -0.976103
-0.976103 < 2.326 indicating no statistical significance at 1% level
-0.976103 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Temperature

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	42
Total Non-Detects	0 (0%)
Pooled Mean	17.7026
Pooled Std Dev	7.03499
Compliance Meas.	37
Compliance Mean	18.1381
Compliance Std Dev	7.22615
Background Meas.	5
Background Mean	14.48
Background Std Dev	4.7531

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	0	0	72.4

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	14.48	4.7531	0	80	16

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
GD 12	37	0	0	671.11

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
GD 12	18.1381	7.22615	3.65811	3.34397	823	22.2432

Analysis of Variance Statistics

SS Wells	58.9434
SS Total	2029.13

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	80
Background Rank Mean	16
H Statistic	1.14079
H Adjusted for Ties	1.14079

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Temperature

Location: GD 12

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	9.8	6
	3/18/2021	17.6	24
	5/5/2021	21	28
	11/23/2021	10.6	8
	1/11/2022	13.4	14
GD 12	3/12/2013	13.43	15
	5/8/2013	16.53	20
	9/23/2013	26.07	36
	12/10/2013	10.18	7
	2/6/2014	5.76	1
	6/26/2014	26.72	38
	9/30/2014	24.68	34
	11/19/2014	5.85	2
	3/23/2015	16.8	21
	4/22/2015	19.8	26
	9/30/2015	24.67	33
	11/19/2015	14.68	17
	3/15/2016	16.05	19
	6/29/2016	31.2	42
	8/9/2016	27.6	39
	12/7/2016	11.4	9
	3/2/2017	11.7	11
	6/21/2017	24.3	31
	8/17/2017	29.9	41
	10/26/2017	13.2	13
	3/27/2018	11.5	10
	6/26/2018	26.1	37
	8/1/2018	22.7	30
	12/11/2018	7.8	3
	4/17/2019	17.5	23
	6/11/2019	21.99	29
	8/28/2019	28.2	40
	10/28/2019	14.7	18
	3/31/2020	14.5	16
	6/10/2020	25.8	35
	9/21/2020	19.9	27
	12/17/2020	8.5	4
	3/18/2021	17.1	22
	5/5/2021	18.9	25
	9/2/2021	24.4	32
	11/23/2021	12.5	12
	1/10/2022	8.5	5

ADEM Watermark

The Wilcoxon Statistic is 120
The Expected value is is 92.5
The Standard Deviation is 25.7472
The Z Score is 1.04866
The Standard Deviation adjusted for ties is 25.7472
The Z Score adjusted for ties is 1.04866
1.04866 < 2.326 indicating no statistical significance at 1% level
1.04866 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: TKN

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	42
Total Non-Detects	6 (14.2857%)
Pooled Mean	0.48181
Pooled Std Dev	0.285798
Compliance Meas.	37
Compliance Mean	0.504649
Compliance Std Dev	0.266477
Background Meas.	5
Background Mean	0.3128
Background Std Dev	0.396992

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	2	40	1.564

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	0.3128	0.396992	0	66	13.2

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
GD 12	37	4	10.8108	18.672

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
GD 12	0.504649	0.266477	0.191849	0.134488	837	22.6216

Analysis of Variance Statistics

SS Wells	0.162121
SS Total	3.3489

Kruskal-Wallis Statistics

Non-Detect Rank	3.5
Background Rank Sum	66
Background Rank Mean	13.2
H Statistic	2.59799
H Adjusted for Ties	2.60538

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: TKN

Location: GD 12

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 6
Non detect rank is 3.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	0.263	7
	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	40
GD 12	3/12/2013	0.54	24
	5/8/2013	0.4	17
	9/23/2013	0.48	22
	12/10/2013	0.45	21
	2/6/2014	0.28	9
	6/26/2014	0.62	31
	9/30/2014	0.39	15
	11/19/2014	0.39	16
	3/23/2015	0.59	28
	4/22/2015	0.43	18
	9/30/2015	0.695	34
	11/19/2015	0.769	36
	3/15/2016	0.434	19
	6/29/2016	0.38	13
	8/9/2016	0.629	33
	12/7/2016	0.599	29
	3/2/2017	0.583	26
	6/21/2017	0.77	37
	8/17/2017	0.583	27
	10/26/2017	0.312	10
	3/27/2018	ND<0	3.5
	6/26/2018	0.528	23
	8/1/2018	1.23	42
	12/11/2018	0.574	25
	4/17/2019	0.272	8
	6/11/2019	0.82	39
	8/28/2019	0.764	35
	10/28/2019	0.387	14
	3/31/2020	1	41
	6/10/2020	0.438	20
	9/21/2020	ND<0	3.5
	12/17/2020	ND<0	3.5
	3/18/2021	0.621	32
	5/5/2021	0.61	30
	9/2/2021	0.779	38
	11/23/2021	ND<0	3.5
	1/10/2022	0.325	11

ADEM Watermark

The Wilcoxon Statistic is 134
The Expected value is is 92.5
The Standard Deviation is 25.7472
The Z Score is 1.59241
The Standard Deviation adjusted for ties is 25.7106
The Z Score adjusted for ties is 1.59467
1.59241 < 2.326 indicating no statistical significance at 1% level
1.59467 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Total Phosphorus

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	42
Total Non-Detects	33 (78.5714%)
Pooled Mean	0.0310952
Pooled Std Dev	0.0652174
Compliance Meas.	37
Compliance Mean	0.0352973
Compliance Std Dev	0.0684953
Background Meas.	5
Background Mean	0
Background Std Dev	0

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	5	100	0

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	0	0	0	85	17

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
GD 12	37	28	75.6757	1.306

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
GD 12	0.0352973	0.0684953	0.0352973	0.0309614	818	22.1081

Analysis of Variance Statistics

SS Wells	0.00548789
SS Total	0.174386

Kruskal-Wallis Statistics

Non-Detect Rank	17
Background Rank Sum	85
Background Rank Mean	17
H Statistic	0.763671
H Adjusted for Ties	1.48253

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Total Phosphorus

Location: GD 12

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 33
Non detect rank is 17

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	ND<0	17
	3/18/2021	ND<0	17
	5/5/2021	ND<0	17
	11/23/2021	ND<0	17
	1/11/2022	ND<0	17
GD 12	3/12/2013	ND<0	17
	5/8/2013	ND<0	17
	9/23/2013	ND<0	17
	12/10/2013	0.11	35
	2/6/2014	ND<0	17
	6/26/2014	0.12	37
	9/30/2014	ND<0	17
	11/19/2014	0.13	39
	3/23/2015	ND<0	17
	4/22/2015	ND<0	17
	9/30/2015	ND<0	17
	11/19/2015	0.15	40
	3/15/2016	ND<0	17
	6/29/2016	ND<0	17
	8/9/2016	ND<0	17
	12/7/2016	ND<0	17
	3/2/2017	0.119	36
	6/21/2017	ND<0	17
	8/17/2017	ND<0	17
	10/26/2017	ND<0	17
	3/27/2018	ND<0	17
	6/26/2018	ND<0	17
	8/1/2018	0.286	42
	12/11/2018	ND<0	17
	4/17/2019	ND<0	17
	6/11/2019	0.121	38
	8/28/2019	0.103	34
	10/28/2019	ND<0	17
	3/31/2020	0.167	41
	6/10/2020	ND<0	17
	9/21/2020	ND<0	17
	12/17/2020	ND<0	17
	3/18/2021	ND<0	17
	5/5/2021	ND<0	17
	9/2/2021	ND<0	17
	11/23/2021	ND<0	17
	1/10/2022	ND<0	17

ADEM Watermark

The Wilcoxon Statistic is 115
The Expected value is is 92.5
The Standard Deviation is 25.7472
The Z Score is 0.854463
The Standard Deviation adjusted for ties is 18.4791
The Z Score adjusted for ties is 1.19054
0.854463 < 2.326 indicating no statistical significance at 1% level
1.19054 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Total Suspended Solids

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	42
Total Non-Detects	0 (0%)
Pooled Mean	14.309
Pooled Std Dev	21.9563
Compliance Meas.	37
Compliance Mean	13.7643
Compliance Std Dev	23.2661
Background Meas.	5
Background Mean	18.34
Background Std Dev	6.81674

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	0	0	91.7

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	18.34	6.81674	0	169	33.8

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
GD 12	37	0	0	509.28

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
GD 12	13.7643	23.2661	-4.57568	10.5668	734	19.8378

Analysis of Variance Statistics

SS Wells	92.2217
SS Total	19765.3

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	169
Background Rank Mean	33.8
H Statistic	5.70547
H Adjusted for Ties	5.70547

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Total Suspended Solids

Location: GD 12

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	17.8	37
	3/18/2021	21.6	38
	5/5/2021	27.5	39
	11/23/2021	9.2	22
	1/11/2022	15.6	33
GD 12	3/12/2013	3.9	5
	5/8/2013	7.5	15
	9/23/2013	9	21
	12/10/2013	5.9	12
	2/6/2014	3.9	6
	6/26/2014	32	40
	9/30/2014	11	24
	11/19/2014	6.6	14
	3/23/2015	8.1	18
	4/22/2015	14	32
	9/30/2015	8.46	20
	11/19/2015	12	26
	3/15/2016	4.6	11
	6/29/2016	12	27
	8/9/2016	13.3	30
	12/7/2016	4	8
	3/2/2017	6.1	13
	6/21/2017	16.8	35
	8/17/2017	13.3	31
	10/26/2017	7.79	17
	3/27/2018	4.2	9
	6/26/2018	13.2	29
	8/1/2018	43.8	41
	12/11/2018	4.3	10
	4/17/2019	3.96	7
	6/11/2019	8.17	19
	8/28/2019	9.4	23
	10/28/2019	12.3	28
	3/31/2020	143	42
	6/10/2020	11.4	25
	9/21/2020	7.6	16
	12/17/2020	3.7	3
	3/18/2021	17.6	36
	5/5/2021	16.4	34
	9/2/2021	3.5	2
	11/23/2021	2.8	1
	1/10/2022	3.7	4

ADEM Watermark

The Wilcoxon Statistic is 31
The Expected value is is 92.5
The Standard Deviation is 25.7472
The Z Score is -2.40803
The Standard Deviation adjusted for ties is 25.7472
The Z Score adjusted for ties is -2.40803
-2.40803 < 2.326 indicating no statistical significance at 1% level
-2.40803 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Turbidity

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	41
Total Non-Detects	2 (4.87805%)
Pooled Mean	16.3705
Pooled Std Dev	13.8083
Compliance Meas.	36
Compliance Mean	15.7072
Compliance Std Dev	13.4814
Background Meas.	5
Background Mean	21.146
Background Std Dev	16.8499

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	0	0	105.73

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	21.146	16.8499	0	134	26.8

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
GD 12	36	2	5.55556	565.46

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
GD 12	15.7072	13.4814	-5.43878	6.61704	727	20.1944

Analysis of Variance Statistics

SS Wells	129.865
SS Total	7626.75

Kruskal-Wallis Statistics

Non-Detect Rank	1.5
Background Rank Sum	134
Background Rank Mean	26.8
H Statistic	1.33492
H Adjusted for Ties	1.33504

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Turbidity

Location: GD 12

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 2
Non detect rank is 1.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	17.7	30
	3/18/2021	2.2	3
	5/5/2021	20.02	34
	11/23/2021	48.51	40
	1/11/2022	17.3	27
GD 12	3/12/2013	8.5	8
	5/8/2013	15	24
	9/23/2013	9.8	11
	12/10/2013	18.8	31
	2/6/2014	12.3	19
	6/26/2014	28.5	37
	9/30/2014	10.6	16
	11/19/2014	14.7	23
	3/23/2015	17.6	29
	4/22/2015	17.3	28
	9/30/2015	7.42	7
	11/19/2015	22.9	36
	3/15/2016	9.84	13
	6/29/2016	12.9	21
	8/9/2016	22.1	35
	12/7/2016	10.3	15
	3/2/2017	15.4	25
	6/21/2017	16.1	26
	8/17/2017	6.3	5
	10/26/2017	9.8	12
	3/27/2018	6.3	6
	6/26/2018	9.9	14
	8/1/2018	42.3	39
	12/11/2018	9.5	10
	4/17/2019	9.1	9
	6/11/2019	19	33
	8/28/2019	11	18
	10/28/2019	18.9	32
	3/31/2020	76.3	41
	6/10/2020	12.3	20
	9/21/2020	ND<0.6	1.5
	12/17/2020	13.1	22
	3/18/2021	36.2	38
	5/5/2021	4.1	4
	11/23/2021	ND<0	1.5
	1/10/2022	10.7	17

The Wilcoxon Statistic is 61

ADEM Watermark

The Expected value is is 90
The Standard Deviation is 25.0998
The Z Score is -1.17531
The Standard Deviation adjusted for ties is 25.0987
The Z Score adjusted for ties is -1.17536
-1.17531 < 2.326 indicating no statistical significance at 1% level
-1.17536 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: DO

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	42
Total Non-Detects	0 (0%)
Pooled Mean	7.94929
Pooled Std Dev	2.27149
Compliance Meas.	37
Compliance Mean	7.68324
Compliance Std Dev	2.24526
Background Meas.	5
Background Mean	9.918
Background Std Dev	1.41999

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	0	0	49.59

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	9.918	1.41999	0	163	32.6

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
HB 3	37	0	0	284.28

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
HB 3	7.68324	2.24526	-2.23476	1.03721	740	20

Analysis of Variance Statistics

SS Wells	21.998
SS Total	211.546

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	163
Background Rank Mean	32.6
H Statistic	4.64651
H Adjusted for Ties	4.64651

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: DO

Location: HB 3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	10.82	38
	3/18/2021	9.2	29
	5/5/2021	7.81	19
	11/23/2021	10.41	36
	1/11/2022	11.35	41
HB 3	3/12/2013	9.48	31
	5/20/2013	6.82	13
	9/23/2013	4.89	4
	12/10/2013	8.65	25
	2/6/2014	12.24	42
	6/26/2014	7.12	15
	9/30/2014	6.01	11
	11/19/2014	8.83	27
	3/23/2015	8.4	23
	4/22/2015	8.36	22
	9/30/2015	5.05	6
	11/19/2015	7.37	16
	3/15/2016	7.97	20
	6/29/2016	2.77	1
	8/9/2016	4.31	3
	12/7/2016	8.44	24
	3/2/2017	3.9	2
	7/5/2017	5.36	8
	8/16/2017	5.04	5
	10/25/2017	9.93	34
	3/28/2018	9.47	30
	6/29/2018	5.55	9
	8/2/2018	5.64	10
	12/10/2018	10.98	39
	4/15/2019	8.27	21
	6/12/2019	6.77	12
	8/27/2019	8.75	26
	10/29/2019	9.88	33
	3/30/2020	8.91	28
	6/16/2020	7.01	14
	9/21/2020	7.69	17
	12/17/2020	9.94	35
	3/18/2021	9.62	32
	5/5/2021	7.71	18
	9/2/2021	5.3	7
	11/23/2021	10.59	37
	1/11/2022	11.26	40

ADEM Watermark

The Wilcoxon Statistic is 37
The Expected value is is 92.5
The Standard Deviation is 25.7472
The Z Score is -2.175
The Standard Deviation adjusted for ties is 25.7472
The Z Score adjusted for ties is -2.175
-2.175 < 2.326 indicating no statistical significance at 1% level
-2.175 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Nitrate-nitrite

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	42
Total Non-Detects	17 (40.4762%)
Pooled Mean	0.15419
Pooled Std Dev	0.15215
Compliance Meas.	37
Compliance Mean	0.133865
Compliance Std Dev	0.145987
Background Meas.	5
Background Mean	0.3046
Background Std Dev	0.115639

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	0	0	1.523

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	0.3046	0.115639	0	166	33.2

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
HB 3	37	17	45.9459	4.953

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
HB 3	0.133865	0.145987	-0.170735	0.0682509	737	19.9189

Analysis of Variance Statistics

SS Wells	0.128401
SS Total	0.949128

Kruskal-Wallis Statistics

Non-Detect Rank	9
Background Rank Sum	166
Background Rank Mean	33.2
H Statistic	5.16241
H Adjusted for Ties	5.52793

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Nitrate-nitrite

Location: HB 3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 17
Non detect rank is 9

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	0.387	40
	3/18/2021	0.319	34
	5/5/2021	0.213	29
	11/23/2021	0.164	22
	1/11/2022	0.44	41
HB 3	3/12/2013	0.19	24
	5/20/2013	0.17	23
	9/23/2013	ND<0	9
	12/10/2013	ND<0	9
	2/6/2014	0.48	42
	6/26/2014	ND<0	9
	9/30/2014	ND<0	9
	11/19/2014	0.11	18
	3/23/2015	0.26	32
	4/22/2015	0.2	26
	9/30/2015	ND<0	9
	11/19/2015	0.377	39
	3/15/2016	0.295	33
	6/29/2016	ND<0	9
	8/9/2016	ND<0	9
	12/7/2016	0.111	19
	3/2/2017	0.334	35
	7/5/2017	ND<0	9
	8/16/2017	ND<0	9
	10/25/2017	ND<0	9
	3/28/2018	0.359	36
	6/29/2018	ND<0	9
	8/2/2018	ND<0	9
	12/10/2018	0.363	37
	4/15/2019	0.233	30
	6/12/2019	0.129	20
	8/27/2019	ND<0	9
	10/29/2019	ND<0	9
	3/30/2020	0.234	31
	6/16/2020	ND<0	9
	9/21/2020	ND<0	9
	12/17/2020	0.195	25
	3/18/2021	0.369	38
	5/5/2021	0.207	28
	9/2/2021	ND<0	9
	11/23/2021	0.137	21
	1/11/2022	0.2	27

ADEM Watermark

The Wilcoxon Statistic is 34
The Expected value is is 92.5
The Standard Deviation is 25.7472
The Z Score is -2.29151
The Standard Deviation adjusted for ties is 24.8814
The Z Score adjusted for ties is -2.37125
-2.29151 < 2.326 indicating no statistical significance at 1% level
-2.37125 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Ortho-phosphate

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	42
Total Non-Detects	35 (83.3333%)
Pooled Mean	0.0123333
Pooled Std Dev	0.0317149
Compliance Meas.	37
Compliance Mean	0.014
Compliance Std Dev	0.0334896
Background Meas.	5
Background Mean	0
Background Std Dev	0

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	5	100	0

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	0	0	0	90	18

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
HB 3	37	30	81.0811	0.518

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
HB 3	0.014	0.0334896	0.014	0.0151381	813	21.973

Analysis of Variance Statistics

SS Wells	0.000863333
SS Total	0.0412393

Kruskal-Wallis Statistics

Non-Detect Rank	18
Background Rank Sum	90
Background Rank Mean	18
H Statistic	0.461974
H Adjusted for Ties	1.09618

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Ortho-phosphate

Location: HB 3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 35
Non detect rank is 18

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	ND<0	18
	3/18/2021	ND<0	18
	5/5/2021	ND<0	18
	11/23/2021	ND<0	18
	1/11/2022	ND<0	18
HB 3	3/12/2013	0.081	39
	5/20/2013	ND<0	18
	9/23/2013	0.037	37
	12/10/2013	0.14	42
	2/6/2014	0.03	36
	6/26/2014	ND<0	18
	9/30/2014	ND<0	18
	11/19/2014	0.098	41
	3/23/2015	ND<0	18
	4/22/2015	ND<0	18
	9/30/2015	ND<0	18
	11/19/2015	0.045	38
	3/15/2016	0.087	40
	6/29/2016	ND<0	18
	8/9/2016	ND<0	18
	12/7/2016	ND<0	18
	3/2/2017	ND<0	18
	7/5/2017	ND<0	18
	8/16/2017	ND<0	18
	10/25/2017	ND<0	18
	3/28/2018	ND<0	18
	6/29/2018	ND<0	18
	8/2/2018	ND<0	18
	12/10/2018	ND<0	18
	4/15/2019	ND<0	18
	6/12/2019	ND<0	18
	8/27/2019	ND<0	18
	10/29/2019	ND<0	18
	3/30/2020	ND<0	18
	6/16/2020	ND<0	18
	9/21/2020	ND<0	18
	12/17/2020	ND<0	18
	3/18/2021	ND<0	18
	5/5/2021	ND<0	18
	9/2/2021	ND<0	18
	11/23/2021	ND<0	18
	1/11/2022	ND<0	18

ADEM Watermark

The Wilcoxon Statistic is 110
The Expected value is is 92.5
The Standard Deviation is 25.7472
The Z Score is 0.660267
The Standard Deviation adjusted for ties is 16.7147
The Z Score adjusted for ties is 1.01707
0.660267 < 2.326 indicating no statistical significance at 1% level
1.01707 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: pH

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	42
Total Non-Detects	0 (0%)
Pooled Mean	7.73905
Pooled Std Dev	0.360175
Compliance Meas.	37
Compliance Mean	7.76243
Compliance Std Dev	0.369334
Background Meas.	5
Background Mean	7.566
Background Std Dev	0.243988

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	0	0	37.83

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	7.566	0.243988	0	70	14

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
HB 3	37	0	0	287.21

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
HB 3	7.76243	0.369334	0.196432	0.170947	833	22.5135

Analysis of Variance Statistics

SS Wells	0.169961
SS Total	5.31876

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	70
Background Rank Mean	14
H Statistic	2.12131
H Adjusted for Ties	2.12131

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: pH

Location: HB 3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	7.69	17
	3/18/2021	7.25	4
	5/5/2021	7.86	26
	11/23/2021	7.64	15
	1/11/2022	7.39	8
HB 3	3/12/2013	7.54	12
	5/20/2013	8.21	39
	9/23/2013	8.02	33
	12/10/2013	7.9	28
	2/6/2014	7.22	3
	6/26/2014	8.2	38
	9/30/2014	8.05	35
	11/19/2014	7.85	25
	3/23/2015	8.21	40
	4/22/2015	7.91	29
	9/30/2015	7.89	27
	11/19/2015	7.83	24
	3/15/2016	8.52	42
	6/29/2016	8.02	34
	8/9/2016	7.91	30
	12/7/2016	7.93	31
	3/2/2017	7.75	19
	7/5/2017	7.29	5
	8/16/2017	7.35	7
	10/25/2017	6.64	1
	3/28/2018	7.99	32
	6/29/2018	7.67	16
	8/2/2018	7.4	9
	12/10/2018	7.55	13
	4/15/2019	7.73	18
	6/12/2019	8.13	37
	8/27/2019	8.21	41
	10/29/2019	7.82	23
	3/30/2020	7.79	21
	6/16/2020	7.33	6
	9/21/2020	7.8	22
	12/17/2020	8.07	36
	3/18/2021	7.47	10
	5/5/2021	7.5	11
	9/2/2021	7.61	14
	11/23/2021	7.15	2
	1/11/2022	7.75	20

ADEM Watermark

The Wilcoxon Statistic is 130
The Expected value is is 92.5
The Standard Deviation is 25.7472
The Z Score is 1.43705
The Standard Deviation adjusted for ties is 25.7472
The Z Score adjusted for ties is 1.43705
1.43705 < 2.326 indicating no statistical significance at 1% level
1.43705 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Temperature

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	41
Total Non-Detects	0 (0%)
Pooled Mean	19.3859
Pooled Std Dev	7.03741
Compliance Meas.	36
Compliance Mean	20.0672
Compliance Std Dev	7.07831
Background Meas.	5
Background Mean	14.48
Background Std Dev	4.7531

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	0	0	72.4

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	14.48	4.7531	0	62	12.4

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
HB 3	36	0	0	722.42

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
HB 3	20.0672	7.07831	5.58722	3.2817	799	22.1944

Analysis of Variance Statistics

SS Wells	137.05
SS Total	1981.01

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	62
Background Rank Mean	12.4
H Statistic	2.93492
H Adjusted for Ties	2.93492

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Temperature

Location: HB 3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	9.8	5
	3/18/2021	17.6	16
	5/5/2021	21	23
	11/23/2021	10.6	7
	1/11/2022	13.4	11
HB 3	3/12/2013	13.9	12
	5/20/2013	27.8	38
	9/23/2013	25.7	30
	12/10/2013	10.1	6
	2/6/2014	5.9	1
	9/30/2014	24.78	28
	11/19/2014	8.8	3
	3/23/2015	24.2	27
	4/22/2015	21.9	24
	9/30/2015	25.7	31
	11/19/2015	17.4	15
	3/15/2016	19.1	21
	6/29/2016	30.61	41
	8/9/2016	30.19	40
	12/7/2016	12.81	10
	3/2/2017	14.33	13
	7/5/2017	27	35
	8/16/2017	27	36
	10/25/2017	18.5	19
	3/28/2018	17.6	17
	6/29/2018	26	32
	8/2/2018	25.1	29
	12/10/2018	7.9	2
	4/15/2019	19.6	22
	6/12/2019	26.6	34
	8/27/2019	29.1	39
	10/29/2019	18.3	18
	3/30/2020	18.5	20
	6/16/2020	26.3	33
	9/21/2020	23.5	26
	12/17/2020	9.1	4
	3/18/2021	16	14
	5/5/2021	22	25
	9/2/2021	27.1	37
	11/23/2021	11.2	8
	1/11/2022	12.8	9

The Wilcoxon Statistic is 133

ADEM Watermark

The Expected value is is 90
The Standard Deviation is 25.0998
The Z Score is 1.69324
The Standard Deviation adjusted for ties is 25.0998
The Z Score adjusted for ties is 1.69324
1.69324 < 2.326 indicating no statistical significance at 1% level
1.69324 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: TKN

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	42
Total Non-Detects	9 (21.4286%)
Pooled Mean	0.447976
Pooled Std Dev	0.302794
Compliance Meas.	37
Compliance Mean	0.466243
Compliance Std Dev	0.289873
Background Meas.	5
Background Mean	0.3128
Background Std Dev	0.396992

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	2	40	1.564

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	0.3128	0.396992	0	78	15.6

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
HB 3	37	7	18.9189	17.251

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
HB 3	0.466243	0.289873	0.153443	0.144037	825	22.2973

Analysis of Variance Statistics

SS Wells	0.103709
SS Total	3.75906

Kruskal-Wallis Statistics

Non-Detect Rank	5
Background Rank Sum	78
Background Rank Mean	15.6
H Statistic	1.31276
H Adjusted for Ties	1.32565

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: TKN

Location: HB 3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 9
Non detect rank is 5

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	0.263	11
	3/18/2021	0.331	15
	5/5/2021	ND<0	5
	11/23/2021	ND<0	5
	1/11/2022	0.97	42
HB 3	3/12/2013	0.83	38
	5/20/2013	0.6	28
	9/23/2013	0.6	29
	12/10/2013	0.62	30
	2/6/2014	0.37	16
	6/26/2014	0.37	17
	9/30/2014	0.48	23
	11/19/2014	0.44	19
	3/23/2015	0.46	21
	4/22/2015	0.66	32
	9/30/2015	0.91	39
	11/19/2015	ND<0	5
	3/15/2016	ND<0	5
	6/29/2016	0.51	24
	8/9/2016	0.703	34
	12/7/2016	0.73	35
	3/2/2017	0.969	41
	7/5/2017	0.812	37
	8/16/2017	0.763	36
	10/25/2017	0.322	14
	3/28/2018	ND<0	5
	6/29/2018	0.464	22
	8/2/2018	0.952	40
	12/10/2018	0.426	18
	4/15/2019	ND<0	5
	6/12/2019	ND<0	5
	8/27/2019	0.634	31
	10/29/2019	0.517	25
	3/30/2020	0.452	20
	6/16/2020	0.299	13
	9/21/2020	0.279	12
	12/17/2020	0.588	27
	3/18/2021	0.252	10
	5/5/2021	ND<0	5
	9/2/2021	0.689	33
	11/23/2021	ND<0	5
	1/11/2022	0.55	26

ADEM Watermark

The Wilcoxon Statistic is 122
The Expected value is is 92.5
The Standard Deviation is 25.7472
The Z Score is 1.12634
The Standard Deviation adjusted for ties is 25.6217
The Z Score adjusted for ties is 1.13185
1.12634 < 2.326 indicating no statistical significance at 1% level
1.13185 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Total Phosphorus

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	42
Total Non-Detects	34 (80.9524%)
Pooled Mean	0.0276905
Pooled Std Dev	0.058608
Compliance Meas.	37
Compliance Mean	0.0314324
Compliance Std Dev	0.0615718
Background Meas.	5
Background Mean	0
Background Std Dev	0

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	5	100	0

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	0	0	0	87.5	17.5

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
HB 3	37	29	78.3784	1.163

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
HB 3	0.0314324	0.0615718	0.0314324	0.0278318	815.5	22.0405

Analysis of Variance Statistics

SS Wells	0.0043519
SS Total	0.140831

Kruskal-Wallis Statistics

Non-Detect Rank	17.5
Background Rank Sum	87.5
Background Rank Mean	17.5
H Statistic	0.603394
H Adjusted for Ties	1.28476

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Total Phosphorus

Location: HB 3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 34
Non detect rank is 17.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	ND<0	17.5
	3/18/2021	ND<0	17.5
	5/5/2021	ND<0	17.5
	11/23/2021	ND<0	17.5
	1/11/2022	ND<0	17.5
HB 3	3/12/2013	ND<0	17.5
	5/20/2013	ND<0	17.5
	9/23/2013	ND<0	17.5
	12/10/2013	0.15	39
	2/6/2014	ND<0	17.5
	6/26/2014	ND<0	17.5
	9/30/2014	ND<0	17.5
	11/19/2014	0.12	36
	3/23/2015	ND<0	17.5
	4/22/2015	ND<0	17.5
	9/30/2015	ND<0	17.5
	11/19/2015	ND<0	17.5
	3/15/2016	ND<0	17.5
	6/29/2016	ND<0	17.5
	8/9/2016	ND<0	17.5
	12/7/2016	0.126	37
	3/2/2017	0.115	35
	7/5/2017	ND<0	17.5
	8/16/2017	ND<0	17.5
	10/25/2017	ND<0	17.5
	3/28/2018	ND<0	17.5
	6/29/2018	ND<0	17.5
	8/2/2018	ND<0	17.5
	12/10/2018	0.141	38
	4/15/2019	ND<0	17.5
	6/12/2019	ND<0	17.5
	8/27/2019	0.179	42
	10/29/2019	0.166	40
	3/30/2020	0.166	41
	6/16/2020	ND<0	17.5
	9/21/2020	ND<0	17.5
	12/17/2020	ND<0	17.5
	3/18/2021	ND<0	17.5
	5/5/2021	ND<0	17.5
	9/2/2021	ND<0	17.5
	11/23/2021	ND<0	17.5
	1/11/2022	ND<0	17.5

ADEM Watermark

The Wilcoxon Statistic is 112.5
The Expected value is is 92.5
The Standard Deviation is 25.7472
The Z Score is 0.757365
The Standard Deviation adjusted for ties is 17.6449
The Z Score adjusted for ties is 1.10514
0.757365 < 2.326 indicating no statistical significance at 1% level
1.10514 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Total Suspended Solids

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	42
Total Non-Detects	0 (0%)
Pooled Mean	23.8024
Pooled Std Dev	11.8778
Compliance Meas.	37
Compliance Mean	24.5405
Compliance Std Dev	12.2805
Background Meas.	5
Background Mean	18.34
Background Std Dev	6.81674

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	0	0	91.7

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	18.34	6.81674	0	80	16

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
HB 3	37	0	0	908

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
HB 3	24.5405	12.2805	6.20054	5.64529	823	22.2432

Analysis of Variance Statistics

SS Wells	169.349
SS Total	5784.41

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	80
Background Rank Mean	16
H Statistic	1.14079
H Adjusted for Ties	1.14079

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Total Suspended Solids

Location: HB 3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	17.8	14
	3/18/2021	21.6	23
	5/5/2021	27.5	30
	11/23/2021	9.2	3
	1/11/2022	15.6	10
HB 3	3/12/2013	49	39
	5/20/2013	17	11
	9/23/2013	19	16
	12/10/2013	20	18
	2/6/2014	13	7
	6/26/2014	12	5
	9/30/2014	30	33
	11/19/2014	51	40
	3/23/2015	35	35
	4/22/2015	22	24
	9/30/2015	23	25
	11/19/2015	30.2	34
	3/15/2016	23.8	29
	6/29/2016	20.9	22
	8/9/2016	14.3	8
	12/7/2016	17	12
	3/2/2017	57.1	42
	7/5/2017	28.5	32
	8/16/2017	12.7	6
	10/25/2017	20.4	20
	3/28/2018	20.2	19
	6/29/2018	18.2	15
	8/2/2018	35.3	37
	12/10/2018	27.6	31
	4/15/2019	35.5	38
	6/12/2019	52.3	41
	8/27/2019	7.3	1
	10/29/2019	17.6	13
	3/30/2020	19	17
	6/16/2020	14.6	9
	9/21/2020	8.3	2
	12/17/2020	20.4	21
	3/18/2021	23	26
	5/5/2021	35.1	36
	9/2/2021	23.6	27
	11/23/2021	10.5	4
	1/11/2022	23.6	28

ADEM Watermark

The Wilcoxon Statistic is 120
The Expected value is is 92.5
The Standard Deviation is 25.7472
The Z Score is 1.04866
The Standard Deviation adjusted for ties is 25.7472
The Z Score adjusted for ties is 1.04866
1.04866 < 2.326 indicating no statistical significance at 1% level
1.04866 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Turbidity

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	42
Total Non-Detects	0 (0%)
Pooled Mean	25.0721
Pooled Std Dev	15.2408
Compliance Meas.	37
Compliance Mean	25.6027
Compliance Std Dev	15.1845
Background Meas.	5
Background Mean	21.146
Background Std Dev	16.8499

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	0	0	105.73

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	21.146	16.8499	0	88	17.6

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
HB 3	37	0	0	947.3

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
HB 3	25.6027	15.1845	4.4567	7.31822	815	22.027

Analysis of Variance Statistics

SS Wells	87.4883
SS Total	9523.6

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	88
Background Rank Mean	17.6
H Statistic	0.573602
H Adjusted for Ties	0.573602

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Turbidity

Location: HB 3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	17.7	16
	3/18/2021	2.2	2
	5/5/2021	20.02	18
	11/23/2021	48.51	38
	1/11/2022	17.3	14
HB 3	3/12/2013	33.3	36
	5/20/2013	14.5	11
	9/23/2013	21.3	20
	12/10/2013	48.4	37
	2/6/2014	32	34
	6/26/2014	12	6
	9/30/2014	29.5	32
	11/19/2014	56.1	41
	3/23/2015	27	27
	4/22/2015	25	25
	9/30/2015	22	21
	11/19/2015	32	35
	3/15/2016	28.8	31
	6/29/2016	17.3	15
	8/9/2016	11.3	4
	12/7/2016	16	13
	3/2/2017	50	39
	7/5/2017	23.1	23
	8/16/2017	13.7	10
	10/25/2017	11.7	5
	3/28/2018	13.2	9
	6/29/2018	14.6	12
	8/2/2018	28.3	29
	12/10/2018	24.8	24
	4/15/2019	22.4	22
	6/12/2019	12.4	8
	8/27/2019	78.1	42
	10/29/2019	28.2	28
	3/30/2020	8.88	3
	6/16/2020	20.4	19
	9/21/2020	12.1	7
	12/17/2020	31.16	33
	3/18/2021	1.8	1
	5/5/2021	28.31	30
	9/2/2021	19.2	17
	11/23/2021	51.55	40
	1/11/2022	26.9	26

ADEM Watermark

The Wilcoxon Statistic is 112
The Expected value is is 92.5
The Standard Deviation is 25.7472
The Z Score is 0.737945
The Standard Deviation adjusted for ties is 25.7472
The Z Score adjusted for ties is 0.737945
0.737945 < 2.326 indicating no statistical significance at 1% level
0.737945 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: DO

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	42
Total Non-Detects	0 (0%)
Pooled Mean	8.49024
Pooled Std Dev	1.96663
Compliance Meas.	37
Compliance Mean	8.2973
Compliance Std Dev	1.96453
Background Meas.	5
Background Mean	9.918
Background Std Dev	1.41999

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	0	0	49.59

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	9.918	1.41999	0	153	30.6

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 1	37	0	0	307

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 1	8.2973	1.96453	-1.6207	0.913424	750	20.2703

Analysis of Variance Statistics

SS Wells	11.5699
SS Total	158.573

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	153
Background Rank Mean	30.6
H Statistic	3.12294
H Adjusted for Ties	3.12294

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: DO

Location: SME 1

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	10.82	36
	3/18/2021	9.2	28
	5/5/2021	7.81	14
	11/23/2021	10.41	34
	1/11/2022	11.35	41
SME 1	3/12/2013	8.26	18
	5/8/2013	8.96	25
	9/23/2013	7.87	15
	12/10/2013	9.15	26
	2/6/2014	11.34	39
	6/26/2014	7.05	11
	9/30/2014	7.46	13
	11/19/2014	10.86	37
	3/23/2015	8.52	21
	4/22/2015	7.97	17
	9/30/2015	7.03	9
	11/19/2015	7.04	10
	3/15/2016	7.21	12
	6/29/2016	3.29	1
	8/9/2016	4.98	3
	12/7/2016	10.2	32
	3/2/2017	4.31	2
	6/29/2017	9.21	29
	8/16/2017	6.58	6
	10/25/2017	8.32	19
	3/28/2018	9.18	27
	6/29/2018	6.37	5
	8/2/2018	5.82	4
	12/10/2018	11.48	42
	4/15/2019	7.89	16
	6/12/2019	8.73	24
	8/27/2019	8.51	20
	10/29/2019	9.21	30
	3/30/2020	8.61	23
	6/16/2020	10.36	33
	9/21/2020	6.92	7
	12/17/2020	10.68	35
	3/18/2021	9.54	31
	5/5/2021	8.53	22
	9/2/2021	6.93	8
	11/23/2021	11.34	40
	1/11/2022	11.29	38

ADEM Watermark

The Wilcoxon Statistic is 47
The Expected value is is 92.5
The Standard Deviation is 25.7472
The Z Score is -1.7866
The Standard Deviation adjusted for ties is 25.7472
The Z Score adjusted for ties is -1.7866
-1.7866 < 2.326 indicating no statistical significance at 1% level
-1.7866 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Nitrate-nitrite

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	42
Total Non-Detects	13 (30.9524%)
Pooled Mean	0.461214
Pooled Std Dev	1.24445
Compliance Meas.	37
Compliance Mean	0.482378
Compliance Std Dev	1.32604
Background Meas.	5
Background Mean	0.3046
Background Std Dev	0.115639

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	0	0	1.523

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	0.3046	0.115639	0	113	22.6

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 1	37	13	35.1351	17.848

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 1	0.482378	1.32604	0.177778	0.599655	790	21.3514

Analysis of Variance Statistics

SS Wells	0.139213
SS Total	63.4948

Kruskal-Wallis Statistics

Non-Detect Rank	7
Background Rank Sum	113
Background Rank Mean	22.6
H Statistic	0.0456317
H Adjusted for Ties	0.0470185

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Nitrate-nitrite

Location: SME 1

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 13
Non detect rank is 7

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	0.387	25
	3/18/2021	0.319	23
	5/5/2021	0.213	18
	11/23/2021	0.164	17
	1/11/2022	0.44	30
SME 1	3/12/2013	0.54	35
	5/8/2013	0.15	16
	9/23/2013	ND<0	7
	12/10/2013	0.55	36
	2/6/2014	0.55	37
	6/26/2014	ND<0	7
	9/30/2014	ND<0	7
	11/19/2014	0.74	41
	3/23/2015	0.51	34
	4/22/2015	0.4	27
	9/30/2015	ND<0	7
	11/19/2015	0.401	28
	3/15/2016	0.454	31
	6/29/2016	ND<0	7
	8/9/2016	ND<0	7
	12/7/2016	0.413	29
	3/2/2017	0.671	40
	6/29/2017	ND<0	7
	8/16/2017	ND<0	7
	10/25/2017	0.368	24
	3/28/2018	0.633	39
	6/29/2018	0.312	22
	8/2/2018	0.296	21
	12/10/2018	0.259	19
	4/15/2019	0.39	26
	6/12/2019	ND<0	7
	8/27/2019	ND<0	7
	10/29/2019	0.129	15
	3/30/2020	0.462	33
	6/16/2020	ND<0	7
	9/21/2020	ND<0	7
	12/17/2020	0.577	38
	3/18/2021	0.263	20
	5/5/2021	0.122	14
	9/2/2021	0.458	32
	11/23/2021	ND<0	7
	1/11/2022	8.2	42

ADEM Watermark

The Wilcoxon Statistic is 87
The Expected value is is 92.5
The Standard Deviation is 25.7472
The Z Score is -0.233035
The Standard Deviation adjusted for ties is 25.3646
The Z Score adjusted for ties is -0.23655
-0.233035 < 2.326 indicating no statistical significance at 1% level
-0.23655 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Ortho-phosphate

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	42
Total Non-Detects	14 (33.3333%)
Pooled Mean	0.0670476
Pooled Std Dev	0.0697892
Compliance Meas.	37
Compliance Mean	0.0761081
Compliance Std Dev	0.0695576
Background Meas.	5
Background Mean	0
Background Std Dev	0

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	5	100	0

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	0	0	0	37.5	7.5

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 1	37	9	24.3243	2.816

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 1	0.0761081	0.0695576	0.0761081	0.0314416	865.5	23.3919

Analysis of Variance Statistics

SS Wells	0.0255143
SS Total	0.199692

Kruskal-Wallis Statistics

Non-Detect Rank	7.5
Background Rank Sum	37.5
Background Rank Mean	7.5
H Statistic	7.39158
H Adjusted for Ties	7.67453

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Ortho-phosphate

Location: SME 1

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 14
Non detect rank is 7.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	ND<0	7.5
	3/18/2021	ND<0	7.5
	5/5/2021	ND<0	7.5
	11/23/2021	ND<0	7.5
	1/11/2022	ND<0	7.5
SME 1	3/12/2013	0.11	32
	5/8/2013	0.063	24
	9/23/2013	0.053	22
	12/10/2013	0.21	41
	2/6/2014	0.11	33
	6/26/2014	ND<0	7.5
	9/30/2014	0.044	18
	11/19/2014	0.27	42
	3/23/2015	0.073	27
	4/22/2015	0.039	17
	9/30/2015	0.052	21
	11/19/2015	0.084	29
	3/15/2016	0.047	19
	6/29/2016	0.18	38
	8/9/2016	0.089	30
	12/7/2016	0.209	40
	3/2/2017	0.127	36
	6/29/2017	0.028	15
	8/16/2017	ND<0	7.5
	10/25/2017	0.121	34
	3/28/2018	0.106	31
	6/29/2018	0.121	35
	8/2/2018	0.145	37
	12/10/2018	ND<0	7.5
	4/15/2019	0.063	25
	6/12/2019	ND<0	7.5
	8/27/2019	ND<0	7.5
	10/29/2019	0.049	20
	3/30/2020	ND<0	7.5
	6/16/2020	0.031	16
	9/21/2020	ND<0	7.5
	12/17/2020	0.072	26
	3/18/2021	ND<0	7.5
	5/5/2021	ND<0	7.5
	9/2/2021	0.19	39
	11/23/2021	0.076	28
	1/11/2022	0.054	23

ADEM Watermark

The Wilcoxon Statistic is 162.5
The Expected value is is 92.5
The Standard Deviation is 25.7472
The Z Score is 2.69933
The Standard Deviation adjusted for ties is 25.2681
The Z Score adjusted for ties is 2.75051
2.69933 > 2.326 indicating statistical significance at 1% level
2.75051 > 2.326 indicating statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: pH

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	42
Total Non-Detects	0 (0%)
Pooled Mean	7.89
Pooled Std Dev	0.462332
Compliance Meas.	37
Compliance Mean	7.93378
Compliance Std Dev	0.469334
Background Meas.	5
Background Mean	7.566
Background Std Dev	0.243988

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	0	0	37.83

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	7.566	0.243988	0	61	12.2

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 1	37	0	0	293.55

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 1	7.93378	0.469334	0.367784	0.215311	842	22.7568

Analysis of Variance Statistics

SS Wells	0.59581
SS Total	8.7638

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	61
Background Rank Mean	12.2
H Statistic	3.26172
H Adjusted for Ties	3.26172

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: pH

Location: SME 1

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	7.69	16
	3/18/2021	7.25	4
	5/5/2021	7.86	21
	11/23/2021	7.64	13
	1/11/2022	7.39	7
SME 1	3/12/2013	8.19	31
	5/8/2013	7.64	14
	9/23/2013	8.26	33
	12/10/2013	8.05	28
	2/6/2014	7.22	2
	6/26/2014	8.49	38
	9/30/2014	8.25	32
	11/19/2014	8.31	35
	3/23/2015	8.26	34
	4/22/2015	7.14	1
	9/30/2015	8.34	36
	11/19/2015	7.92	24
	3/15/2016	8.44	37
	6/29/2016	8.8	41
	8/9/2016	8.55	39
	12/7/2016	7.96	26
	3/2/2017	7.75	18
	6/29/2017	9.11	42
	8/16/2017	8.12	30
	10/25/2017	8.02	27
	3/28/2018	8.1	29
	6/29/2018	7.84	20
	8/2/2018	7.48	11
	12/10/2018	7.45	9
	4/15/2019	7.89	22
	6/12/2019	7.34	5
	8/27/2019	7.45	10
	10/29/2019	7.95	25
	3/30/2020	7.35	6
	6/16/2020	8.58	40
	9/21/2020	7.71	17
	12/17/2020	7.66	15
	3/18/2021	7.24	3
	5/5/2021	7.43	8
	9/2/2021	7.8	19
	11/23/2021	7.91	23
	1/11/2022	7.55	12

ADEM Watermark

The Wilcoxon Statistic is 139
The Expected value is is 92.5
The Standard Deviation is 25.7472
The Z Score is 1.7866
The Standard Deviation adjusted for ties is 25.7472
The Z Score adjusted for ties is 1.7866
1.7866 < 2.326 indicating no statistical significance at 1% level
1.7866 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Temperature

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	41
Total Non-Detects	0 (0%)
Pooled Mean	18.5154
Pooled Std Dev	7.13208
Compliance Meas.	36
Compliance Mean	19.0758
Compliance Std Dev	7.27336
Background Meas.	5
Background Mean	14.48
Background Std Dev	4.7531

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	0	0	72.4

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	14.48	4.7531	0	73	14.6

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 1	36	0	0	686.73

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 1	19.0758	7.27336	4.59583	3.36775	788	21.8889

Analysis of Variance Statistics

SS Wells	92.7293
SS Total	2034.66

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	73
Background Rank Mean	14.6
H Statistic	1.6254
H Adjusted for Ties	1.6254

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Temperature

Location: SME 1

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	9.8	6
	3/18/2021	17.6	19
	5/5/2021	21	27
	11/23/2021	10.6	8
	1/11/2022	13.4	13
SME 1	3/12/2013	13.1	12
	5/8/2013	16	16
	9/23/2013	27.7	37
	12/10/2013	7.6	2
	2/6/2014	5.9	1
	9/30/2014	24.67	30
	11/19/2014	7.8	3
	3/23/2015	17.3	17
	4/22/2015	18.5	23
	9/30/2015	26.4	34
	11/19/2015	15.9	15
	3/15/2016	18.3	22
	6/29/2016	30.67	41
	8/9/2016	28.87	39
	12/7/2016	11.98	9
	3/2/2017	12.34	10
	6/29/2017	25.8	31
	8/16/2017	29.7	40
	10/25/2017	17.3	18
	3/28/2018	17.6	20
	6/29/2018	26.2	33
	8/2/2018	23.9	29
	12/10/2018	8	4
	4/15/2019	19.7	25
	6/12/2019	27.2	36
	8/27/2019	28.8	38
	10/29/2019	17.6	21
	3/30/2020	19.3	24
	6/16/2020	27	35
	9/21/2020	22.2	28
	12/17/2020	9.2	5
	3/18/2021	15.7	14
	5/5/2021	20.1	26
	9/2/2021	25.8	32
	11/23/2021	12.4	11
	1/11/2022	10.2	7

The Wilcoxon Statistic is 122

ADEM Watermark

The Expected value is is 90
The Standard Deviation is 25.0998
The Z Score is 1.25499
The Standard Deviation adjusted for ties is 25.0998
The Z Score adjusted for ties is 1.25499
1.25499 < 2.326 indicating no statistical significance at 1% level
1.25499 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: TKN

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	42
Total Non-Detects	10 (23.8095%)
Pooled Mean	0.39019
Pooled Std Dev	0.334925
Compliance Meas.	37
Compliance Mean	0.400649
Compliance Std Dev	0.330604
Background Meas.	5
Background Mean	0.3128
Background Std Dev	0.396992

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	2	40	1.564

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	0.3128	0.396992	0	79	15.8

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 1	37	8	21.6216	14.824

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 1	0.400649	0.330604	0.0878486	0.160967	824	22.2703

Analysis of Variance Statistics

SS Wells	0.0339932
SS Total	4.59918

Kruskal-Wallis Statistics

Non-Detect Rank	5.5
Background Rank Sum	79
Background Rank Mean	15.8
H Statistic	1.22527
H Adjusted for Ties	1.24187

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: TKN

Location: SME 1

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 10
Non detect rank is 5.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	0.263	11
	3/18/2021	0.331	16
	5/5/2021	ND<0	5.5
	11/23/2021	ND<0	5.5
	1/11/2022	0.97	41
SME 1	3/12/2013	0.34	18
	5/8/2013	0.42	26
	9/23/2013	0.8	39
	12/10/2013	0.47	27
	2/6/2014	0.5	30
	6/26/2014	0.31	15
	9/30/2014	0.61	36
	11/19/2014	0.55	34
	3/23/2015	ND<0	5.5
	4/22/2015	0.38	24
	9/30/2015	0.807	40
	11/19/2015	ND<0	5.5
	3/15/2016	ND<0	5.5
	6/29/2016	0.62	37
	8/9/2016	0.547	33
	12/7/2016	0.378	23
	3/2/2017	0.345	19
	6/29/2017	0.53	32
	8/16/2017	0.52	31
	10/25/2017	0.288	13
	3/28/2018	ND<0	5.5
	6/29/2018	0.67	38
	8/2/2018	0.495	29
	12/10/2018	0.336	17
	4/15/2019	0.36	22
	6/12/2019	ND<0	5.5
	8/27/2019	0.356	21
	10/29/2019	0.272	12
	3/30/2020	ND<0	5.5
	6/16/2020	0.485	28
	9/21/2020	ND<0	5.5
	12/17/2020	0.3	14
	3/18/2021	0.58	35
	5/5/2021	0.402	25
	9/2/2021	0.353	20
	11/23/2021	ND<0	5.5
	1/11/2022	1.8	42

ADEM Watermark

The Wilcoxon Statistic is 121
The Expected value is is 92.5
The Standard Deviation is 25.7472
The Z Score is 1.0875
The Standard Deviation adjusted for ties is 25.5745
The Z Score adjusted for ties is 1.09484
1.0875 < 2.326 indicating no statistical significance at 1% level
1.09484 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Total Phosphorus

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	42
Total Non-Detects	20 (47.619%)
Pooled Mean	0.0882143
Pooled Std Dev	0.0952664
Compliance Meas.	37
Compliance Mean	0.100135
Compliance Std Dev	0.0954429
Background Meas.	5
Background Mean	0
Background Std Dev	0

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	5	100	0

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	0	0	0	52.5	10.5

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 1	37	15	40.5405	3.705

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 1	0.100135	0.0954429	0.100135	0.0431423	850.5	22.9865

Analysis of Variance Statistics

SS Wells	0.0441667
SS Total	0.372103

Kruskal-Wallis Statistics

Non-Detect Rank	10.5
Background Rank Sum	52.5
Background Rank Mean	10.5
H Statistic	4.56317
H Adjusted for Ties	5.11435

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Total Phosphorus

Location: SME 1

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 20
Non detect rank is 10.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	ND<0	10.5
	3/18/2021	ND<0	10.5
	5/5/2021	ND<0	10.5
	11/23/2021	ND<0	10.5
	1/11/2022	ND<0	10.5
SME 1	3/12/2013	0.11	22
	5/8/2013	ND<0	10.5
	9/23/2013	ND<0	10.5
	12/10/2013	0.26	40
	2/6/2014	0.13	27
	6/26/2014	ND<0	10.5
	9/30/2014	0.11	23
	11/19/2014	0.29	42
	3/23/2015	0.1	21
	4/22/2015	ND<0	10.5
	9/30/2015	0.135	30
	11/19/2015	0.134	28
	3/15/2016	ND<0	10.5
	6/29/2016	0.245	39
	8/9/2016	0.154	33
	12/7/2016	0.271	41
	3/2/2017	0.208	36
	6/29/2017	ND<0	10.5
	8/16/2017	0.111	24
	10/25/2017	0.151	32
	3/28/2018	ND<0	10.5
	6/29/2018	0.241	38
	8/2/2018	0.136	31
	12/10/2018	ND<0	10.5
	4/15/2019	ND<0	10.5
	6/12/2019	ND<0	10.5
	8/27/2019	0.161	34
	10/29/2019	0.134	29
	3/30/2020	ND<0	10.5
	6/16/2020	0.129	26
	9/21/2020	ND<0	10.5
	12/17/2020	ND<0	10.5
	3/18/2021	0.112	25
	5/5/2021	ND<0	10.5
	9/2/2021	0.218	37
	11/23/2021	0.165	35
	1/11/2022	ND<0	10.5

ADEM Watermark

The Wilcoxon Statistic is 147.5
The Expected value is is 92.5
The Standard Deviation is 25.7472
The Z Score is 2.11674
The Standard Deviation adjusted for ties is 24.3202
The Z Score adjusted for ties is 2.24093
2.11674 < 2.326 indicating no statistical significance at 1% level
2.24093 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Total Suspended Solids

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	42
Total Non-Detects	0 (0%)
Pooled Mean	20.4588
Pooled Std Dev	13.3054
Compliance Meas.	37
Compliance Mean	20.7451
Compliance Std Dev	13.9911
Background Meas.	5
Background Mean	18.34
Background Std Dev	6.81674

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	0	0	91.7

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	18.34	6.81674	0	109	21.8

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 1	37	0	0	767.57

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 1	20.7451	13.9911	2.40514	6.40716	794	21.4595

Analysis of Variance Statistics

SS Wells	25.4801
SS Total	7258.41

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	109
Background Rank Mean	21.8
H Statistic	0.00339409
H Adjusted for Ties	0.00339409

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Total Suspended Solids

Location: SME 1

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	17.8	23
	3/18/2021	21.6	31
	5/5/2021	27.5	35
	11/23/2021	9.2	3
	1/11/2022	15.6	17
SME 1	3/12/2013	16	18
	5/8/2013	14	12
	9/23/2013	15	14
	12/10/2013	21	30
	2/6/2014	23	32
	6/26/2014	13	10
	9/30/2014	34	38
	11/19/2014	19	26
	3/23/2015	14	13
	4/22/2015	18	24
	9/30/2015	15.3	16
	11/19/2015	23.2	33
	3/15/2016	17.7	21
	6/29/2016	20.3	28
	8/9/2016	12.6	7
	12/7/2016	17.7	22
	3/2/2017	15	15
	6/29/2017	18.3	25
	8/16/2017	12.7	8
	10/25/2017	16.9	19
	3/28/2018	19.8	27
	6/29/2018	23.3	34
	8/2/2018	29.5	36
	12/10/2018	31	37
	4/15/2019	35	40
	6/12/2019	9.67	4
	8/27/2019	7.1	1
	10/29/2019	11	5
	3/30/2020	13.3	11
	6/16/2020	11.4	6
	9/21/2020	9	2
	12/17/2020	20.9	29
	3/18/2021	90.4	42
	5/5/2021	34	39
	9/2/2021	35.8	41
	11/23/2021	12.7	9
	1/11/2022	17	20

ADEM Watermark

The Wilcoxon Statistic is 91
The Expected value is is 92.5
The Standard Deviation is 25.7472
The Z Score is -0.0776784
The Standard Deviation adjusted for ties is 25.7472
The Z Score adjusted for ties is -0.0776784
-0.0776784 < 2.326 indicating no statistical significance at 1% level
-0.0776784 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Turbidity

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	42
Total Non-Detects	0 (0%)
Pooled Mean	28.9729
Pooled Std Dev	29.8617
Compliance Meas.	37
Compliance Mean	30.0305
Compliance Std Dev	31.2149
Background Meas.	5
Background Mean	21.146
Background Std Dev	16.8499

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	0	0	105.73

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	21.146	16.8499	0	93	18.6

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 1	37	0	0	1111.13

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 1	30.0305	31.2149	8.88454	14.3364	810	21.8919

Analysis of Variance Statistics

SS Wells	347.69
SS Total	36560.7

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	93
Background Rank Mean	18.6
H Statistic	0.317159
H Adjusted for Ties	0.317159

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Turbidity

Location: SME 1

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	17.7	17
	3/18/2021	2.2	1
	5/5/2021	20.02	21
	11/23/2021	48.51	38
	1/11/2022	17.3	16
SME 1	3/12/2013	13.1	6
	5/8/2013	24	27
	9/23/2013	14.2	12
	12/10/2013	46.3	37
	2/6/2014	61	40
	6/26/2014	14	9
	9/30/2014	27.6	29
	11/19/2014	40.1	35
	3/23/2015	21	23
	4/22/2015	29	32
	9/30/2015	15	14
	11/19/2015	50	39
	3/15/2016	26.2	28
	6/29/2016	21.2	24
	8/9/2016	15.3	15
	12/7/2016	31	33
	3/2/2017	14	10
	6/29/2017	19.2	19
	8/16/2017	10.6	3
	10/25/2017	5.4	2
	3/28/2018	19.3	20
	6/29/2018	20.7	22
	8/2/2018	28.5	30
	12/10/2018	32	34
	4/15/2019	42.2	36
	6/12/2019	12.2	5
	8/27/2019	135.2	41
	10/29/2019	14.5	13
	3/30/2020	13.3	7
	6/16/2020	11.6	4
	9/21/2020	13.8	8
	12/17/2020	23.19	25
	3/18/2021	14.1	11
	5/5/2021	28.83	31
	9/2/2021	23.89	26
	11/23/2021	18.42	18
	1/11/2022	161.2	42

ADEM Watermark

The Wilcoxon Statistic is 107
The Expected value is is 92.5
The Standard Deviation is 25.7472
The Z Score is 0.543749
The Standard Deviation adjusted for ties is 25.7472
The Z Score adjusted for ties is 0.543749
0.543749 < 2.326 indicating no statistical significance at 1% level
0.543749 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: DO

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	38
Total Non-Detects	0 (0%)
Pooled Mean	7.63684
Pooled Std Dev	2.22161
Compliance Meas.	33
Compliance Mean	7.29121
Compliance Std Dev	2.12566
Background Meas.	5
Background Mean	9.918
Background Std Dev	1.41999

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	0	0	49.59

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	9.918	1.41999	0	156	31.2

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 3	33	0	0	240.61

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 3	7.29121	2.12566	-2.62679	0.988222	585	17.7273

Analysis of Variance Statistics

SS Wells	29.9606
SS Total	182.616

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	156
Background Rank Mean	31.2
H Statistic	6.38182
H Adjusted for Ties	6.38182

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: DO

Location: SME 3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	10.82	35
	3/18/2021	9.2	29
	5/5/2021	7.81	22
	11/23/2021	10.41	32
	1/11/2022	11.35	38
SME 3	3/13/2013	7.44	17
	5/20/2013	6.09	11
	9/23/2013	5.32	5
	12/10/2013	8.85	27
	2/6/2014	10.62	33
	6/26/2014	7.03	16
	9/30/2014	5.98	10
	11/19/2014	10.4	31
	3/23/2015	7.72	21
	4/22/2015	6.7	14
	9/30/2015	6.19	12
	11/19/2015	7.44	18
	3/15/2016	7.51	19
	6/29/2016	2.56	1
	8/9/2016	3.43	2
	12/7/2016	10.91	36
	3/2/2017	4.6	3
	7/5/2017	5.88	9
	8/16/2017	5	4
	10/25/2017	8.23	24
	3/28/2018	9.44	30
	6/29/2018	5.39	6
	8/2/2018	5.66	8
	12/10/2018	10.68	34
	4/15/2019	7.65	20
	6/12/2019	6.87	15
	8/27/2019	8.41	25
	10/29/2019	8.44	26
	3/30/2020	8.91	28
	6/16/2020	7.95	23
	9/21/2020	6.5	13
	9/2/2021	5.64	7
	1/11/2022	11.17	37

The Wilcoxon Statistic is 24
The Expected value is is 82.5
The Standard Deviation is 23.1571
The Z Score is -2.54782

ADEM Watermark

The Standard Deviation adjusted for ties is 23.1571
The Z Score adjusted for ties is -2.54782
-2.54782 < 2.326 indicating no statistical significance at 1% level
-2.54782 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Nitrate-nitrite

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	38
Total Non-Detects	19 (50%)
Pooled Mean	0.123184
Pooled Std Dev	0.139467
Compliance Meas.	33
Compliance Mean	0.095697
Compliance Std Dev	0.122054
Background Meas.	5
Background Mean	0.3046
Background Std Dev	0.115639

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	0	0	1.523

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	0.3046	0.115639	0	158	31.6

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 3	33	19	57.5758	3.158

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 3	0.095697	0.122054	-0.208903	0.0582395	583	17.6667

Analysis of Variance Statistics

SS Wells	0.189492
SS Total	0.71969

Kruskal-Wallis Statistics

Non-Detect Rank	10
Background Rank Sum	158
Background Rank Mean	31.6
H Statistic	6.82564
H Adjusted for Ties	7.79842

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Nitrate-nitrite

Location: SME 3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 19
Non detect rank is 10

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	0.387	36
	3/18/2021	0.319	35
	5/5/2021	0.213	26
	11/23/2021	0.164	23
	1/11/2022	0.44	38
SME 3	3/13/2013	0.2	25
	5/20/2013	0.17	24
	9/23/2013	ND<0	10
	12/10/2013	ND<0	10
	2/6/2014	0.25	31
	6/26/2014	ND<0	10
	9/30/2014	ND<0	10
	11/19/2014	0.12	20
	3/23/2015	0.24	30
	4/22/2015	0.15	22
	9/30/2015	0.125	21
	11/19/2015	0.253	32
	3/15/2016	0.295	34
	6/29/2016	ND<0	10
	8/9/2016	ND<0	10
	12/7/2016	ND<0	10
	3/2/2017	0.272	33
	7/5/2017	ND<0	10
	8/16/2017	ND<0	10
	10/25/2017	ND<0	10
	3/28/2018	0.22	27
	6/29/2018	ND<0	10
	8/2/2018	ND<0	10
	12/10/2018	ND<0	10
	4/15/2019	0.234	28
	6/12/2019	ND<0	10
	8/27/2019	ND<0	10
	10/29/2019	ND<0	10
	3/30/2020	0.239	29
	6/16/2020	ND<0	10
	9/21/2020	ND<0	10
	9/2/2021	ND<0	10
	1/11/2022	0.39	37

The Wilcoxon Statistic is 22
The Expected value is is 82.5
The Standard Deviation is 23.1571
The Z Score is -2.63418

ADEM Watermark

The Standard Deviation adjusted for ties is 21.6647
The Z Score adjusted for ties is -2.81564
-2.63418 < 2.326 indicating no statistical significance at 1% level
-2.81564 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Ortho-phosphate

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	38
Total Non-Detects	25 (65.7895%)
Pooled Mean	0.0158421
Pooled Std Dev	0.0245968
Compliance Meas.	33
Compliance Mean	0.0182424
Compliance Std Dev	0.0255808
Background Meas.	5
Background Mean	0
Background Std Dev	0

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	5	100	0

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	0	0	0	65	13

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 3	33	20	60.6061	0.602

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 3	0.0182424	0.0255808	0.0182424	0.0115741	676	20.4848

Analysis of Variance Statistics

SS Wells	0.00144499
SS Total	0.0223851

Kruskal-Wallis Statistics

Non-Detect Rank	13
Background Rank Sum	65
Background Rank Mean	13
H Statistic	1.9697
H Adjusted for Ties	2.75288

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Ortho-phosphate

Location: SME 3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 25
Non detect rank is 13

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	ND<0	13
	3/18/2021	ND<0	13
	5/5/2021	ND<0	13
	11/23/2021	ND<0	13
	1/11/2022	ND<0	13
SME 3	3/13/2013	0.038	31
	5/20/2013	0.028	27
	9/23/2013	0.029	28
	12/10/2013	0.086	38
	2/6/2014	ND<0	13
	6/26/2014	0.047	33
	9/30/2014	ND<0	13
	11/19/2014	0.035	30
	3/23/2015	0.026	26
	4/22/2015	ND<0	13
	9/30/2015	ND<0	13
	11/19/2015	0.032	29
	3/15/2016	ND<0	13
	6/29/2016	0.062	36
	8/9/2016	ND<0	13
	12/7/2016	ND<0	13
	3/2/2017	ND<0	13
	7/5/2017	0.039	32
	8/16/2017	0.07	37
	10/25/2017	0.053	34
	3/28/2018	ND<0	13
	6/29/2018	ND<0	13
	8/2/2018	ND<0	13
	12/10/2018	ND<0	13
	4/15/2019	ND<0	13
	6/12/2019	ND<0	13
	8/27/2019	ND<0	13
	10/29/2019	ND<0	13
	3/30/2020	ND<0	13
	6/16/2020	ND<0	13
	9/21/2020	ND<0	13
	9/2/2021	0.057	35
	1/11/2022	ND<0	13

The Wilcoxon Statistic is 115
The Expected value is is 82.5
The Standard Deviation is 23.1571
The Z Score is 1.38187

ADEM Watermark

The Standard Deviation adjusted for ties is 19.588
The Z Score adjusted for ties is 1.63365
1.38187 < 2.326 indicating no statistical significance at 1% level
1.63365 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: pH

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	37
Total Non-Detects	0 (0%)
Pooled Mean	7.74459
Pooled Std Dev	0.291248
Compliance Meas.	32
Compliance Mean	7.7725
Compliance Std Dev	0.291337
Background Meas.	5
Background Mean	7.566
Background Std Dev	0.243988

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	0	0	37.83

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	7.566	0.243988	0	61	12.2

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 3	32	0	0	248.72

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 3	7.7725	0.291337	0.2065	0.137688	642	20.0625

Analysis of Variance Statistics

SS Wells	0.184399
SS Total	3.05372

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	61
Background Rank Mean	12.2
H Statistic	2.28158
H Adjusted for Ties	2.28158

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: pH

Location: SME 3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	7.69	16
	3/18/2021	7.25	3
	5/5/2021	7.86	24
	11/23/2021	7.64	14
	1/11/2022	7.39	4
SME 3	3/13/2013	7.84	23
	5/20/2013	8.11	34
	12/10/2013	7.69	17
	2/6/2014	7.09	1
	6/26/2014	8.04	31
	9/30/2014	8.08	33
	11/19/2014	8.3	36
	3/23/2015	8.13	35
	4/22/2015	7.76	19
	9/30/2015	7.96	29
	11/19/2015	7.56	11
	3/15/2016	8.35	37
	6/29/2016	7.8	22
	8/9/2016	7.52	8
	12/7/2016	7.9	26
	3/2/2017	7.95	28
	7/5/2017	7.54	10
	8/16/2017	7.86	25
	10/25/2017	7.42	5
	3/28/2018	7.98	30
	6/29/2018	7.53	9
	8/2/2018	7.59	13
	12/10/2018	7.21	2
	4/15/2019	7.78	21
	6/12/2019	7.48	6
	8/27/2019	7.91	27
	10/29/2019	7.77	20
	3/30/2020	7.51	7
	6/16/2020	8.06	32
	9/21/2020	7.67	15
	9/2/2021	7.75	18
	1/11/2022	7.58	12

The Wilcoxon Statistic is 114
The Expected value is is 80
The Standard Deviation is 22.5093
The Z Score is 1.48828
The Standard Deviation adjusted for ties is 22.5093

ADEM Watermark

The Z Score adjusted for ties is 1.48828
1.48828 < 2.326 indicating no statistical significance at 1% level
1.48828 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Temperature

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	37
Total Non-Detects	0 (0%)
Pooled Mean	19.5651
Pooled Std Dev	7.24517
Compliance Meas.	32
Compliance Mean	20.3597
Compliance Std Dev	7.29531
Background Meas.	5
Background Mean	14.48
Background Std Dev	4.7531

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	0	0	72.4

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	14.48	4.7531	0	57	11.4

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 3	32	0	0	651.51

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 3	20.3597	7.29531	5.87969	3.39087	646	20.1875

Analysis of Variance Statistics

SS Wells	149.495
SS Total	1889.73

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	57
Background Rank Mean	11.4
H Statistic	2.85
H Adjusted for Ties	2.85

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Temperature

Location: SME 3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	9.8	5
	3/18/2021	17.6	15
	5/5/2021	21	20
	11/23/2021	10.6	7
	1/11/2022	13.4	10
SME 3	3/13/2013	11.3	8
	5/20/2013	23.6	24
	9/23/2013	26.5	29
	12/10/2013	9.6	4
	2/6/2014	6.3	1
	9/30/2014	25.33	25
	11/19/2014	9.3	3
	3/23/2015	21.2	21
	4/22/2015	21.8	22
	9/30/2015	25.6	26
	11/19/2015	15.8	12
	3/15/2016	19.2	17
	6/29/2016	30.16	37
	8/9/2016	29.53	36
	12/7/2016	11.85	9
	3/2/2017	13.64	11
	7/5/2017	27.3	33
	8/16/2017	28.1	34
	10/25/2017	19.4	18
	3/28/2018	17.4	14
	6/29/2018	26.9	30
	8/2/2018	26.4	28
	12/10/2018	7	2
	4/15/2019	19.7	19
	6/12/2019	27.1	31
	8/27/2019	29.2	35
	10/29/2019	17.2	13
	3/30/2020	18.8	16
	6/16/2020	27.1	32
	9/21/2020	23	23
	9/2/2021	26.3	27
	1/11/2022	9.9	6

The Wilcoxon Statistic is 118
The Expected value is is 80
The Standard Deviation is 22.5093
The Z Score is 1.66598
The Standard Deviation adjusted for ties is 22.5093

ADEM Watermark

The Z Score adjusted for ties is 1.66598
1.66598 < 2.326 indicating no statistical significance at 1% level
1.66598 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: TKN

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	38
Total Non-Detects	7 (18.4211%)
Pooled Mean	0.500211
Pooled Std Dev	0.366381
Compliance Meas.	33
Compliance Mean	0.528606
Compliance Std Dev	0.35943
Background Meas.	5
Background Mean	0.3128
Background Std Dev	0.396992

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	2	40	1.564

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	0.3128	0.396992	0	61	12.2

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 3	33	5	15.1515	17.444

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 3	0.528606	0.35943	0.215806	0.174585	680	20.6061

Analysis of Variance Statistics

SS Wells	0.202222
SS Total	4.96671

Kruskal-Wallis Statistics

Non-Detect Rank	4
Background Rank Sum	61
Background Rank Mean	12.2
H Statistic	2.48438
H Adjusted for Ties	2.4997

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: TKN

Location: SME 3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 7
Non detect rank is 4

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	0.263	8
	3/18/2021	0.331	10
	5/5/2021	ND<0	4
	11/23/2021	ND<0	4
	1/11/2022	0.97	35
SME 3	3/13/2013	0.69	30
	5/20/2013	0.69	31
	9/23/2013	0.53	22
	12/10/2013	0.62	25
	2/6/2014	0.69	32
	6/26/2014	0.53	23
	9/30/2014	0.66	28
	11/19/2014	ND<0	4
	3/23/2015	0.46	19
	4/22/2015	0.45	18
	9/30/2015	0.42	15
	11/19/2015	ND<0	4
	3/15/2016	ND<0	4
	6/29/2016	0.37	11
	8/9/2016	0.564	24
	12/7/2016	1.78	38
	3/2/2017	0.733	33
	7/5/2017	0.628	26
	8/16/2017	0.446	17
	10/25/2017	0.376	12
	3/28/2018	ND<0	4
	6/29/2018	0.8	34
	8/2/2018	0.981	36
	12/10/2018	0.433	16
	4/15/2019	0.271	9
	6/12/2019	ND<0	4
	8/27/2019	0.389	13
	10/29/2019	0.39	14
	3/30/2020	0.657	27
	6/16/2020	0.466	20
	9/21/2020	0.66	29
	9/2/2021	1.24	37
	1/11/2022	0.52	21

The Wilcoxon Statistic is 119
The Expected value is is 82.5
The Standard Deviation is 23.1571
The Z Score is 1.5546

ADEM Watermark

The Standard Deviation adjusted for ties is 23.086
The Z Score adjusted for ties is 1.55939
1.5546 < 2.326 indicating no statistical significance at 1% level
1.55939 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Total Phosphorus

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	38
Total Non-Detects	29 (76.3158%)
Pooled Mean	0.0365
Pooled Std Dev	0.0726412
Compliance Meas.	33
Compliance Mean	0.0420303
Compliance Std Dev	0.0765606
Background Meas.	5
Background Mean	0
Background Std Dev	0

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	5	100	0

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	0	0	0	75	15

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 3	33	24	72.7273	1.387

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 3	0.0420303	0.0765606	0.0420303	0.0346401	666	20.1818

Analysis of Variance Statistics

SS Wells	0.00767053
SS Total	0.195239

Kruskal-Wallis Statistics

Non-Detect Rank	15
Background Rank Sum	75
Background Rank Mean	15
H Statistic	0.944056
H Adjusted for Ties	1.69871

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Total Phosphorus

Location: SME 3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 29
Non detect rank is 15

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	ND<0	15
	3/18/2021	ND<0	15
	5/5/2021	ND<0	15
	11/23/2021	ND<0	15
	1/11/2022	ND<0	15
SME 3	3/13/2013	ND<0	15
	5/20/2013	ND<0	15
	9/23/2013	ND<0	15
	12/10/2013	ND<0	15
	2/6/2014	ND<0	15
	6/26/2014	ND<0	15
	9/30/2014	ND<0	15
	11/19/2014	ND<0	15
	3/23/2015	ND<0	15
	4/22/2015	ND<0	15
	9/30/2015	0.129	34
	11/19/2015	ND<0	15
	3/15/2016	ND<0	15
	6/29/2016	ND<0	15
	8/9/2016	ND<0	15
	12/7/2016	0.147	35
	3/2/2017	ND<0	15
	7/5/2017	ND<0	15
	8/16/2017	ND<0	15
	10/25/2017	0.106	31
	3/28/2018	ND<0	15
	6/29/2018	ND<0	15
	8/2/2018	0.108	32
	12/10/2018	0.127	33
	4/15/2019	0.285	38
	6/12/2019	ND<0	15
	8/27/2019	0.149	36
	10/29/2019	ND<0	15
	3/30/2020	ND<0	15
	6/16/2020	0.102	30
	9/21/2020	ND<0	15
	9/2/2021	0.234	37
	1/11/2022	ND<0	15

The Wilcoxon Statistic is 105
The Expected value is is 82.5
The Standard Deviation is 23.1571
The Z Score is 0.950034

ADEM Watermark

The Standard Deviation adjusted for ties is 17.2633
The Z Score adjusted for ties is 1.27438
0.950034 < 2.326 indicating no statistical significance at 1% level
1.27438 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Total Suspended Solids

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	38
Total Non-Detects	0 (0%)
Pooled Mean	39.5126
Pooled Std Dev	70.9391
Compliance Meas.	33
Compliance Mean	42.7206
Compliance Std Dev	75.7112
Background Meas.	5
Background Mean	18.34
Background Std Dev	6.81674

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	0	0	91.7

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	18.34	6.81674	0	91	18.2

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 3	33	0	0	1409.78

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 3	42.7206	75.7112	24.3806	34.2731	650	19.697

Analysis of Variance Statistics

SS Wells	2581.01
SS Total	186197

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	91
Background Rank Mean	18.2
H Statistic	0.0787879
H Adjusted for Ties	0.0787879

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Total Suspended Solids

Location: SME 3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	17.8	19
	3/18/2021	21.6	26
	5/5/2021	27.5	29
	11/23/2021	9.2	2
	1/11/2022	15.6	15
SME 3	3/13/2013	15	11
	5/20/2013	19	23
	9/23/2013	13	9
	12/10/2013	20	25
	2/6/2014	33	31
	6/26/2014	30	30
	9/30/2014	18	20
	11/19/2014	19	24
	3/23/2015	16	16
	4/22/2015	14	10
	9/30/2015	24.4	27
	11/19/2015	37.8	32
	3/15/2016	78.8	35
	6/29/2016	15.3	12
	8/9/2016	10.8	7
	12/7/2016	9.38	3
	3/2/2017	17	18
	7/5/2017	16.3	17
	8/16/2017	18.5	22
	10/25/2017	49.7	33
	3/28/2018	11.2	8
	6/29/2018	115	36
	8/2/2018	56	34
	12/10/2018	27.1	28
	4/15/2019	371	38
	6/12/2019	10.7	5
	8/27/2019	7	1
	10/29/2019	15.4	13
	3/30/2020	18.2	21
	6/16/2020	10.1	4
	9/21/2020	10.7	6
	9/2/2021	267	37
	1/11/2022	15.4	14

The Wilcoxon Statistic is 89
The Expected value is is 82.5
The Standard Deviation is 23.1571
The Z Score is 0.2591

ADEM Watermark

The Standard Deviation adjusted for ties is 23.1571
The Z Score adjusted for ties is 0.2591
0.2591 < 2.326 indicating no statistical significance at 1% level
0.2591 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Turbidity

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	38
Total Non-Detects	0 (0%)
Pooled Mean	43.0824
Pooled Std Dev	88.8045
Compliance Meas.	33
Compliance Mean	46.4061
Compliance Std Dev	94.8493
Background Meas.	5
Background Mean	21.146
Background Std Dev	16.8499

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	0	0	105.73

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	21.146	16.8499	0	90	18

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 3	33	0	0	1531.4

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 3	46.4061	94.8493	25.2601	42.9994	651	19.7273

Analysis of Variance Statistics

SS Wells	2770.57
SS Total	291791

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	90
Background Rank Mean	18
H Statistic	0.104895
H Adjusted for Ties	0.104895

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Turbidity

Location: SME 3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	17.7	19
	3/18/2021	2.2	1
	5/5/2021	20.02	23
	11/23/2021	48.51	30
	1/11/2022	17.3	17
SME 3	3/13/2013	17.1	16
	5/20/2013	18.5	22
	9/23/2013	15.3	12
	12/10/2013	48.3	29
	2/6/2014	82.7	35
	6/26/2014	50	31
	9/30/2014	17.3	18
	11/19/2014	22.4	24
	3/23/2015	25	26
	4/22/2015	12	7
	9/30/2015	18	21
	11/19/2015	65	33
	3/15/2016	68.4	34
	6/29/2016	17.7	20
	8/9/2016	14.8	11
	12/7/2016	8.5	3
	3/2/2017	14.6	10
	7/5/2017	12.5	8
	8/16/2017	11.5	6
	10/25/2017	15.3	13
	3/28/2018	8.9	4
	6/29/2018	15.8	15
	8/2/2018	30	27
	12/10/2018	33.1	28
	4/15/2019	552.6	38
	6/12/2019	7.8	2
	8/27/2019	55.3	32
	10/29/2019	22.4	25
	3/30/2020	14.4	9
	6/16/2020	9.2	5
	9/21/2020	15.3	14
	9/2/2021	102.3	36
	1/11/2022	109.4	37

The Wilcoxon Statistic is 90
The Expected value is is 82.5
The Standard Deviation is 23.1571
The Z Score is 0.302283

ADEM Watermark

The Standard Deviation adjusted for ties is 23.1571
The Z Score adjusted for ties is 0.302283
0.302283 < 2.326 indicating no statistical significance at 1% level
0.302283 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: DO

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	11
Total Non-Detects	0 (0%)
Pooled Mean	9.58
Pooled Std Dev	1.56769
Compliance Meas.	6
Compliance Mean	9.29833
Compliance Std Dev	1.75862
Background Meas.	5
Background Mean	9.918
Background Std Dev	1.41999

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	0	0	49.59

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	9.918	1.41999	0	32	6.4

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 5	6	0	0	55.79

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 5	9.29833	1.75862	-0.619667	0.979079	34	5.66667

Analysis of Variance Statistics

SS Wells	1.04724
SS Total	24.5764

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	32
Background Rank Mean	6.4
H Statistic	0.133333
H Adjusted for Ties	0.133333

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: DO

Location: SME 5

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	10.82	9
	3/18/2021	9.2	4
	5/5/2021	7.81	2
	11/23/2021	10.41	6
	1/11/2022	11.35	11
SME 5	12/17/2020	10.94	10
	3/18/2021	9.59	5
	5/5/2021	7.96	3
	9/2/2021	6.42	1
	11/23/2021	10.42	7
	1/11/2022	10.46	8

The Wilcoxon Statistic is 13
The Expected value is is 15
The Standard Deviation is 5.47723
The Z Score is -0.456435
The Standard Deviation adjusted for ties is 5.47723
The Z Score adjusted for ties is -0.456435
-0.456435 < 2.326 indicating no statistical significance at 1% level
-0.456435 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Nitrate-nitrite

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	11
Total Non-Detects	1 (9.09091%)
Pooled Mean	0.274455
Pooled Std Dev	0.140911
Compliance Meas.	6
Compliance Mean	0.249333
Compliance Std Dev	0.165372
Background Meas.	5
Background Mean	0.3046
Background Std Dev	0.115639

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	0	0	1.523

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	0.3046	0.115639	0	33	6.6

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 5	6	1	16.6667	1.496

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 5	0.249333	0.165372	-0.0552667	0.0880344	33	5.5

Analysis of Variance Statistics

SS Wells	0.00833019
SS Total	0.198559

Kruskal-Wallis Statistics

Non-Detect Rank	1
Background Rank Sum	33
Background Rank Mean	6.6
H Statistic	0.3
H Adjusted for Ties	0.3

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Nitrate-nitrite

Location: SME 5

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 1
Non detect rank is 1

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	0.387	9
	3/18/2021	0.319	7
	5/5/2021	0.213	4
	11/23/2021	0.164	3
	1/11/2022	0.44	10
SME 5	12/17/2020	0.371	8
	3/18/2021	0.316	6
	5/5/2021	ND<0	1
	9/2/2021	0.128	2
	11/23/2021	0.231	5
	1/11/2022	0.45	11

The Wilcoxon Statistic is 12
The Expected value is is 15
The Standard Deviation is 5.47723
The Z Score is -0.63901
The Standard Deviation adjusted for ties is 5.47723
The Z Score adjusted for ties is -0.63901
-0.63901 < 2.326 indicating no statistical significance at 1% level
-0.63901 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Ortho-phosphate

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	11
Total Non-Detects	10 (90.9091%)
Pooled Mean	0.00318182
Pooled Std Dev	0.0105529
Compliance Meas.	6
Compliance Mean	0.00583333
Compliance Std Dev	0.0142887
Background Meas.	5
Background Mean	0
Background Std Dev	0

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	5	100	0

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	0	0	0	27.5	5.5

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 5	6	5	83.3333	0.035

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 5	0.00583333	0.0142887	0.00583333	0.00644899	38.5	6.41667

Analysis of Variance Statistics

SS Wells	9.2803e-005
SS Total	0.00111364

Kruskal-Wallis Statistics

Non-Detect Rank	5.5
Background Rank Sum	27.5
Background Rank Mean	5.5
H Statistic	0.208333
H Adjusted for Ties	0.833333

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Ortho-phosphate

Location: SME 5

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 10
Non detect rank is 5.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	ND<0	5.5
	3/18/2021	ND<0	5.5
	5/5/2021	ND<0	5.5
	11/23/2021	ND<0	5.5
	1/11/2022	ND<0	5.5
SME 5	12/17/2020	ND<0	5.5
	3/18/2021	ND<0	5.5
	5/5/2021	ND<0	5.5
	9/2/2021	ND<0	5.5
	11/23/2021	ND<0	5.5
	1/11/2022	0.035	11

The Wilcoxon Statistic is 17.5
The Expected value is is 15
The Standard Deviation is 5.47723
The Z Score is 0.365148
The Standard Deviation adjusted for ties is 2.73861
The Z Score adjusted for ties is 0.730297
0.365148 < 2.326 indicating no statistical significance at 1% level
0.730297 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: pH

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	11
Total Non-Detects	0 (0%)
Pooled Mean	7.70182
Pooled Std Dev	0.217982
Compliance Meas.	6
Compliance Mean	7.815
Compliance Std Dev	0.116576
Background Meas.	5
Background Mean	7.566
Background Std Dev	0.243988

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	0	0	37.83

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	7.566	0.243988	0	21	4.2

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 5	6	0	0	46.89

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 5	7.815	0.116576	0.249	0.111667	45	7.5

Analysis of Variance Statistics

SS Wells	0.169094
SS Total	0.475164

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	21
Background Rank Mean	4.2
H Statistic	2.7
H Adjusted for Ties	2.7

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: pH

Location: SME 5

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	7.69	5
	3/18/2021	7.25	1
	5/5/2021	7.86	10
	11/23/2021	7.64	3
	1/11/2022	7.39	2
SME 5	12/17/2020	7.8	7
	3/18/2021	7.83	9
	5/5/2021	7.8	8
	9/2/2021	8.02	11
	11/23/2021	7.78	6
	1/11/2022	7.66	4

The Wilcoxon Statistic is 24
The Expected value is is 15
The Standard Deviation is 5.47723
The Z Score is 1.55188
The Standard Deviation adjusted for ties is 5.47723
The Z Score adjusted for ties is 1.55188
1.55188 < 2.326 indicating no statistical significance at 1% level
1.55188 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Temperature

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	11
Total Non-Detects	0 (0%)
Pooled Mean	16.1182
Pooled Std Dev	5.62633
Compliance Meas.	6
Compliance Mean	17.4833
Compliance Std Dev	6.34962
Background Meas.	5
Background Mean	14.48
Background Std Dev	4.7531

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	0	0	72.4

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	14.48	4.7531	0	25	5

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 5	6	0	0	104.9

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 5	17.4833	6.34962	3.00333	3.44884	41	6.83333

Analysis of Variance Statistics

SS Wells	24.6
SS Total	316.556

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	25
Background Rank Mean	5
H Statistic	0.833333
H Adjusted for Ties	0.833333

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Temperature

Location: SME 5

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

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	8
	5/5/2021	21	9
	11/23/2021	10.6	3
	1/11/2022	13.4	4
SME 5	12/17/2020	10	2
	3/18/2021	15.9	7
	5/5/2021	21.2	10
	9/2/2021	28.2	11
	11/23/2021	14.9	6
	1/11/2022	14.7	5

The Wilcoxon Statistic is 20
The Expected value is is 15
The Standard Deviation is 5.47723
The Z Score is 0.821584
The Standard Deviation adjusted for ties is 5.47723
The Z Score adjusted for ties is 0.821584
0.821584 < 2.326 indicating no statistical significance at 1% level
0.821584 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: TKN

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	11
Total Non-Detects	3 (27.2727%)
Pooled Mean	0.397636
Pooled Std Dev	0.455099
Compliance Meas.	6
Compliance Mean	0.468333
Compliance Std Dev	0.524359
Background Meas.	5
Background Mean	0.3128
Background Std Dev	0.396992

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	2	40	1.564

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	0.3128	0.396992	0	27	5.4

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 5	6	1	16.6667	2.81

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 5	0.468333	0.524359	0.155533	0.285818	39	6.5

Analysis of Variance Statistics

SS Wells	0.0659744
SS Total	2.07115

Kruskal-Wallis Statistics

Non-Detect Rank	2
Background Rank Sum	27
Background Rank Mean	5.4
H Statistic	0.3
H Adjusted for Ties	0.305556

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: TKN

Location: SME 5

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 3
Non detect rank is 2

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	0.263	5
	3/18/2021	0.331	8
	5/5/2021	ND<0	2
	11/23/2021	ND<0	2
	1/11/2022	0.97	10
SME 5	12/17/2020	0.258	4
	3/18/2021	0.317	6
	5/5/2021	0.41	9
	9/2/2021	0.325	7
	11/23/2021	ND<0	2
	1/11/2022	1.5	11

The Wilcoxon Statistic is 18
The Expected value is is 15
The Standard Deviation is 5.47723
The Z Score is 0.456435
The Standard Deviation adjusted for ties is 5.4272
The Z Score adjusted for ties is 0.460642
0.456435 < 2.326 indicating no statistical significance at 1% level
0.460642 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Total Phosphorus

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	11
Total Non-Detects	10 (90.9091%)
Pooled Mean	0.00909091
Pooled Std Dev	0.0301511
Compliance Meas.	6
Compliance Mean	0.0166667
Compliance Std Dev	0.0408248
Background Meas.	5
Background Mean	0
Background Std Dev	0

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	5	100	0

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	0	0	0	27.5	5.5

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 5	6	5	83.3333	0.1

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 5	0.0166667	0.0408248	0.0166667	0.0184257	38.5	6.41667

Analysis of Variance Statistics

SS Wells	0.000757576
SS Total	0.00909091

Kruskal-Wallis Statistics

Non-Detect Rank	5.5
Background Rank Sum	27.5
Background Rank Mean	5.5
H Statistic	0.208333
H Adjusted for Ties	0.833333

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Total Phosphorus

Location: SME 5

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 10
Non detect rank is 5.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	ND<0	5.5
	3/18/2021	ND<0	5.5
	5/5/2021	ND<0	5.5
	11/23/2021	ND<0	5.5
	1/11/2022	ND<0	5.5
SME 5	12/17/2020	ND<0	5.5
	3/18/2021	ND<0	5.5
	5/5/2021	ND<0	5.5
	9/2/2021	0.1	11
	11/23/2021	ND<0	5.5
	1/11/2022	ND<0	5.5

The Wilcoxon Statistic is 17.5
The Expected value is is 15
The Standard Deviation is 5.47723
The Z Score is 0.365148
The Standard Deviation adjusted for ties is 2.73861
The Z Score adjusted for ties is 0.730297
0.365148 < 2.326 indicating no statistical significance at 1% level
0.730297 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Total Suspended Solids

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	11
Total Non-Detects	0 (0%)
Pooled Mean	23.2182
Pooled Std Dev	13.9111
Compliance Meas.	6
Compliance Mean	27.2833
Compliance Std Dev	17.4995
Background Meas.	5
Background Mean	18.34
Background Std Dev	6.81674

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	0	0	91.7

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	18.34	6.81674	0	26	5.2

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 5	6	0	0	163.7

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 5	27.2833	17.4995	8.94333	8.36382	40	6.66667

Analysis of Variance Statistics

SS Wells	218.136
SS Total	1935.18

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	26
Background Rank Mean	5.2
H Statistic	0.533333
H Adjusted for Ties	0.533333

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Total Suspended Solids

Location: SME 5

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	17.8	6
	3/18/2021	21.6	7
	5/5/2021	27.5	9
	11/23/2021	9.2	1
	1/11/2022	15.6	3
SME 5	12/17/2020	17.7	5
	3/18/2021	23	8
	5/5/2021	60.6	11
	9/2/2021	31.8	10
	11/23/2021	14	2
	1/11/2022	16.6	4

The Wilcoxon Statistic is 19
The Expected value is is 15
The Standard Deviation is 5.47723
The Z Score is 0.63901
The Standard Deviation adjusted for ties is 5.47723
The Z Score adjusted for ties is 0.63901
0.63901 < 2.326 indicating no statistical significance at 1% level
0.63901 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Turbidity

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	11
Total Non-Detects	0 (0%)
Pooled Mean	25.5709
Pooled Std Dev	21.0784
Compliance Meas.	6
Compliance Mean	29.2583
Compliance Std Dev	25.0113
Background Meas.	5
Background Mean	21.146
Background Std Dev	16.8499

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	0	0	105.73

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	21.146	16.8499	0	29	5.8

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 5	6	0	0	175.55

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 5	29.2583	25.0113	8.11233	13.1794	37	6.16667

Analysis of Variance Statistics

SS Wells	179.482
SS Total	4442.97

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	29
Background Rank Mean	5.8
H Statistic	0.0333333
H Adjusted for Ties	0.0333333

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Turbidity

Location: SME 5

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	17.7	6
	3/18/2021	2.2	2
	5/5/2021	20.02	7
	11/23/2021	48.51	9
	1/11/2022	17.3	5
SME 5	12/17/2020	15.4	4
	3/18/2021	1.7	1
	5/5/2021	50.11	10
	9/2/2021	15.15	3
	11/23/2021	68.29	11
	1/11/2022	24.9	8

The Wilcoxon Statistic is 16
The Expected value is is 15
The Standard Deviation is 5.47723
The Z Score is 0.0912871
The Standard Deviation adjusted for ties is 5.47723
The Z Score adjusted for ties is 0.0912871
0.0912871 < 2.326 indicating no statistical significance at 1% level
0.0912871 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: DO

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	11
Total Non-Detects	0 (0%)
Pooled Mean	9.67545
Pooled Std Dev	1.58167
Compliance Meas.	6
Compliance Mean	9.47333
Compliance Std Dev	1.81174
Background Meas.	5
Background Mean	9.918
Background Std Dev	1.41999

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	0	0	49.59

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	9.918	1.41999	0	33	6.6

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 6	6	0	0	56.84

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 6	9.47333	1.81174	-0.444667	0.998613	33	5.5

Analysis of Variance Statistics

SS Wells	0.539259
SS Total	25.0167

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	33
Background Rank Mean	6.6
H Statistic	0.3
H Adjusted for Ties	0.3

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: DO

Location: SME 6

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	10.82	8
	3/18/2021	9.2	4
	5/5/2021	7.81	3
	11/23/2021	10.41	7
	1/11/2022	11.35	11
SME 6	12/17/2020	10.89	9
	3/18/2021	9.84	5
	5/5/2021	7.8	2
	9/2/2021	6.72	1
	11/23/2021	10.35	6
	1/11/2022	11.24	10

The Wilcoxon Statistic is 12
The Expected value is is 15
The Standard Deviation is 5.47723
The Z Score is -0.63901
The Standard Deviation adjusted for ties is 5.47723
The Z Score adjusted for ties is -0.63901
-0.63901 < 2.326 indicating no statistical significance at 1% level
-0.63901 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Nitrate-nitrite

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	11
Total Non-Detects	0 (0%)
Pooled Mean	0.294909
Pooled Std Dev	0.114372
Compliance Meas.	6
Compliance Mean	0.286833
Compliance Std Dev	0.12366
Background Meas.	5
Background Mean	0.3046
Background Std Dev	0.115639

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	0	0	1.523

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	0.3046	0.115639	0	31	6.2

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 6	6	0	0	1.721

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 6	0.286833	0.12366	-0.0177667	0.0727611	35	5.83333

Analysis of Variance Statistics

SS Wells	0.000860876
SS Total	0.130809

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	31
Background Rank Mean	6.2
H Statistic	0.0333333
H Adjusted for Ties	0.0333333

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Nitrate-nitrite

Location: SME 6

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	0.387	9
	3/18/2021	0.319	6
	5/5/2021	0.213	4
	11/23/2021	0.164	2
	1/11/2022	0.44	10
SME 6	12/17/2020	0.368	8
	3/18/2021	0.358	7
	5/5/2021	0.183	3
	9/2/2021	0.131	1
	11/23/2021	0.231	5
	1/11/2022	0.45	11

The Wilcoxon Statistic is 14
The Expected value is is 15
The Standard Deviation is 5.47723
The Z Score is -0.273861
The Standard Deviation adjusted for ties is 5.47723
The Z Score adjusted for ties is -0.273861
-0.273861 < 2.326 indicating no statistical significance at 1% level
-0.273861 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Ortho-phosphate

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	11
Total Non-Detects	11 (100%)
Pooled Mean	0
Pooled Std Dev	0
Compliance Meas.	6
Compliance Mean	0
Compliance Std Dev	0
Background Meas.	5
Background Mean	0
Background Std Dev	0

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	5	100	0

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	0	0	0	30	6

Compliance Locations

There is 1 compliance location

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

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 6	0	0	0	0	36	6

Analysis of Variance Statistics

SS Wells	0
SS Total	0

Kruskal-Wallis Statistics

Non-Detect Rank	6
Background Rank Sum	30
Background Rank Mean	6
H Statistic	0
H Adjusted for Ties	0

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Ortho-phosphate

Location: SME 6

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 11
Non detect rank is 6

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	ND<0	6
	3/18/2021	ND<0	6
	5/5/2021	ND<0	6
	11/23/2021	ND<0	6
	1/11/2022	ND<0	6
SME 6	12/17/2020	ND<0	6
	3/18/2021	ND<0	6
	5/5/2021	ND<0	6
	9/2/2021	ND<0	6
	11/23/2021	ND<0	6
	1/11/2022	ND<0	6

The Wilcoxon Statistic is 15
The Expected value is is 15
The Standard Deviation is 5.47723
The Z Score is -0.0912871
The Standard Deviation adjusted for ties is 0
The Z Score adjusted for ties is -1.#INF
-0.0912871 < 2.326 indicating no statistical significance at 1% level
-1.#INF < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: pH

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	11
Total Non-Detects	0 (0%)
Pooled Mean	7.70727
Pooled Std Dev	0.253144
Compliance Meas.	6
Compliance Mean	7.825
Compliance Std Dev	0.209643
Background Meas.	5
Background Mean	7.566
Background Std Dev	0.243988

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	0	0	37.83

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	7.566	0.243988	0	21	4.2

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 6	6	0	0	46.95

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 6	7.825	0.209643	0.259	0.13658	45	7.5

Analysis of Variance Statistics

SS Wells	0.182948
SS Total	0.640818

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	21
Background Rank Mean	4.2
H Statistic	2.7
H Adjusted for Ties	2.7

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: pH

Location: SME 6

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	7.69	6
	3/18/2021	7.25	1
	5/5/2021	7.86	9
	11/23/2021	7.64	3
	1/11/2022	7.39	2
SME 6	12/17/2020	7.96	10
	3/18/2021	7.65	4
	5/5/2021	7.75	8
	9/2/2021	8.19	11
	11/23/2021	7.68	5
	1/11/2022	7.72	7

The Wilcoxon Statistic is 24
The Expected value is is 15
The Standard Deviation is 5.47723
The Z Score is 1.55188
The Standard Deviation adjusted for ties is 5.47723
The Z Score adjusted for ties is 1.55188
1.55188 < 2.326 indicating no statistical significance at 1% level
1.55188 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Temperature

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	11
Total Non-Detects	0 (0%)
Pooled Mean	15.5364
Pooled Std Dev	5.66715
Compliance Meas.	6
Compliance Mean	16.4167
Compliance Std Dev	6.64181
Background Meas.	5
Background Mean	14.48
Background Std Dev	4.7531

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	0	0	72.4

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	14.48	4.7531	0	28	5.6

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 6	6	0	0	98.5

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 6	16.4167	6.64181	1.93667	3.55918	38	6.33333

Analysis of Variance Statistics

SS Wells	10.2291
SS Total	321.165

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	28
Background Rank Mean	5.6
H Statistic	0.133333
H Adjusted for Ties	0.133333

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Temperature

Location: SME 6

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

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	8
	5/5/2021	21	10
	11/23/2021	10.6	4
	1/11/2022	13.4	5
SME 6	12/17/2020	10.1	2
	3/18/2021	15.5	7
	5/5/2021	19.9	9
	9/2/2021	27.7	11
	11/23/2021	15.1	6
	1/11/2022	10.2	3

The Wilcoxon Statistic is 17
The Expected value is is 15
The Standard Deviation is 5.47723
The Z Score is 0.273861
The Standard Deviation adjusted for ties is 5.47723
The Z Score adjusted for ties is 0.273861
0.273861 < 2.326 indicating no statistical significance at 1% level
0.273861 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: TKN

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	11
Total Non-Detects	5 (45.4545%)
Pooled Mean	0.429091
Pooled Std Dev	0.717031
Compliance Meas.	6
Compliance Mean	0.526
Compliance Std Dev	0.936692
Background Meas.	5
Background Mean	0.3128
Background Std Dev	0.396992

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	2	40	1.564

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	0.3128	0.396992	0	29	5.8

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 6	6	3	50	3.156

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 6	0.526	0.936692	0.2132	0.452119	37	6.16667

Analysis of Variance Statistics

SS Wells	0.123966
SS Total	5.14134

Kruskal-Wallis Statistics

Non-Detect Rank	3
Background Rank Sum	29
Background Rank Mean	5.8
H Statistic	0.0333333
H Adjusted for Ties	0.0366667

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: TKN

Location: SME 6

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 5
Non detect rank is 3

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	0.263	6
	3/18/2021	0.331	7
	5/5/2021	ND<0	3
	11/23/2021	ND<0	3
	1/11/2022	0.97	10
SME 6	12/17/2020	ND<0	3
	3/18/2021	ND<0	3
	5/5/2021	0.403	9
	9/2/2021	0.353	8
	11/23/2021	ND<0	3
	1/11/2022	2.4	11

The Wilcoxon Statistic is 16
The Expected value is is 15
The Standard Deviation is 5.47723
The Z Score is 0.0912871
The Standard Deviation adjusted for ties is 5.22233
The Z Score adjusted for ties is 0.0957427
0.0912871 < 2.326 indicating no statistical significance at 1% level
0.0957427 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Total Phosphorus

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	11
Total Non-Detects	10 (90.9091%)
Pooled Mean	0.0390909
Pooled Std Dev	0.12965
Compliance Meas.	6
Compliance Mean	0.0716667
Compliance Std Dev	0.175547
Background Meas.	5
Background Mean	0
Background Std Dev	0

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	5	100	0

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	0	0	0	27.5	5.5

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 6	6	5	83.3333	0.43

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 6	0.0716667	0.175547	0.0716667	0.0792305	38.5	6.41667

Analysis of Variance Statistics

SS Wells	0.0140076
SS Total	0.168091

Kruskal-Wallis Statistics

Non-Detect Rank	5.5
Background Rank Sum	27.5
Background Rank Mean	5.5
H Statistic	0.208333
H Adjusted for Ties	0.833333

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Total Phosphorus

Location: SME 6

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 10
Non detect rank is 5.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	ND<0	5.5
	3/18/2021	ND<0	5.5
	5/5/2021	ND<0	5.5
	11/23/2021	ND<0	5.5
	1/11/2022	ND<0	5.5
SME 6	12/17/2020	ND<0	5.5
	3/18/2021	ND<0	5.5
	5/5/2021	ND<0	5.5
	9/2/2021	0.43	11
	11/23/2021	ND<0	5.5
	1/11/2022	ND<0	5.5

The Wilcoxon Statistic is 17.5
The Expected value is is 15
The Standard Deviation is 5.47723
The Z Score is 0.365148
The Standard Deviation adjusted for ties is 2.73861
The Z Score adjusted for ties is 0.730297
0.365148 < 2.326 indicating no statistical significance at 1% level
0.730297 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Total Suspended Solids

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	11
Total Non-Detects	0 (0%)
Pooled Mean	25.9545
Pooled Std Dev	21.4295
Compliance Meas.	6
Compliance Mean	32.3
Compliance Std Dev	27.8384
Background Meas.	5
Background Mean	18.34
Background Std Dev	6.81674

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	0	0	91.7

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	18.34	6.81674	0	27	5.4

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 6	6	0	0	193.8

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 6	32.3	27.8384	13.96	12.8623	39	6.5

Analysis of Variance Statistics

SS Wells	531.495
SS Total	4592.25

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	27
Background Rank Mean	5.4
H Statistic	0.3
H Adjusted for Ties	0.3

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Total Suspended Solids

Location: SME 6

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	17.8	6
	3/18/2021	21.6	8
	5/5/2021	27.5	9
	11/23/2021	9.2	1
	1/11/2022	15.6	3
SME 6	12/17/2020	16.7	4
	3/18/2021	47.2	10
	5/5/2021	82.8	11
	9/2/2021	19	7
	11/23/2021	11.2	2
	1/11/2022	16.9	5

The Wilcoxon Statistic is 18
The Expected value is is 15
The Standard Deviation is 5.47723
The Z Score is 0.456435
The Standard Deviation adjusted for ties is 5.47723
The Z Score adjusted for ties is 0.456435
0.456435 < 2.326 indicating no statistical significance at 1% level
0.456435 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Turbidity

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	11
Total Non-Detects	0 (0%)
Pooled Mean	21.1327
Pooled Std Dev	18.4586
Compliance Meas.	6
Compliance Mean	21.1217
Compliance Std Dev	21.3144
Background Meas.	5
Background Mean	21.146
Background Std Dev	16.8499

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	0	0	105.73

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	21.146	16.8499	0	32	6.4

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 6	6	0	0	126.73

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 6	21.1217	21.3144	-0.0243333	11.7818	34	5.66667

Analysis of Variance Statistics

SS Wells	0.00161485
SS Total	3407.19

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	32
Background Rank Mean	6.4
H Statistic	0.133333
H Adjusted for Ties	0.133333

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Turbidity

Location: SME 6

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	17.7	7
	3/18/2021	2.2	1
	5/5/2021	20.02	8
	11/23/2021	48.51	10
	1/11/2022	17.3	6
SME 6	12/17/2020	13.6	5
	3/18/2021	3.3	2
	5/5/2021	62.32	11
	9/2/2021	13.32	4
	11/23/2021	9.79	3
	1/11/2022	24.4	9

The Wilcoxon Statistic is 13
The Expected value is is 15
The Standard Deviation is 5.47723
The Z Score is -0.456435
The Standard Deviation adjusted for ties is 5.47723
The Z Score adjusted for ties is -0.456435
-0.456435 < 2.326 indicating no statistical significance at 1% level
-0.456435 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: DO

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	42
Total Non-Detects	0 (0%)
Pooled Mean	8.43667
Pooled Std Dev	2.3727
Compliance Meas.	37
Compliance Mean	8.23649
Compliance Std Dev	2.41694
Background Meas.	5
Background Mean	9.918
Background Std Dev	1.41999

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	0	0	49.59

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	9.918	1.41999	0	149	29.8

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SS 5	37	0	0	304.75

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SS 5	8.23649	2.41694	-1.68151	1.11327	754	20.3784

Analysis of Variance Statistics

SS Wells	12.4544
SS Total	230.818

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	149
Background Rank Mean	29.8
H Statistic	2.59799
H Adjusted for Ties	2.59799

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: DO

Location: SS 5

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	10.82	33
	3/18/2021	9.2	28
	5/5/2021	7.81	17
	11/23/2021	10.41	32
	1/11/2022	11.35	39
SS 5	3/12/2013	9.87	30
	5/8/2013	7.19	13
	9/23/2013	5.44	5
	12/10/2013	9.1	27
	2/6/2014	12.09	41
	6/26/2014	7.01	12
	9/30/2014	6.82	11
	11/19/2014	13.13	42
	3/23/2015	8.99	24
	4/22/2015	6.71	10
	9/30/2015	6.61	8
	11/19/2015	8.47	20
	3/15/2016	8.47	21
	6/29/2016	3.81	2
	8/9/2016	3.16	1
	12/7/2016	6.7	9
	3/2/2017	3.92	3
	7/5/2017	7.19	14
	8/16/2017	4.83	4
	10/25/2017	8.36	19
	3/28/2018	10.23	31
	6/29/2018	5.5	6
	8/2/2018	6.04	7
	12/10/2018	11.15	37
	4/15/2019	7.77	16
	6/12/2019	8.78	23
	8/27/2019	9.02	25
	10/29/2019	9.33	29
	3/30/2020	11.07	35
	6/16/2020	7.99	18
	9/21/2020	11.45	40
	12/17/2020	11.24	38
	3/18/2021	9.03	26
	5/5/2021	7.72	15
	9/2/2021	8.54	22
	11/23/2021	10.89	34
	1/11/2022	11.13	36

ADEM Watermark

The Wilcoxon Statistic is 51
The Expected value is is 92.5
The Standard Deviation is 25.7472
The Z Score is -1.63125
The Standard Deviation adjusted for ties is 25.7472
The Z Score adjusted for ties is -1.63125
-1.63125 < 2.326 indicating no statistical significance at 1% level
-1.63125 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Nitrate-nitrite

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	42
Total Non-Detects	18 (42.8571%)
Pooled Mean	0.13331
Pooled Std Dev	0.136987
Compliance Meas.	37
Compliance Mean	0.110162
Compliance Std Dev	0.123533
Background Meas.	5
Background Mean	0.3046
Background Std Dev	0.115639

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	0	0	1.523

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	0.3046	0.115639	0	175	35

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SS 5	37	18	48.6486	4.076

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SS 5	0.110162	0.123533	-0.194438	0.0584948	728	19.6757

Analysis of Variance Statistics

SS Wells	0.166527
SS Total	0.769387

Kruskal-Wallis Statistics

Non-Detect Rank	9.5
Background Rank Sum	175
Background Rank Mean	35
H Statistic	6.87304
H Adjusted for Ties	7.45868

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Nitrate-nitrite

Location: SS 5

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 18
Non detect rank is 9.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	0.387	40
	3/18/2021	0.319	37
	5/5/2021	0.213	30
	11/23/2021	0.164	26
	1/11/2022	0.44	42
SS 5	3/12/2013	0.3	36
	5/8/2013	0.16	25
	9/23/2013	ND<0	9.5
	12/10/2013	0.24	32
	2/6/2014	0.39	41
	6/26/2014	ND<0	9.5
	9/30/2014	ND<0	9.5
	11/19/2014	ND<0	9.5
	3/23/2015	0.26	34
	4/22/2015	0.15	24
	9/30/2015	ND<0	9.5
	11/19/2015	0.239	31
	3/15/2016	0.264	35
	6/29/2016	ND<0	9.5
	8/9/2016	ND<0	9.5
	12/7/2016	ND<0	9.5
	3/2/2017	0.334	39
	7/5/2017	ND<0	9.5
	8/16/2017	ND<0	9.5
	10/25/2017	ND<0	9.5
	3/28/2018	0.248	33
	6/29/2018	ND<0	9.5
	8/2/2018	ND<0	9.5
	12/10/2018	0.146	23
	4/15/2019	0.168	27
	6/12/2019	ND<0	9.5
	8/27/2019	ND<0	9.5
	10/29/2019	0.105	19
	3/30/2020	0.127	22
	6/16/2020	ND<0	9.5
	9/21/2020	ND<0	9.5
	12/17/2020	0.2	29
	3/18/2021	0.191	28
	5/5/2021	0.108	20
	9/2/2021	ND<0	9.5
	11/23/2021	0.126	21
	1/11/2022	0.32	38

ADEM Watermark

The Wilcoxon Statistic is 25
The Expected value is is 92.5
The Standard Deviation is 25.7472
The Z Score is -2.64107
The Standard Deviation adjusted for ties is 24.7157
The Z Score adjusted for ties is -2.75129
-2.64107 < 2.326 indicating no statistical significance at 1% level
-2.75129 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Ortho-phosphate

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	42
Total Non-Detects	38 (90.4762%)
Pooled Mean	0.00402381
Pooled Std Dev	0.0133681
Compliance Meas.	37
Compliance Mean	0.00456757
Compliance Std Dev	0.0141765
Background Meas.	5
Background Mean	0
Background Std Dev	0

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	5	100	0

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	0	0	0	97.5	19.5

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SS 5	37	33	89.1892	0.169

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SS 5	0.00456757	0.0141765	0.00456757	0.00640812	805.5	21.7703

Analysis of Variance Statistics

SS Wells	9.18951e-005
SS Total	0.00732698

Kruskal-Wallis Statistics

Non-Detect Rank	19.5
Background Rank Sum	97.5
Background Rank Mean	19.5
H Statistic	0.150849
H Adjusted for Ties	0.581393

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Ortho-phosphate

Location: SS 5

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 38
Non detect rank is 19.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	ND<0	19.5
	3/18/2021	ND<0	19.5
	5/5/2021	ND<0	19.5
	11/23/2021	ND<0	19.5
	1/11/2022	ND<0	19.5
SS 5	3/12/2013	0.031	40
	5/8/2013	ND<0	19.5
	9/23/2013	0.029	39
	12/10/2013	0.043	41
	2/6/2014	ND<0	19.5
	6/26/2014	ND<0	19.5
	9/30/2014	ND<0	19.5
	11/19/2014	ND<0	19.5
	3/23/2015	ND<0	19.5
	4/22/2015	ND<0	19.5
	9/30/2015	ND<0	19.5
	11/19/2015	ND<0	19.5
	3/15/2016	ND<0	19.5
	6/29/2016	0.066	42
	8/9/2016	ND<0	19.5
	12/7/2016	ND<0	19.5
	3/2/2017	ND<0	19.5
	7/5/2017	ND<0	19.5
	8/16/2017	ND<0	19.5
	10/25/2017	ND<0	19.5
	3/28/2018	ND<0	19.5
	6/29/2018	ND<0	19.5
	8/2/2018	ND<0	19.5
	12/10/2018	ND<0	19.5
	4/15/2019	ND<0	19.5
	6/12/2019	ND<0	19.5
	8/27/2019	ND<0	19.5
	10/29/2019	ND<0	19.5
	3/30/2020	ND<0	19.5
	6/16/2020	ND<0	19.5
	9/21/2020	ND<0	19.5
	12/17/2020	ND<0	19.5
	3/18/2021	ND<0	19.5
	5/5/2021	ND<0	19.5
	9/2/2021	ND<0	19.5
	11/23/2021	ND<0	19.5
	1/11/2022	ND<0	19.5

ADEM Watermark

The Wilcoxon Statistic is 102.5
The Expected value is is 92.5
The Standard Deviation is 25.7472
The Z Score is 0.368973
The Standard Deviation adjusted for ties is 13.1149
The Z Score adjusted for ties is 0.724367
0.368973 < 2.326 indicating no statistical significance at 1% level
0.724367 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: pH

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	42
Total Non-Detects	0 (0%)
Pooled Mean	7.91452
Pooled Std Dev	0.455231
Compliance Meas.	37
Compliance Mean	7.96162
Compliance Std Dev	0.458533
Background Meas.	5
Background Mean	7.566
Background Std Dev	0.243988

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	0	0	37.83

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	7.566	0.243988	0	57	11.4

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SS 5	37	0	0	294.58

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SS 5	7.96162	0.458533	0.395622	0.210502	846	22.8649

Analysis of Variance Statistics

SS Wells	0.689418
SS Total	8.49664

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	57
Background Rank Mean	11.4
H Statistic	3.84701
H Adjusted for Ties	3.84701

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: pH

Location: SS 5

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	7.69	15
	3/18/2021	7.25	3
	5/5/2021	7.86	19
	11/23/2021	7.64	12
	1/11/2022	7.39	8
SS 5	3/12/2013	8.38	35
	5/8/2013	7.38	7
	9/23/2013	8	24
	12/10/2013	8.25	31
	2/6/2014	7.2	2
	6/26/2014	8.53	39
	9/30/2014	7.64	13
	11/19/2014	8.96	42
	3/23/2015	8.5	38
	4/22/2015	7.76	16
	9/30/2015	8.26	32
	11/19/2015	7.86	20
	3/15/2016	8.37	34
	6/29/2016	8.01	26
	8/9/2016	7.86	21
	12/7/2016	7.94	23
	3/2/2017	7.78	18
	7/5/2017	7.77	17
	8/16/2017	8.1	28
	10/25/2017	8.24	30
	3/28/2018	8.53	40
	6/29/2018	7.93	22
	8/2/2018	7.58	11
	12/10/2018	7.01	1
	4/15/2019	7.35	4
	6/12/2019	8.44	37
	8/27/2019	8.66	41
	10/29/2019	8.2	29
	3/30/2020	8.35	33
	6/16/2020	8.41	36
	9/21/2020	7.36	5
	12/17/2020	8.02	27
	3/18/2021	7.36	6
	5/5/2021	7.55	10
	9/2/2021	8	25
	11/23/2021	7.4	9
	1/11/2022	7.64	14

ADEM Watermark

The Wilcoxon Statistic is 143
The Expected value is is 92.5
The Standard Deviation is 25.7472
The Z Score is 1.94196
The Standard Deviation adjusted for ties is 25.7472
The Z Score adjusted for ties is 1.94196
1.94196 < 2.326 indicating no statistical significance at 1% level
1.94196 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Temperature

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	41
Total Non-Detects	0 (0%)
Pooled Mean	18.8532
Pooled Std Dev	7.30544
Compliance Meas.	36
Compliance Mean	19.4606
Compliance Std Dev	7.4364
Background Meas.	5
Background Mean	14.48
Background Std Dev	4.7531

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	0	0	72.4

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	14.48	4.7531	0	70	14

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SS 5	36	0	0	700.58

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SS 5	19.4606	7.4364	4.98056	3.43977	791	21.9722

Analysis of Variance Statistics

SS Wells	108.904
SS Total	2134.78

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	70
Background Rank Mean	14
H Statistic	1.94444
H Adjusted for Ties	1.94444

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Temperature

Location: SS 5

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	9.8	6
	3/18/2021	17.6	18
	5/5/2021	21	27
	11/23/2021	10.6	7
	1/11/2022	13.4	12
SS 5	3/12/2013	10.8	8
	5/8/2013	16.8	16
	9/23/2013	25.8	31
	12/10/2013	7.7	3
	2/6/2014	5.4	1
	9/30/2014	24.44	29
	11/19/2014	8.5	4
	3/23/2015	17.7	19
	4/22/2015	20.2	24
	9/30/2015	25.3	30
	11/19/2015	15.9	15
	3/15/2016	17.2	17
	6/29/2016	29.77	40
	8/9/2016	29.4	39
	12/7/2016	12.3	10
	3/2/2017	12.77	11
	7/5/2017	28.9	37
	8/16/2017	29.9	41
	10/25/2017	19.2	22
	3/28/2018	18.5	21
	6/29/2018	27.5	34
	8/2/2018	25.8	32
	12/10/2018	7.3	2
	4/15/2019	19.4	23
	6/12/2019	26.6	33
	8/27/2019	28.9	38
	10/29/2019	18.1	20
	3/30/2020	20.8	26
	6/16/2020	27.9	35
	9/21/2020	22.6	28
	12/17/2020	9.6	5
	3/18/2021	15.7	14
	5/5/2021	20.5	25
	9/2/2021	28.6	36
	11/23/2021	13.7	13
	1/11/2022	11.1	9

The Wilcoxon Statistic is 125

ADEM Watermark

The Expected value is is 90
The Standard Deviation is 25.0998
The Z Score is 1.37451
The Standard Deviation adjusted for ties is 25.0998
The Z Score adjusted for ties is 1.37451
1.37451 < 2.326 indicating no statistical significance at 1% level
1.37451 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: TKN

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	42
Total Non-Detects	6 (14.2857%)
Pooled Mean	0.475976
Pooled Std Dev	0.292348
Compliance Meas.	37
Compliance Mean	0.498027
Compliance Std Dev	0.275006
Background Meas.	5
Background Mean	0.3128
Background Std Dev	0.396992

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	2	40	1.564

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	0.3128	0.396992	0	63	12.6

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SS 5	37	4	10.8108	18.427

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SS 5	0.498027	0.275006	0.185227	0.137952	840	22.7027

Analysis of Variance Statistics

SS Wells	0.151123
SS Total	3.50415

Kruskal-Wallis Statistics

Non-Detect Rank	3.5
Background Rank Sum	63
Background Rank Mean	12.6
H Statistic	2.98718
H Adjusted for Ties	2.99567

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: TKN

Location: SS 5

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 6
Non detect rank is 3.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	0.263	7
	3/18/2021	0.331	9
	5/5/2021	ND<0	3.5
	11/23/2021	ND<0	3.5
	1/11/2022	0.97	40
SS 5	3/12/2013	0.39	12
	5/8/2013	0.62	35
	9/23/2013	1.3	41
	12/10/2013	0.67	37
	2/6/2014	0.86	39
	6/26/2014	0.4	14
	9/30/2014	0.45	18
	11/19/2014	0.35	10
	3/23/2015	0.46	19
	4/22/2015	0.47	21
	9/30/2015	0.606	34
	11/19/2015	ND<0	3.5
	3/15/2016	0.279	8
	6/29/2016	0.48	23
	8/9/2016	0.464	20
	12/7/2016	0.42	15
	3/2/2017	0.766	38
	7/5/2017	0.474	22
	8/16/2017	0.493	24
	10/25/2017	0.531	28
	3/28/2018	ND<0	3.5
	6/29/2018	0.605	33
	8/2/2018	0.554	30
	12/10/2018	0.522	27
	4/15/2019	0.374	11
	6/12/2019	ND<0	3.5
	8/27/2019	0.508	25
	10/29/2019	0.631	36
	3/30/2020	0.399	13
	6/16/2020	0.534	29
	9/21/2020	0.512	26
	12/17/2020	0.428	16
	3/18/2021	0.57	31
	5/5/2021	0.576	32
	9/2/2021	0.431	17
	11/23/2021	ND<0	3.5
	1/11/2022	1.3	42

ADEM Watermark

The Wilcoxon Statistic is 137
The Expected value is is 92.5
The Standard Deviation is 25.7472
The Z Score is 1.70893
The Standard Deviation adjusted for ties is 25.7106
The Z Score adjusted for ties is 1.71135
1.70893 < 2.326 indicating no statistical significance at 1% level
1.71135 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Total Phosphorus

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	42
Total Non-Detects	37 (88.0952%)
Pooled Mean	0.0196429
Pooled Std Dev	0.0562702
Compliance Meas.	37
Compliance Mean	0.0222973
Compliance Std Dev	0.0595422
Background Meas.	5
Background Mean	0
Background Std Dev	0

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	5	100	0

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	0	0	0	95	19

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SS 5	37	32	86.4865	0.825

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SS 5	0.0222973	0.0595422	0.0222973	0.0269144	808	21.8378

Analysis of Variance Statistics

SS Wells	0.00218991
SS Total	0.12982

Kruskal-Wallis Statistics

Non-Detect Rank	19
Background Rank Sum	95
Background Rank Mean	19
H Statistic	0.235701
H Adjusted for Ties	0.744887

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Total Phosphorus

Location: SS 5

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 37
Non detect rank is 19

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	ND<0	19
	3/18/2021	ND<0	19
	5/5/2021	ND<0	19
	11/23/2021	ND<0	19
	1/11/2022	ND<0	19
SS 5	3/12/2013	ND<0	19
	5/8/2013	ND<0	19
	9/23/2013	ND<0	19
	12/10/2013	0.11	38
	2/6/2014	ND<0	19
	6/26/2014	ND<0	19
	9/30/2014	ND<0	19
	11/19/2014	ND<0	19
	3/23/2015	ND<0	19
	4/22/2015	ND<0	19
	9/30/2015	ND<0	19
	11/19/2015	ND<0	19
	3/15/2016	0.225	42
	6/29/2016	ND<0	19
	8/9/2016	ND<0	19
	12/7/2016	0.12	39
	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	0.17	40
	10/29/2019	0.2	41
	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

ADEM Watermark

The Wilcoxon Statistic is 105
The Expected value is is 92.5
The Standard Deviation is 25.7472
The Z Score is 0.466071
The Standard Deviation adjusted for ties is 14.4832
The Z Score adjusted for ties is 0.828546
0.466071 < 2.326 indicating no statistical significance at 1% level
0.828546 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Total Suspended Solids

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	42
Total Non-Detects	0 (0%)
Pooled Mean	13.0145
Pooled Std Dev	5.04044
Compliance Meas.	37
Compliance Mean	12.2949
Compliance Std Dev	4.3932
Background Meas.	5
Background Mean	18.34
Background Std Dev	6.81674

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	0	0	91.7

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	18.34	6.81674	0	160	32

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SS 5	37	0	0	454.91

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SS 5	12.2949	4.3932	-6.04514	2.23572	743	20.0811

Analysis of Variance Statistics

SS Wells	160.966
SS Total	1041.65

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	160
Background Rank Mean	32
H Statistic	4.15776
H Adjusted for Ties	4.15776

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Total Suspended Solids

Location: SS 5

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	17.8	38
	3/18/2021	21.6	40
	5/5/2021	27.5	41
	11/23/2021	9.2	6
	1/11/2022	15.6	35
SS 5	3/12/2013	7.2	2
	5/8/2013	21	39
	9/23/2013	15	33
	12/10/2013	13	27
	2/6/2014	12	23
	6/26/2014	11	15
	9/30/2014	11	16
	11/19/2014	9.6	8
	3/23/2015	11	17
	4/22/2015	13	28
	9/30/2015	9.91	10
	11/19/2015	11	18
	3/15/2016	9.5	7
	6/29/2016	13.2	29
	8/9/2016	12.6	25
	12/7/2016	8	4
	3/2/2017	16	36
	7/5/2017	12	24
	8/16/2017	15.1	34
	10/25/2017	11.8	22
	3/28/2018	8.33	5
	6/29/2018	13.3	30
	8/2/2018	12.8	26
	12/10/2018	16.7	37
	4/15/2019	11.7	21
	6/12/2019	11	19
	8/27/2019	7.1	1
	10/29/2019	10.4	12
	3/30/2020	10.6	14
	6/16/2020	9.67	9
	9/21/2020	11	20
	12/17/2020	10.1	11
	3/18/2021	14.6	32
	5/5/2021	32.2	42
	9/2/2021	14.4	31
	11/23/2021	7.7	3
	1/11/2022	10.4	13

ADEM Watermark

The Wilcoxon Statistic is 40
The Expected value is is 92.5
The Standard Deviation is 25.7472
The Z Score is -2.05848
The Standard Deviation adjusted for ties is 25.7472
The Z Score adjusted for ties is -2.05848
-2.05848 < 2.326 indicating no statistical significance at 1% level
-2.05848 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Turbidity

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	41
Total Non-Detects	0 (0%)
Pooled Mean	15.8124
Pooled Std Dev	10.1279
Compliance Meas.	36
Compliance Mean	15.0717
Compliance Std Dev	8.9528
Background Meas.	5
Background Mean	21.146
Background Std Dev	16.8499

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	5	0	0	105.73

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	21.146	16.8499	0	131	26.2

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SS 5	36	0	0	542.58

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SS 5	15.0717	8.9528	-6.07433	4.79764	730	20.2778

Analysis of Variance Statistics

SS Wells	161.989
SS Total	4103.01

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	131
Background Rank Mean	26.2
H Statistic	1.07302
H Adjusted for Ties	1.07302

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Turbidity

Location: SS 5

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	17.7	28
	3/18/2021	2.2	2
	5/5/2021	20.02	33
	11/23/2021	48.51	41
	1/11/2022	17.3	27
SS 5	3/12/2013	5.98	3
	5/8/2013	24.4	36
	9/23/2013	13.8	21
	12/10/2013	22.8	35
	2/6/2014	27.5	38
	6/26/2014	11	16
	9/30/2014	11.2	18
	11/19/2014	14.1	23
	3/23/2015	18	29
	4/22/2015	19	31
	9/30/2015	11	17
	11/19/2015	19	32
	6/29/2016	14.7	24
	8/9/2016	11.6	19
	12/7/2016	6.6	4
	3/2/2017	14	22
	7/5/2017	8.4	7
	8/16/2017	10.2	12
	10/25/2017	7.5	6
	3/28/2018	7	5
	6/29/2018	10.4	13
	8/2/2018	13.5	20
	12/10/2018	21.9	34
	4/15/2019	15.5	25
	6/12/2019	10	11
	8/27/2019	24.5	37
	10/29/2019	18.7	30
	3/30/2020	9.2	9
	6/16/2020	10.5	14
	9/21/2020	16.5	26
	12/17/2020	8.64	8
	3/18/2021	0.6	1
	5/5/2021	38.4	39
	9/2/2021	9.62	10
	11/23/2021	10.84	15
	1/11/2022	46	40

The Wilcoxon Statistic is 64

ADEM Watermark

The Expected value is is 90
The Standard Deviation is 25.0998
The Z Score is -1.05579
The Standard Deviation adjusted for ties is 25.0998
The Z Score adjusted for ties is -1.05579
-1.05579 < 2.326 indicating no statistical significance at 1% level
-1.05579 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: DO

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	43
Total Non-Detects	0 (0%)
Pooled Mean	7.73
Pooled Std Dev	2.43643
Compliance Meas.	37
Compliance Mean	7.47568
Compliance Std Dev	2.45349
Background Meas.	6
Background Mean	9.29833
Background Std Dev	1.75862

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 5	6	0	0	55.79

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 5	9.29833	1.75862	1.16354	183	30.5

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
RC 14	37	0	0	276.6

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
RC 14	7.47568	2.45349	-1.82266	1.04729	763	20.6216

Analysis of Variance Statistics

SS Wells	17.1512
SS Total	249.321

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	183
Background Rank Mean	30.5
H Statistic	3.19533
H Adjusted for Ties	3.19533

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: DO

Location: RC 14

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 5	12/17/2020	10.94	41
	3/18/2021	9.59	31
	5/5/2021	7.96	24
	9/2/2021	6.42	12
	11/23/2021	10.42	37
	1/11/2022	10.46	38
RC 14	3/12/2013	7.53	20
	5/8/2013	1.78	1
	9/23/2013	6.68	15
	12/10/2013	9.5	30
	2/6/2014	10.94	42
	6/26/2014	6.3	11
	9/19/2014	10.1	35
	9/30/2014	6.2	10
	3/23/2015	7.8	23
	4/22/2015	7.25	17
	9/30/2015	5.63	7
	11/19/2015	6.07	9
	3/15/2016	7.73	22
	6/29/2016	2.17	2
	8/9/2016	2.35	3
	12/7/2016	6.47	13
	3/2/2017	3.55	4
	7/5/2017	6.56	14
	8/16/2017	5.54	5
	10/25/2017	7.26	18
	3/28/2018	9	29
	6/29/2018	5.89	8
	8/2/2018	5.56	6
	12/10/2018	10.63	40
	4/15/2019	7.67	21
	6/12/2019	7.39	19
	8/27/2019	8.78	27
	10/29/2019	9.83	33
	3/30/2020	10.01	34
	6/16/2020	8.01	26
	9/21/2020	9.65	32
	12/17/2020	10.4	36
	3/18/2021	8.88	28
	5/5/2021	7.99	25
	9/2/2021	7.11	16
	11/23/2021	10.57	39
	1/11/2022	11.82	43

ADEM Watermark

The Wilcoxon Statistic is 60
The Expected value is is 111
The Standard Deviation is 28.5307
The Z Score is -1.80507
The Standard Deviation adjusted for ties is 28.5307
The Z Score adjusted for ties is -1.80507
-1.80507 < 2.326 indicating no statistical significance at 1% level
-1.80507 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Nitrate-nitrite

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	43
Total Non-Detects	21 (48.8372%)
Pooled Mean	0.104791
Pooled Std Dev	0.121819
Compliance Meas.	37
Compliance Mean	0.0813514
Compliance Std Dev	0.0973037
Background Meas.	6
Background Mean	0.249333
Background Std Dev	0.165372

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 5	6	1	16.6667	1.496

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 5	0.249333	0.165372	0.0944363	199	33.1667

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
RC 14	37	20	54.0541	3.01

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
RC 14	0.0813514	0.0973037	-0.167982	0.0474999	747	20.1892

Analysis of Variance Statistics

SS Wells	0.145683
SS Total	0.623271

Kruskal-Wallis Statistics

Non-Detect Rank	11
Background Rank Sum	199
Background Rank Mean	33.1667
H Statistic	5.51474
H Adjusted for Ties	6.24037

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Nitrate-nitrite

Location: RC 14

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 21
Non detect rank is 11

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 5	12/17/2020	0.371	42
	3/18/2021	0.316	41
	5/5/2021	ND<0	11
	9/2/2021	0.128	26
	11/23/2021	0.231	36
	1/11/2022	0.45	43
RC 14	3/12/2013	ND<0	11
	5/8/2013	0.14	28
	9/23/2013	ND<0	11
	12/10/2013	ND<0	11
	2/6/2014	0.16	31
	6/26/2014	ND<0	11
	9/19/2014	ND<0	11
	9/30/2014	ND<0	11
	3/23/2015	0.26	38
	4/22/2015	0.2	33
	9/30/2015	ND<0	11
	11/19/2015	0.137	27
	3/15/2016	0.106	22
	6/29/2016	ND<0	11
	8/9/2016	ND<0	11
	12/7/2016	ND<0	11
	3/2/2017	0.12	24
	7/5/2017	0.279	40
	8/16/2017	0.21	34
	10/25/2017	0.24	37
	3/28/2018	0.148	30
	6/29/2018	ND<0	11
	8/2/2018	ND<0	11
	12/10/2018	ND<0	11
	4/15/2019	0.108	23
	6/12/2019	0.12	25
	8/27/2019	ND<0	11
	10/29/2019	ND<0	11
	3/30/2020	ND<0	11
	6/16/2020	0.141	29
	9/21/2020	ND<0	11
	12/17/2020	0.261	39
	3/18/2021	ND<0	11
	5/5/2021	ND<0	11
	9/2/2021	0.21	35
	11/23/2021	ND<0	11
	1/11/2022	0.17	32

ADEM Watermark

The Wilcoxon Statistic is 44
The Expected value is is 111
The Standard Deviation is 28.5307
The Z Score is -2.36587
The Standard Deviation adjusted for ties is 26.8207
The Z Score adjusted for ties is -2.51671
-2.36587 < 2.326 indicating no statistical significance at 1% level
-2.51671 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Ortho-phosphate

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	43
Total Non-Detects	30 (69.7674%)
Pooled Mean	0.0175581
Pooled Std Dev	0.0299844
Compliance Meas.	37
Compliance Mean	0.0194595
Compliance Std Dev	0.0315265
Background Meas.	6
Background Mean	0.00583333
Background Std Dev	0.0142887

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 5	6	5	83.3333	0.035

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 5	0.00583333	0.0142887	0.00583333	108.5	18.0833

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
RC 14	37	25	67.5676	0.72

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
RC 14	0.0194595	0.0315265	0.0136261	0.0131857	837.5	22.6351

Analysis of Variance Statistics

SS Wells	0.000958582
SS Total	0.0377606

Kruskal-Wallis Statistics

Non-Detect Rank	15.5
Background Rank Sum	108.5
Background Rank Mean	18.0833
H Statistic	0.67844
H Adjusted for Ties	1.027

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Ortho-phosphate

Location: RC 14

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 30
Non detect rank is 15.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 5	12/17/2020	ND<0	15.5
	3/18/2021	ND<0	15.5
	5/5/2021	ND<0	15.5
	9/2/2021	ND<0	15.5
	11/23/2021	ND<0	15.5
	1/11/2022	0.035	31
RC 14	3/12/2013	0.088	41
	5/8/2013	ND<0	15.5
	9/23/2013	ND<0	15.5
	12/10/2013	0.1	43
	2/6/2014	0.036	32
	6/26/2014	ND<0	15.5
	9/19/2014	0.085	40
	9/30/2014	ND<0	15.5
	3/23/2015	0.07	39
	4/22/2015	ND<0	15.5
	9/30/2015	ND<0	15.5
	11/19/2015	ND<0	15.5
	3/15/2016	ND<0	15.5
	6/29/2016	0.037	33
	8/9/2016	ND<0	15.5
	12/7/2016	ND<0	15.5
	3/2/2017	ND<0	15.5
	7/5/2017	0.041	36
	8/16/2017	0.042	37
	10/25/2017	0.088	42
	3/28/2018	ND<0	15.5
	6/29/2018	ND<0	15.5
	8/2/2018	0.055	38
	12/10/2018	0.038	34
	4/15/2019	ND<0	15.5
	6/12/2019	ND<0	15.5
	8/27/2019	ND<0	15.5
	10/29/2019	ND<0	15.5
	3/30/2020	ND<0	15.5
	6/16/2020	ND<0	15.5
	9/21/2020	ND<0	15.5
	12/17/2020	ND<0	15.5
	3/18/2021	ND<0	15.5
	5/5/2021	ND<0	15.5
	9/2/2021	0.04	35
	11/23/2021	ND<0	15.5
	1/11/2022	ND<0	15.5

ADEM Watermark

The Wilcoxon Statistic is 134.5
The Expected value is is 111
The Standard Deviation is 28.5307
The Z Score is 0.80615
The Standard Deviation adjusted for ties is 23.189
The Z Score adjusted for ties is 0.99185
0.80615 < 2.326 indicating no statistical significance at 1% level
0.99185 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: pH

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	43
Total Non-Detects	0 (0%)
Pooled Mean	7.69814
Pooled Std Dev	0.412347
Compliance Meas.	37
Compliance Mean	7.67919
Compliance Std Dev	0.440267
Background Meas.	6
Background Mean	7.815
Background Std Dev	0.116576

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 5	6	0	0	46.89

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 5	7.815	0.116576	0.102214	152	25.3333

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
RC 14	37	0	0	284.13

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
RC 14	7.67919	0.440267	-0.135811	0.182448	794	21.4595

Analysis of Variance Statistics

SS Wells	0.0952255
SS Total	7.14125

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	152
Background Rank Mean	25.3333
H Statistic	0.4914
H Adjusted for Ties	0.4914

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: pH

Location: RC 14

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 5	12/17/2020	7.8	25
	3/18/2021	7.83	27
	5/5/2021	7.8	26
	9/2/2021	8.02	32
	11/23/2021	7.78	24
	1/11/2022	7.66	18
RC 14	3/12/2013	8.23	40
	5/8/2013	6.72	1
	9/23/2013	7.86	28
	12/10/2013	8.45	43
	2/6/2014	7.15	5
	6/26/2014	8.21	39
	9/19/2014	8.2	38
	9/30/2014	7.2	6
	3/23/2015	8.03	33
	4/22/2015	7.77	23
	9/30/2015	8.28	41
	11/19/2015	7.32	9
	3/15/2016	8.13	37
	6/29/2016	7.58	15
	8/9/2016	7.05	3
	12/7/2016	7.21	7
	3/2/2017	7.32	10
	7/5/2017	7.55	14
	8/16/2017	7.72	21
	10/25/2017	7.64	16
	3/28/2018	8.03	34
	6/29/2018	7.64	17
	8/2/2018	7.3	8
	12/10/2018	7.13	4
	4/15/2019	7.68	19
	6/12/2019	8.03	35
	8/27/2019	8.36	42
	10/29/2019	7.9	30
	3/30/2020	8.1	36
	6/16/2020	6.79	2
	9/21/2020	7.49	13
	12/17/2020	7.72	22
	3/18/2021	7.43	12
	5/5/2021	7.68	20
	9/2/2021	7.87	29
	11/23/2021	7.96	31
	1/11/2022	7.4	11

ADEM Watermark

The Wilcoxon Statistic is 91
The Expected value is is 111
The Standard Deviation is 28.5307
The Z Score is -0.718525
The Standard Deviation adjusted for ties is 28.5307
The Z Score adjusted for ties is -0.718525
-0.718525 < 2.326 indicating no statistical significance at 1% level
-0.718525 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Temperature

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	42
Total Non-Detects	0 (0%)
Pooled Mean	18.7233
Pooled Std Dev	6.81677
Compliance Meas.	36
Compliance Mean	18.93
Compliance Std Dev	6.95465
Background Meas.	6
Background Mean	17.4833
Background Std Dev	6.34962

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 5	6	0	0	104.9

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 5	17.4833	6.34962	3.79061	110	18.3333

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
RC 14	36	0	0	681.48

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
RC 14	18.93	6.95465	1.44667	3.03465	793	22.0278

Analysis of Variance Statistics

SS Wells	10.7632
SS Total	1905.2

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	110
Background Rank Mean	18.3333
H Statistic	0.466408
H Adjusted for Ties	0.466408

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Temperature

Location: RC 14

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 5	12/17/2020	10	6
	3/18/2021	15.9	15
	5/5/2021	21.2	25
	9/2/2021	28.2	39
	11/23/2021	14.9	13
	1/11/2022	14.7	12
RC 14	3/12/2013	10.3	7
	5/8/2013	21.4	26
	9/23/2013	24.7	32
	12/10/2013	8.2	4
	2/6/2014	4.9	1
	9/19/2014	7.5	3
	9/30/2014	23.5	29
	3/23/2015	18.2	20
	4/22/2015	18.1	19
	9/30/2015	24.4	31
	11/19/2015	17.71	18
	3/15/2016	18.5	22
	6/29/2016	28.53	41
	8/9/2016	28.53	42
	12/7/2016	11.62	9
	3/2/2017	12.69	10
	7/5/2017	25.7	34
	8/16/2017	26.7	36
	10/25/2017	17.1	16
	3/28/2018	18.3	21
	6/29/2018	27.1	38
	8/2/2018	23.7	30
	12/10/2018	7.3	2
	4/15/2019	19.5	23
	6/12/2019	25.3	33
	8/27/2019	28.4	40
	10/29/2019	17.7	17
	3/30/2020	21.9	27
	6/16/2020	26.9	37
	9/21/2020	21.9	28
	12/17/2020	9.3	5
	3/18/2021	15.6	14
	5/5/2021	20.9	24
	9/2/2021	25.7	35
	11/23/2021	13.3	11
	1/11/2022	10.4	8

ADEM Watermark

The Wilcoxon Statistic is 127
The Expected value is is 108
The Standard Deviation is 27.8209
The Z Score is 0.664969
The Standard Deviation adjusted for ties is 27.8209
The Z Score adjusted for ties is 0.664969
0.664969 < 2.326 indicating no statistical significance at 1% level
0.664969 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: TKN

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	43
Total Non-Detects	3 (6.97674%)
Pooled Mean	0.533535
Pooled Std Dev	0.333875
Compliance Meas.	37
Compliance Mean	0.544108
Compliance Std Dev	0.301729
Background Meas.	6
Background Mean	0.468333
Background Std Dev	0.524359

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 5	6	1	16.6667	2.81

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 5	0.468333	0.524359	0.263235	85	14.1667

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
RC 14	37	2	5.40541	20.132

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
RC 14	0.544108	0.301729	0.0757748	0.14825	861	23.2703

Analysis of Variance Statistics

SS Wells	0.0296438
SS Total	4.68185

Kruskal-Wallis Statistics

Non-Detect Rank	2
Background Rank Sum	85
Background Rank Mean	14.1667
H Statistic	2.71376
H Adjusted for Ties	2.71458

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: TKN

Location: RC 14

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 3
Non detect rank is 2

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 5	12/17/2020	0.258	6
	3/18/2021	0.317	8
	5/5/2021	0.41	18
	9/2/2021	0.325	9
	11/23/2021	ND<0	2
	1/11/2022	1.5	42
RC 14	3/12/2013	0.61	32
	5/8/2013	0.63	33
	9/23/2013	0.58	30
	12/10/2013	0.69	35
	2/6/2014	0.7	36
	6/26/2014	0.39	12
	9/19/2014	0.52	26
	9/30/2014	0.4	14
	3/23/2015	1.1	40
	4/22/2015	0.4	15
	9/30/2015	0.454	21
	11/19/2015	0.633	34
	3/15/2016	0.434	19
	6/29/2016	0.46	22
	8/9/2016	0.547	27
	12/7/2016	0.252	5
	3/2/2017	0.608	31
	7/5/2017	0.357	11
	8/16/2017	0.4	16
	10/25/2017	0.465	23
	3/28/2018	ND<0	2
	6/29/2018	0.722	37
	8/2/2018	0.848	39
	12/10/2018	1.4	41
	4/15/2019	0.403	17
	6/12/2019	0.25	4
	8/27/2019	0.391	13
	10/29/2019	0.478	24
	3/30/2020	0.451	20
	6/16/2020	0.56	28
	9/21/2020	0.307	7
	12/17/2020	0.497	25
	3/18/2021	0.779	38
	5/5/2021	0.566	29
	9/2/2021	0.35	10
	11/23/2021	ND<0	2
	1/11/2022	1.5	43

ADEM Watermark

The Wilcoxon Statistic is 158
The Expected value is is 111
The Standard Deviation is 28.5307
The Z Score is 1.62982
The Standard Deviation adjusted for ties is 28.5264
The Z Score adjusted for ties is 1.63007
1.62982 < 2.326 indicating no statistical significance at 1% level
1.63007 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Total Phosphorus

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	43
Total Non-Detects	31 (72.093%)
Pooled Mean	0.0408372
Pooled Std Dev	0.0728168
Compliance Meas.	37
Compliance Mean	0.0447568
Compliance Std Dev	0.0764288
Background Meas.	6
Background Mean	0.0166667
Background Std Dev	0.0408248

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 5	6	5	83.3333	0.1

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 5	0.0166667	0.0408248	0.0166667	112	18.6667

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
RC 14	37	26	70.2703	1.656

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
RC 14	0.0447568	0.0764288	0.0280901	0.0321376	834	22.5405

Analysis of Variance Statistics

SS Wells	0.00407372
SS Total	0.222696

Kruskal-Wallis Statistics

Non-Detect Rank	16
Background Rank Sum	112
Background Rank Mean	18.6667
H Statistic	0.4914
H Adjusted for Ties	0.785624

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Total Phosphorus

Location: RC 14

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 31
Non detect rank is 16

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 5	12/17/2020	ND<0	16
	3/18/2021	ND<0	16
	5/5/2021	ND<0	16
	9/2/2021	0.1	32
	11/23/2021	ND<0	16
	1/11/2022	ND<0	16
RC 14	3/12/2013	ND<0	16
	5/8/2013	ND<0	16
	9/23/2013	ND<0	16
	12/10/2013	0.11	35
	2/6/2014	0.11	36
	6/26/2014	ND<0	16
	9/19/2014	0.13	37
	9/30/2014	ND<0	16
	3/23/2015	ND<0	16
	4/22/2015	ND<0	16
	9/30/2015	ND<0	16
	11/19/2015	0.135	38
	3/15/2016	0.304	43
	6/29/2016	ND<0	16
	8/9/2016	ND<0	16
	12/7/2016	ND<0	16
	3/2/2017	ND<0	16
	7/5/2017	ND<0	16
	8/16/2017	ND<0	16
	10/25/2017	0.149	40
	3/28/2018	ND<0	16
	6/29/2018	ND<0	16
	8/2/2018	ND<0	16
	12/10/2018	0.169	41
	4/15/2019	ND<0	16
	6/12/2019	ND<0	16
	8/27/2019	0.141	39
	10/29/2019	ND<0	16
	3/30/2020	ND<0	16
	6/16/2020	ND<0	16
	9/21/2020	0.202	42
	12/17/2020	ND<0	16
	3/18/2021	ND<0	16
	5/5/2021	ND<0	16
	9/2/2021	ND<0	16
	11/23/2021	0.103	33
	1/11/2022	0.103	34

ADEM Watermark

The Wilcoxon Statistic is 131
The Expected value is is 111
The Standard Deviation is 28.5307
The Z Score is 0.683475
The Standard Deviation adjusted for ties is 22.5643
The Z Score adjusted for ties is 0.864195
0.683475 < 2.326 indicating no statistical significance at 1% level
0.864195 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Total Suspended Solids

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	43
Total Non-Detects	0 (0%)
Pooled Mean	21.5553
Pooled Std Dev	14.0055
Compliance Meas.	37
Compliance Mean	20.6265
Compliance Std Dev	13.4149
Background Meas.	6
Background Mean	27.2833
Background Std Dev	17.4995

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 5	6	0	0	163.7

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 5	27.2833	17.4995	7.74893	170	28.3333

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
RC 14	37	0	0	763.18

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
RC 14	20.6265	13.4149	-6.65685	6.1514	776	20.973

Analysis of Variance Statistics

SS Wells	228.782
SS Total	8238.49

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	170
Background Rank Mean	28.3333
H Statistic	1.77396
H Adjusted for Ties	1.77396

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Total Suspended Solids

Location: RC 14

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 5	12/17/2020	17.7	26
	3/18/2021	23	30
	5/5/2021	60.6	42
	9/2/2021	31.8	35
	11/23/2021	14	15
	1/11/2022	16.6	22
RC 14	3/12/2013	21	29
	5/8/2013	16	20
	9/23/2013	13	13
	12/10/2013	16	21
	2/6/2014	18	27
	6/26/2014	5.9	1
	9/19/2014	28	33
	9/30/2014	12	9
	3/23/2015	34	36
	4/22/2015	15	18
	9/30/2015	12.6	12
	11/19/2015	36	38
	3/15/2016	69.6	43
	6/29/2016	17.5	25
	8/9/2016	8.48	3
	12/7/2016	8.6	4
	3/2/2017	14.6	17
	7/5/2017	35	37
	8/16/2017	12.4	11
	10/25/2017	27.2	32
	3/28/2018	10.9	7
	6/29/2018	13.8	14
	8/2/2018	17.3	24
	12/10/2018	16.9	23
	4/15/2019	36	39
	6/12/2019	12.3	10
	8/27/2019	8.8	5
	10/29/2019	10.6	6
	3/30/2020	15.7	19
	6/16/2020	11.4	8
	9/21/2020	8.2	2
	12/17/2020	14.4	16
	3/18/2021	51.6	41
	5/5/2021	30.4	34
	9/2/2021	23.2	31
	11/23/2021	40.2	40
	1/11/2022	20.6	28

ADEM Watermark

The Wilcoxon Statistic is 73
The Expected value is is 111
The Standard Deviation is 28.5307
The Z Score is -1.34942
The Standard Deviation adjusted for ties is 28.5307
The Z Score adjusted for ties is -1.34942
-1.34942 < 2.326 indicating no statistical significance at 1% level
-1.34942 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Turbidity

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	43
Total Non-Detects	0 (0%)
Pooled Mean	29.5205
Pooled Std Dev	23.625
Compliance Meas.	37
Compliance Mean	29.563
Compliance Std Dev	23.7543
Background Meas.	6
Background Mean	29.2583
Background Std Dev	25.0113

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 5	6	0	0	175.55

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 5	29.2583	25.0113	11.9611	130	21.6667

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
RC 14	37	0	0	1093.83

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
RC 14	29.563	23.7543	0.30464	10.5234	816	22.0541

Analysis of Variance Statistics

SS Wells	0.479134
SS Total	23441.9

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	130
Background Rank Mean	21.6667
H Statistic	0.004914
H Adjusted for Ties	0.004914

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Turbidity

Location: RC 14

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 5	12/17/2020	15.4	15
	3/18/2021	1.7	1
	5/5/2021	50.11	35
	9/2/2021	15.15	14
	11/23/2021	68.29	39
	1/11/2022	24.9	26
RC 14	3/12/2013	28.3	28
	5/8/2013	29.5	29
	9/23/2013	18.4	22
	12/10/2013	40	33
	2/6/2014	66.6	38
	6/26/2014	6.2	2
	9/19/2014	50.3	36
	9/30/2014	12.4	10
	3/23/2015	70	40
	4/22/2015	30	30
	9/30/2015	17	17
	11/19/2015	95	43
	3/15/2016	85	42
	6/29/2016	17.2	18
	8/9/2016	10.38	7
	12/7/2016	7.9	3
	3/2/2017	18	21
	7/5/2017	17.7	20
	8/16/2017	9.8	4
	10/25/2017	18.7	23
	3/28/2018	9.9	5
	6/29/2018	12.9	11
	8/2/2018	21.7	24
	12/10/2018	35.1	32
	4/15/2019	45.8	34
	6/12/2019	11	8
	8/27/2019	76.4	41
	10/29/2019	17.4	19
	3/30/2020	12.9	12
	6/16/2020	11.5	9
	9/21/2020	13.7	13
	12/17/2020	25.8	27
	3/18/2021	10.1	6
	5/5/2021	33.45	31
	9/2/2021	16.8	16
	11/23/2021	24.6	25
	1/11/2022	66.4	37

ADEM Watermark

The Wilcoxon Statistic is 113
The Expected value is is 111
The Standard Deviation is 28.5307
The Z Score is 0.052575
The Standard Deviation adjusted for ties is 28.5307
The Z Score adjusted for ties is 0.052575
0.052575 < 2.326 indicating no statistical significance at 1% level
0.052575 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: DO

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	12
Total Non-Detects	0 (0%)
Pooled Mean	9.38583
Pooled Std Dev	1.70474
Compliance Meas.	6
Compliance Mean	9.47333
Compliance Std Dev	1.81174
Background Meas.	6
Background Mean	9.29833
Background Std Dev	1.75862

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 5	6	0	0	55.79

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 5	9.29833	1.75862	1.16354	38	6.33333

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 6	6	0	0	56.84

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 6	9.47333	1.81174	0.175	1.03079	40	6.66667

Analysis of Variance Statistics

SS Wells	0.091875
SS Total	31.9675

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	38
Background Rank Mean	6.33333
H Statistic	0.025641
H Adjusted for Ties	0.025641

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: DO

Location: SME 6

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 5	12/17/2020	10.94	11
	3/18/2021	9.59	5
	5/5/2021	7.96	4
	9/2/2021	6.42	1
	11/23/2021	10.42	8
	1/11/2022	10.46	9
SME 6	12/17/2020	10.89	10
	3/18/2021	9.84	6
	5/5/2021	7.8	3
	9/2/2021	6.72	2
	11/23/2021	10.35	7
	1/11/2022	11.24	12

The Wilcoxon Statistic is 19
The Expected value is is 18
The Standard Deviation is 6.245
The Z Score is 0.0800641
The Standard Deviation adjusted for ties is 6.245
The Z Score adjusted for ties is 0.0800641
0.0800641 < 2.326 indicating no statistical significance at 1% level
0.0800641 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Nitrate-nitrite

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	12
Total Non-Detects	1 (8.33333%)
Pooled Mean	0.268
Pooled Std Dev	0.140678
Compliance Meas.	6
Compliance Mean	0.286667
Compliance Std Dev	0.123912
Background Meas.	6
Background Mean	0.249333
Background Std Dev	0.165372

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 5	6	1	16.6667	1.496

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 5	0.249333	0.165372	0.0944363	36	6

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 6	6	0	0	1.72

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 6	0.286667	0.123912	0.0373333	0.0843624	42	7

Analysis of Variance Statistics

SS Wells	0.00418133
SS Total	0.217692

Kruskal-Wallis Statistics

Non-Detect Rank	1
Background Rank Sum	36
Background Rank Mean	6
H Statistic	0.230769
H Adjusted for Ties	0.230769

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Nitrate-nitrite

Location: SME 6

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 1
Non detect rank is 1

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 5	12/17/2020	0.371	10
	3/18/2021	0.316	7
	5/5/2021	ND<0	1
	9/2/2021	0.128	2
	11/23/2021	0.231	5
	1/11/2022	0.45	11
SME 6	12/17/2020	0.368	9
	3/18/2021	0.358	8
	5/5/2021	0.183	4
	9/2/2021	0.13	3
	11/23/2021	0.231	6
	1/11/2022	0.45	12

The Wilcoxon Statistic is 21
The Expected value is is 18
The Standard Deviation is 6.245
The Z Score is 0.40032
The Standard Deviation adjusted for ties is 6.245
The Z Score adjusted for ties is 0.40032
0.40032 < 2.326 indicating no statistical significance at 1% level
0.40032 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Ortho-phosphate

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	12
Total Non-Detects	11 (91.6667%)
Pooled Mean	0.00291667
Pooled Std Dev	0.0101036
Compliance Meas.	6
Compliance Mean	0
Compliance Std Dev	0
Background Meas.	6
Background Mean	0.00583333
Background Std Dev	0.0142887

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 5	6	5	83.3333	0.035

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 5	0.00583333	0.0142887	0.00583333	42	7

Compliance Locations

There is 1 compliance location

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

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 6	0	0	-0.00583333	0.00583333	36	6

Analysis of Variance Statistics

SS Wells	0.000102083
SS Total	0.00112292

Kruskal-Wallis Statistics

Non-Detect Rank	6
Background Rank Sum	42
Background Rank Mean	7
H Statistic	0.230769
H Adjusted for Ties	1

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Ortho-phosphate

Location: SME 6

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 11
Non detect rank is 6

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 5	12/17/2020	ND<0	6
	3/18/2021	ND<0	6
	5/5/2021	ND<0	6
	9/2/2021	ND<0	6
	11/23/2021	ND<0	6
	1/11/2022	0.035	12
SME 6	12/17/2020	ND<0	6
	3/18/2021	ND<0	6
	5/5/2021	ND<0	6
	9/2/2021	ND<0	6
	11/23/2021	ND<0	6
	1/11/2022	ND<0	6

The Wilcoxon Statistic is 15
The Expected value is is 18
The Standard Deviation is 6.245
The Z Score is -0.560449
The Standard Deviation adjusted for ties is 3
The Z Score adjusted for ties is -1.16667
-0.560449 < 2.326 indicating no statistical significance at 1% level
-1.16667 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: pH

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	12
Total Non-Detects	0 (0%)
Pooled Mean	7.82
Pooled Std Dev	0.161808
Compliance Meas.	6
Compliance Mean	7.825
Compliance Std Dev	0.209643
Background Meas.	6
Background Mean	7.815
Background Std Dev	0.116576

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 5	6	0	0	46.89

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 5	7.815	0.116576	0.102214	43	7.16667

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 6	6	0	0	46.95

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 6	7.825	0.209643	0.01	0.0979285	35	5.83333

Analysis of Variance Statistics

SS Wells	0.0003
SS Total	0.288

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	43
Background Rank Mean	7.16667
H Statistic	0.410256
H Adjusted for Ties	0.410256

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: pH

Location: SME 6

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 5	12/17/2020	7.8	7
	3/18/2021	7.83	9
	5/5/2021	7.8	8
	9/2/2021	8.02	11
	11/23/2021	7.78	6
	1/11/2022	7.66	2
SME 6	12/17/2020	7.96	10
	3/18/2021	7.65	1
	5/5/2021	7.75	5
	9/2/2021	8.19	12
	11/23/2021	7.68	3
	1/11/2022	7.72	4

The Wilcoxon Statistic is 14
The Expected value is is 18
The Standard Deviation is 6.245
The Z Score is -0.720577
The Standard Deviation adjusted for ties is 6.245
The Z Score adjusted for ties is -0.720577
-0.720577 < 2.326 indicating no statistical significance at 1% level
-0.720577 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Temperature

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	12
Total Non-Detects	0 (0%)
Pooled Mean	16.95
Pooled Std Dev	6.21998
Compliance Meas.	6
Compliance Mean	16.4167
Compliance Std Dev	6.64181
Background Meas.	6
Background Mean	17.4833
Background Std Dev	6.34962

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 5	6	0	0	104.9

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 5	17.4833	6.34962	3.79061	40	6.66667

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 6	6	0	0	98.5

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 6	16.4167	6.64181	-1.06667	3.75125	38	6.33333

Analysis of Variance Statistics

SS Wells	3.41333
SS Total	425.57

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	40
Background Rank Mean	6.66667
H Statistic	0.025641
H Adjusted for Ties	0.025641

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Temperature

Location: SME 6

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

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	8
	5/5/2021	21.2	10
	9/2/2021	28.2	12
	11/23/2021	14.9	5
	1/11/2022	14.7	4
SME 6	12/17/2020	10.1	2
	3/18/2021	15.5	7
	5/5/2021	19.9	9
	9/2/2021	27.7	11
	11/23/2021	15.1	6
	1/11/2022	10.2	3

The Wilcoxon Statistic is 17
The Expected value is is 18
The Standard Deviation is 6.245
The Z Score is -0.240192
The Standard Deviation adjusted for ties is 6.245
The Z Score adjusted for ties is -0.240192
-0.240192 < 2.326 indicating no statistical significance at 1% level
-0.240192 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: TKN

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	12
Total Non-Detects	4 (33.3333%)
Pooled Mean	0.496917
Pooled Std Dev	0.724417
Compliance Meas.	6
Compliance Mean	0.5255
Compliance Std Dev	0.936804
Background Meas.	6
Background Mean	0.468333
Background Std Dev	0.524359

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 5	6	1	16.6667	2.81

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 5	0.468333	0.524359	0.263235	41.5	6.91667

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 6	6	3	50	3.153

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 6	0.5255	0.936804	0.0571667	0.438283	36.5	6.08333

Analysis of Variance Statistics

SS Wells	0.00980408
SS Total	5.77257

Kruskal-Wallis Statistics

Non-Detect Rank	2.5
Background Rank Sum	41.5
Background Rank Mean	6.91667
H Statistic	0.160256
H Adjusted for Ties	0.166063

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: TKN

Location: SME 6

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 4
Non detect rank is 2.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 5	12/17/2020	0.258	5
	3/18/2021	0.317	6
	5/5/2021	0.41	10
	9/2/2021	0.325	7
	11/23/2021	ND<0	2.5
	1/11/2022	1.5	11
SME 6	12/17/2020	ND<0	2.5
	3/18/2021	ND<0	2.5
	5/5/2021	0.403	9
	9/2/2021	0.35	8
	11/23/2021	ND<0	2.5
	1/11/2022	2.4	12

The Wilcoxon Statistic is 15.5
The Expected value is is 18
The Standard Deviation is 6.245
The Z Score is -0.480384
The Standard Deviation adjusted for ties is 6.13485
The Z Score adjusted for ties is -0.48901
-0.480384 < 2.326 indicating no statistical significance at 1% level
-0.48901 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Total Phosphorus

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	12
Total Non-Detects	10 (83.3333%)
Pooled Mean	0.0441667
Pooled Std Dev	0.124861
Compliance Meas.	6
Compliance Mean	0.0716667
Compliance Std Dev	0.175547
Background Meas.	6
Background Mean	0.0166667
Background Std Dev	0.0408248

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 5	6	5	83.3333	0.1

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 5	0.0166667	0.0408248	0.0166667	38.5	6.41667

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 6	6	5	83.3333	0.43

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 6	0.0716667	0.175547	0.055	0.0735791	39.5	6.58333

Analysis of Variance Statistics

SS Wells	0.009075
SS Total	0.171492

Kruskal-Wallis Statistics

Non-Detect Rank	5.5
Background Rank Sum	38.5
Background Rank Mean	6.41667
H Statistic	0.00641026
H Adjusted for Ties	0.0151515

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Total Phosphorus

Location: SME 6

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 10
Non detect rank is 5.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 5	12/17/2020	ND<0	5.5
	3/18/2021	ND<0	5.5
	5/5/2021	ND<0	5.5
	9/2/2021	0.1	11
	11/23/2021	ND<0	5.5
	1/11/2022	ND<0	5.5
SME 6	12/17/2020	ND<0	5.5
	3/18/2021	ND<0	5.5
	5/5/2021	ND<0	5.5
	9/2/2021	0.43	12
	11/23/2021	ND<0	5.5
	1/11/2022	ND<0	5.5

The Wilcoxon Statistic is 18.5
The Expected value is is 18
The Standard Deviation is 6.245
The Z Score is 0
The Standard Deviation adjusted for ties is 4.06202
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

ADEM Watermark

Basic Statistics

Parameter: Total Suspended Solids

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	12
Total Non-Detects	0 (0%)
Pooled Mean	29.7917
Pooled Std Dev	22.3231
Compliance Meas.	6
Compliance Mean	32.3
Compliance Std Dev	27.8384
Background Meas.	6
Background Mean	27.2833
Background Std Dev	17.4995

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 5	6	0	0	163.7

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 5	27.2833	17.4995	7.74893	39	6.5

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 6	6	0	0	193.8

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 6	32.3	27.8384	5.01667	13.4239	39	6.5

Analysis of Variance Statistics

SS Wells	75.5008
SS Total	5481.55

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	39
Background Rank Mean	6.5
H Statistic	0
H Adjusted for Ties	0

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Total Suspended Solids

Location: SME 6

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 5	12/17/2020	17.7	6
	3/18/2021	23	8
	5/5/2021	60.6	11
	9/2/2021	31.8	9
	11/23/2021	14	2
	1/11/2022	16.6	3
SME 6	12/17/2020	16.7	4
	3/18/2021	47.2	10
	5/5/2021	82.8	12
	9/2/2021	19	7
	11/23/2021	11.2	1
	1/11/2022	16.9	5

The Wilcoxon Statistic is 18
The Expected value is is 18
The Standard Deviation is 6.245
The Z Score is -0.0800641
The Standard Deviation adjusted for ties is 6.245
The Z Score adjusted for ties is -0.0800641
-0.0800641 < 2.326 indicating no statistical significance at 1% level
-0.0800641 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Turbidity

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	12
Total Non-Detects	0 (0%)
Pooled Mean	25.19
Pooled Std Dev	22.5589
Compliance Meas.	6
Compliance Mean	21.1217
Compliance Std Dev	21.3144
Background Meas.	6
Background Mean	29.2583
Background Std Dev	25.0113

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 5	6	0	0	175.55

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 5	29.2583	25.0113	11.9611	45	7.5

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 6	6	0	0	126.73

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 6	21.1217	21.3144	-8.13667	13.4156	33	5.5

Analysis of Variance Statistics

SS Wells	198.616
SS Total	5597.94

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	45
Background Rank Mean	7.5
H Statistic	0.923077
H Adjusted for Ties	0.923077

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Turbidity

Location: SME 6

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 5	12/17/2020	15.4	7
	3/18/2021	1.7	1
	5/5/2021	50.11	10
	9/2/2021	15.15	6
	11/23/2021	68.29	12
	1/11/2022	24.9	9
SME 6	12/17/2020	13.6	5
	3/18/2021	3.3	2
	5/5/2021	62.32	11
	9/2/2021	13.32	4
	11/23/2021	9.79	3
	1/11/2022	24.4	8

The Wilcoxon Statistic is 12
The Expected value is is 18
The Standard Deviation is 6.245
The Z Score is -1.04083
The Standard Deviation adjusted for ties is 6.245
The Z Score adjusted for ties is -1.04083
-1.04083 < 2.326 indicating no statistical significance at 1% level
-1.04083 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: DO

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	43
Total Non-Detects	0 (0%)
Pooled Mean	8.32744
Pooled Std Dev	3.20274
Compliance Meas.	37
Compliance Mean	8.17
Compliance Std Dev	3.36972
Background Meas.	6
Background Mean	9.29833
Background Std Dev	1.75862

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 5	6	0	0	55.79

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 5	9.29833	1.75862	1.16354	167	27.8333

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SS 13	37	0	0	302.29

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SS 13	8.17	3.36972	-1.12833	1.41571	779	21.0541

Analysis of Variance Statistics

SS Wells	6.57294
SS Total	430.816

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	167
Background Rank Mean	27.8333
H Statistic	1.50491
H Adjusted for Ties	1.50491

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: DO

Location: SS 13

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 5	12/17/2020	10.94	38
	3/18/2021	9.59	31
	5/5/2021	7.96	20
	9/2/2021	6.42	11
	11/23/2021	10.42	33
	1/11/2022	10.46	34
SS 13	3/12/2013	9.85	32
	5/8/2013	2.94	1
	9/23/2013	3.38	3
	12/10/2013	10.93	37
	2/6/2014	17.5	42
	6/26/2014	8.09	21
	9/30/2014	4.26	5
	11/19/2014	6.08	9
	3/23/2015	8.57	26
	4/22/2015	8.93	28
	9/30/2015	11.54	40
	11/19/2015	18.48	43
	3/15/2016	12.42	41
	6/29/2016	6.15	10
	8/9/2016	5.92	8
	12/7/2016	6.97	15
	3/2/2017	7.19	17
	6/21/2017	5.82	7
	8/17/2017	6.54	12
	10/26/2017	7.41	19
	3/27/2018	8.23	23
	6/26/2018	5.67	6
	8/1/2018	6.86	14
	12/11/2018	10.79	35
	4/17/2019	9.23	29
	6/11/2019	3.12	2
	8/28/2019	7.33	18
	10/28/2019	3.61	4
	3/31/2020	8.64	27
	6/10/2020	7.08	16
	9/21/2020	6.58	13
	12/17/2020	10.83	36
	3/18/2021	9.23	30
	5/5/2021	8.13	22
	9/2/2021	8.5	25
	11/23/2021	8.26	24
	1/10/2022	11.23	39

ADEM Watermark

The Wilcoxon Statistic is 76
The Expected value is is 111
The Standard Deviation is 28.5307
The Z Score is -1.24427
The Standard Deviation adjusted for ties is 28.5307
The Z Score adjusted for ties is -1.24427
-1.24427 < 2.326 indicating no statistical significance at 1% level
-1.24427 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Nitrate-nitrite

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	43
Total Non-Detects	15 (34.8837%)
Pooled Mean	0.353907
Pooled Std Dev	1.14862
Compliance Meas.	37
Compliance Mean	0.370865
Compliance Std Dev	1.23827
Background Meas.	6
Background Mean	0.249333
Background Std Dev	0.165372

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 5	6	1	16.6667	1.496

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 5	0.249333	0.165372	0.0944363	160	26.6667

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SS 13	37	14	37.8378	13.722

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SS 13	0.370865	1.23827	0.121532	0.511292	786	21.2432

Analysis of Variance Statistics

SS Wells	0.076254
SS Total	55.412

Kruskal-Wallis Statistics

Non-Detect Rank	8
Background Rank Sum	160
Background Rank Mean	26.6667
H Statistic	0.963145
H Adjusted for Ties	1.00567

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Nitrate-nitrite

Location: SS 13

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 15
Non detect rank is 8

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 5	12/17/2020	0.371	37
	3/18/2021	0.316	31
	5/5/2021	ND<0	8
	9/2/2021	0.128	18
	11/23/2021	0.231	26
	1/11/2022	0.45	40
SS 13	3/12/2013	0.34	35
	5/8/2013	0.36	36
	9/23/2013	ND<0	8
	12/10/2013	0.33	34
	2/6/2014	0.42	39
	6/26/2014	ND<0	8
	9/30/2014	ND<0	8
	11/19/2014	0.22	23
	3/23/2015	0.22	24
	4/22/2015	0.32	32
	9/30/2015	ND<0	8
	11/19/2015	0.242	28
	3/15/2016	0.323	33
	6/29/2016	ND<0	8
	8/9/2016	ND<0	8
	12/7/2016	0.108	16
	3/2/2017	0.249	29
	6/21/2017	ND<0	8
	8/17/2017	ND<0	8
	10/26/2017	0.122	17
	3/27/2018	0.495	42
	6/26/2018	ND<0	8
	8/1/2018	0.226	25
	12/11/2018	0.451	41
	4/17/2019	ND<0	8
	6/11/2019	ND<0	8
	8/28/2019	ND<0	8
	10/28/2019	0.211	22
	3/31/2020	0.233	27
	6/10/2020	ND<0	8
	9/21/2020	ND<0	8
	12/17/2020	0.405	38
	3/18/2021	0.163	20
	5/5/2021	7.64	43
	9/2/2021	0.189	21
	11/23/2021	0.16	19
	1/10/2022	0.295	30

ADEM Watermark

The Wilcoxon Statistic is 83
The Expected value is is 111
The Standard Deviation is 28.5307
The Z Score is -0.998924
The Standard Deviation adjusted for ties is 27.921
The Z Score adjusted for ties is -1.02074
-0.998924 < 2.326 indicating no statistical significance at 1% level
-1.02074 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Ortho-phosphate

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	43
Total Non-Detects	33 (76.7442%)
Pooled Mean	0.0147907
Pooled Std Dev	0.0372601
Compliance Meas.	37
Compliance Mean	0.0162432
Compliance Std Dev	0.0396964
Background Meas.	6
Background Mean	0.00583333
Background Std Dev	0.0142887

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 5	6	5	83.3333	0.035

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 5	0.00583333	0.0142887	0.00583333	123	20.5

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SS 13	37	28	75.6757	0.601

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SS 13	0.0162432	0.0396964	0.0104099	0.0165174	823	22.2432

Analysis of Variance Statistics

SS Wells	0.000559472
SS Total	0.0583091

Kruskal-Wallis Statistics

Non-Detect Rank	17
Background Rank Sum	123
Background Rank Mean	20.5
H Statistic	0.0995086
H Adjusted for Ties	0.181528

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Ortho-phosphate

Location: SS 13

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 33
Non detect rank is 17

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 5	12/17/2020	ND<0	17
	3/18/2021	ND<0	17
	5/5/2021	ND<0	17
	9/2/2021	ND<0	17
	11/23/2021	ND<0	17
	1/11/2022	0.035	38
SS 13	3/12/2013	0.032	37
	5/8/2013	ND<0	17
	9/23/2013	0.028	34
	12/10/2013	0.077	41
	2/6/2014	ND<0	17
	6/26/2014	ND<0	17
	9/30/2014	ND<0	17
	11/19/2014	0.044	39
	3/23/2015	0.029	35
	4/22/2015	ND<0	17
	9/30/2015	ND<0	17
	11/19/2015	ND<0	17
	3/15/2016	ND<0	17
	6/29/2016	ND<0	17
	8/9/2016	ND<0	17
	12/7/2016	ND<0	17
	3/2/2017	ND<0	17
	6/21/2017	ND<0	17
	8/17/2017	ND<0	17
	10/26/2017	ND<0	17
	3/27/2018	ND<0	17
	6/26/2018	ND<0	17
	8/1/2018	0.206	43
	12/11/2018	ND<0	17
	4/17/2019	ND<0	17
	6/11/2019	ND<0	17
	8/28/2019	ND<0	17
	10/28/2019	0.031	36
	3/31/2020	0.058	40
	6/10/2020	ND<0	17
	9/21/2020	ND<0	17
	12/17/2020	ND<0	17
	3/18/2021	ND<0	17
	5/5/2021	0.096	42
	9/2/2021	ND<0	17
	11/23/2021	ND<0	17
	1/10/2022	ND<0	17

ADEM Watermark

The Wilcoxon Statistic is 120
The Expected value is is 111
The Standard Deviation is 28.5307
The Z Score is 0.297925
The Standard Deviation adjusted for ties is 21.1237
The Z Score adjusted for ties is 0.402391
0.297925 < 2.326 indicating no statistical significance at 1% level
0.402391 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: pH

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	42
Total Non-Detects	0 (0%)
Pooled Mean	7.25119
Pooled Std Dev	0.730009
Compliance Meas.	36
Compliance Mean	7.15722
Compliance Std Dev	0.747497
Background Meas.	6
Background Mean	7.815
Background Std Dev	0.116576

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 5	6	0	0	46.89

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 5	7.815	0.116576	0.102214	201	33.5

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SS 13	36	0	0	257.66

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SS 13	7.15722	0.747497	-0.657778	0.308862	702	19.5

Analysis of Variance Statistics

SS Wells	2.22517
SS Total	21.8494

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	201
Background Rank Mean	33.5
H Statistic	6.69767
H Adjusted for Ties	6.69767

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: pH

Location: SS 13

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 5	12/17/2020	7.8	33
	3/18/2021	7.83	35
	5/5/2021	7.8	34
	9/2/2021	8.02	39
	11/23/2021	7.78	32
	1/11/2022	7.66	28
SS 13	3/12/2013	7.04	13
	5/8/2013	6.68	9
	9/23/2013	7.04	14
	12/10/2013	6.14	2
	2/6/2014	4.26	1
	6/26/2014	8.33	42
	9/30/2014	7.41	24
	11/19/2014	6.31	4
	3/23/2015	7.33	18
	4/22/2015	6.6	6
	9/30/2015	7.33	19
	11/19/2015	7.07	15
	3/15/2016	6.61	7
	6/29/2016	7.86	36
	8/9/2016	7.77	30
	12/7/2016	7.39	23
	3/2/2017	6.64	8
	6/21/2017	7.54	26
	8/17/2017	7.93	37
	10/26/2017	6.7	10
	3/27/2018	8.19	41
	6/26/2018	7.36	20
	8/1/2018	6.75	11
	12/11/2018	7.37	22
	4/17/2019	7.42	25
	6/11/2019	6.59	5
	8/28/2019	7.93	38
	10/28/2019	6.25	3
	3/31/2020	6.95	12
	6/10/2020	7.27	17
	9/21/2020	7.36	21
	12/17/2020	8.04	40
	3/18/2021	7.61	27
	5/5/2021	7.77	31
	11/23/2021	7.11	16
	1/10/2022	7.71	29

ADEM Watermark

The Wilcoxon Statistic is 36
The Expected value is is 108
The Standard Deviation is 27.8209
The Z Score is -2.60596
The Standard Deviation adjusted for ties is 27.8209
The Z Score adjusted for ties is -2.60596
-2.60596 < 2.326 indicating no statistical significance at 1% level
-2.60596 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Temperature

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	43
Total Non-Detects	0 (0%)
Pooled Mean	18.7705
Pooled Std Dev	7.50127
Compliance Meas.	37
Compliance Mean	18.9792
Compliance Std Dev	7.7283
Background Meas.	6
Background Mean	17.4833
Background Std Dev	6.34962

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 5	6	0	0	104.9

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 5	17.4833	6.34962	3.79061	114	19

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SS 13	37	0	0	702.23

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SS 13	18.9792	7.7283	1.49586	3.3332	832	22.4865

Analysis of Variance Statistics

SS Wells	11.5522
SS Total	2363.3

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	114
Background Rank Mean	19
H Statistic	0.398034
H Adjusted for Ties	0.398034

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Temperature

Location: SS 13

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 5	12/17/2020	10	7
	3/18/2021	15.9	19
	5/5/2021	21.2	27
	9/2/2021	28.2	35
	11/23/2021	14.9	14
	1/11/2022	14.7	12
SS 13	3/12/2013	11.45	8
	5/8/2013	18.75	24
	9/23/2013	25.31	32
	12/10/2013	8.99	6
	2/6/2014	5.14	1
	6/26/2014	28.44	37
	9/30/2014	24.77	31
	11/19/2014	6.44	2
	3/23/2015	15.4	17
	4/22/2015	20.8	26
	9/30/2015	25.95	33
	11/19/2015	15.31	16
	3/15/2016	17.37	22
	6/29/2016	30.6	42
	8/9/2016	29.1	39
	12/7/2016	12.5	10
	3/2/2017	13.4	11
	6/21/2017	26.1	34
	8/17/2017	30.9	43
	10/26/2017	15.4	18
	3/27/2018	12.4	9
	6/26/2018	29.5	40
	8/1/2018	21.9	28
	12/11/2018	7.4	3
	4/17/2019	19.1	25
	6/11/2019	23.41	30
	8/28/2019	29.7	41
	10/28/2019	16	20
	3/31/2020	14.9	15
	6/10/2020	28.2	36
	9/21/2020	21.9	29
	12/17/2020	8.3	4
	3/18/2021	16.9	21
	5/5/2021	18.2	23
	9/2/2021	28.7	38
	11/23/2021	14.8	13
	1/10/2022	8.8	5

ADEM Watermark

The Wilcoxon Statistic is 129
The Expected value is is 111
The Standard Deviation is 28.5307
The Z Score is 0.613375
The Standard Deviation adjusted for ties is 28.5307
The Z Score adjusted for ties is 0.613375
0.613375 < 2.326 indicating no statistical significance at 1% level
0.613375 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: TKN

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	42
Total Non-Detects	4 (9.52381%)
Pooled Mean	0.659048
Pooled Std Dev	0.362453
Compliance Meas.	36
Compliance Mean	0.690833
Compliance Std Dev	0.327628
Background Meas.	6
Background Mean	0.468333
Background Std Dev	0.524359

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 5	6	1	16.6667	2.81

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 5	0.468333	0.524359	0.263235	71.5	11.9167

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SS 13	36	3	8.33333	24.87

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SS 13	0.690833	0.327628	0.2225	0.157942	831.5	23.0972

Analysis of Variance Statistics

SS Wells	0.254604
SS Total	5.38627

Kruskal-Wallis Statistics

Non-Detect Rank	2.5
Background Rank Sum	71.5
Background Rank Mean	11.9167
H Statistic	4.27164
H Adjusted for Ties	4.2751

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: TKN

Location: SS 13

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 4
Non detect rank is 2.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 5	12/17/2020	0.258	5
	3/18/2021	0.317	6
	5/5/2021	0.41	9
	9/2/2021	0.325	7
	11/23/2021	ND<0	2.5
	1/11/2022	1.5	42
SS 13	3/12/2013	0.78	29
	5/8/2013	0.72	24
	9/23/2013	0.84	32
	12/10/2013	0.67	21
	2/6/2014	0.44	11
	6/26/2014	0.52	15
	9/30/2014	0.44	12
	3/23/2015	0.71	23
	4/22/2015	0.67	22
	9/30/2015	0.523	16
	11/19/2015	0.971	36
	3/15/2016	ND<0	2.5
	6/29/2016	0.53	17
	8/9/2016	0.728	25
	12/7/2016	0.453	13
	3/2/2017	0.754	28
	6/21/2017	0.82	31
	8/17/2017	0.806	30
	10/26/2017	0.602	18
	3/27/2018	ND<0	2.5
	6/26/2018	0.998	37
	8/1/2018	1.18	39
	12/11/2018	0.655	20
	4/17/2019	0.624	19
	6/11/2019	0.929	35
	8/28/2019	1.17	38
	10/28/2019	0.739	26
	3/31/2020	0.928	34
	6/10/2020	0.492	14
	9/21/2020	ND<0	2.5
	12/17/2020	0.432	10
	3/18/2021	0.926	33
	5/5/2021	1.41	41
	9/2/2021	1.33	40
	11/23/2021	0.33	8
	1/10/2022	0.75	27

ADEM Watermark

The Wilcoxon Statistic is 165.5
The Expected value is is 108
The Standard Deviation is 27.8209
The Z Score is 2.04882
The Standard Deviation adjusted for ties is 27.8096
The Z Score adjusted for ties is 2.04965
2.04882 < 2.326 indicating no statistical significance at 1% level
2.04965 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Total Phosphorus

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	43
Total Non-Detects	33 (76.7442%)
Pooled Mean	0.0368372
Pooled Std Dev	0.0734438
Compliance Meas.	37
Compliance Mean	0.0401081
Compliance Std Dev	0.077348
Background Meas.	6
Background Mean	0.0166667
Background Std Dev	0.0408248

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 5	6	5	83.3333	0.1

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 5	0.0166667	0.0408248	0.0166667	119	19.8333

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SS 13	37	28	75.6757	1.484

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SS 13	0.0401081	0.077348	0.0234414	0.0325094	827	22.3514

Analysis of Variance Statistics

SS Wells	0.00283696
SS Total	0.226548

Kruskal-Wallis Statistics

Non-Detect Rank	17
Background Rank Sum	119
Background Rank Mean	19.8333
H Statistic	0.207617
H Adjusted for Ties	0.378743

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Total Phosphorus

Location: SS 13

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 33
Non detect rank is 17

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 5	12/17/2020	ND<0	17
	3/18/2021	ND<0	17
	5/5/2021	ND<0	17
	9/2/2021	0.1	34
	11/23/2021	ND<0	17
	1/11/2022	ND<0	17
SS 13	3/12/2013	ND<0	17
	5/8/2013	ND<0	17
	9/23/2013	ND<0	17
	12/10/2013	0.12	36
	2/6/2014	ND<0	17
	6/26/2014	0.12	37
	9/30/2014	ND<0	17
	11/19/2014	ND<0	17
	3/23/2015	ND<0	17
	4/22/2015	ND<0	17
	9/30/2015	ND<0	17
	11/19/2015	0.181	41
	3/15/2016	ND<0	17
	6/29/2016	ND<0	17
	8/9/2016	ND<0	17
	12/7/2016	ND<0	17
	3/2/2017	ND<0	17
	6/21/2017	ND<0	17
	8/17/2017	ND<0	17
	10/26/2017	ND<0	17
	3/27/2018	ND<0	17
	6/26/2018	0.14	38
	8/1/2018	0.308	43
	12/11/2018	ND<0	17
	4/17/2019	ND<0	17
	6/11/2019	ND<0	17
	8/28/2019	ND<0	17
	10/28/2019	ND<0	17
	3/31/2020	0.147	39
	6/10/2020	ND<0	17
	9/21/2020	0.2	42
	12/17/2020	ND<0	17
	3/18/2021	ND<0	17
	5/5/2021	0.16	40
	9/2/2021	0.108	35
	11/23/2021	ND<0	17
	1/10/2022	ND<0	17

ADEM Watermark

The Wilcoxon Statistic is 124
The Expected value is is 111
The Standard Deviation is 28.5307
The Z Score is 0.438125
The Standard Deviation adjusted for ties is 21.1237
The Z Score adjusted for ties is 0.591751
0.438125 < 2.326 indicating no statistical significance at 1% level
0.591751 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Total Suspended Solids

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	43
Total Non-Detects	1 (2.32558%)
Pooled Mean	13.9833
Pooled Std Dev	15.9432
Compliance Meas.	37
Compliance Mean	11.8265
Compliance Std Dev	14.8242
Background Meas.	6
Background Mean	27.2833
Background Std Dev	17.4995

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 5	6	0	0	163.7

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 5	27.2833	17.4995	7.74893	218	36.3333

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SS 13	37	1	2.7027	437.58

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SS 13	11.8265	14.8242	-15.4568	6.67893	728	19.6757

Analysis of Variance Statistics

SS Wells	1233.46
SS Total	10675.9

Kruskal-Wallis Statistics

Non-Detect Rank	1
Background Rank Sum	218
Background Rank Mean	36.3333
H Statistic	9.086
H Adjusted for Ties	9.086

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Total Suspended Solids

Location: SS 13

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 1
Non detect rank is 1

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 5	12/17/2020	17.7	34
	3/18/2021	23	38
	5/5/2021	60.6	42
	9/2/2021	31.8	41
	11/23/2021	14	30
	1/11/2022	16.6	33
SS 13	3/12/2013	4.7	6
	5/8/2013	5.7	14
	9/23/2013	9.6	22
	12/10/2013	5.6	13
	2/6/2014	4.1	4
	6/26/2014	5.4	12
	9/30/2014	12	27
	11/19/2014	4.8	8
	3/23/2015	7.6	18
	4/22/2015	10	24
	9/30/2015	8.96	21
	11/19/2015	4.8	9
	3/15/2016	4.7	7
	6/29/2016	9.8	23
	8/9/2016	24	39
	12/7/2016	3.6	2
	3/2/2017	4.6	5
	6/21/2017	12.8	28
	8/17/2017	18.6	35
	10/26/2017	7.17	17
	3/27/2018	16.2	31
	6/26/2018	10.2	25
	8/1/2018	20.2	36
	12/11/2018	8.6	20
	4/17/2019	6.75	15
	6/11/2019	ND<0	1
	8/28/2019	24.4	40
	10/28/2019	3.7	3
	3/31/2020	92	43
	6/10/2020	21.2	37
	9/21/2020	7.8	19
	12/17/2020	5.3	10
	3/18/2021	16.5	32
	5/5/2021	10.5	26
	9/2/2021	13.4	29
	11/23/2021	5.3	11
	1/10/2022	7	16

ADEM Watermark

The Wilcoxon Statistic is 25
The Expected value is is 111
The Standard Deviation is 28.5307
The Z Score is -3.03182
The Standard Deviation adjusted for ties is 28.5307
The Z Score adjusted for ties is -3.03182
-3.03182 < 2.326 indicating no statistical significance at 1% level
-3.03182 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Turbidity

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	43
Total Non-Detects	3 (6.97674%)
Pooled Mean	14.647
Pooled Std Dev	14.629
Compliance Meas.	37
Compliance Mean	12.2776
Compliance Std Dev	11.02
Background Meas.	6
Background Mean	29.2583
Background Std Dev	25.0113

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 5	6	0	0	175.55

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 5	29.2583	25.0113	11.9611	191	31.8333

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SS 13	37	3	8.10811	454.27

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SS 13	12.2776	11.02	-16.9808	5.95232	755	20.4054

Analysis of Variance Statistics

SS Wells	1488.67
SS Total	8988.32

Kruskal-Wallis Statistics

Non-Detect Rank	2
Background Rank Sum	191
Background Rank Mean	31.8333
H Statistic	4.27641
H Adjusted for Ties	4.2777

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Turbidity

Location: SS 13

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 3
Non detect rank is 2

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 5	12/17/2020	15.4	33
	3/18/2021	1.7	5
	5/5/2021	50.11	41
	9/2/2021	15.15	31
	11/23/2021	68.29	43
	1/11/2022	24.9	38
SS 13	3/12/2013	8.4	14
	5/8/2013	10.3	23
	9/23/2013	11.7	24
	12/10/2013	12.2	26
	2/6/2014	7.19	12
	6/26/2014	23.2	36
	9/30/2014	12.4	29
	11/19/2014	13.4	30
	3/23/2015	15.9	34
	4/22/2015	15.3	32
	9/30/2015	9.49	20
	11/19/2015	35.8	40
	3/15/2016	9.08	17
	6/29/2016	9.72	21
	8/9/2016	20.3	35
	12/7/2016	4.8	6
	3/2/2017	12	25
	6/21/2017	8.7	15
	8/17/2017	9.3	19
	10/26/2017	5.2	7
	3/27/2018	6.4	8
	6/26/2018	6.8	11
	8/1/2018	24.2	37
	12/11/2018	8.2	13
	4/17/2019	6.4	9
	6/11/2019	8.89	16
	8/28/2019	6.7	10
	10/28/2019	12.3	27
	3/31/2020	60.4	42
	6/10/2020	10.1	22
	9/21/2020	ND<0.8	2
	12/17/2020	12.3	28
	3/18/2021	26.8	39
	5/5/2021	0.5	4
	9/2/2021	ND<0	2
	11/23/2021	ND<0	2
	1/10/2022	9.1	18

ADEM Watermark

The Wilcoxon Statistic is 52
The Expected value is is 111
The Standard Deviation is 28.5307
The Z Score is -2.08547
The Standard Deviation adjusted for ties is 28.5264
The Z Score adjusted for ties is -2.08579
-2.08547 < 2.326 indicating no statistical significance at 1% level
-2.08579 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: DO

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	42
Total Non-Detects	0 (0%)
Pooled Mean	9.06929
Pooled Std Dev	3.38997
Compliance Meas.	36
Compliance Mean	9.03111
Compliance Std Dev	3.60688
Background Meas.	6
Background Mean	9.29833
Background Std Dev	1.75862

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 5	6	0	0	55.79

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 5	9.29833	1.75862	0.979079	142	23.6667

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SS 14	36	0	0	325.12

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SS 14	9.03111	3.60688	-0.267222	1.51282	761	21.1389

Analysis of Variance Statistics

SS Wells	0.36724
SS Total	471.167

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	142
Background Rank Mean	23.6667
H Statistic	0.218346
H Adjusted for Ties	0.218346

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: DO

Location: SS 14

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 5	12/17/2020	10.94	32
	3/18/2021	9.59	26
	5/5/2021	7.96	18
	9/2/2021	6.42	7
	11/23/2021	10.42	29
	1/11/2022	10.46	30
SS 14	3/12/2013	11.23	33
	5/8/2013	2.75	1
	9/23/2013	6.49	8
	12/10/2013	11.33	34
	2/6/2014	17.56	41
	6/26/2014	7.58	12
	9/30/2014	3.67	4
	3/23/2015	9.53	25
	4/22/2015	12.29	39
	9/30/2015	12.79	40
	11/19/2015	20.71	42
	3/15/2016	12.11	38
	6/29/2016	3.61	3
	8/9/2016	5.99	5
	12/7/2016	7.72	15
	3/2/2017	8.76	22
	6/21/2017	6.24	6
	8/17/2017	7.11	10
	10/26/2017	7.66	14
	3/27/2018	8.96	23
	6/26/2018	10.65	31
	8/1/2018	7.04	9
	12/11/2018	11.53	35
	4/17/2019	8.28	20
	6/11/2019	3.47	2
	8/28/2019	8.1	19
	10/28/2019	7.83	17
	3/31/2020	9.31	24
	6/10/2020	7.2	11
	9/21/2020	7.59	13
	12/17/2020	11.72	36
	3/18/2021	9.77	27
	5/5/2021	8.62	21
	9/2/2021	7.8	16
	11/23/2021	10.28	28
	1/10/2022	11.84	37

ADEM Watermark

The Wilcoxon Statistic is 95
The Expected value is is 108
The Standard Deviation is 27.8209
The Z Score is -0.485247
The Standard Deviation adjusted for ties is 27.8209
The Z Score adjusted for ties is -0.485247
-0.485247 < 2.326 indicating no statistical significance at 1% level
-0.485247 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Nitrate-nitrite

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	43
Total Non-Detects	5 (11.6279%)
Pooled Mean	0.54386
Pooled Std Dev	1.16425
Compliance Meas.	37
Compliance Mean	0.591622
Compliance Std Dev	1.24932
Background Meas.	6
Background Mean	0.249333
Background Std Dev	0.165372

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 5	6	1	16.6667	1.496

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 5	0.249333	0.165372	0.0880344	91	15.1667

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SS 14	37	4	10.8108	21.89

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SS 14	0.591622	1.24932	0.342288	0.515844	855	23.1081

Analysis of Variance Statistics

SS Wells	0.604879
SS Total	56.9303

Kruskal-Wallis Statistics

Non-Detect Rank	3
Background Rank Sum	91
Background Rank Mean	15.1667
H Statistic	2.06511
H Adjusted for Ties	2.06823

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Nitrate-nitrite

Location: SS 14

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 5
Non detect rank is 3

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 5	12/17/2020	0.371	21
	3/18/2021	0.316	19
	5/5/2021	ND<0	3
	9/2/2021	0.128	8
	11/23/2021	0.231	13
	1/11/2022	0.45	27
SS 14	3/12/2013	0.4	24
	5/8/2013	0.45	28
	9/23/2013	0.38	22
	12/10/2013	0.28	17
	2/6/2014	0.62	35
	6/26/2014	0.67	37
	9/30/2014	ND<0	3
	11/19/2014	0.75	40
	3/23/2015	0.27	16
	4/22/2015	0.62	36
	9/30/2015	ND<0	3
	11/19/2015	0.442	25
	3/15/2016	0.5	31
	6/29/2016	ND<0	3
	8/9/2016	0.164	9
	12/7/2016	0.885	42
	3/2/2017	0.475	30
	6/21/2017	0.249	15
	8/17/2017	0.118	7
	10/26/2017	0.699	39
	3/27/2018	0.673	38
	6/26/2018	0.206	12
	8/1/2018	0.109	6
	12/11/2018	0.812	41
	4/17/2019	0.598	34
	6/11/2019	0.444	26
	8/28/2019	ND<0	3
	10/28/2019	0.458	29
	3/31/2020	0.19	11
	6/10/2020	0.246	14
	9/21/2020	0.345	20
	12/17/2020	0.546	32
	3/18/2021	0.189	10
	5/5/2021	7.85	43
	9/2/2021	0.552	33
	11/23/2021	0.315	18
	1/10/2022	0.385	23

ADEM Watermark

The Wilcoxon Statistic is 152
The Expected value is is 111
The Standard Deviation is 28.5307
The Z Score is 1.41952
The Standard Deviation adjusted for ties is 28.5091
The Z Score adjusted for ties is 1.4206
1.41952 < 2.326 indicating no statistical significance at 1% level
1.4206 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Ortho-phosphate

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	43
Total Non-Detects	7 (16.2791%)
Pooled Mean	0.0872791
Pooled Std Dev	0.148908
Compliance Meas.	37
Compliance Mean	0.100486
Compliance Std Dev	0.156704
Background Meas.	6
Background Mean	0.00583333
Background Std Dev	0.0142887

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 5	6	5	83.3333	0.035

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 5	0.00583333	0.0142887	0.00644899	30	5

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SS 14	37	2	5.40541	3.718

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SS 14	0.100486	0.156704	0.0946532	0.0646617	916	24.7568

Analysis of Variance Statistics

SS Wells	0.0462546
SS Total	0.931295

Kruskal-Wallis Statistics

Non-Detect Rank	4
Background Rank Sum	30
Background Rank Mean	5
H Statistic	12.7813
H Adjusted for Ties	12.8356

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Ortho-phosphate

Location: SS 14

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 7
Non detect rank is 4

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 5	12/17/2020	ND<0	4
	3/18/2021	ND<0	4
	5/5/2021	ND<0	4
	9/2/2021	ND<0	4
	11/23/2021	ND<0	4
	1/11/2022	0.035	10
SS 14	3/12/2013	0.087	33
	5/8/2013	0.041	12
	9/23/2013	0.036	11
	12/10/2013	0.16	40
	2/6/2014	0.074	26
	6/26/2014	0.08	32
	9/30/2014	0.031	9
	11/19/2014	0.075	27
	3/23/2015	0.11	38
	4/22/2015	ND<0	4
	9/30/2015	0.088	34
	11/19/2015	0.131	39
	3/15/2016	0.056	20
	6/29/2016	0.103	36
	8/9/2016	0.062	22
	12/7/2016	0.078	30
	3/2/2017	0.092	35
	6/21/2017	0.03	8
	8/17/2017	0.07	24
	10/26/2017	0.054	19
	3/27/2018	0.044	14
	6/26/2018	0.044	15
	8/1/2018	0.233	41
	12/11/2018	0.057	21
	4/17/2019	0.042	13
	6/11/2019	0.077	29
	8/28/2019	ND<0	4
	10/28/2019	0.048	16
	3/31/2020	0.235	42
	6/10/2020	0.078	31
	9/21/2020	0.075	28
	12/17/2020	0.05	18
	3/18/2021	0.048	17
	5/5/2021	0.073	25
	9/2/2021	0.98	43
	11/23/2021	0.108	37
	1/10/2022	0.068	23

ADEM Watermark

The Wilcoxon Statistic is 213
The Expected value is is 111
The Standard Deviation is 28.5307
The Z Score is 3.55757
The Standard Deviation adjusted for ties is 28.4703
The Z Score adjusted for ties is 3.56512
3.55757 > 2.326 indicating statistical significance at 1% level
3.56512 > 2.326 indicating statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: pH

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	42
Total Non-Detects	0 (0%)
Pooled Mean	7.28405
Pooled Std Dev	0.75949
Compliance Meas.	36
Compliance Mean	7.19556
Compliance Std Dev	0.785739
Background Meas.	6
Background Mean	7.815
Background Std Dev	0.116576

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 5	6	0	0	46.89

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 5	7.815	0.116576	0.111667	205	34.1667

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SS 14	36	0	0	259.04

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SS 14	7.19556	0.785739	-0.619444	0.32461	698	19.3889

Analysis of Variance Statistics

SS Wells	1.97337
SS Total	23.6498

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	205
Background Rank Mean	34.1667
H Statistic	7.46253
H Adjusted for Ties	7.46253

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: pH

Location: SS 14

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 5	12/17/2020	7.8	34
	3/18/2021	7.83	36
	5/5/2021	7.8	35
	9/2/2021	8.02	39
	11/23/2021	7.78	33
	1/11/2022	7.66	28
SS 14	3/12/2013	7.4	20
	5/8/2013	6.47	5
	9/23/2013	6.76	8
	12/10/2013	5.63	2
	2/6/2014	4.19	1
	6/26/2014	8.18	41
	9/30/2014	7.42	21
	11/19/2014	6.27	3
	3/23/2015	7.75	32
	4/22/2015	7.43	22
	9/30/2015	7.16	14
	11/19/2015	6.49	6
	3/15/2016	7.18	15
	6/29/2016	7.62	26
	8/9/2016	7.71	29
	12/7/2016	7.27	16
	3/2/2017	7.6	24
	6/21/2017	7.74	31
	8/17/2017	8.12	40
	10/26/2017	7.39	19
	3/27/2018	7.34	18
	6/26/2018	8.47	42
	8/1/2018	6.35	4
	12/11/2018	6.95	10
	4/17/2019	7.6	25
	6/11/2019	6.78	9
	8/28/2019	7.96	38
	10/28/2019	6.97	11
	3/31/2020	6.67	7
	6/10/2020	7.32	17
	9/21/2020	7.62	27
	12/17/2020	7.94	37
	3/18/2021	7.73	30
	5/5/2021	6.98	12
	11/23/2021	7.46	23
	1/10/2022	7.12	13

ADEM Watermark

The Wilcoxon Statistic is 32
The Expected value is is 108
The Standard Deviation is 27.8209
The Z Score is -2.74974
The Standard Deviation adjusted for ties is 27.8209
The Z Score adjusted for ties is -2.74974
-2.74974 < 2.326 indicating no statistical significance at 1% level
-2.74974 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Temperature

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	43
Total Non-Detects	0 (0%)
Pooled Mean	17.9935
Pooled Std Dev	7.10113
Compliance Meas.	37
Compliance Mean	18.0762
Compliance Std Dev	7.29248
Background Meas.	6
Background Mean	17.4833
Background Std Dev	6.34962

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 5	6	0	0	104.9

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 5	17.4833	6.34962	3.44884	122	20.3333

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SS 14	37	0	0	668.82

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SS 14	18.0762	7.29248	0.592883	3.16178	824	22.2703

Analysis of Variance Statistics

SS Wells	1.81477
SS Total	2117.89

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	122
Background Rank Mean	20.3333
H Statistic	0.12285
H Adjusted for Ties	0.12285

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Temperature

Location: SS 14

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 5	12/17/2020	10	7
	3/18/2021	15.9	19
	5/5/2021	21.2	27
	9/2/2021	28.2	40
	11/23/2021	14.9	15
	1/11/2022	14.7	14
SS 14	3/12/2013	10.93	8
	5/8/2013	16.42	21
	9/23/2013	21.77	28
	12/10/2013	8.56	4
	2/6/2014	5.16	1
	6/26/2014	24.14	35
	9/30/2014	22.35	30
	11/19/2014	5.48	2
	3/23/2015	16.5	22
	4/22/2015	17.5	24
	9/30/2015	24.02	34
	11/19/2015	15.16	17
	3/15/2016	16.01	20
	6/29/2016	27.2	38
	8/9/2016	26.9	37
	12/7/2016	11.9	9
	3/2/2017	12.2	11
	6/21/2017	23.7	32
	8/17/2017	31.4	43
	10/26/2017	13.9	13
	3/27/2018	11.9	10
	6/26/2018	29.3	42
	8/1/2018	22.5	31
	12/11/2018	7.4	3
	4/17/2019	22.1	29
	6/11/2019	23.82	33
	8/28/2019	27.9	39
	10/28/2019	15.1	16
	3/31/2020	15.2	18
	6/10/2020	29.1	41
	9/21/2020	20.7	26
	12/17/2020	8.6	5
	3/18/2021	16.8	23
	5/5/2021	19.4	25
	9/2/2021	26.3	36
	11/23/2021	12.7	12
	1/10/2022	8.8	6

ADEM Watermark

The Wilcoxon Statistic is 121
The Expected value is is 111
The Standard Deviation is 28.5307
The Z Score is 0.332975
The Standard Deviation adjusted for ties is 28.5307
The Z Score adjusted for ties is 0.332975
0.332975 < 2.326 indicating no statistical significance at 1% level
0.332975 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: TKN

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	43
Total Non-Detects	2 (4.65116%)
Pooled Mean	0.662326
Pooled Std Dev	0.303532
Compliance Meas.	37
Compliance Mean	0.693784
Compliance Std Dev	0.249018
Background Meas.	6
Background Mean	0.468333
Background Std Dev	0.524359

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 5	6	1	16.6667	2.81

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 5	0.468333	0.524359	0.285818	67.5	11.25

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SS 14	37	1	2.7027	25.67

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SS 14	0.693784	0.249018	0.22545	0.130541	878.5	23.7432

Analysis of Variance Statistics

SS Wells	0.262414
SS Total	3.86954

Kruskal-Wallis Statistics

Non-Detect Rank	1.5
Background Rank Sum	67.5
Background Rank Mean	11.25
H Statistic	5.11087
H Adjusted for Ties	5.11126

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: TKN

Location: SS 14

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 2
Non detect rank is 1.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 5	12/17/2020	0.258	3
	3/18/2021	0.317	5
	5/5/2021	0.41	9
	9/2/2021	0.325	6
	11/23/2021	ND<0	1.5
	1/11/2022	1.5	43
SS 14	3/12/2013	0.77	27
	5/8/2013	0.53	16
	9/23/2013	0.45	11
	12/10/2013	0.66	22
	2/6/2014	0.5	13
	6/26/2014	0.89	33
	9/30/2014	0.52	15
	11/19/2014	0.46	12
	3/23/2015	1.1	42
	4/22/2015	0.58	18
	9/30/2015	0.514	14
	11/19/2015	0.996	38
	3/15/2016	0.834	29
	6/29/2016	0.65	21
	8/9/2016	0.871	31
	12/7/2016	0.705	25
	3/2/2017	0.842	30
	6/21/2017	0.725	26
	8/17/2017	0.827	28
	10/26/2017	0.582	19
	3/27/2018	ND<0	1.5
	6/26/2018	1.01	39
	8/1/2018	0.885	32
	12/11/2018	0.635	20
	4/17/2019	0.414	10
	6/11/2019	0.928	35
	8/28/2019	1.05	40
	10/28/2019	0.381	8
	3/31/2020	0.934	36
	6/10/2020	0.897	34
	9/21/2020	0.281	4
	12/17/2020	0.54	17
	3/18/2021	0.67	23
	5/5/2021	1.06	41
	9/2/2021	0.935	37
	11/23/2021	0.37	7
	1/10/2022	0.674	24

ADEM Watermark

The Wilcoxon Statistic is 175.5
The Expected value is is 111
The Standard Deviation is 28.5307
The Z Score is 2.2432
The Standard Deviation adjusted for ties is 28.5296
The Z Score adjusted for ties is 2.24328
2.2432 < 2.326 indicating no statistical significance at 1% level
2.24328 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Total Phosphorus

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	43
Total Non-Detects	19 (44.186%)
Pooled Mean	0.0910465
Pooled Std Dev	0.0915954
Compliance Meas.	37
Compliance Mean	0.103108
Compliance Std Dev	0.0921137
Background Meas.	6
Background Mean	0.0166667
Background Std Dev	0.0408248

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 5	6	5	83.3333	0.1

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 5	0.0166667	0.0408248	0.0184257	70	11.6667

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SS 14	37	14	37.8378	3.815

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SS 14	0.103108	0.0921137	0.0864414	0.0385022	876	23.6757

Analysis of Variance Statistics

SS Wells	0.038577
SS Total	0.352368

Kruskal-Wallis Statistics

Non-Detect Rank	10
Background Rank Sum	70
Background Rank Mean	11.6667
H Statistic	4.72236
H Adjusted for Ties	5.16713

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Total Phosphorus

Location: SS 14

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

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	0.1	20
	11/23/2021	ND<0	10
	1/11/2022	ND<0	10
SS 14	3/12/2013	0.11	22
	5/8/2013	ND<0	10
	9/23/2013	ND<0	10
	12/10/2013	0.19	40
	2/6/2014	ND<0	10
	6/26/2014	0.16	33
	9/30/2014	ND<0	10
	11/19/2014	0.22	41
	3/23/2015	0.14	28
	4/22/2015	ND<0	10
	9/30/2015	0.176	37
	11/19/2015	0.183	39
	3/15/2016	ND<0	10
	6/29/2016	0.16	34
	8/9/2016	0.119	24
	12/7/2016	0.147	29
	3/2/2017	0.153	32
	6/21/2017	0.109	21
	8/17/2017	ND<0	10
	10/26/2017	ND<0	10
	3/27/2018	0.148	30
	6/26/2018	0.148	31
	8/1/2018	0.276	42
	12/11/2018	0.117	23
	4/17/2019	ND<0	10
	6/11/2019	ND<0	10
	8/28/2019	0.174	36
	10/28/2019	0.167	35
	3/31/2020	0.348	43
	6/10/2020	0.128	25
	9/21/2020	ND<0	10
	12/17/2020	ND<0	10
	3/18/2021	ND<0	10
	5/5/2021	ND<0	10
	9/2/2021	0.128	26
	11/23/2021	0.178	38
	1/10/2022	0.136	27

ADEM Watermark

The Wilcoxon Statistic is 173
The Expected value is is 111
The Standard Deviation is 28.5307
The Z Score is 2.15557
The Standard Deviation adjusted for ties is 27.2751
The Z Score adjusted for ties is 2.2548
2.15557 < 2.326 indicating no statistical significance at 1% level
2.2548 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Total Suspended Solids

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	43
Total Non-Detects	3 (6.97674%)
Pooled Mean	17.147
Pooled Std Dev	25.3552
Compliance Meas.	37
Compliance Mean	15.5032
Compliance Std Dev	26.2222
Background Meas.	6
Background Mean	27.2833
Background Std Dev	17.4995

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 5	6	0	0	163.7

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 5	27.2833	17.4995	8.36382	206	34.3333

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SS 14	37	3	8.10811	573.62

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SS 14	15.5032	26.2222	-11.7801	11.1434	740	20

Analysis of Variance Statistics

SS Wells	716.443
SS Total	27001.3

Kruskal-Wallis Statistics

Non-Detect Rank	2
Background Rank Sum	206
Background Rank Mean	34.3333
H Statistic	6.72727
H Adjusted for Ties	6.72931

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Total Suspended Solids

Location: SS 14

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 3
Non detect rank is 2

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 5	12/17/2020	17.7	32
	3/18/2021	23	35
	5/5/2021	60.6	41
	9/2/2021	31.8	38
	11/23/2021	14	29
	1/11/2022	16.6	31
SS 14	3/12/2013	4.7	10
	5/8/2013	5	11
	9/23/2013	ND<0	2
	12/10/2013	9.2	25
	2/6/2014	14	30
	6/26/2014	ND<0	2
	9/30/2014	6.1	15
	11/19/2014	9.2	26
	3/23/2015	11	27
	4/22/2015	6.3	17
	9/30/2015	6.59	18
	11/19/2015	23.3	36
	3/15/2016	8.1	20
	6/29/2016	6	14
	8/9/2016	12.7	28
	12/7/2016	ND<0	2
	3/2/2017	9.19	24
	6/21/2017	63.7	42
	8/17/2017	24.8	37
	10/26/2017	3.55	7
	3/27/2018	8.2	21
	6/26/2018	18.7	33
	8/1/2018	60	40
	12/11/2018	4.3	8
	4/17/2019	6.67	19
	6/11/2019	5.9	13
	8/28/2019	8.5	23
	10/28/2019	2.7	5
	3/31/2020	145	43
	6/10/2020	40.4	39
	9/21/2020	8.4	22
	12/17/2020	5.4	12
	3/18/2021	19.8	34
	5/5/2021	6.27	16
	9/2/2021	3	6
	11/23/2021	2.55	4
	1/10/2022	4.4	9

ADEM Watermark

The Wilcoxon Statistic is 37
The Expected value is is 111
The Standard Deviation is 28.5307
The Z Score is -2.61122
The Standard Deviation adjusted for ties is 28.5264
The Z Score adjusted for ties is -2.61162
-2.61122 < 2.326 indicating no statistical significance at 1% level
-2.61162 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Turbidity

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	42
Total Non-Detects	2 (4.7619%)
Pooled Mean	15.7188
Pooled Std Dev	15.2657
Compliance Meas.	36
Compliance Mean	13.4622
Compliance Std Dev	12.1227
Background Meas.	6
Background Mean	29.2583
Background Std Dev	25.0113

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 5	6	0	0	175.55

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 5	29.2583	25.0113	13.1794	179	29.8333

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SS 14	36	2	5.55556	484.64

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SS 14	13.4622	12.1227	-15.7961	6.341	724	20.1111

Analysis of Variance Statistics

SS Wells	1283.23
SS Total	9554.64

Kruskal-Wallis Statistics

Non-Detect Rank	1.5
Background Rank Sum	179
Background Rank Mean	29.8333
H Statistic	3.22997
H Adjusted for Ties	3.23024

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Turbidity

Location: SS 14

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 2
Non detect rank is 1.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 5	12/17/2020	15.4	29
	3/18/2021	1.7	4
	5/5/2021	50.11	40
	9/2/2021	15.15	28
	11/23/2021	68.29	42
	1/11/2022	24.9	36
SS 14	3/12/2013	9.7	18
	5/8/2013	10.3	20
	9/23/2013	3.1	5
	12/10/2013	17.6	32
	2/6/2014	12.4	25
	6/26/2014	7.94	14
	9/30/2014	7.9	13
	11/19/2014	16	30
	3/23/2015	21.3	33
	4/22/2015	12.3	24
	9/30/2015	7.32	10
	11/19/2015	27	37
	3/15/2016	11.3	22
	6/29/2016	5.98	7
	8/9/2016	22.3	35
	12/7/2016	7.6	11
	3/2/2017	12.6	26
	6/21/2017	21.5	34
	8/17/2017	6	8
	10/26/2017	4.3	6
	3/27/2018	8.8	17
	6/26/2018	7.7	12
	8/1/2018	42.9	39
	12/11/2018	8.4	16
	4/17/2019	6.6	9
	6/11/2019	12.6	27
	8/28/2019	8.1	15
	10/28/2019	10.9	21
	3/31/2020	62.4	41
	6/10/2020	17	31
	9/21/2020	ND<1	1.5
	12/17/2020	11.4	23
	3/18/2021	31.4	38
	5/5/2021	1.2	3
	11/23/2021	ND<0	1.5
	1/10/2022	9.8	19

ADEM Watermark

The Wilcoxon Statistic is 58
The Expected value is is 108
The Standard Deviation is 27.8209
The Z Score is -1.81519
The Standard Deviation adjusted for ties is 27.8197
The Z Score adjusted for ties is -1.81526
-1.81519 < 2.326 indicating no statistical significance at 1% level
-1.81526 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: DO

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	43
Total Non-Detects	0 (0%)
Pooled Mean	9.26465
Pooled Std Dev	3.34572
Compliance Meas.	37
Compliance Mean	9.18297
Compliance Std Dev	3.56729
Background Meas.	6
Background Mean	9.76833
Background Std Dev	1.4319

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 7	6	0	0	58.61

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 7	9.76833	1.4319	0	157	26.1667

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
AT 5	37	0	0	339.77

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
AT 5	9.18297	3.56729	-0.585366	1.48751	789	21.3243

Analysis of Variance Statistics

SS Wells	1.76905
SS Total	470.141

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	157
Background Rank Mean	26.1667
H Statistic	0.767813
H Adjusted for Ties	0.767813

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: DO

Location: AT 5

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 7	12/17/2020	11.01	34
	3/18/2021	10.25	29
	5/5/2021	8.01	16
	9/2/2021	7.91	15
	11/23/2021	10.45	30
	1/10/2022	10.98	33
AT 5	3/12/2013	11.04	35
	5/8/2013	2.59	1
	9/23/2013	3.9498	3
	12/10/2013	11.43	39
	2/6/2014	15.29	41
	6/26/2014	7.61	13
	9/30/2014	6.63	6
	11/19/2014	10.23	28
	3/23/2015	9.39	25
	4/22/2015	11.13	37
	9/30/2015	9.45	26
	11/19/2015	19.33	42
	3/15/2016	20.43	43
	6/29/2016	6.57	5
	8/9/2016	6.47	4
	12/7/2016	10.19	27
	3/2/2017	8.86	21
	6/21/2017	6.74	7
	8/17/2017	6.77	8
	10/26/2017	8.25	18
	3/27/2018	9.03	23
	6/26/2018	6.89	9
	8/1/2018	7.16	10
	12/11/2018	10.73	32
	4/17/2019	8.99	22
	6/11/2019	3.48	2
	8/28/2019	7.42	12
	10/28/2019	8.45	19
	3/31/2020	9.07	24
	6/10/2020	7.35	11
	9/21/2020	8.21	17
	12/17/2020	11.21	38
	3/18/2021	10.68	31
	5/5/2021	8.45	20
	9/2/2021	7.75	14
	11/23/2021	11.09	36
	1/10/2022	11.46	40

ADEM Watermark

The Wilcoxon Statistic is 86
The Expected value is is 111
The Standard Deviation is 28.5307
The Z Score is -0.893775
The Standard Deviation adjusted for ties is 28.5307
The Z Score adjusted for ties is -0.893775
-0.893775 < 2.326 indicating no statistical significance at 1% level
-0.893775 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Nitrate-nitrite

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	43
Total Non-Detects	0 (0%)
Pooled Mean	0.906372
Pooled Std Dev	0.973009
Compliance Meas.	37
Compliance Mean	0.94273
Compliance Std Dev	1.04061
Background Meas.	6
Background Mean	0.682167
Background Std Dev	0.293081

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 7	6	0	0	4.093

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 7	0.682167	0.293081	0	115	19.1667

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
AT 5	37	0	0	34.881

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
AT 5	0.94273	1.04061	0.260563	0.431504	831	22.4595

Analysis of Variance Statistics

SS Wells	0.350518
SS Total	39.7633

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	115
Background Rank Mean	19.1667
H Statistic	0.355037
H Adjusted for Ties	0.355037

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Nitrate-nitrite

Location: AT 5

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 7	12/17/2020	0.884	32
	3/18/2021	0.429	5
	5/5/2021	1.09	38
	9/2/2021	0.491	7
	11/23/2021	0.367	4
	1/10/2022	0.832	29
AT 5	3/12/2013	0.61	12
	5/8/2013	0.31	1
	9/23/2013	1.3	40
	12/10/2013	0.79	23
	2/6/2014	0.8	24
	6/26/2014	0.77	22
	9/30/2014	0.94	35
	11/19/2014	1.3	41
	3/23/2015	0.71	20
	4/22/2015	0.69	19
	9/30/2015	1.82	42
	11/19/2015	0.666	18
	3/15/2016	0.578	10
	6/29/2016	0.8	25
	8/9/2016	0.975	36
	12/7/2016	0.663	16
	3/2/2017	1.08	37
	6/21/2017	0.616	13
	8/17/2017	0.89	33
	10/26/2017	0.936	34
	3/27/2018	0.849	30
	6/26/2018	0.849	31
	8/1/2018	0.51	8
	12/11/2018	1.09	39
	4/17/2019	0.638	14
	6/11/2019	0.822	26
	8/28/2019	0.534	9
	10/28/2019	0.665	17
	3/31/2020	0.657	15
	6/10/2020	0.825	27
	9/21/2020	0.603	11
	12/17/2020	0.831	28
	3/18/2021	0.31	2
	5/5/2021	6.86	43
	9/2/2021	0.482	6
	11/23/2021	0.343	3
	1/10/2022	0.769	21

ADEM Watermark

The Wilcoxon Statistic is 128
The Expected value is is 111
The Standard Deviation is 28.5307
The Z Score is 0.578325
The Standard Deviation adjusted for ties is 28.5307
The Z Score adjusted for ties is 0.578325
0.578325 < 2.326 indicating no statistical significance at 1% level
0.578325 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Ortho-phosphate

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	43
Total Non-Detects	1 (2.32558%)
Pooled Mean	0.240977
Pooled Std Dev	0.169636
Compliance Meas.	37
Compliance Mean	0.250595
Compliance Std Dev	0.173016
Background Meas.	6
Background Mean	0.181667
Background Std Dev	0.145902

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 7	6	0	0	1.09

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 7	0.181667	0.145902	0	105	17.5

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
AT 5	37	1	2.7027	9.272

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
AT 5	0.250595	0.173016	0.0689279	0.0747923	841	22.7297

Analysis of Variance Statistics

SS Wells	0.0245287
SS Total	1.20861

Kruskal-Wallis Statistics

Non-Detect Rank	1
Background Rank Sum	105
Background Rank Mean	17.5
H Statistic	0.895577
H Adjusted for Ties	0.895577

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Ortho-phosphate

Location: AT 5

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 1
Non detect rank is 1

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 7	12/17/2020	0.094	9
	3/18/2021	0.093	8
	5/5/2021	0.112	12
	9/2/2021	0.179	21
	11/23/2021	0.472	37
	1/10/2022	0.14	18
AT 5	3/12/2013	0.15	19
	5/8/2013	0.099	10
	9/23/2013	0.4	33
	12/10/2013	0.29	31
	2/6/2014	0.13	15
	6/26/2014	0.34	32
	9/30/2014	0.49	39
	11/19/2014	0.41	35
	3/23/2015	0.13	16
	4/22/2015	0.11	11
	9/30/2015	0.664	43
	11/19/2015	0.261	28
	3/15/2016	0.068	6
	6/29/2016	0.598	42
	8/9/2016	0.482	38
	12/7/2016	0.45	36
	3/2/2017	0.267	29
	6/21/2017	0.226	23
	8/17/2017	0.258	27
	10/26/2017	0.226	24
	3/27/2018	0.162	20
	6/26/2018	0.23	25
	8/1/2018	0.285	30
	12/11/2018	0.066	5
	4/17/2019	0.061	4
	6/11/2019	0.206	22
	8/28/2019	0.404	34
	10/28/2019	0.523	41
	3/31/2020	0.032	2
	6/10/2020	0.248	26
	9/21/2020	0.491	40
	12/17/2020	0.087	7
	3/18/2021	0.05	3
	5/5/2021	0.121	13
	9/2/2021	0.131	17
	11/23/2021	ND<0	1
	1/10/2022	0.126	14

ADEM Watermark

The Wilcoxon Statistic is 138
The Expected value is is 111
The Standard Deviation is 28.5307
The Z Score is 0.928825
The Standard Deviation adjusted for ties is 28.5307
The Z Score adjusted for ties is 0.928825
0.928825 < 2.326 indicating no statistical significance at 1% level
0.928825 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: pH

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	41
Total Non-Detects	0 (0%)
Pooled Mean	7.3578
Pooled Std Dev	1.06051
Compliance Meas.	36
Compliance Mean	7.30083
Compliance Std Dev	1.06382
Background Meas.	5
Background Mean	7.768
Background Std Dev	1.05103

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 7	5	0	0	38.84

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 7	7.768	1.05103	0	134	26.8

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
AT 5	36	0	0	262.83

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
AT 5	7.30083	1.06382	-0.467167	0.507098	727	20.1944

Analysis of Variance Statistics

SS Wells	0.958147
SS Total	44.9869

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	134
Background Rank Mean	26.8
H Statistic	1.33492
H Adjusted for Ties	1.33492

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: pH

Location: AT 5

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 7	12/17/2020	8.1	37
	3/18/2021	8.93	41
	5/5/2021	6.06	7
	11/23/2021	7.78	19
	1/10/2022	7.97	30
AT 5	3/12/2013	7.8	21
	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	25
	9/30/2014	5.78	5
	11/19/2014	5.08	3
	3/23/2015	8.69	40
	4/22/2015	6.93	9
	9/30/2015	6.37	8
	11/19/2015	7.38	14
	3/15/2016	7.93	28
	6/29/2016	7.99	32
	8/9/2016	7.89	26
	12/7/2016	7.08	10
	3/2/2017	8.14	39
	6/21/2017	7.98	31
	8/17/2017	8.09	35
	10/26/2017	7.95	29
	3/27/2018	7.79	20
	6/26/2018	8.06	33
	8/1/2018	7.33	13
	12/11/2018	7.59	17
	4/17/2019	7.63	18
	6/11/2019	7.18	11
	8/28/2019	7.84	23
	10/28/2019	7.84	24
	3/31/2020	8.09	36
	6/10/2020	7.56	16
	9/21/2020	8.08	34
	12/17/2020	7.91	27
	3/18/2021	7.82	22
	5/5/2021	7.24	12
	11/23/2021	8.13	38
	1/10/2022	7.39	15

The Wilcoxon Statistic is 61

ADEM Watermark

The Expected value is is 90
The Standard Deviation is 25.0998
The Z Score is -1.17531
The Standard Deviation adjusted for ties is 25.0998
The Z Score adjusted for ties is -1.17531
-1.17531 < 2.326 indicating no statistical significance at 1% level
-1.17531 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Temperature

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	43
Total Non-Detects	0 (0%)
Pooled Mean	17.2923
Pooled Std Dev	5.73107
Compliance Meas.	37
Compliance Mean	17.5316
Compliance Std Dev	5.91233
Background Meas.	6
Background Mean	15.8167
Background Std Dev	4.60235

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 7	6	0	0	94.9

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 7	15.8167	4.60235	0	111	18.5

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
AT 5	37	0	0	648.67

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
AT 5	17.5316	5.91233	1.71495	2.53876	835	22.5676

Analysis of Variance Statistics

SS Wells	15.1841
SS Total	1379.49

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	111
Background Rank Mean	18.5
H Statistic	0.541769
H Adjusted for Ties	0.541769

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Temperature

Location: AT 5

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 7	12/17/2020	11.5	8
	3/18/2021	18.3	25
	5/5/2021	18.4	26
	9/2/2021	22.6	33
	11/23/2021	12.2	10
	1/10/2022	11.9	9
AT 5	3/12/2013	12.55	11
	5/8/2013	14.69	16
	9/23/2013	22.88	34
	12/10/2013	8.21	3
	2/6/2014	7.28	2
	6/26/2014	23.89	38
	9/30/2014	21.03	29
	11/19/2014	6.91	1
	3/23/2015	14.5	15
	4/22/2015	18.4	27
	9/30/2015	21.63	30
	11/19/2015	14.98	17
	3/15/2016	16.86	21
	6/29/2016	25.4	39
	8/9/2016	25.8	41
	12/7/2016	11.3	7
	3/2/2017	13.4	14
	6/21/2017	23.3	36
	8/17/2017	26	42
	10/26/2017	15.7	19
	3/27/2018	12.9	12
	6/26/2018	25.5	40
	8/1/2018	22.3	32
	12/11/2018	9.4	4
	4/17/2019	17.9	23
	6/11/2019	22.16	31
	8/28/2019	27.1	43
	10/28/2019	15.1	18
	3/31/2020	16.6	20
	6/10/2020	23.2	35
	9/21/2020	20.6	28
	12/17/2020	9.6	5
	3/18/2021	17.2	22
	5/5/2021	18.1	24
	9/2/2021	23.4	37
	11/23/2021	12.9	13
	1/10/2022	10	6

ADEM Watermark

The Wilcoxon Statistic is 132
The Expected value is is 111
The Standard Deviation is 28.5307
The Z Score is 0.718525
The Standard Deviation adjusted for ties is 28.5307
The Z Score adjusted for ties is 0.718525
0.718525 < 2.326 indicating no statistical significance at 1% level
0.718525 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: TKN

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	43
Total Non-Detects	16 (37.2093%)
Pooled Mean	0.450465
Pooled Std Dev	0.520041
Compliance Meas.	37
Compliance Mean	0.375324
Compliance Std Dev	0.409197
Background Meas.	6
Background Mean	0.913833
Background Std Dev	0.875615

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 7	6	1	16.6667	5.483

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 7	0.913833	0.875615	0	180.5	30.0833

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
AT 5	37	15	40.5405	13.887

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
AT 5	0.375324	0.409197	-0.538509	0.215842	765.5	20.6892

Analysis of Variance Statistics

SS Wells	1.49717
SS Total	11.3586

Kruskal-Wallis Statistics

Non-Detect Rank	8.5
Background Rank Sum	180.5
Background Rank Mean	30.0833
H Statistic	2.88974
H Adjusted for Ties	3.04614

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: TKN

Location: AT 5

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 16
Non detect rank is 8.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 7	12/17/2020	0.541	29
	3/18/2021	0.407	24
	5/5/2021	1.24	40
	9/2/2021	2.49	43
	11/23/2021	ND<0	8.5
	1/10/2022	0.805	36
AT 5	3/12/2013	0.37	21
	5/8/2013	0.56	31
	9/23/2013	0.37	22
	12/10/2013	0.97	38
	2/6/2014	0.35	20
	6/26/2014	0.38	23
	9/30/2014	ND<0	8.5
	11/19/2014	0.5	27
	3/23/2015	0.27	18
	4/22/2015	ND<0	8.5
	9/30/2015	ND<0	8.5
	11/19/2015	1.47	42
	3/15/2016	0.772	35
	6/29/2016	ND<0	8.5
	8/9/2016	0.268	17
	12/7/2016	ND<0	8.5
	3/2/2017	0.529	28
	6/21/2017	0.544	30
	8/17/2017	0.69	34
	10/26/2017	ND<0	8.5
	3/27/2018	ND<0	8.5
	6/26/2018	0.411	25
	8/1/2018	0.68	33
	12/11/2018	0.579	32
	4/17/2019	ND<0	8.5
	6/11/2019	0.486	26
	8/28/2019	1.07	39
	10/28/2019	ND<0	8.5
	3/31/2020	ND<0	8.5
	6/10/2020	ND<0	8.5
	9/21/2020	ND<0	8.5
	12/17/2020	ND<0	8.5
	3/18/2021	ND<0	8.5
	5/5/2021	1.37	41
	9/2/2021	0.969	37
	11/23/2021	ND<0	8.5
	1/10/2022	0.279	19

ADEM Watermark

The Wilcoxon Statistic is 62.5
The Expected value is is 111
The Standard Deviation is 28.5307
The Z Score is -1.71745
The Standard Deviation adjusted for ties is 27.7886
The Z Score adjusted for ties is -1.76331
-1.71745 < 2.326 indicating no statistical significance at 1% level
-1.76331 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Total Phosphorus

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	43
Total Non-Detects	5 (11.6279%)
Pooled Mean	0.280651
Pooled Std Dev	0.188047
Compliance Meas.	37
Compliance Mean	0.285189
Compliance Std Dev	0.193214
Background Meas.	6
Background Mean	0.252667
Background Std Dev	0.1648

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 7	6	1	16.6667	1.516

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 7	0.252667	0.1648	0	124	20.6667

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
AT 5	37	4	10.8108	10.552

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
AT 5	0.285189	0.193214	0.0325225	0.0836099	822	22.2162

Analysis of Variance Statistics

SS Wells	0.00546076
SS Total	1.48519

Kruskal-Wallis Statistics

Non-Detect Rank	3
Background Rank Sum	124
Background Rank Mean	20.6667
H Statistic	0.0786241
H Adjusted for Ties	0.078743

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Total Phosphorus

Location: AT 5

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 5
Non detect rank is 3

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 7	12/17/2020	ND<0	3
	3/18/2021	0.27	23
	5/5/2021	0.244	18
	9/2/2021	0.275	24
	11/23/2021	0.516	40
	1/10/2022	0.211	16
AT 5	3/12/2013	0.14	10
	5/8/2013	0.11	7
	9/23/2013	0.35	30
	12/10/2013	0.34	29
	2/6/2014	0.13	8
	6/26/2014	0.28	25
	9/30/2014	0.54	41
	11/19/2014	0.39	33
	3/23/2015	0.14	11
	4/22/2015	0.13	9
	9/30/2015	0.862	43
	11/19/2015	0.309	28
	3/15/2016	ND<0	3
	6/29/2016	0.71	42
	8/9/2016	0.502	39
	12/7/2016	0.474	36
	3/2/2017	0.373	32
	6/21/2017	0.366	31
	8/17/2017	0.283	26
	10/26/2017	0.25	20
	3/27/2018	0.148	12
	6/26/2018	0.246	19
	8/1/2018	0.401	35
	12/11/2018	0.204	15
	4/17/2019	ND<0	3
	6/11/2019	0.29	27
	8/28/2019	0.485	37
	10/28/2019	0.499	38
	3/31/2020	0.102	6
	6/10/2020	0.243	17
	9/21/2020	0.399	34
	12/17/2020	ND<0	3
	3/18/2021	ND<0	3
	5/5/2021	0.157	13
	9/2/2021	0.262	22
	11/23/2021	0.253	21
	1/10/2022	0.184	14

ADEM Watermark

The Wilcoxon Statistic is 119
The Expected value is is 111
The Standard Deviation is 28.5307
The Z Score is 0.262875
The Standard Deviation adjusted for ties is 28.5091
The Z Score adjusted for ties is 0.263074
0.262875 < 2.326 indicating no statistical significance at 1% level
0.263074 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Total Suspended Solids

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	43
Total Non-Detects	1 (2.32558%)
Pooled Mean	32.5956
Pooled Std Dev	24.6117
Compliance Meas.	37
Compliance Mean	31.2246
Compliance Std Dev	23.5765
Background Meas.	6
Background Mean	41.05
Background Std Dev	31.4064

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 7	6	1	16.6667	246.3

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 7	41.05	31.4064	0	164	27.3333

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
AT 5	37	0	0	1155.31

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
AT 5	31.2246	23.5765	-9.82541	10.8551	782	21.1351

Analysis of Variance Statistics

SS Wells	498.409
SS Total	25440.9

Kruskal-Wallis Statistics

Non-Detect Rank	1
Background Rank Sum	164
Background Rank Mean	27.3333
H Statistic	1.25799
H Adjusted for Ties	1.25799

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Total Suspended Solids

Location: AT 5

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 1
Non detect rank is 1

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 7	12/17/2020	19.4	19
	3/18/2021	78.2	42
	5/5/2021	36.4	31
	9/2/2021	77.6	41
	11/23/2021	ND<0	1
	1/10/2022	34.7	30
AT 5	3/12/2013	20	20
	5/8/2013	19	17
	9/23/2013	22	21
	12/10/2013	64	36
	2/6/2014	32	29
	6/26/2014	19	18
	9/30/2014	14	6
	11/19/2014	27	26
	3/23/2015	15	9
	4/22/2015	76	40
	9/30/2015	16.4	12
	11/19/2015	74.6	39
	3/15/2016	26.7	25
	6/29/2016	14.5	8
	8/9/2016	18.3	15
	12/7/2016	16.9	13
	3/2/2017	44.6	33
	6/21/2017	70	38
	8/17/2017	12	5
	10/26/2017	9.41	3
	3/27/2018	15.9	10
	6/26/2018	25.2	24
	8/1/2018	107	43
	12/11/2018	46.2	34
	4/17/2019	14.4	7
	6/11/2019	15.9	11
	8/28/2019	23.5	23
	10/28/2019	17	14
	3/31/2020	27.1	27
	6/10/2020	22.8	22
	9/21/2020	11.3	4
	12/17/2020	18.6	16
	3/18/2021	55.6	35
	5/5/2021	43.7	32
	9/2/2021	67.4	37
	11/23/2021	2.6	2
	1/10/2022	29.7	28

ADEM Watermark

The Wilcoxon Statistic is 79
The Expected value is is 111
The Standard Deviation is 28.5307
The Z Score is -1.13912
The Standard Deviation adjusted for ties is 28.5307
The Z Score adjusted for ties is -1.13912
-1.13912 < 2.326 indicating no statistical significance at 1% level
-1.13912 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Turbidity

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	41
Total Non-Detects	3 (7.31707%)
Pooled Mean	50.8917
Pooled Std Dev	143.884
Compliance Meas.	36
Compliance Mean	53.65
Compliance Std Dev	152.844
Background Meas.	5
Background Mean	31.032
Background Std Dev	45.34

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 7	5	1	20	155.16

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 7	31.032	45.34	0	80	16

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
AT 5	36	2	5.55556	1931.4

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
AT 5	53.65	152.844	22.618	69.4508	781	21.6944

Analysis of Variance Statistics

SS Wells	2245.93
SS Total	828109

Kruskal-Wallis Statistics

Non-Detect Rank	2
Background Rank Sum	80
Background Rank Mean	16
H Statistic	0.992063
H Adjusted for Ties	0.992409

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Turbidity

Location: AT 5

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 3
Non detect rank is 2

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 7	12/17/2020	16.76	15
	3/18/2021	111	39
	5/5/2021	8.2	5
	11/23/2021	ND<0	2
	1/10/2022	19.2	19
AT 5	3/12/2013	15.4	12
	5/8/2013	25.3	27
	9/23/2013	21.3	23
	12/10/2013	68.4	36
	2/6/2014	39.8	32
	6/26/2014	70.4	37
	9/30/2014	14.9	11
	11/19/2014	47.1	33
	3/23/2015	17.1	16
	4/22/2015	52.8	35
	9/30/2015	15.4	13
	11/19/2015	934	41
	3/15/2016	30.2	31
	6/29/2016	18.1	18
	8/9/2016	17.1	17
	12/7/2016	26.5	28
	3/2/2017	50.8	34
	6/21/2017	11.7	8
	8/17/2017	9.5	6
	10/26/2017	9.8	7
	3/27/2018	14.5	10
	6/26/2018	16.4	14
	8/1/2018	77.9	38
	12/11/2018	29.2	30
	4/17/2019	12.2	9
	6/11/2019	24.6	26
	8/28/2019	20.7	21
	10/28/2019	22.5	24
	3/31/2020	23.1	25
	6/10/2020	19.4	20
	9/21/2020	ND<0.3	2
	12/17/2020	28.7	29
	3/18/2021	119	40
	5/5/2021	6.5	4
	11/23/2021	ND<0	2
	1/10/2022	20.8	22

The Wilcoxon Statistic is 115

ADEM Watermark

The Expected value is is 90
The Standard Deviation is 25.0998
The Z Score is 0.976103
The Standard Deviation adjusted for ties is 25.0954
The Z Score adjusted for ties is 0.976273
0.976103 < 2.326 indicating no statistical significance at 1% level
0.976273 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: DO

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	43
Total Non-Detects	0 (0%)
Pooled Mean	8.50256
Pooled Std Dev	1.954
Compliance Meas.	37
Compliance Mean	8.2973
Compliance Std Dev	1.96453
Background Meas.	6
Background Mean	9.76833
Background Std Dev	1.4319

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 7	6	0	0	58.61

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 7	9.76833	1.4319	0	179	29.8333

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 1	37	0	0	307

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 1	8.2973	1.96453	-1.47104	0.839528	767	20.7297

Analysis of Variance Statistics

SS Wells	11.172
SS Total	160.362

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	179
Background Rank Mean	29.8333
H Statistic	2.71376
H Adjusted for Ties	2.71376

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: DO

Location: SME 1

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 7	12/17/2020	11.01	39
	3/18/2021	10.25	33
	5/5/2021	8.01	18
	9/2/2021	7.91	16
	11/23/2021	10.45	35
	1/10/2022	10.98	38
SME 1	3/12/2013	8.26	19
	5/8/2013	8.96	26
	9/23/2013	7.87	14
	12/10/2013	9.15	27
	2/6/2014	11.34	41
	6/26/2014	7.05	11
	9/30/2014	7.46	13
	11/19/2014	10.86	37
	3/23/2015	8.52	22
	4/22/2015	7.97	17
	9/30/2015	7.03	9
	11/19/2015	7.04	10
	3/15/2016	7.21	12
	6/29/2016	3.29	1
	8/9/2016	4.98	3
	12/7/2016	10.2	32
	3/2/2017	4.31	2
	6/29/2017	9.21	29
	8/16/2017	6.58	6
	10/25/2017	8.32	20
	3/28/2018	9.18	28
	6/29/2018	6.37	5
	8/2/2018	5.82	4
	12/10/2018	11.48	43
	4/15/2019	7.89	15
	6/12/2019	8.73	25
	8/27/2019	8.51	21
	10/29/2019	9.21	30
	3/30/2020	8.61	24
	6/16/2020	10.36	34
	9/21/2020	6.92	7
	12/17/2020	10.68	36
	3/18/2021	9.54	31
	5/5/2021	8.53	23
	9/2/2021	6.93	8
	11/23/2021	11.34	42
	1/11/2022	11.29	40

ADEM Watermark

The Wilcoxon Statistic is 64
The Expected value is is 111
The Standard Deviation is 28.5307
The Z Score is -1.66487
The Standard Deviation adjusted for ties is 28.5307
The Z Score adjusted for ties is -1.66487
-1.66487 < 2.326 indicating no statistical significance at 1% level
-1.66487 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Nitrate-nitrite

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	43
Total Non-Detects	13 (30.2326%)
Pooled Mean	0.510233
Pooled Std Dev	1.23383
Compliance Meas.	37
Compliance Mean	0.482378
Compliance Std Dev	1.32604
Background Meas.	6
Background Mean	0.682
Background Std Dev	0.293212

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 7	6	0	0	4.092

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 7	0.682	0.293212	0	202	33.6667

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 1	37	13	35.1351	17.848

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 1	0.482378	1.32604	-0.199622	0.548712	744	20.1081

Analysis of Variance Statistics

SS Wells	0.205731
SS Total	63.9377

Kruskal-Wallis Statistics

Non-Detect Rank	7
Background Rank Sum	202
Background Rank Mean	33.6667
H Statistic	6.01966
H Adjusted for Ties	6.18978

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Nitrate-nitrite

Location: SME 1

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 13
Non detect rank is 7

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 7	12/17/2020	0.884	41
	3/18/2021	0.429	27
	5/5/2021	1.09	42
	9/2/2021	0.49	31
	11/23/2021	0.367	21
	1/10/2022	0.832	40
SME 1	3/12/2013	0.54	33
	5/8/2013	0.15	16
	9/23/2013	ND<0	7
	12/10/2013	0.55	34
	2/6/2014	0.55	35
	6/26/2014	ND<0	7
	9/30/2014	ND<0	7
	11/19/2014	0.74	39
	3/23/2015	0.51	32
	4/22/2015	0.4	24
	9/30/2015	ND<0	7
	11/19/2015	0.401	25
	3/15/2016	0.454	28
	6/29/2016	ND<0	7
	8/9/2016	ND<0	7
	12/7/2016	0.413	26
	3/2/2017	0.671	38
	6/29/2017	ND<0	7
	8/16/2017	ND<0	7
	10/25/2017	0.368	22
	3/28/2018	0.633	37
	6/29/2018	0.312	20
	8/2/2018	0.296	19
	12/10/2018	0.259	17
	4/15/2019	0.39	23
	6/12/2019	ND<0	7
	8/27/2019	ND<0	7
	10/29/2019	0.129	15
	3/30/2020	0.462	30
	6/16/2020	ND<0	7
	9/21/2020	ND<0	7
	12/17/2020	0.577	36
	3/18/2021	0.263	18
	5/5/2021	0.122	14
	9/2/2021	0.458	29
	11/23/2021	ND<0	7
	1/11/2022	8.2	43

ADEM Watermark

The Wilcoxon Statistic is 41
The Expected value is is 111
The Standard Deviation is 28.5307
The Z Score is -2.47102
The Standard Deviation adjusted for ties is 28.1359
The Z Score adjusted for ties is -2.5057
-2.47102 < 2.326 indicating no statistical significance at 1% level
-2.5057 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Ortho-phosphate

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	43
Total Non-Detects	9 (20.9302%)
Pooled Mean	0.0908372
Pooled Std Dev	0.0897273
Compliance Meas.	37
Compliance Mean	0.0761081
Compliance Std Dev	0.0695576
Background Meas.	6
Background Mean	0.181667
Background Std Dev	0.145902

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 7	6	0	0	1.09

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 7	0.181667	0.145902	0	199	33.1667

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 1	37	9	24.3243	2.816

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 1	0.0761081	0.0695576	-0.105559	0.03641	747	20.1892

Analysis of Variance Statistics

SS Wells	0.057527
SS Total	0.338142

Kruskal-Wallis Statistics

Non-Detect Rank	5
Background Rank Sum	199
Background Rank Mean	33.1667
H Statistic	5.51474
H Adjusted for Ties	5.56517

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Ortho-phosphate

Location: SME 1

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 9
Non detect rank is 5

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 7	12/17/2020	0.094	27
	3/18/2021	0.093	26
	5/5/2021	0.112	31
	9/2/2021	0.179	37
	11/23/2021	0.472	43
	1/10/2022	0.14	35
SME 1	3/12/2013	0.11	29
	5/8/2013	0.063	19
	9/23/2013	0.053	17
	12/10/2013	0.21	41
	2/6/2014	0.11	30
	6/26/2014	ND<0	5
	9/30/2014	0.044	13
	11/19/2014	0.27	42
	3/23/2015	0.073	22
	4/22/2015	0.039	12
	9/30/2015	0.052	16
	11/19/2015	0.084	24
	3/15/2016	0.047	14
	6/29/2016	0.18	38
	8/9/2016	0.089	25
	12/7/2016	0.209	40
	3/2/2017	0.127	34
	6/29/2017	0.028	10
	8/16/2017	ND<0	5
	10/25/2017	0.121	32
	3/28/2018	0.106	28
	6/29/2018	0.121	33
	8/2/2018	0.145	36
	12/10/2018	ND<0	5
	4/15/2019	0.063	20
	6/12/2019	ND<0	5
	8/27/2019	ND<0	5
	10/29/2019	0.049	15
	3/30/2020	ND<0	5
	6/16/2020	0.031	11
	9/21/2020	ND<0	5
	12/17/2020	0.072	21
	3/18/2021	ND<0	5
	5/5/2021	ND<0	5
	9/2/2021	0.19	39
	11/23/2021	0.076	23
	1/11/2022	0.054	18

ADEM Watermark

The Wilcoxon Statistic is 44
The Expected value is is 111
The Standard Deviation is 28.5307
The Z Score is -2.36587
The Standard Deviation adjusted for ties is 28.4011
The Z Score adjusted for ties is -2.37667
-2.36587 < 2.326 indicating no statistical significance at 1% level
-2.37667 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: pH

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	42
Total Non-Detects	0 (0%)
Pooled Mean	7.91405
Pooled Std Dev	0.551486
Compliance Meas.	37
Compliance Mean	7.93378
Compliance Std Dev	0.469334
Background Meas.	5
Background Mean	7.768
Background Std Dev	1.05103

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 7	5	0	0	38.84

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 7	7.768	1.05103	0	109	21.8

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 1	37	0	0	293.55

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 1	7.93378	0.469334	0.165784	0.264738	794	21.4595

Analysis of Variance Statistics

SS Wells	0.121062
SS Total	12.4696

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	109
Background Rank Mean	21.8
H Statistic	0.00339409
H Adjusted for Ties	0.00339409

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: pH

Location: SME 1

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 7	12/17/2020	8.1	27
	3/18/2021	8.93	41
	5/5/2021	6.06	1
	11/23/2021	7.78	16
	1/10/2022	7.97	24
SME 1	3/12/2013	8.19	30
	5/8/2013	7.64	12
	9/23/2013	8.26	32
	12/10/2013	8.05	26
	2/6/2014	7.22	3
	6/26/2014	8.49	37
	9/30/2014	8.25	31
	11/19/2014	8.31	34
	3/23/2015	8.26	33
	4/22/2015	7.14	2
	9/30/2015	8.34	35
	11/19/2015	7.92	21
	3/15/2016	8.44	36
	6/29/2016	8.8	40
	8/9/2016	8.55	38
	12/7/2016	7.96	23
	3/2/2017	7.75	15
	6/29/2017	9.11	42
	8/16/2017	8.12	29
	10/25/2017	8.02	25
	3/28/2018	8.1	28
	6/29/2018	7.84	18
	8/2/2018	7.48	10
	12/10/2018	7.45	8
	4/15/2019	7.89	19
	6/12/2019	7.34	5
	8/27/2019	7.45	9
	10/29/2019	7.95	22
	3/30/2020	7.35	6
	6/16/2020	8.58	39
	9/21/2020	7.71	14
	12/17/2020	7.66	13
	3/18/2021	7.24	4
	5/5/2021	7.43	7
	9/2/2021	7.8	17
	11/23/2021	7.91	20
	1/11/2022	7.55	11

ADEM Watermark

The Wilcoxon Statistic is 91
The Expected value is is 92.5
The Standard Deviation is 25.7472
The Z Score is -0.0776784
The Standard Deviation adjusted for ties is 25.7472
The Z Score adjusted for ties is -0.0776784
-0.0776784 < 2.326 indicating no statistical significance at 1% level
-0.0776784 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Temperature

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	42
Total Non-Detects	0 (0%)
Pooled Mean	18.6102
Pooled Std Dev	7.0054
Compliance Meas.	36
Compliance Mean	19.0758
Compliance Std Dev	7.27336
Background Meas.	6
Background Mean	15.8167
Background Std Dev	4.60235

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 7	6	0	0	94.9

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 7	15.8167	4.60235	0	98	16.3333

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 1	36	0	0	686.73

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 1	19.0758	7.27336	3.25917	3.08472	805	22.3611

Analysis of Variance Statistics

SS Wells	54.6283
SS Total	2012.1

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	98
Background Rank Mean	16.3333
H Statistic	1.2416
H Adjusted for Ties	1.2416

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Temperature

Location: SME 1

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 7	12/17/2020	11.5	7
	3/18/2021	18.3	21
	5/5/2021	18.4	23
	9/2/2021	22.6	29
	11/23/2021	12.2	10
	1/10/2022	11.9	8
SME 1	3/12/2013	13.1	13
	5/8/2013	16	16
	9/23/2013	27.7	38
	12/10/2013	7.6	2
	2/6/2014	5.9	1
	9/30/2014	24.67	31
	11/19/2014	7.8	3
	3/23/2015	17.3	17
	4/22/2015	18.5	24
	9/30/2015	26.4	35
	11/19/2015	15.9	15
	3/15/2016	18.3	22
	6/29/2016	30.67	42
	8/9/2016	28.87	40
	12/7/2016	11.98	9
	3/2/2017	12.34	11
	6/29/2017	25.8	32
	8/16/2017	29.7	41
	10/25/2017	17.3	18
	3/28/2018	17.6	19
	6/29/2018	26.2	34
	8/2/2018	23.9	30
	12/10/2018	8	4
	4/15/2019	19.7	26
	6/12/2019	27.2	37
	8/27/2019	28.8	39
	10/29/2019	17.6	20
	3/30/2020	19.3	25
	6/16/2020	27	36
	9/21/2020	22.2	28
	12/17/2020	9.2	5
	3/18/2021	15.7	14
	5/5/2021	20.1	27
	9/2/2021	25.8	33
	11/23/2021	12.4	12
	1/11/2022	10.2	6

ADEM Watermark

The Wilcoxon Statistic is 139
The Expected value is is 108
The Standard Deviation is 27.8209
The Z Score is 1.0963
The Standard Deviation adjusted for ties is 27.8209
The Z Score adjusted for ties is 1.0963
1.0963 < 2.326 indicating no statistical significance at 1% level
1.0963 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: TKN

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	43
Total Non-Detects	9 (20.9302%)
Pooled Mean	0.472256
Pooled Std Dev	0.466189
Compliance Meas.	37
Compliance Mean	0.400649
Compliance Std Dev	0.330604
Background Meas.	6
Background Mean	0.913833
Background Std Dev	0.875615

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 7	6	1	16.6667	5.483

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 7	0.913833	0.875615	0	182	30.3333

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 1	37	8	21.6216	14.824

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 1	0.400649	0.330604	-0.513185	0.19157	764	20.6486

Analysis of Variance Statistics

SS Wells	1.35966
SS Total	9.12795

Kruskal-Wallis Statistics

Non-Detect Rank	5
Background Rank Sum	182
Background Rank Mean	30.3333
H Statistic	3.07125
H Adjusted for Ties	3.09934

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: TKN

Location: SME 1

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 9
Non detect rank is 5

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 7	12/17/2020	0.541	31
	3/18/2021	0.407	23
	5/5/2021	1.24	41
	9/2/2021	2.49	43
	11/23/2021	ND<0	5
	1/10/2022	0.805	39
SME 1	3/12/2013	0.34	15
	5/8/2013	0.42	24
	9/23/2013	0.8	38
	12/10/2013	0.47	25
	2/6/2014	0.5	28
	6/26/2014	0.31	13
	9/30/2014	0.61	35
	11/19/2014	0.55	33
	3/23/2015	ND<0	5
	4/22/2015	0.38	21
	9/30/2015	0.807	40
	11/19/2015	ND<0	5
	3/15/2016	ND<0	5
	6/29/2016	0.62	36
	8/9/2016	0.547	32
	12/7/2016	0.378	20
	3/2/2017	0.345	16
	6/29/2017	0.53	30
	8/16/2017	0.52	29
	10/25/2017	0.288	11
	3/28/2018	ND<0	5
	6/29/2018	0.67	37
	8/2/2018	0.495	27
	12/10/2018	0.336	14
	4/15/2019	0.36	19
	6/12/2019	ND<0	5
	8/27/2019	0.356	18
	10/29/2019	0.272	10
	3/30/2020	ND<0	5
	6/16/2020	0.485	26
	9/21/2020	ND<0	5
	12/17/2020	0.3	12
	3/18/2021	0.58	34
	5/5/2021	0.402	22
	9/2/2021	0.353	17
	11/23/2021	ND<0	5
	1/11/2022	1.8	42

ADEM Watermark

The Wilcoxon Statistic is 61
The Expected value is is 111
The Standard Deviation is 28.5307
The Z Score is -1.77002
The Standard Deviation adjusted for ties is 28.4011
The Z Score adjusted for ties is -1.7781
-1.77002 < 2.326 indicating no statistical significance at 1% level
-1.7781 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Total Phosphorus

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	43
Total Non-Detects	16 (37.2093%)
Pooled Mean	0.121535
Pooled Std Dev	0.118061
Compliance Meas.	37
Compliance Mean	0.100135
Compliance Std Dev	0.0954429
Background Meas.	6
Background Mean	0.2535
Background Std Dev	0.164948

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 7	6	1	16.6667	1.521

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 7	0.2535	0.164948	0	200.5	33.4167

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 1	37	15	40.5405	3.705

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 1	0.100135	0.0954429	-0.153365	0.0468181	745.5	20.1486

Analysis of Variance Statistics

SS Wells	0.121433
SS Total	0.585409

Kruskal-Wallis Statistics

Non-Detect Rank	8.5
Background Rank Sum	200.5
Background Rank Mean	33.4167
H Statistic	5.76443
H Adjusted for Ties	6.07642

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Total Phosphorus

Location: SME 1

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 16
Non detect rank is 8.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 7	12/17/2020	ND<0	8.5
	3/18/2021	0.27	39
	5/5/2021	0.244	36
	9/2/2021	0.28	41
	11/23/2021	0.516	43
	1/10/2022	0.211	33
SME 1	3/12/2013	0.11	18
	5/8/2013	ND<0	8.5
	9/23/2013	ND<0	8.5
	12/10/2013	0.26	38
	2/6/2014	0.13	23
	6/26/2014	ND<0	8.5
	9/30/2014	0.11	19
	11/19/2014	0.29	42
	3/23/2015	0.1	17
	4/22/2015	ND<0	8.5
	9/30/2015	0.135	26
	11/19/2015	0.134	24
	3/15/2016	ND<0	8.5
	6/29/2016	0.245	37
	8/9/2016	0.154	29
	12/7/2016	0.271	40
	3/2/2017	0.208	32
	6/29/2017	ND<0	8.5
	8/16/2017	0.111	20
	10/25/2017	0.151	28
	3/28/2018	ND<0	8.5
	6/29/2018	0.241	35
	8/2/2018	0.136	27
	12/10/2018	ND<0	8.5
	4/15/2019	ND<0	8.5
	6/12/2019	ND<0	8.5
	8/27/2019	0.161	30
	10/29/2019	0.134	25
	3/30/2020	ND<0	8.5
	6/16/2020	0.129	22
	9/21/2020	ND<0	8.5
	12/17/2020	ND<0	8.5
	3/18/2021	0.112	21
	5/5/2021	ND<0	8.5
	9/2/2021	0.218	34
	11/23/2021	0.165	31
	1/11/2022	ND<0	8.5

ADEM Watermark

The Wilcoxon Statistic is 42.5
The Expected value is is 111
The Standard Deviation is 28.5307
The Z Score is -2.41845
The Standard Deviation adjusted for ties is 27.7886
The Z Score adjusted for ties is -2.48303
-2.41845 < 2.326 indicating no statistical significance at 1% level
-2.48303 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Total Suspended Solids

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	43
Total Non-Detects	1 (2.32558%)
Pooled Mean	23.5784
Pooled Std Dev	18.3273
Compliance Meas.	37
Compliance Mean	20.7451
Compliance Std Dev	13.9911
Background Meas.	6
Background Mean	41.05
Background Std Dev	31.4064

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 7	6	1	16.6667	246.3

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 7	41.05	31.4064	0	186	31

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 1	37	0	0	767.57

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 1	20.7451	13.9911	-20.3049	7.52269	760	20.5405

Analysis of Variance Statistics

SS Wells	2128.55
SS Total	14107.4

Kruskal-Wallis Statistics

Non-Detect Rank	1
Background Rank Sum	186
Background Rank Mean	31
H Statistic	3.58231
H Adjusted for Ties	3.58231

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Total Suspended Solids

Location: SME 1

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 1
Non detect rank is 1

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 7	12/17/2020	19.4	25
	3/18/2021	78.2	42
	5/5/2021	36.4	40
	9/2/2021	77.6	41
	11/23/2021	ND<0	1
	1/10/2022	34.7	37
SME 1	3/12/2013	16	17
	5/8/2013	14	12
	9/23/2013	15	14
	12/10/2013	21	29
	2/6/2014	23	30
	6/26/2014	13	10
	9/30/2014	34	35
	11/19/2014	19	24
	3/23/2015	14	13
	4/22/2015	18	22
	9/30/2015	15.3	16
	11/19/2015	23.2	31
	3/15/2016	17.7	20
	6/29/2016	20.3	27
	8/9/2016	12.6	7
	12/7/2016	17.7	21
	3/2/2017	15	15
	6/29/2017	18.3	23
	8/16/2017	12.7	8
	10/25/2017	16.9	18
	3/28/2018	19.8	26
	6/29/2018	23.3	32
	8/2/2018	29.5	33
	12/10/2018	31	34
	4/15/2019	35	38
	6/12/2019	9.67	4
	8/27/2019	7.1	2
	10/29/2019	11	5
	3/30/2020	13.3	11
	6/16/2020	11.4	6
	9/21/2020	9	3
	12/17/2020	20.9	28
	3/18/2021	90.4	43
	5/5/2021	34	36
	9/2/2021	35.8	39
	11/23/2021	12.7	9
	1/11/2022	17	19

ADEM Watermark

The Wilcoxon Statistic is 57
The Expected value is is 111
The Standard Deviation is 28.5307
The Z Score is -1.91022
The Standard Deviation adjusted for ties is 28.5307
The Z Score adjusted for ties is -1.91022
-1.91022 < 2.326 indicating no statistical significance at 1% level
-1.91022 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

ADEM Watermark

Basic Statistics

Parameter: Turbidity

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	43
Total Non-Detects	1 (2.32558%)
Pooled Mean	32.1765
Pooled Std Dev	44.9178
Compliance Meas.	37
Compliance Mean	33.0116
Compliance Std Dev	45.9016
Background Meas.	6
Background Mean	27.0267
Background Std Dev	41.7232

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 7	6	1	16.6667	162.16

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 7	27.0267	41.7232	0	87	14.5

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 1	37	0	0	1221.43

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 1	33.0116	45.9016	5.98495	19.9864	859	23.2162

Analysis of Variance Statistics

SS Wells	184.93
SS Total	84739.6

Kruskal-Wallis Statistics

Non-Detect Rank	1
Background Rank Sum	87
Background Rank Mean	14.5
H Statistic	2.48771
H Adjusted for Ties	2.48771

ADEM Watermark

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Turbidity

Location: SME 1

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non detects is 1
Non detect rank is 1

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 7	12/17/2020	16.76	18
	3/18/2021	111	41
	5/5/2021	8.2	4
	9/2/2021	7	3
	11/23/2021	ND<0	1
	1/10/2022	19.2	20
SME 1	3/12/2013	13.1	8
	5/8/2013	24	28
	9/23/2013	14.2	14
	12/10/2013	46.3	38
	2/6/2014	61	40
	6/26/2014	14	11
	9/30/2014	27.6	30
	11/19/2014	40.1	36
	3/23/2015	21	24
	4/22/2015	29	33
	9/30/2015	15	16
	11/19/2015	50	39
	3/15/2016	26.2	29
	6/29/2016	21.2	25
	8/9/2016	15.3	17
	12/7/2016	31	34
	3/2/2017	14	12
	6/29/2017	19.2	21
	8/16/2017	10.6	5
	10/25/2017	5.4	2
	3/28/2018	19.3	22
	6/29/2018	20.7	23
	8/2/2018	28.5	31
	12/10/2018	32	35
	4/15/2019	42.2	37
	6/12/2019	12.2	7
	8/27/2019	135.2	42
	10/29/2019	14.5	15
	3/30/2020	13.3	9
	6/16/2020	11.6	6
	9/21/2020	13.8	10
	12/17/2020	23.19	26
	3/18/2021	14.1	13
	5/5/2021	28.83	32
	9/2/2021	23.89	27
	11/23/2021	18.42	19
	1/11/2022	271.5	43

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The Wilcoxon Statistic is 156
The Expected value is is 111
The Standard Deviation is 28.5307
The Z Score is 1.55972
The Standard Deviation adjusted for ties is 28.5307
The Z Score adjusted for ties is 1.55972
1.55972 < 2.326 indicating no statistical significance at 1% level
1.55972 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

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Appendix C – Monitoring Reports

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Monitoring Report Second Quarter 2021
Gadsden Alabama Urbanized Area
Phase II Small MS4
NPDES General Permit ALR040000
Gadsden, Etowah County, Alabama
S&ME Project No. 4482-20-044

PREPARED FOR:

Gadsden-Etowah MS4 Steering Committee

PREPARED BY:

S&ME, Inc.
360D Quality Circle NW, Ste 450
Huntsville, AL 35806

June 24, 2021

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June 24, 2021

Attention: Gadsden-Etowah MS4 Steering Committee

Reference: **Quarterly Report: April 1, 2021 – June 31, 2021**
Gadsden- Etowah MS4 Entities
Gadsden, Etowah County, Alabama
S&ME Project No. 4482-20-044

Dear Gadsden-Etowah MS4 Steering Committee:

S&ME, Inc. has prepared the attached Quarterly Report (April 1, 2021-June 31, 2021 reporting period) for the Gadsden-Etowah Phase II Small Municipal Separate Storm Sewer System in accordance with S&ME Proposal No. 44-2000256, 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.

Grant Williams, E.I.
Associate Project Manager

Deborah J. Jones, P.E.
Senior Engineer

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Appendix III

Laboratory Report No. L1348916, dated May 20, 2021
Laboratory Report No. L1349027, dated May 26, 2021

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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. 44-2000256, dated September 18, 2020. Authorization date and responsible official for each entity are provided in Table 1.1.

Table 1-1 Responsible Official and Authorization Dates

Entity	Name	Date
City of Attalla	Larry Means, Mayor	October 20, 2020
City of Gadsden	Sherman Guyton, Mayor	October 22, 2020
City of Glencoe	Chris Hare, Mayor	October 19, 2020
City of Hokes Bluff	Scott Reeves, Mayor	November 10, 2020
City of Rainbow City	Joe Taylor, Mayor	October 20, 2020
City of Southside	Dana Snyder, Mayor	October 26, 2020
Etowah County	Tim Graves, Engineer	April 6, 2020

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 1-2: 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

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Entity	ADEM Permit Number
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 January 1, 2017, 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 May 3 and 4, 2021, 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**.

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Table 2-1 Quarterly Rainfall Data

Gauge Name	Location	Lat.	Long.	Precip 5/3/20	Precip 5/4/20
KGAD	Gadsden Municipal Airport	33.973°	-86.088°	0.22 in.	0.39 in.
KALHOKES2	Hokes Bluff Hokes Bluff, AL	33.993°	-85.806°	1.46 in.	2.69 in.
KALGADSD3	Noccalula Falls Gadsden, AL	34.056°	-85.994°	0.60 in.	2.47 in.
KALRAINB19	Rainbow City, AL	33.942°	-86.030°	1.23 in.	2.87 in.

3.0 Monitoring Event

On May 5, 2021, S&ME personnel mobilized to conduct storm water monitoring at the land and boat access monitoring points for the second quarter of 2021.

Land and boat access monitoring was successfully sampled on May 5, 2021. The quarterly monitoring events are carried out in accordance with Section 2 of the Gadsden-Etowah MS4 Storm Water Management Program (SWMPP), dated January 1, 2017.

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
SME 2	34.002461°	-86.001571°	LAND	U.T. to Coosa River
GD 6	34.015350°	-85.995617°	LAND	Town Creek
CO 15	33.972280°	-85.965354°	LAND	U.T. to Neely Henry Lake

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Outfall ID	Latitude	Longitude	Access	Waterbody Evaluated
SME 7	34.006225°	-86.111277°	LAND	Big Wills Creek
SME 8	34.004730°	-85.873852°	LAND	U.T. to Coosa River
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 CO14, SME 3, and GD3 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.

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:

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- 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	HDPE - 250 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 9. One duplicate sample of monitoring point SME 8 was collected by the land team during the sampling event and labeled as SME 10. One duplicate

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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 May 5, 2021 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.

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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.

Grant Williams, E.I
Associate Project Manager

Deborah J. Jones, P.E.
Senior Engineer

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Appendices

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Appendix I

Figure 1 – Gadsden, Alabama Urbanized Area

Figure 2 – MS4 Monitoring Locations Map

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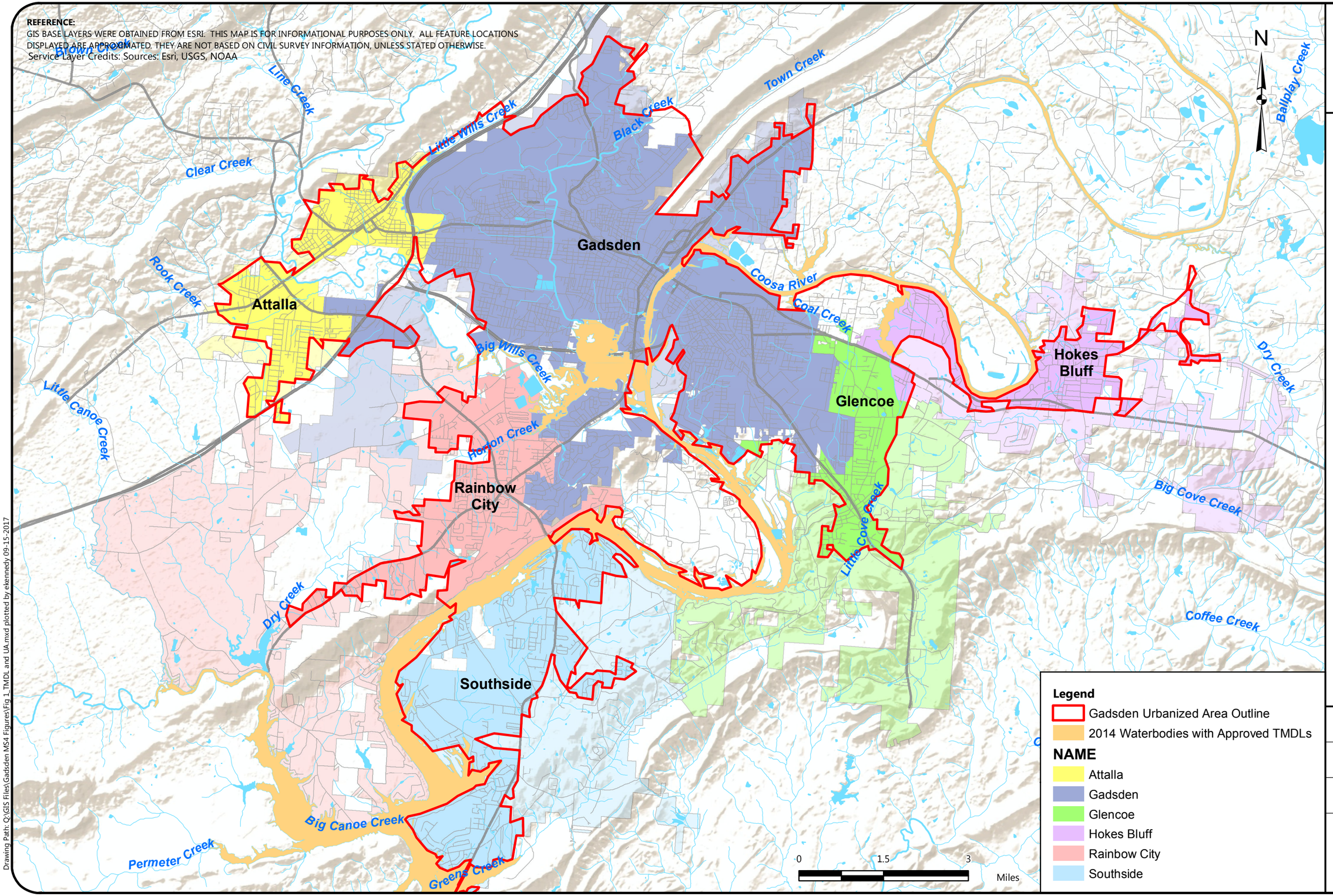
REFERENCE:
GIS BASE LAYERS WERE OBTAINED FROM ESRI. THIS MAP IS FOR INFORMATIONAL PURPOSES ONLY. ALL FEATURE LOCATIONS DISPLAYED ARE APPROXIMATED. THEY ARE NOT BASED ON CIVIL SURVEY INFORMATION, UNLESS STATED OTHERWISE.
Service Layer Credits: Sources: Esri, USGS, NOAA



Drawing Path: Q:\GIS Files\Gadsden MS4 Figures\Fig 1_TMDL and UA.mxd plotted by ekennedy 09-15-2017

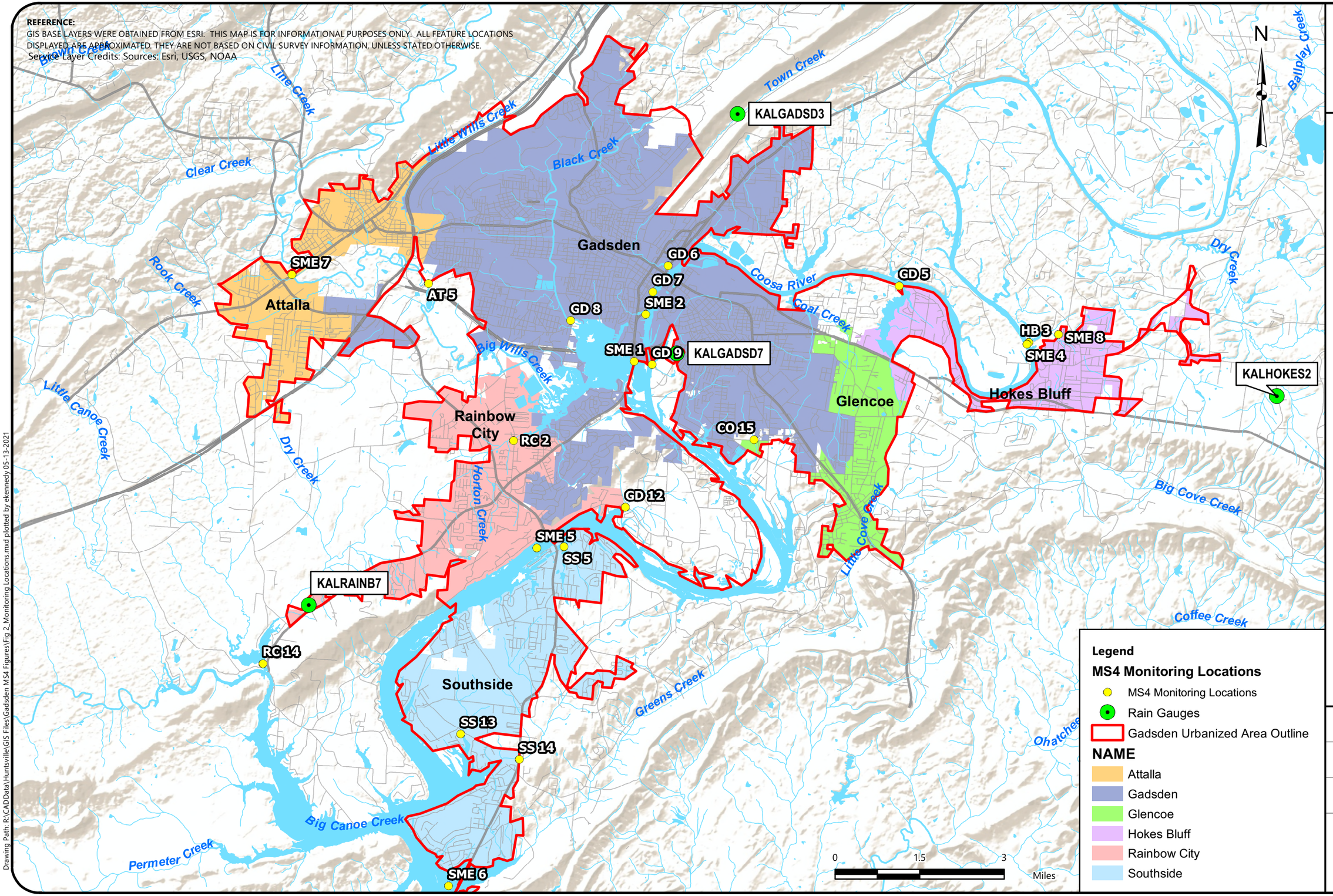
GADSDEN-ETOWAH MS4 BOUNDARIES

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

ADEM Watermark

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

MS4 Monitoring Locations

- MS4 Monitoring Locations
- Rain Gauges
- Gadsden Urbanized Area Outline

NAME

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

MS4 MONITORING LOCATIONS

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

SCALE:	1:100,000
DATE:	05-13-21
PROJECT NUMBER	4482-20-044
FIGURE NO.	2

Drawing Path: R:\CADData\Huntsville\GIS Files\Gadsden MS4 Figures\Fig 2_Monitoring Locations.mxd plotted by ekennedy 05-13-2021

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Appendix II

Table B.1 – Field Observations

Table B.2 – Analytical Data

Tables B.3 to B.26 – Historical Analytical Data

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TABLE B.1 - FIELD OBSERVATIONS

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

MONITORING POINT ID	DATE	TIME	DEPTH (FT)	PERSONNEL	WEATHER CONDITIONS	WATERBODY CONDITIONS
AT 5	5/5/2021	1339	-3'	EAB/PC	Cloudy	Fast, rough
GD 8	5/5/2021	1326	-3'	EAB/PC	Cloudy	Fast, smooth
RC 2	5/5/2021	1315	-3'	EAB/PC	Cloudy	Slow, smooth
SS 13	5/5/2021	1240	-3	EAB/PC	Cloudy	Fast, rough
SS 14	5/5/2021	1246	-3'	EAB/PC	Cloudy	Slow, smooth
GD 12	5/5/2021	1300	-3'	EAB/PC	Cloudy	Slow, smooth
CO 14	Removed monitoring point from Stormwater Monitoring Program in September 2020					
SME 2	5/5/2021	1215	-3'	EAB/PC	Cloudy	Fast, smooth
GD 6	5/5/2021	1207	-3'	EAB/PC	Cloudy	Slow, smooth
CO 15	5/5/2021	1150	-2'	EAB/PC	Cloudy	Slow, smooth
SME 7	5/5/2021	1130	Surface	EAB/PC	Cloudy	Slow, smooth
SME 8	5/5/2021	1030	-3'	EAB/PC	Cloudy	Fast, smooth
HB 3	5/5/2021	1100	-5'	GPW	Overcast	High, Smooth
SME 4	5/5/2021	1115	-5'	GPW	Overcast	High, Smooth
GD 5	5/5/2021	1130	-5'	GPW	Overcast	High, Smooth
GD 7	5/5/2021	1145	-5'	GPW	Overcast	High, Smooth
GD 9	5/5/2021	1200	-5'	GPW	Overcast	High, Smooth
SME 1	5/5/2021	1210	-5'	GPW	Overcast	High, Smooth
GD 3	Removed monitoring point from Stormwater Monitoring Program in September 2020					
SME 3	Removed monitoring point from Stormwater Monitoring Program in September 2020					
SS 5	5/5/2021	1305	-5'	GPW	Overcast	High, Smooth
SME 5	5/5/2021	1320	-5'	GPW	Overcast	High, Smooth
SME 6	5/5/2021	1335	-5'	GPW	Overcast	High, Smooth
RC 14	5/5/2021	1345	-5'	GPW	Overcast	High, Smooth

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TABLE B.2 - ANALYTICAL DATA

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

		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	5/5/2021	6.5	7.24	8.45	18.1	6.86	0.121	0.157	1.37	43.7
GD 8	5/5/2021	3.7	**8.01**	**9.62**	18.5	7.03	<0.03	<0.100	0.796	35.7
RC 2	5/5/2021	2.8	7.31	8.95	19.1	7.91	<0.03	<0.100	0.892	15.6
SS 13	5/5/2021	0.5	7.77	8.13	18.2	7.64	0.0960	0.160	**1.41**	10.5
SS 14	5/5/2021	1.2	6.98	8.62	19.4	7.85	0.0730	<0.100	1.06	6.27
GD 12	5/5/2021	4.1	7.49	8.97	18.9	7.26	<0.0300	<0.100	0.610	16.4
CO 14	Removed monitoring point from Stormwater Monitoring Program in September 2020									
SME 2	5/5/2021	0	7.29	6.72	21.2	0.560	0.0390	<0.100	0.768	6.80
GD 6	5/5/2021	5.7	7.55	8.62	19.2	7.95	<0.0300	0.124	0.542	12.3
CO 15	5/5/2021	3.8	7.47	9.06	19.3	7.78	<0.0300	0.200	1.17	10.9
SME 7	5/5/2021	3.3	7.11	9.39	18.5	0.597	<0.0300	0.118	0.366	60.3
SME 8	5/5/2021	8.2	6.06	8.01	18.4	1.09	0.112	0.244	1.24	36.4
SME 9	5/5/2021	DUPLICATE OF AT 5				7.78	**0.145**	**0.460**	0.381	42.8
SME 10	5/5/2021	DUPLICATE OF SME 8				8.53	0.117	0.269	0.338	52.0
HB 3	5/5/2021	28.31	7.50	7.71	**22.0**	0.207	<0.0300	<0.100	<0.250	35.1
SME 4	5/5/2021	20.02	7.86	7.81	21.0	0.213	<0.0300	<0.100	<0.250	27.5
GD 5	5/5/2021	36.10	7.84	7.74	19.8	0.204	<0.0300	<0.100	<0.250	36.8
GD 7	5/5/2021	19.74	7.59	7.64	21.4	<0.100	<0.0300	<0.100	0.661	40.3
GD 9	5/5/2021	23.76	7.68	7.08	21.0	0.176	0.0360	<0.100	0.564	29.0
SME 1	5/5/2021	28.83	7.43	8.53	20.1	0.122	<0.0300	<0.100	0.402	34.0
GD 3	Removed monitoring point from Stormwater Monitoring Program in September 2020									
SME 3	Removed monitoring point from Stormwater Monitoring Program in September 2020									
SS 5	5/5/2021	38.40	7.55	7.72	20.5	0.108	<0.0300	<0.100	0.576	32.2
SME 5	5/5/2021	50.11	7.80	7.96	21.2	<0.100	<0.0300	<0.100	0.410	60.6
SME 6	5/5/2021	**62.32**	7.75	7.80	19.9	0.183	<0.0300	<0.100	0.403	**82.8**
RC 14	5/5/2021	33.45	7.68	7.99	20.9	<0.100	<0.0300	<0.100	0.566	30.4
SME 11	5/5/2021	DUPLICATE OF HB 3				0.207	<0.0300	<0.100	<0.250	24.8

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled (Dry)

Bold - maximum reading for constituent

NA - not availabe at this time

* - unknown reading due to equipment malfuction

ADEM Watermark

TABLE B.3 - ANALYTICAL DATA - AT 5

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

		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	7.93	20.43	16.86	0.58	0.068	<0.10	0.77	26.7
AT 5	6/29/2016	18	7.99	6.57	25.4	0.80	0.598	0.71	<0.25	14.5
AT 5	8/9/2016	17	7.89	6.47	25.8	0.98	0.482	0.50	0.27	18.3
AT5	12/7/2016	26.5	7.08	10.19	11.3	0.66	0.450	0.47	<0.25	16.9
AT5	3/2/2017	51	8.14	8.86	13.4	1.08	0.267	0.37	0.53	44.6
AT 5	6/21/2017	11.7	7.98	6.74	23.3	0.62	0.226	0.37	0.54	70.0
AT 5	8/17/2017	9.5	8.09	6.77	26.0	0.89	0.258	0.28	0.69	12.0
AT 5	10/26/2017	9.8	7.95	8.25	15.7	0.94	0.226	0.25	<0.25	9.4
AT 5	3/27/2018	14.5	7.79	9.03	12.9	0.849	0.162	0.148	<0.25	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	1.090	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	<0.10	<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	<0.10	<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

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled/Meter Not Working

ADEM Watermark

TABLE B.4 - ANALYTICAL DATA - GD 8

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

		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	7	7.65	11.73	9.85	0.13	<0.025	<0.10	0.25	4.5
GD 8	5/8/2013	19	6.71	1.72	14.47	0.11	<0.025	<0.10	0.38	19.0
GD 8	9/23/2013	18	6.22	3.98	22.74	<0.10	<0.025	<0.10	0.41	9.6
GD 8	12/10/2013	31	6.04	13.33	8.10	0.28	0.040	<0.10	0.35	32.0
GD 8	2/6/2014	16	3.87	16.32	6.48	0.25	<0.025	<0.10	0.13	13.0
GD 8	6/26/2014	31	8.19	6.64	26.15	0.25	<0.025	<0.10	0.48	7.3
GD 8	9/30/2014	12	7.32	5.06	23.19	0.14	<0.025	<0.10	0.42	6.0
GD 8	11/19/2014	25	5.16	9.01	5.87	0.23	<0.025	<0.01	0.32	13.0
GD 8	3/23/2015	11	8.67	9.76	14.8	0.22	<0.025	<0.10	<0.25	4.8
GD 8	4/22/2015	20	7.40	11.71	17.70	0.16	<0.025	<0.10	<0.25	15.0
GD 8	9/30/2015	9	7.79	9.48	24.33	0.18	<0.025	<0.10	0.48	6.8
GD 8	11/19/2015	212	6.94	23.30	15.13	0.23	<0.025	0.10	0.85	79.6
GD 8	3/15/2016	11	7.88	16.81	16.98	0.13	<0.025	<0.10	0.47	8.3
GD 8	6/29/2016	33	8.50	6.60	29.3	<0.10	<0.025	<0.10	0.45	39.8
GD 8	8/9/2016	13	8.90	5.87	28.9	0.22	<0.025	<0.10	0.67	6.3
GD 8	12/7/2016	10.1	7.75	8.84	12.1	0.31	<0.025	<0.10	0.41	7.0
GD 8	3/2/2017	20	8.14	9.76	12.2	0.28	<0.025	<0.10	0.34	3.6
GD 8	6/21/2017	7.9	8.73	6.50	25.0	<0.10	<0.025	<0.10	0.64	7.0
GD 8	8/17/2017	6.8	8.55	6.30	28.7	0.13	<0.025	<0.10	0.54	8.9
GD 8	10/26/2017	6.1	8.17	8.25	16.3	<0.10	<0.025	<0.10	0.35	4.0
GD 8	3/27/2018	8.9	8.09	9.52	12.1	0.215	<0.025	<0.10	<0.25	6.5
GD 8	6/26/2018	5.8	8.50	5.74	29.7	0.150	<0.025	<0.10	0.670	5.8
GD 8	8/1/2018	45.8	6.89	7.39	22.9	0.556	0.072	0.11	0.641	53.2
GD 8	12/11/2018	16.0	7.87	11.71	9.2	0.326	<0.025	<0.10	0.406	24.4
GD 8	4/17/2019	6.7	8.05	9.30	17.6	0.115	<0.025	<0.10	0.437	<5.00
GD 8	6/11/2019	9.4	7.19	2.94	25.8	0.181	<0.025	<0.10	0.948	4.1
GD 8	8/28/2019	14.2	8.26	6.07	30.2	0.212	<0.025	<0.10	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	<0.03	<0.100	<0.25	8.0
GD 8	9/21/2020	NS	8.19	6.36	22.8	0.171	<0.03	<0.100	0.290	7.4
GD 8	12/17/2020	17.5	8.30	11.68	9.4	0.273	<0.03	<0.100	<0.25	11.5
GD 8	3/18/2021	117.0	8.15	11.53	16.5	0.178	<0.03	<0.100	0.312	102.0
GD 8	5/5/2021	3.7	8.01	9.62	18.5	7.03	<0.03	<0.100	0.796	35.7

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled/Meter Not Working

ADEM Watermark

TABLE B.5 - ANALYTICAL DATA - RC 2

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

		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	7.73	9.83	10.53	0.12	0.088	<0.10	0.75	14.0
RC 2	5/8/2013	19	6.16	3.06	16.36	0.19	<0.025	<0.10	0.55	12.0
RC 2	9/23/2013	11	6.24	3.00	23.61	<0.10	<0.025	<0.10	0.43	6.3
RC 2	12/10/2013	34	6.07	11.71	8.38	0.11	0.062	<0.10	0.54	10.0
RC 2	2/6/2014	30	3.89	17.28	5.62	0.26	<0.025	<0.10	0.43	9.6
RC 2	6/26/2014	18	7.90	6.81	24.81	0.15	<0.025	<0.10	0.44	7.2
RC 2	9/30/2014	3	7.27	5.55	22.25	<0.10	<0.025	<0.10	0.40	2.5
RC 2	11/19/2014	27	5.65	7.14	5.72	0.17	<0.025	<0.10	0.43	11.0
RC 2	3/23/2015	45	8.23	9.07	16.00	0.15	0.044	<0.10	0.81	18.0
RC 2	4/22/2015	14	7.64	11.42	18.40	0.26	<0.025	<0.10	<0.25	4.8
RC 2	9/30/2015	7	5.93	9.28	23.33	<0.10	<0.025	<0.10	<0.25	4.6
RC 2	11/19/2015	114	7.36	21.94	15.29	0.27	<0.025	0.13	0.75	14.4
RC 2	3/15/2016	15	7.62	16.67	14.61	0.18	<0.025	<0.10	0.43	6.0
RC 2	6/29/2016	12	7.78	4.31	28.30	<0.10	0.077	<0.10	0.35	10.9
RC 2	8/9/2016	25	8.12	5.05	26.50	0.14	<0.025	<0.10	0.45	9.9
RC 2	12/7/2016	17.2	7.86	7.47	12.0	0.20	<0.025	<0.10	0.53	11.9
RC 2	3/2/2017	25	7.71	7.74	13.10	0.17	<0.025	<0.10	0.45	8.0
RC 2	6/21/2017	14.2	7.91	5.61	23.7	<0.10	<0.025	<0.10	0.51	12.3
RC 2	8/17/2017	18.2	8.08	4.94	27.90	<0.10	<0.025	0.13	0.72	72.2
RC 2	10/26/2017	18.1	7.57	7.05	15.2	<0.10	<0.025	<0.10	0.27	17.5
RC 2	3/27/2018	18.2	7.91	8.43	12.4	0.146	<0.025	<0.10	<0.25	12.5
RC 2	6/26/2018	18.8	7.94	6.19	26.5	0.101	<0.025	<0.10	0.802	13.0
RC 2	8/1/2018	56.8	7.40	7.10	22.4	<0.10	<0.025	<0.10	0.506	84.4
RC 2	12/11/2018	16.0	7.54	11.41	7.7	0.316	<0.025	<0.10	0.479	3.1
RC 2	4/17/2019	7.0	7.77	8.67	18.9	0.165	<0.025	<0.10	0.288	<5.00
RC 2	6/11/2019	14.3	6.83	3.78	23.0	<0.10	<0.025	<0.10	0.520	5.2
RC 2	8/28/2019	14.4	8.01	7.30	28.0	<0.10	<0.025	<0.10	0.748	4.8
RC 2	10/28/2019	11.4	7.55	9.42	14.9	0.132	<0.025	0.20	<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	<0.03	<0.100	0.330	10.8
RC 2	9/21/2020	NS	7.24	7.03	19.6	<0.100	<0.03	<0.100	<0.250	5.2
RC 2	12/17/2020	28.1	7.91	11.23	8.9	0.218	<0.03	<0.100	0.396	5.4
RC 2	3/18/2021	67.5	7.90	8.68	16.7	0.145	<0.03	<0.100	0.611	26.8
RC 2	5/5/2021	2.8	7.31	8.95	19.1	7.91	<0.03	<0.100	0.892	15.6

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled/Meter Not Working

ADEM Watermark

TABLE B.6 - ANALYTICAL DATA - SS 13

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

		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	6.14	10.93	8.99	0.33	0.077	0.12	0.67	5.6
SS 13	2/6/2014	7	4.26	17.50	5.14	0.42	<0.025	<0.10	0.44	4.1
SS 13	6/26/2014	23	8.33	8.09	28.44	<0.10	<0.025	0.12	0.52	5.4
SS 13	9/30/2014	12	7.41	4.26	24.77	<0.10	<0.025	<0.10	0.44	12.0
SS 13	11/19/2014	13	6.31	6.08	6.44	0.22	0.044	<0.10	0.40	4.8
SS 13	3/23/2015	16	7.33	8.57	15.4	0.22	0.029	<0.10	0.71	7.6
SS 13	4/22/2015	15	6.60	8.93	20.8	0.32	<0.025	<0.10	0.67	10.0
SS 13	9/30/2015	9	7.33	11.54	25.95	<0.10	<0.025	<0.10	0.52	9.0
SS 13	11/19/2015	36	7.07	18.48	15.31	0.24	<0.025	0.18	0.97	4.8
SS 13	3/15/2016	9	6.61	12.42	17.37	0.32	<0.025	<0.10	<0.25	4.7
SS 13	6/29/2016	10	7.86	6.15	30.6	<0.10	<0.025	<0.10	0.53	9.8
SS 13	8/9/2016	20	7.77	5.92	29.1	<0.10	<0.025	<0.10	0.73	24.0
SS 13	12/7/2016	4.8	7.39	6.97	12.5	0.11	<0.025	<0.10	0.45	3.6
SS 13	3/2/2017	12	6.64	7.19	13.4	0.25	<0.025	<0.10	0.75	4.6
SS 13	6/21/2017	8.7	7.54	5.82	26.1	<0.10	<0.025	<0.10	0.82	12.8
SS 13	8/17/2017	9.3	7.93	6.54	30.9	<0.10	<0.025	<0.10	0.81	18.6
SS 13	10/26/2017	5.2	6.70	7.41	15.4	0.12	<0.025	<0.10	0.60	7.2
SS 13	3/27/2018	6.4	8.19	8.23	12.4	0.495	<0.025	<0.10	<0.25	16.2
SS 13	6/26/2018	6.8	7.36	5.67	29.5	<0.10	<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	<0.10	0.655	8.6
SS 13	4/17/2019	6.4	7.42	9.23	19.1	<0.10	<0.025	<0.10	0.624	6.8
SS 13	6/11/2019	8.9	6.59	3.12	23.4	<0.10	<0.025	<0.10	0.929	<6.25
SS 13	8/28/2019	6.7	7.93	7.33	29.7	<0.10	<0.025	<0.10	1.170	24.4
SS 13	10/28/2019	12.3	6.25	3.61	16.0	0.211	0.031	<0.10	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	<0.03	<0.100	0.492	21.2
SS 13	9/21/2020	NS	7.36	6.58	21.9	<0.100	<0.03	0.200	<0.250	7.8
SS 13	12/17/2020	12.3	8.04	10.83	8.3	0.405	<0.03	<0.100	0.432	5.3
SS 13	3/18/2021	26.8	7.61	9.23	16.9	0.163	<0.03	<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

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled/Meter Not Working

ADEM Watermark

TABLE B.7 - ANALYTICAL DATA - SS 14

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

		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	10	7.40	11.23	10.93	0.40	0.087	0.11	0.77	4.7
SS 14	5/8/2013	10	6.47	2.75	16.42	0.45	0.041	<0.10	0.53	5.0
SS 14	9/23/2013	3	6.76	6.49	21.77	0.38	0.036	<0.10	0.45	<2.5
SS 14	12/10/2013	18	5.63	11.33	8.56	0.28	0.160	0.19	0.66	9.2
SS 14	2/6/2014	12	4.19	17.56	5.16	0.62	0.074	<0.10	0.50	14.0
SS 14	6/26/2014	8	8.18	7.58	24.14	0.67	0.080	0.16	0.89	<2.5
SS 14	9/30/2014	8	7.42	3.67	22.35	<0.10	0.031	<0.10	0.52	6.1
SS 14	11/19/2014	16	6.27	7.50	5.48	0.75	0.075	0.22	0.46	9.2
SS 14	3/23/2015	21	7.75	9.53	16.5	0.27	0.110	0.14	1.10	11.0
SS 14	4/22/2015	12	7.43	12.29	17.5	0.62	<0.025	<0.10	0.58	6.3
SS 14	9/30/2015	7	7.16	12.79	24.02	<0.10	0.088	0.18	0.51	6.6
SS 14	11/19/2015	27	6.49	20.71	15.16	0.44	0.131	0.18	1.00	23.3
SS 14	3/15/2016	11	7.18	12.11	16.01	0.50	0.056	<0.10	0.83	8.1
SS 14	6/29/2016	6	7.62	3.61	27.2	<0.10	0.103	0.16	0.65	6.0
SS 14	8/9/2016	22	7.71	5.99	26.9	0.16	0.062	0.12	0.87	12.7
SS 14	12/7/2016	7.6	7.27	7.72	11.9	0.89	0.078	0.15	0.71	<2.5
SS 14	3/2/2017	13	7.60	8.76	12.2	0.48	0.092	0.15	0.84	9.2
SS 14	6/21/2017	21.5	7.74	6.24	23.7	0.25	0.030	0.11	0.73	63.7
SS 14	8/17/2017	6.0	8.12	7.11	31.4	0.12	0.070	<0.10	0.83	24.8
SS 14	10/26/2017	4.3	7.39	7.66	13.9	0.70	0.054	<0.10	0.58	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	1.01	18.7
SS 14	8/1/2018	42.9	6.35	7.04	22.5	0.109	0.233	0.276	0.89	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
SS 14	4/17/2019	6.6	7.60	8.28	22.1	0.598	0.042	<0.10	0.414	6.7
SS 14	6/11/2019	12.6	6.78	3.47	23.8	0.444	0.077	<0.10	0.928	5.9
SS 14	8/28/2019	8.1	7.96	8.18	27.9	<0.10	<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

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled/Meter Not Working

ADEM Watermark

TABLE B.8 - ANALYTICAL DATA - GD 12

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

		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	9	7.41	10.93	13.43	0.25	0.030	<0.10	0.54	3.9
GD 12	5/8/2013	15	6.73	2.35	16.53	0.21	0.030	<0.10	0.40	7.5
GD 12	9/23/2013	10	6.76	3.94	26.07	<0.10	0.026	<0.10	0.48	9.0
GD 12	12/10/2013	19	6.15	10.09	10.18	0.22	0.079	0.11	0.45	5.9
GD 12	2/6/2014	12	4.17	16.99	5.76	0.31	<0.025	<0.10	0.28	3.9
GD 12	6/26/2014	29	8.38	9.40	26.72	0.11	0.035	0.12	0.62	32.0
GD 12	9/30/2014	11	7.68	5.77	24.68	<0.10	<0.025	<0.10	0.39	11.0
GD 12	11/19/2014	15	6.95	5.93	5.85	0.28	<0.025	0.13	0.39	6.6
GD 12	3/23/2015	18	7.80	9.56	16.80	0.24	<0.025	<0.10	0.59	8.1
GD 12	4/22/2015	17	7.45	11.04	19.80	0.25	<0.025	<0.10	0.43	14.0
GD 12	9/30/2015	7	7.30	11.07	24.67	<0.10	<0.025	<0.10	0.70	8.5
GD 12	11/19/2015	23	7.07	19.14	14.68	0.28	0.100	0.15	0.77	12.0
GD 12	3/15/2016	10	7.43	13.14	16.05	0.25	0.032	<0.10	0.43	4.6
GD 12	6/29/2016	13	8.22	7.68	31.20	<0.10	0.036	<0.10	0.38	12.0
GD 12	8/9/2016	22	7.57	4.39	27.60	<0.10	<0.025	<0.10	0.63	13.3
GD 12	12/7/2016	10.3	7.18	6.65	11.4	0.14	<0.025	<0.10	0.60	4.0
GD 12	3/2/2017	15	7.79	10.12	11.70	0.22	<0.025	0.12	0.58	6.1
GD 12	6/21/2017	16.1	7.43	5.12	24.3	<0.10	<0.025	<0.10	0.77	16.8
GD 12	8/17/2017	6.3	8.13	5.80	29.90	<0.10	<0.025	<0.10	0.58	13.3
GD 12	10/26/2017	9.8	6.74	7.53	13.2	0.2	<0.025	<0.10	0.31	7.8
GD 12	3/27/2018	6.3	7.71	9.24	11.5	0.356	<0.025	<0.10	<0.25	4.2
GD 12	6/26/2018	9.9	7.44	4.35	26.1	0.102	<0.025	<0.10	0.528	13.2
GD 12	8/1/2018	42.3	7.05	7.33	22.7	0.108	0.159	0.286	1.23	43.8
GD 12	12/11/2018	9.5	6.68	11.46	7.8	0.313	<0.025	<0.10	0.574	4.3
GD 12	4/17/2019	9.1	7.45	9.20	17.5	0.257	<0.025	<0.10	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	<0.10	<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	<0.10	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	<0.03	<0.100	0.438	11.4
GD 12	9/21/2020	NS	7.18	7.15	19.9	0.103	<0.03	<0.100	<0.250	7.6
GD 12	12/17/2020	13.1	8.03	11.10	8.5	0.268	<0.03	<0.100	<0.250	3.7
GD 12	3/18/2021	36.2	7.92	10.04	17.1	0.163	<0.03	<0.100	0.621	17.6
GD 12	5/5/2021	4.1	7.49	8.97	18.9	7.26	<0.03	<0.100	0.610	16.4

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled/Meter Not Working

ADEM Watermark

TABLE B.9 - ANALYTICAL DATA - CO 14

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

		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	6.88	9.65	12.92	0.32	<0.025	<0.10	0.42	3.5
CO 14	5/8/2013	13	6.61	3.02	16.37	0.34	<0.12	<0.10	0.74	6.7
CO 14	9/23/2013	15	6.70	3.78	22.58	<0.10	0.036	<0.10	0.30	9.6
CO 14	12/10/2013	14	5.82	11.15	9.37	0.11	0.027	<0.10	0.55	9.7
CO 14	2/6/2014	14	4.02	16.69	5.08	0.58	<0.025	<0.10	0.41	9.1
CO 14	6/26/2014	20	8.25	8.19	22.33	0.34	<0.025	<0.10	0.86	9.0
CO 14	9/30/2014	*	*	*	*	*	*	*	*	*
CO 14	11/19/2014	9.84	6.70	3.86	7.90	<0.10	<0.025	<0.10	0.26	2.8
CO 14	3/23/2015	19	6.85	8.78	17.20	0.25	<0.025	<0.10	0.67	10.0
CO 14	4/22/2015	14	6.23	11.19	18.00	0.49	<0.025	<0.10	0.60	8.6
CO 14	9/30/2015	*	*	*	*	*	*	*	*	*
CO 14	11/19/2015	24	6.64	16.06	15.25	<0.10	<0.025	<0.10	1.27	5.9
CO 14	3/15/2016	16	6.33	13.05	16.42	0.47	<0.025	<0.10	0.71	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	0.11	<0.025	<0.10	0.60	5.2
CO 14	6/21/2017	9.0	6.57	6.49	22.9	<0.10	<0.025	<0.10	0.76	19.0
CO 14	8/17/2017	13.8	7.83	6.22	28.0	<0.10	<0.025	<0.10	0.85	50.6
CO 14	10/26/2017	8.1	6.43	8.40	14.2	<0.10	<0.025	<0.10	0.44	4.7
CO 14	3/27/2018	8.2	7.63	9.45	11.4	0.601	<0.025	<0.10	<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	<0.10	<0.025	<0.10	0.76	28.3
CO 14	12/11/2018	7.6	7.38	10.74	7.7	0.184	<0.025	<0.10	0.567	4.9
CO 14	4/17/2019	9.3	7.91	8.99	19.0	0.460	<0.025	<0.10	2.96	9.4
CO 14	6/11/2019	17.5	7.07	3.56	22.4	<0.10	<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	<0.10	0.532	106
CO 14	6/10/2020	13.8	7.64	7.20	24.4	0.244	<0.03	<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

ADEM Watermark

TABLE B.10 - ANALYTICAL DATA - SME 2

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

		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	7.12	9.28	14.17	0.28	0.032	<0.10	0.47	8.1
SME 2	5/8/2013	26	7.67	6.46	21.40	0.24	0.042	<0.10	0.92	21.0
SME 2	9/23/2013	7	6.92	5.51	26.24	<0.10	0.039	<0.10	0.34	7.1
SME 2	12/10/2013	12	5.71	11.05	11.01	0.31	0.100	0.15	0.42	7.0
SME 2	2/6/2014	20	4.21	14.38	6.13	0.39	0.053	<0.10	0.59	14.0
SME 2	6/26/2014	15	8.16	7.22	26.98	0.11	<0.025	<0.10	0.38	8.7
SME 2	9/30/2014	6	7.97	5.33	26.53	<0.10	<0.025	<0.10	0.52	7.4
SME 2	11/19/2014	10	7.06	3.53	10.20	0.14	0.039	0.16	<0.25	6.8
SME 2	3/23/2015	11	7.96	9.34	17.60	0.24	<0.025	<0.10	0.45	10.0
SME 2	4/22/2015	9	7.93	11.46	24.50	0.13	<0.025	<0.10	0.48	9.1
SME 2	9/30/2015	7	7.62	12.67	25.91	0.10	<0.025	0.10	0.50	8.7
SME 2	11/19/2015	22	6.55	14.30	19.12	0.22	0.062	0.22	1.21	82.3
SME 2	3/15/2016	8	7.86	13.43	20.73	<0.10	<0.025	<0.10	0.49	6.3
SME 2	6/29/2016	8	8.23	7.24	30.4	0.19	<0.025	<0.10	0.29	8.0
SME 2	8/9/2016	10	8.01	6.58	30.6	<0.10	<0.025	<0.10	0.59	8.2
SME 2	12/7/2016	6.0	7.52	6.86	12.7	<0.10	<0.025	0.10	0.47	5.8
SME 2	3/2/2017	12	8.03	8.55	15.2	0.27	<0.025	<0.10	0.72	11.4
SME 2	6/21/2017	5.2	7.18	4.64	26.6	<0.10	<0.025	<0.10	0.89	11.4
SME 2	8/17/2017	6.5	7.76	6.43	30.6	<0.10	<0.025	<0.10	0.73	15.3
SME 2	10/26/2017	5.2	7.03	6.87	17.6	<0.10	<0.025	<0.10	0.38	8.5
SME 2	3/27/2018	11.1	7.44	8.64	12.9	0.161	<0.025	<0.10	<0.25	17.5
SME 2	6/26/2018	10.8	7.97	6.43	29.6	0.111	<0.025	<0.10	0.731	9.9
SME 2	8/1/2018	29.6	7.39	6.46	23.4	0.371	0.099	0.13	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
SME 2	4/17/2019	5.0	7.82	7.80	20.5	0.105	<0.025	<0.10	0.783	6.0
SME 2	6/11/2019	12.3	6.68	3.43	24.4	<0.10	<0.025	<0.10	0.676	9.2
SME 2	8/28/2019	6.6	7.83	6.26	29.2	<0.10	<0.025	<0.10	0.452	5.9
SME 2	10/28/2019	24.9	7.64	7.42	16.8	<0.10	<0.025	0.107	0.341	18.2
SME 2	3/31/2020	9.5	7.02	7.31	18.2	<0.10	<0.025	<0.10	0.521	10.2
SME 2	6/10/2020	10.4	7.81	6.40	27.0	0.117	<0.03	<0.100	0.367	8.0
SME 2	9/21/2020	NS	7.84	8.02	23.6	<0.100	<0.03	<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

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled/Meter Not Working

ADEM Watermark

TABLE B.11 - ANALYTICAL DATA - GD 6

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

		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	8.03	9.65	11.90	0.21	0.036	<0.10	0.29	5.8
GD 6	5/8/2013	19	6.81	2.35	19.02	0.23	0.033	<0.10	0.40	8.3
GD 6	9/23/2013	6	7.28	5.17	26.93	<0.10	<0.025	<0.10	0.36	5.8
GD 6	12/10/2013	26	5.98	11.41	10.64	0.37	0.041	<0.10	0.17	8.6
GD 6	2/6/2014	16	4.34	15.80	6.85	0.26	0.057	<0.10	0.16	5.5
GD 6	6/26/2014	14	8.31	8.95	27.29	<0.10	<0.025	<0.10	0.42	7.0
GD 6	9/30/2014	7	8.35	6.53	26.78	<0.10	<0.025	<0.10	0.55	7.0
GD 6	11/19/2014	13	7.17	3.36	9.67	0.22	<0.025	0.28	0.38	9.8
GD 6	3/23/2015	17	7.95	8.95	18.40	0.22	<0.025	<0.10	0.26	8.2
GD 6	4/22/2015	15	7.59	10.82	19.80	0.22	<0.025	<0.10	0.28	8.0
GD 6	9/30/2015	14	8.19	12.31	25.47	<0.10	<0.025	0.10	0.97	12.4
GD 6	11/19/2015	43	6.97	15.87	17.75	0.47	0.037	0.13	0.77	16.0
GD 6	3/15/2016	16	7.68	11.58	19.98	0.12	0.043	<0.10	0.50	7.9
GD 6	6/29/2016	10	8.86	9.64	31.50	<0.10	<0.025	<0.10	0.40	11.2
GD 6	8/9/2016	10	8.26	6.98	30.70	<0.10	<0.025	<0.10	0.62	10.3
GD 6	12/7/2016	11.5	7.43	8.13	14.3	0.37	<0.025	<0.10	0.49	7.5
GD 6	3/2/2017	14	8.05	8.02	14.70	0.25	<0.025	<0.10	0.51	9.0
GD 6	6/21/2017	7.7	7.67	4.99	26.8	<0.10	<0.025	0.11	0.93	21.0
GD 6	8/17/2017	7.0	8.02	7.72	31.2	<0.10	<0.025	<0.10	0.68	13.2
GD 6	10/26/2017	8.3	6.25	7.84	15.8	0.13	<0.025	<0.10	0.39	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	<0.10	0.782	9.6
GD 6	8/1/2018	25.4	7.66	7.52	22.7	0.335	0.090	0.1	0.636	21.9
GD 6	12/11/2018	13.8	7.97	10.92	8.2	0.397	<0.025	<0.10	0.362	5.8
GD 6	4/17/2019	9.0	7.10	8.00	20.5	0.198	<0.025	<0.10	0.624	9.6
GD 6	6/11/2019	17.9	7.07	3.68	23.8	<0.10	<0.025	<0.10	0.728	12.4
GD 6	8/28/2019	9.1	7.94	6.32	28.5	<0.10	<0.025	<0.10	0.607	6.5
GD 6	10/28/2019	18.4	7.48	6.63	16.4	0.198	<0.025	<0.10	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	<0.03	<0.100	0.832	10.40
GD 6	9/21/2020	NS	7.96	8.48	21.4	<0.100	<0.03	<0.100	<0.250	8.60
GD 6	12/17/2020	0.5	7.96	10.08	9.0	0.309	<0.03	<0.100	0.377	7.40
GD 6	3/18/2021	75.6	7.97	9.21	17.0	0.241	<0.03	0.183	0.364	31.60
GD 6	5/5/2021	5.7	7.55	8.62	19.2	7.95	<0.03	0.124	0.542	12.3

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled/Meter Not Working

ADEM Watermark

TABLE B.12 - ANALYTICAL DATA - CO 15

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

		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	<0.10	0.53	9.0
CO 15	5/8/2013	27	7.51	8.04	18.10	0.10	<0.12	<0.10	0.59	11.0
CO 15	9/23/2013	13	7.09	4.01	27.18	<0.10	0.027	<0.10	0.34	11.0
CO 15	12/10/2013	42	6.09	11.25	9.83	0.18	0.068	<0.10	0.56	13.0
CO 15	2/6/2014	32	4.22	16.10	6.28	0.21	<0.025	<0.10	0.46	12.0
CO 15	6/26/2014	105	8.16	7.00	25.55	<0.10	0.140	<0.10	0.59	46.0
CO 15	9/30/2014	8	7.88	6.67	23.28	<0.10	<0.025	<0.10	<0.25	8.6
CO 15	11/19/2014	44	7.38	3.68	9.43	0.20	0.030	<0.10	0.32	12.0
CO 15	3/23/2015	56	7.85	9.53	18.50	0.14	0.067	<0.10	0.61	19.0
CO 15	4/22/2015	26	7.62	10.14	21.90	0.14	<0.025	<0.10	0.40	11.0
CO 15	9/30/2015	15	7.68	12.73	22.88	<0.10	<0.025	<0.10	0.75	11.8
CO 15	11/19/2015	50	7.30	19.45	16.98	0.24	0.042	0.18	0.42	17.5
CO 15	3/15/2016	29	7.66	12.39	19.83	<0.10	<0.025	<0.10	0.78	12.4
CO 15	6/29/2016	*	*	*	*	*	*	*	*	*
CO 15	8/9/2016	38	8.03	6.78	29.6	<0.10	<0.025	<0.10	<0.25	22.0
CO 15	12/7/2016	13.6	7.50	9.78	12.1	<0.10	<0.025	<0.10	0.67	14.8
CO 15	3/2/2017	38.2	7.77	8.32	16.0	0.15	<0.025	<0.10	0.52	17.4
CO 15	6/21/2017	6.4	7.56	5.12	26.7	<0.10	<0.025	<0.10	0.97	18.3
CO 15	8/17/2017	21.7	8.29	6.47	30.1	<0.10	<0.025	<0.10	0.69	12.4
CO 15	10/26/2017	10.8	4.43	8.24	13.6	<0.10	<0.025	<0.10	0.39	6.4
CO 15	3/27/2018	14.5	7.87	9.33	12.1	<0.10	<0.025	<0.10	<0.25	8.0
CO 15	6/26/2018	13.8	7.87	7.33	26.5	<0.10	<0.025	0.270	0.573	12.4
CO 15	8/1/2018	58.8	7.25	7.12	23.0	<0.10	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	1.160	10.1
CO 15	4/17/2019	17.0	7.80	9.17	19.1	0.144	<0.025	<0.10	0.574	11.5
CO 15	6/11/2019	21.9	6.56	3.10	22.8	<0.10	<0.025	<0.10	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	<0.10	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	<0.03	<0.100	0.456	10.4
CO 15	9/21/2020	NS	7.31	8.18	17.9	<0.100	<0.03	<0.100	<0.250	5.6
CO 15	12/17/2020	2.8	8.98	10.87	10.0	0.161	<0.03	<0.100	0.685	15.6
CO 15	3/18/2021	63.1	8.46	15.75	19.8	0.193	<0.03	<0.100	0.554	26.0
CO 15	5/5/2021	3.8	7.47	9.06	19.3	7.78	<0.03	0.200	1.17	10.9

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled/Meter Not Working

* - outfall was dry

ADEM Watermark

TABLE B.14 - ANALYTICAL DATA - SME 7

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

		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	0.30	7.72	11.22	9.10	0.312	<0.03	<0.10	<0.25	25.9
SME 7	3/18/2021	48.8	8.17	9.47	18.0	0.183	<0.03	<0.100	0.460	17.7
SME 7	5/5/2021	3.3	7.11	9.39	18.5	0.597	<0.03	0.118	0.366	60.3

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled/Meter Not Working

ADEM Watermark

TABLE B.13 - ANALYTICAL DATA - SME 8

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

		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	16.76	8.10	11.01	11.50	0.884	0.094	<0.10	0.541	19.4
SME 8	3/18/2021	111.0	8.93	10.25	18.3	0.429	0.093	0.270	0.407	78.2
SME 8	5/5/2021	8.2	6.06	8.01	18.4	1.09	0.112	0.244	1.24	36.4

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled/Meter Not Working

ADEM Watermark

TABLE B.23 - ANALYTICAL DATA - HB 3

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

		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	7.54	9.48	13.90	0.19	0.081	<0.10	0.83	49.0
HB 3	5/20/2013	15	8.21	6.82	27.80	0.17	<0.025	<0.10	0.60	17.0
HB 3	9/23/2013	21	8.02	4.89	25.70	<0.10	0.037	<0.10	0.60	19.0
HB 3	12/10/2013	48	7.90	8.65	10.10	<0.10	0.140	0.15	0.62	20.0
HB 3	2/6/2014	32	7.22	12.24	5.90	0.48	0.030	<0.10	0.37	13.0
HB 3	6/26/2014	12	8.20	7.12	NS	<0.10	<0.025	<0.10	0.37	12.0
HB 3	9/30/2014	30	8.05	6.01	24.78	<0.10	<0.025	<0.10	0.48	30.0
HB 3	11/19/2014	56	7.85	8.83	8.80	0.11	0.098	0.12	0.44	51.0
HB 3	3/23/2015	27	8.21	8.40	24.20	0.26	<0.025	<0.10	0.46	35.0
HB 3	4/22/2015	25	7.91	8.36	21.90	0.20	<0.025	<0.10	0.66	22.0
HB 3	9/30/2015	22	7.89	5.05	25.70	<0.10	<0.025	<0.10	0.91	23.0
HB 3	11/19/2015	32	7.83	7.37	17.40	0.38	0.045	<0.10	<0.25	30.2
HB 3	3/15/2016	29	8.52	7.97	19.10	0.30	0.087	<0.10	<0.25	23.8
HB 3	6/29/2016	17	8.02	2.77	30.61	<0.10	<0.025	<0.10	0.51	20.9
HB 3	8/9/2016	11	7.91	4.31	30.19	<0.10	<0.025	<0.10	0.70	14.3
HB 3	12/7/2016	16	7.93	8.44	12.81	0.11	<0.025	0.13	0.73	17.0
HB 3	3/2/2017	50.0	7.75	3.90	14.33	0.33	<0.025	0.12	0.97	57.1
HB 3	7/5/2017	23	7.29	5.36	27.00	<0.10	<0.025	<0.10	0.81	28.5
HB 3	8/16/2017	13.7	7.35	5.04	27.00	<0.10	<0.025	<0.10	0.76	12.7
HB 3	10/25/2017	11.7	6.64	9.93	18.5	<0.10	<0.025	<0.10	0.32	20.4
HB 3	3/28/2018	13.2	7.99	9.47	17.6	0.359	<0.025	<0.10	<0.25	20.2
HB 3	6/29/2018	14.6	7.67	5.55	26.0	<0.10	<0.025	<0.10	0.464	18.2
HB 3	8/2/2018	28.3	7.40	5.64	25.1	<0.10	<0.025	<0.10	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
HB 3	4/15/2019	22.4	7.73	8.27	19.6	0.233	<0.025	<0.10	<0.250	35.5
HB 3	6/12/2019	12.4	8.13	6.77	26.6	0.129	<0.025	<0.10	<0.250	52.3
HB 3	8/27/2019	78.1	8.21	8.75	29.1	<0.10	<0.025	0.179	0.634	7.3
HB 3	10/29/2019	28.2	7.82	9.88	18.3	<0.10	<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	<0.10	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

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled/Meter Not Working

ADEM Watermark

TABLE B.24 - ANALYTICAL DATA - SME 4

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

		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	17.7	7.69	10.82	9.80	0.387	<0.03	<0.10	0.263	17.8
SME 4	3/18/2021	2.2	7.25	9.20	17.6	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

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled/Meter Not Working

ADEM Watermark

TABLE B.20 - ANALYTICAL DATA - GD 5

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

		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	12	8.33	9.29	10.20	0.26	<0.025	<0.10	0.34	9.6
GD 5	5/20/2013	14	8.28	7.76	22.60	<0.10	<0.025	<0.10	0.62	9.0
GD 5	9/23/2013	12	7.67	6.78	27.10	<0.10	0.027	<0.10	0.45	8.0
GD 5	12/10/2013	58	7.97	9.10	9.10	0.10	0.088	0.10	0.47	18.0
GD 5	2/6/2014	46	7.14	9.88	7.20	0.17	0.038	<0.10	0.37	17.0
GD 5	6/26/2014	17	7.90	6.54	NS	<0.10	<0.025	<0.10	0.34	12.0
GD 5	9/30/2014	23	8.28	7.53	25.22	<0.10	<0.025	<0.10	<0.25	18.0
GD 5	11/19/2014	43	8.15	9.30	9.40	0.11	0.051	<0.10	0.43	26.0
GD 5	3/23/2015	24	8.14	8.58	15.90	0.12	<0.025	<0.10	0.34	15.0
GD 5	4/22/2015	25	7.81	7.78	21.70	0.14	<0.025	<0.10	0.65	13.0
GD 5	9/30/2015	18	8.03	6.27	26.30	<0.10	<0.025	0.12	0.56	17.3
GD 5	11/19/2015	90	7.63	7.34	16.60	0.17	0.042	<0.10	<0.25	42.8
GD 5	3/15/2016	24	8.80	7.47	19.40	<0.10	<0.025	<0.10	0.44	13.2
GD 5	6/29/2016	21	8.02	2.27	30.37	<0.10	0.074	<0.10	0.49	15.0
GD 5	8/9/2016	12	8.25	5.55	30.20	<0.10	<0.025	<0.10	0.41	11.0
GD 5	12/7/2016	10	7.73	10.61	11.96	<0.10	<0.025	<0.10	0.34	6.8
GD 5	3/2/2017	12	7.81	4.49	14.26	0.12	<0.025	<0.10	0.49	13.0
GD 5	7/5/2017	15.0	7.32	5.83	26.9	<0.10	<0.025	<0.10	0.73	22.7
GD 5	8/16/2017	8.0	7.89	6.22	28.0	<0.10	<0.025	<0.10	0.40	9.0
GD 5	10/25/2017	9.2	7.36	7.35	18.7	<0.10	<0.025	<0.10	0.35	14.6
GD 5	3/28/2018	6.1	8.18	9.47	18.5	0.127	<0.025	<0.10	<0.25	6.06
GD 5	6/29/2018	16.3	7.76	5.66	27.5	<0.10	<0.025	<0.10	0.689	19.60
GD 5	8/2/2018	18.4	7.59	6.02	25.7	<0.10	<0.025	<0.10	0.332	26.40
GD 5	12/10/2018	37.7	7.87	11.30	7.3	<0.10	<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	<0.10	<0.025	<0.10	<0.250	9.3
GD 5	8/27/2019	75.2	7.15	7.98	28.7	<0.10	<0.025	0.17	0.506	10.9
GD 5	10/29/2019	29.0	7.85	9.42	17.8	<0.10	<0.025	<0.10	0.477	21.0
GD 5	3/30/2020	14.5	7.65	8.86	19.1	0.130	<0.025	<0.10	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

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled/Meter Not Working

ADEM Watermark

TABLE B.19 - ANALYTICAL DATA - GD 7

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

		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	10	7.98	11.63	15.27	0.39	0.037	<0.10	0.31	8.8
GD 7	5/8/2013	26	7.72	7.46	18.40	0.24	0.063	<0.10	<0.56	20.0
GD 7	9/23/2013	11	7.05	6.31	26.50	<0.10	0.026	<0.10	0.54	9.6
GD 7	12/10/2013	42	8.02	9.68	7.50	0.34	0.084	0.11	0.32	40.0
GD 7	2/6/2014	28	7.27	13.32	4.40	0.52	0.034	<0.10	0.61	13.0
GD 7	6/26/2014	6	8.45	7.04	NS	<0.10	<0.025	<0.10	0.52	8.7
GD 7	9/30/2014	12	7.87	6.32	24.39	<0.10	<0.025	<0.10	0.41	13.0
GD 7	11/19/2014	20	8.53	10.10	9.60	0.14	<0.025	0.13	0.46	15.0
GD 7	3/23/2015	13	8.28	8.87	15.40	0.27	<0.025	<0.10	0.35	10.0
GD 7	4/22/2015	28	7.99	6.40	20.20	0.24	<0.025	<0.10	0.47	24.0
GD 7	9/30/2015	8	7.89	5.18	24.90	<0.10	<0.025	<0.10	0.59	9.1
GD 7	11/19/2015	45	7.78	8.23	15.60	0.34	0.051	<0.10	<0.25	34.3
GD 7	3/15/2016	17	8.46	8.51	17.80	0.26	<0.025	<0.10	0.40	13.9
GD 7	6/29/2016	11	7.90	2.22	30.32	<0.10	0.048	<0.10	0.49	8.6
GD 7	8/9/2016	7	7.97	4.08	29.31	<0.10	<0.025	<0.10	0.47	5.7
GD 7	12/7/2016	9.5	7.88	10.14	12.39	<0.10	<0.025	<0.10	0.36	7.8
GD 7	3/2/2017	11	7.80	4.57	13.35	0.36	<0.025	<0.10	0.51	14.4
GD 7	6/29/2017	9.4	8.18	6.59	26.4	<0.10	<0.025	<0.10	0.44	13.4
GD 7	8/16/2017	8.5	7.84	5.66	29.0	<0.10	<0.025	<0.10	0.36	15.3
GD 7	10/25/2017	9.9	7.73	6.93	19.8	<0.10	<0.025	<0.10	0.42	18.4
GD 7	3/28/2018	7.6	8.16	9.33	14.9	0.350	<0.025	<0.10	<0.25	9.19
GD 7	6/29/2018	14.2	7.79	5.56	27.5	<0.10	<0.025	<0.10	0.625	14.60
GD 7	8/2/2018	18.5	7.62	5.51	27.0	<0.10	0.027	<0.10	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
GD 7	4/15/2019	30.1	7.83	7.85	19.2	0.230	<0.025	<0.10	<0.250	12.0
GD 7	6/12/2019	7.4	7.24	6.68	27.2	0.132	<0.025	<0.10	<0.250	9.3
GD 7	8/27/2019	45.3	7.35	9.35	29.1	<0.10	<0.025	0.156	0.604	6.3
GD 7	10/29/2019	17.6	7.77	8.14	17.2	<0.10	<0.025	<0.10	0.414	17.0
GD 7	3/30/2020	7.8	7.77	10.38	21.1	<0.10	<0.025	<0.10	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

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled/Meter Not Working

ADEM Watermark

TABLE B.18 - ANALYTICAL DATA - GD 9

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

		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	34	7.20	11.27	5.50	0.40	0.063	0.12	0.60	14.0
GD 9	6/26/2014	45	8.22	6.08	NS	<0.10	0.029	0.12	0.41	34.0
GD 9	9/30/2014	12	8.30	6.93	24.61	<0.10	<0.025	<0.10	0.30	15.0
GD 9	11/19/2014	23	8.13	9.38	9.30	0.16	0.082	0.25	0.74	15.0
GD 9	3/23/2015	25	8.16	7.58	15.80	0.15	<0.025	<0.10	0.64	18.0
GD 9	4/22/2015	18	7.58	5.58	20.70	0.15	<0.025	<0.10	0.65	14.0
GD 9	9/30/2015	10	7.93	5.37	25.70	<0.10	<0.025	<0.10	0.64	10.8
GD 9	11/19/2015	40	7.67	NS	16.50	0.25	0.096	0.12	<0.25	16.7
GD 9	3/15/2016	15	8.49	7.66	17.30	0.33	0.044	<0.10	<0.25	12.1
GD 9	6/29/2016	44	8.20	1.76	29.77	<0.10	<0.025	<0.10	0.65	67.2
GD 9	8/9/2016	11	8.07	4.14	29.00	<0.10	<0.025	<0.10	0.47	9.4
GD 9	12/7/2016	26	7.99	8.01	11.99	<0.10	<0.025	0.13	0.38	38.3
GD 9	3/2/2017	10.7	7.70	4.26	13.60	0.27	<0.025	<0.10	0.67	11.2
GD 9	6/29/2017	15.8	8.37	5.85	26.4	<0.10	<0.025	<0.10	0.72	15.7
GD 9	8/16/2017	11.3	7.82	5.52	29.60	<0.10	<0.025	<0.10	0.38	18.2
GD 9	10/25/2017	18.9	7.50	6.68	18.9	<0.10	0.025	<0.10	0.38	29.7
GD 9	3/28/2018	10.2	8.21	9.75	15.8	0.230	<0.025	<0.10	<0.25	12.4
GD 9	6/29/2018	11.0	7.73	5.45	27.6	<0.10	<0.025	<0.10	0.507	13.9
GD 9	8/2/2018	13.0	7.55	5.17	26.0	0.110	0.067	<0.10	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	<0.10	<0.250	178
GD 9	6/12/2019	7.3	7.21	8.61	27.0	0.116	<0.025	<0.10	<0.250	29.0
GD 9	8/27/2019	76.5	7.81	8.22	28.8	<0.10	<0.025	0.146	0.385	9.3
GD 9	10/29/2019	22.3	7.35	8.91	17.9	<0.10	<0.025	<0.10	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

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled/Meter Not Working

ADEM Watermark

TABLE B.17 - ANALYTICAL DATA - SME 1

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

		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	8.19	8.26	13.10	0.54	0.110	0.11	0.34	16.0
SME 1	5/8/2013	24	7.64	8.96	16.00	0.15	0.063	<0.10	0.42	14.0
SME 1	9/23/2013	14	8.26	7.87	27.70	<0.10	0.053	<0.10	0.80	15.0
SME 1	12/10/2013	46	8.05	9.15	7.60	0.55	0.210	0.26	0.47	21.0
SME 1	2/6/2014	61	7.22	11.34	5.90	0.55	0.110	0.13	0.50	23.0
SME 1	6/26/2014	14	8.49	7.05	NS	<0.10	<0.025	<0.10	0.31	13.0
SME 1	9/30/2014	28	8.25	7.46	24.67	<0.10	0.044	0.11	0.61	34.0
SME 1	11/19/2014	40	8.31	10.86	7.80	0.74	0.270	0.29	0.55	19.0
SME 1	3/23/2015	21	8.26	8.52	17.30	0.51	0.073	0.10	<0.25	14.0
SME 1	4/22/2015	29	7.14	7.97	18.50	0.40	0.039	<0.10	0.38	18.0
SME 1	9/30/2015	15	8.34	7.03	26.40	<0.10	0.052	0.14	0.81	15.3
SME 1	11/19/2015	50	7.92	7.04	15.90	0.40	0.084	0.13	<0.25	23.2
SME 1	3/15/2016	26	8.44	7.21	18.30	0.45	0.047	<0.10	<0.25	17.7
SME 1	6/29/2016	21	8.80	3.29	30.67	<0.10	0.180	0.25	0.62	20.3
SME 1	8/9/2016	15	8.55	4.98	28.87	<0.10	0.089	0.15	0.55	12.6
SME 1	12/7/2016	31	7.96	10.20	11.98	0.41	0.209	0.27	0.38	17.7
SME 1	3/2/2017	14	7.75	4.31	12.34	0.67	0.127	0.21	0.35	15.0
SME 1	6/29/2017	19.2	9.11	9.21	25.80	<0.10	0.028	<0.10	0.53	18.3
SME 1	8/16/2017	10.6	8.12	6.58	29.70	<0.10	<0.025	0.11	0.52	12.7
SME 1	10/25/2017	5.4	8.02	8.32	17.3	0.4	0.121	0.15	0.29	16.9
SME 1	3/28/2018	19.3	8.10	9.18	17.6	0.633	0.106	<0.10	<0.25	19.8
SME 1	6/29/2018	20.7	7.84	6.37	26.2	0.312	0.121	0.24	0.670	23.3
SME 1	8/2/2018	28.5	7.48	5.82	23.9	0.296	0.145	0.14	0.495	29.5
SME 1	12/10/2018	32.0	7.45	11.48	8.0	0.259	<0.025	<0.10	0.336	31.0
SME 1	4/15/2019	42.2	7.89	7.89	19.7	0.390	0.063	<0.10	0.360	35.0
SME 1	6/12/2019	12.2	7.34	8.73	27.2	<0.10	<0.025	<0.10	<0.250	9.7
SME 1	8/27/2019	135.2	7.45	8.51	28.8	<0.10	<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	<0.10	<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

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled/Meter Not Working

ADEM Watermark

TABLE B.21 - ANALYTICAL DATA - GD 3

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

		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	12	8.00	9.28	10.70	0.29	0.028	<0.10	0.44	11.0
GD 3	5/20/2013	12	8.09	7.01	23.40	0.15	0.026	<0.10	0.63	13.0
GD 3	9/23/2013	12	7.80	6.50	26.40	<0.10	0.025	<0.10	0.58	10.0
GD 3	12/10/2013	46	7.85	9.23	9.30	0.21	0.085	0.14	0.64	23.0
GD 3	2/6/2014	90	7.13	10.58	6.10	0.21	<0.025	0.12	0.68	27.0
GD 3	6/26/2014	15	8.13	8.00	NS	0.12	<0.025	<0.10	0.40	14.0
GD 3	9/30/2014	20	8.11	6.69	25.06	<0.10	<0.025	<0.10	0.32	19.0
GD 3	11/19/2014	18	8.36	10.88	9.3	<0.10	<0.025	<0.10	0.26	15.0
GD 3	3/23/2015	13	8.32	7.84	16.5	0.22	<0.025	<0.10	0.34	10.0
GD 3	4/22/2015	26	7.86	6.74	20.6	0.18	0.079	<0.10	0.36	21.0
GD 3	9/30/2015	10	7.94	4.91	24.9	0.10	<0.025	0.13	0.74	11.5
GD 3	11/19/2015	40	7.61	7.74	16.0	0.25	<0.025	0.10	<0.25	22.0
GD 3	3/15/2016	26	8.04	8.62	18.7	0.42	0.071	<0.10	<0.25	11.7
GD 3	6/29/2016	6	7.84	2.78	29.94	<0.10	0.088	<0.10	<0.25	10.7
GD 3	8/9/2016	8	7.98	5.09	30.01	<0.10	<0.025	<0.10	0.39	10.0
GD 3	12/7/2016	5.9	7.91	10.55	12.0	<0.10	<0.025	<0.10	0.36	8.1
GD 3	3/2/2017	14	8.21	5.01	14.35	0.24	<0.025	0.14	0.65	15.6
GD 3	7/5/2017	11.2	7.48	6.23	27.3	<0.10	<0.025	<0.10	0.56	14.4
GD 3	8/16/2017	7.4	8.01	6.24	28.8	<0.10	<0.025	<0.10	0.39	8.5
GD 3	10/25/2017	8.9	7.54	7.25	19.1	<0.10	<0.025	<0.10	0.39	13.6
GD 3	3/28/2018	9.1	8.06	9.34	16.6	0.241	<0.025	<0.10	<0.25	10.8
GD 3	6/29/2018	12.9	7.68	5.63	27.3	<0.10	<0.025	<0.10	0.511	12.7
GD 3	8/2/2018	13.4	7.69	5.72	26.6	<0.10	<0.025	<0.10	0.569	20.8
GD 3	12/10/2018	41.4	7.40	11.09	6.8	<0.10	<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	<0.10	<0.250	14.7
GD 3	6/12/2019	9.6	7.24	8.31	27.3	<0.10	<0.025	<0.10	<0.250	13.0
GD 3	8/27/2019	202.8	7.18	8.33	28.8	<0.10	<0.025	0.159	0.434	6.5
GD 3	10/29/2019	26.2	7.84	9.63	17.2	<0.10	<0.025	<0.10	0.453	13.0
GD 3	3/30/2020	17.4	7.58	8.83	18.8	0.216	<0.025	<0.10	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/Meter Not Working

ADEM Watermark

TABLE B.22 - ANALYTICAL DATA - SME 3

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

		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	7.84	7.44	11.30	0.20	0.038	<0.10	0.69	15.0
SME 3	5/20/2013	19	8.11	6.09	23.60	0.17	0.028	<0.10	0.69	19.0
SME 3	9/23/2013	15		5.32	26.50	<0.10	0.029	<0.10	0.53	13.0
SME 3	12/10/2013	48	7.69	8.85	9.60	<0.10	0.086	<0.10	0.62	20.0
SME 3	2/6/2014	83	7.09	10.62	6.30	0.25	<0.025	<0.10	0.69	33.0
SME 3	6/26/2014	50	8.04	7.03	NS	<0.10	0.047	<0.10	0.53	30.0
SME 3	9/30/2014	17	8.08	5.98	25.33	<0.10	<0.025	<0.10	0.66	18.0
SME 3	11/19/2014	22	8.30	10.40	9.30	0.12	0.035	<0.10	<0.25	19.0
SME 3	3/23/2015	25	8.13	7.72	21.20	0.24	0.026	<0.10	0.46	16.0
SME 3	4/22/2015	12	7.76	6.70	21.80	0.15	<0.025	<0.10	0.45	14.0
SME 3	9/30/2015	18	7.96	6.19	25.60	0.13	<0.025	0.13	0.42	24.4
SME 3	11/19/2015	65	7.56	7.44	15.80	0.25	0.032	<0.10	<0.25	37.8
SME 3	3/15/2016	68	8.35	7.51	19.20	0.30	<0.025	<0.10	<0.25	78.8
SME 3	6/29/2016	18	7.80	2.56	30.16	<0.10	0.062	<0.10	0.37	15.3
SME 3	8/9/2016	15	7.52	3.43	29.53	<0.10	<0.025	<0.10	0.56	10.8
SME 3	12/7/2016	8.5	7.90	10.91	11.85	<0.10	<0.025	0.15	1.78	9.4
SME 3	3/2/2017	14.6	7.95	4.60	13.64	0.27	<0.025	<0.10	0.73	17.0
SME 3	7/5/2017	12.5	7.54	5.88	27.3	<0.10	0.039	<0.10	0.63	16.3
SME 3	8/16/2017	11.5	7.86	5.00	28.1	<0.10	0.07	<0.10	0.45	18.5
SME 3	10/25/2017	15.3	7.42	8.23	19.4	<0.10	0.053	0.11	0.38	49.7
SME 3	3/28/2018	8.9	7.98	9.44	17.4	0.220	<0.025	<0.10	<0.25	11.2
SME 3	6/29/2018	15.8	7.53	5.39	26.9	<0.10	<0.025	<0.10	0.800	115.0
SME 3	8/2/2018	30.0	7.59	5.66	26.4	<0.10	<0.025	0.11	0.981	56.0
SME 3	12/10/2018	33.1	7.21	10.68	7.0	<0.10	<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	<0.10	<0.025	<0.10	<0.250	10.7
SME 3	8/27/2019	55.3	7.91	8.41	29.2	<0.10	<0.025	0.149	0.389	7.0
SME 3	10/29/2019	22.4	7.77	8.44	17.2	<0.10	<0.025	<0.10	0.390	15.4
SME 3	3/30/2020	14.4	7.51	8.91	18.8	0.239	<0.025	<0.10	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	removed Monitoring Point from Stormwater Monitoring Program in September 2020									

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled/Meter Not Working

ADEM Watermark

TABLE B.16 - ANALYTICAL DATA - SS 5

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

		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	6	8.38	9.87	10.80	0.30	0.031	<0.10	0.39	7.2
SS 5	5/8/2013	24	7.38	7.19	16.80	0.16	<0.12	<0.10	0.62	21.0
SS 5	9/23/2013	14	8.00	5.44	25.80	<0.10	0.029	<0.10	1.30	15.0
SS 5	12/10/2013	23	8.25	9.10	7.70	0.24	0.043	0.11	0.67	13.0
SS 5	2/6/2014	28	7.20	12.09	5.40	0.39	<0.025	<0.10	0.86	12.0
SS 5	6/26/2014	11	8.53	7.01	NS	<0.10	<0.025	<0.10	0.40	11.0
SS 5	9/30/2014	11	7.64	6.82	24.44	<0.10	<0.025	<0.10	0.45	11.0
SS 5	11/19/2014	14	8.96	13.13	8.50	<0.10	<0.025	<0.10	0.35	9.6
SS 5	3/23/2015	18	8.50	8.99	17.70	0.26	<0.025	<0.10	0.46	11.0
SS 5	4/22/2015	19	7.76	6.71	20.20	0.15	<0.025	<0.10	0.47	13.0
SS 5	9/30/2015	11	8.26	6.61	25.30	<0.10	<0.025	<0.10	0.61	9.9
SS 5	11/19/2015	19	7.86	8.47	15.90	0.24	<0.025	<0.10	<0.25	11.0
SS 5	3/15/2016	20	8.37	8.47	17.20	0.26	<0.025	0.23	0.28	9.5
SS 5	6/29/2016	15	8.01	3.81	29.77	<0.10	0.066	<0.10	0.48	13.2
SS 5	8/9/2016	12	7.86	3.16	29.40	<0.10	<0.025	<0.10	0.46	12.6
SS 5	12/7/2016	6.6	7.94	6.70	12.30	<0.10	<0.025	0.12	0.42	8.0
SS 5	3/2/2017	14.0	7.78	3.92	12.77	0.33	<0.025	<0.10	0.77	16.0
SS 5	7/5/2017	8.4	7.77	7.19	28.90	<0.10	<0.025	<0.10	0.47	12.0
SS 5	8/16/2017	10.2	8.10	4.83	29.90	<0.10	<0.025	<0.10	0.49	15.1
SS 5	10/25/2017	7.5	8.24	8.36	19.2	<0.10	<0.025	<0.10	0.53	11.8
SS 5	3/28/2018	7.0	8.53	10.23	18.5	0.248	<0.025	<0.10	<0.25	8.33
SS 5	6/29/2018	10.4	7.93	5.50	27.5	<0.10	<0.025	<0.10	0.605	13.3
SS 5	8/2/2018	13.5	7.58	6.04	25.8	<0.10	<0.025	<0.10	0.554	12.8
SS 5	12/10/2018	21.9	7.01	11.15	7.3	0.146	<0.025	<0.10	0.522	16.7
SS 5	4/15/2019	15.5	7.35	7.77	19.4	0.168	<0.025	<0.10	0.374	11.7
SS 5	6/12/2019	10.0	8.44	8.78	26.6	<0.10	<0.025	<0.10	<0.250	11.0
SS 5	8/27/2019	24.5	8.66	9.02	28.9	<0.10	<0.025	0.17	0.508	7.1
SS 5	10/29/2019	18.7	8.20	9.33	18.1	0.105	<0.025	0.20	0.631	10.4
SS 5	3/30/2020	9.2	8.35	11.07	20.8	0.127	<0.025	<0.10	0.399	10.6
SS 5	6/16/2020	10.5	8.41	7.99	27.9	<0.100	<0.030	<0.10	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

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled/Meter Not Working

ADEM Watermark

TABLE B.25 - ANALYTICAL DATA - SME 5

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

		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	<0.03	<0.10	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

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled/Meter Not Working

ADEM Watermark

TABLE B.26 - ANALYTICAL DATA - SME 6

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

		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

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled/Meter Not Working

ADEM Watermark

TABLE B.15 - ANALYTICAL DATA - RC 14

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

		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	8.23	7.53	10.30	<0.10	0.088	<0.10	0.61	21.0
RC 14	5/8/2013	30	6.72	1.78	21.40	0.14	<0.12	<0.10	0.63	16.0
RC 14	9/23/2013	18	7.86	6.68	24.70	<0.10	<0.025	<0.10	0.58	13.0
RC 14	12/10/2013	40	8.45	9.50	8.20	<0.10	0.100	0.11	0.69	16.0
RC 14	2/6/2014	67	7.15	10.94	4.90	0.16	0.036	0.11	0.70	18.0
RC 14	6/26/2014	6	8.21	6.30	NS	<0.10	<0.025	<0.10	0.39	5.9
RC 14	9/30/2014	12	7.20	6.20	23.50	<0.10	<0.025	<0.10	0.40	12.0
RC 14	9/19/2014	50	8.20	10.10	7.50	<0.10	0.085	0.13	0.52	28.0
RC 14	3/23/2015	70	8.03	7.80	18.20	0.26	0.070	<0.10	1.10	34.0
RC 14	4/22/2015	30	7.77	7.25	18.10	0.20	<0.025	<0.10	0.40	15.0
RC 14	9/30/2015	17	8.28	5.63	24.40	<0.10	<0.025	<0.10	0.45	12.6
RC 14	11/19/2015	95	7.32	6.07	17.71	0.14	<0.025	0.14	0.63	36.0
RC 14	3/15/2016	85	8.13	7.73	18.50	0.11	<0.025	0.30	0.43	69.6
RC 14	6/29/2016	17	7.58	2.17	28.53	<0.10	0.037	<0.10	0.46	17.5
RC 14	8/9/2016	10	7.05	2.35	28.53	<0.10	<0.025	<0.10	0.55	8.5
RC 14	12/7/2016	7.9	7.21	6.47	11.62	<0.10	<0.025	<0.10	0.25	8.6
RC 14	3/2/2017	18.0	7.32	3.55	12.69	0.12	<0.025	<0.10	0.61	14.6
RC 14	7/5/2017	17.7	7.55	6.56	25.7	0.28	0.041	<0.10	0.36	35.0
RC 14	8/16/2017	9.8	7.72	5.54	26.70	0.21	0.042	<0.10	0.40	12.4
RC 14	10/25/2017	18.7	7.64	7.26	17.1	0.24	0.088	0.15	0.47	27.2
RC 14	3/28/2018	9.9	8.03	9.00	18.3	0.148	<0.025	<0.10	<0.25	10.9
RC 14	6/29/2018	12.9	7.64	5.89	27.1	<0.10	<0.025	<0.10	0.722	13.8
RC 14	8/2/2018	21.7	7.30	5.56	23.7	<0.10	0.055	<0.10	0.848	17.3
RC 14	12/10/2018	35.1	7.13	10.63	7.3	<0.10	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	<0.10	0.403	36.0
RC 14	6/12/2019	11.0	8.03	7.39	25.3	0.120	<0.025	<0.10	0.250	12.3
RC 14	8/27/2019	76.4	8.36	8.78	28.4	<0.10	<0.025	0.141	0.391	8.8
RC 14	10/29/2019	17.4	7.90	9.83	17.7	<0.10	<0.025	<0.10	0.478	10.6
RC 14	3/30/2020	12.9	8.10	10.01	21.9	<0.10	<0.025	<0.10	0.451	15.7
RC 14	6/16/2020	11.5	6.79	8.01	26.9	0.141	<0.030	<0.10	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	<0.10	0.497	14.4
RC 14	3/18/2021	25.8	7.72	10.40	9.3	0.261	<0.030	<0.10	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

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled/Meter Not Working

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Appendix III

Laboratory Report No. L1348916, dated May 20, 2021

Laboratory Report No. L1349027, dated May 26, 2021

ADEM Watermark

ANALYTICAL REPORT

May 26, 2021

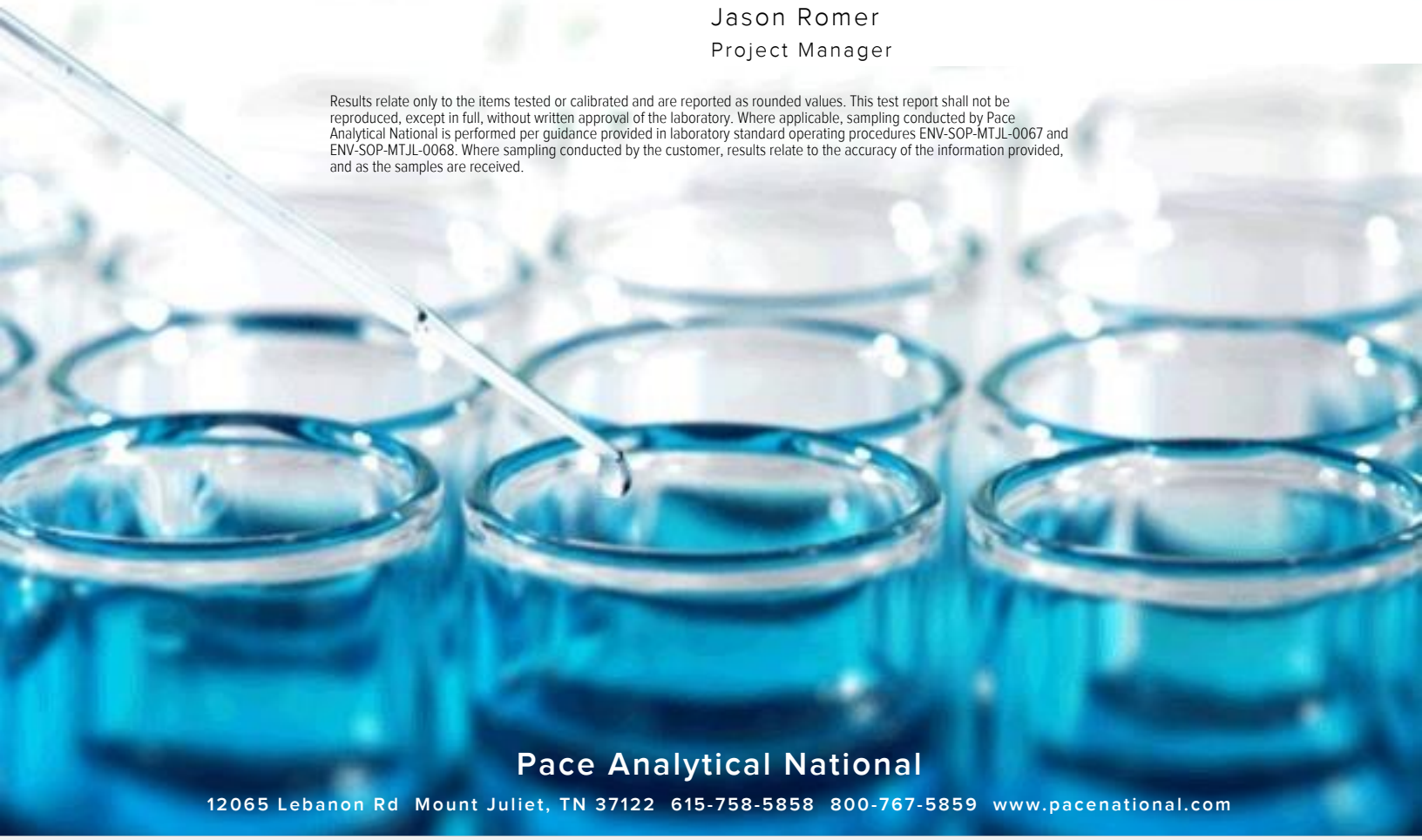
S&ME - Huntsville

Sample Delivery Group:	L1349027
Samples Received:	05/06/2021
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:

Jason Romer
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 L1349027-01 WW

Collected by: Elizabeth Bavis | Collected date/time: 05/05/21 13:39 | Received date/time: 05/06/21 15:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1669080	1	05/12/21 10:56	05/12/21 12:48	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1669304	1	05/12/21 15:54	05/13/21 17:03	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1670863	10	05/25/21 14:26	05/25/21 14:26	MSP	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1670842	1	05/14/21 15:18	05/15/21 02:28	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1665895	1	05/07/21 07:04	05/07/21 07:04	KPS	Mt. Juliet, TN

GD 8 L1349027-02 WW

Collected by: Elizabeth Bavis | Collected date/time: 05/05/21 13:26 | Received date/time: 05/06/21 15:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1669080	1	05/12/21 10:56	05/12/21 12:48	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1669304	1	05/12/21 15:54	05/13/21 16:29	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1670863	10	05/25/21 14:29	05/25/21 14:29	MSP	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1670842	1	05/14/21 15:18	05/15/21 02:29	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1665895	1	05/07/21 07:05	05/07/21 07:05	KPS	Mt. Juliet, TN

RC 2 L1349027-03 WW

Collected by: Elizabeth Bavis | Collected date/time: 05/05/21 13:15 | Received date/time: 05/06/21 15:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1669080	1	05/12/21 10:56	05/12/21 12:48	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1669304	1	05/12/21 15:54	05/13/21 16:30	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1670863	10	05/25/21 14:38	05/25/21 14:38	MSP	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1670842	1	05/14/21 15:18	05/15/21 02:31	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1665895	1	05/07/21 07:05	05/07/21 07:05	KPS	Mt. Juliet, TN

SS 13 L1349027-04 WW

Collected by: Elizabeth Bavis | Collected date/time: 05/05/21 12:40 | Received date/time: 05/06/21 15:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1669080	1	05/12/21 10:56	05/12/21 12:48	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1669304	1	05/12/21 15:54	05/13/21 16:34	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1670863	10	05/25/21 14:39	05/25/21 14:39	MSP	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1670842	1	05/14/21 15:18	05/15/21 02:32	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1665895	1	05/07/21 07:05	05/07/21 07:05	KPS	Mt. Juliet, TN

SS 14 L1349027-05 WW

Collected by: Elizabeth Bavis | Collected date/time: 05/05/21 12:40 | Received date/time: 05/06/21 15:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1669080	1	05/12/21 10:56	05/12/21 12:48	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1669304	1	05/12/21 15:54	05/13/21 16:36	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1670863	10	05/25/21 14:40	05/25/21 14:40	MSP	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1670842	1	05/14/21 15:18	05/15/21 02:33	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1665895	1	05/07/21 07:06	05/07/21 07:06	KPS	Mt. Juliet, TN

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GD 12 L1349027-06 WW

Collected by: Elizabeth Bavis | Collected date/time: 05/05/21 13:00 | Received date/time: 05/06/21 15:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1669080	1	05/12/21 10:56	05/12/21 12:48	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1669304	1	05/12/21 15:54	05/13/21 16:37	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1670863	10	05/25/21 14:42	05/25/21 14:42	MSP	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1670842	1	05/14/21 15:18	05/15/21 02:37	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1665895	1	05/07/21 07:06	05/07/21 07:06	KPS	Mt. Juliet, TN

SME2 L1349027-07 WW

Collected by: Elizabeth Bavis | Collected date/time: 05/05/21 12:15 | Received date/time: 05/06/21 15:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1669080	1	05/12/21 10:56	05/12/21 12:48	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1669304	1	05/12/21 15:54	05/13/21 16:38	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1670863	1	05/25/21 14:43	05/25/21 14:43	MSP	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1670842	1	05/14/21 15:18	05/15/21 02:38	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1665895	1	05/07/21 07:06	05/07/21 07:06	KPS	Mt. Juliet, TN

GD 6 L1349027-08 WW

Collected by: Elizabeth Bavis | Collected date/time: 05/05/21 12:07 | Received date/time: 05/06/21 15:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1669080	1	05/12/21 10:56	05/12/21 12:48	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1669307	1	05/12/21 23:08	05/14/21 12:41	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1670863	10	05/25/21 14:44	05/25/21 14:44	MSP	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1670763	1	05/12/21 23:08	05/14/21 12:59	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1665895	1	05/07/21 07:07	05/07/21 07:07	KPS	Mt. Juliet, TN

CO 15 L1349027-09 WW

Collected by: Elizabeth Bavis | Collected date/time: 05/05/21 11:50 | Received date/time: 05/06/21 15:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1669080	1	05/12/21 10:56	05/12/21 12:48	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1669307	1	05/12/21 23:08	05/14/21 12:43	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1670863	10	05/25/21 14:45	05/25/21 14:45	MSP	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1670763	1	05/12/21 23:08	05/14/21 13:00	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1665895	1	05/07/21 07:07	05/07/21 07:07	KPS	Mt. Juliet, TN

SME 7 L1349027-10 WW

Collected by: Elizabeth Bavis | Collected date/time: 05/05/21 11:30 | Received date/time: 05/06/21 15:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1669080	1	05/12/21 10:56	05/12/21 12:48	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1671165	1	05/14/21 15:22	05/19/21 02:31	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1670863	1	05/25/21 14:47	05/25/21 14:47	MSP	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1670763	1	05/12/21 23:08	05/14/21 13:02	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1666102	1	05/07/21 06:27	05/07/21 06:27	KPS	Mt. Juliet, TN

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SME 8 L1349027-11 WW

Collected by: Elizabeth Bavis
Collected date/time: 05/05/21 10:30
Received date/time: 05/06/21 15:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1669080	1	05/12/21 10:56	05/12/21 12:48	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1669307	1	05/12/21 23:08	05/14/21 12:48	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1670863	1	05/25/21 14:48	05/25/21 14:48	MSP	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1670763	1	05/12/21 23:08	05/14/21 13:04	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1666102	1	05/07/21 06:27	05/07/21 06:27	KPS	Mt. Juliet, TN

SME 9 L1349027-12 WW

Collected by: Elizabeth Bavis
Collected date/time: 05/05/21 12:00
Received date/time: 05/06/21 15:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1668694	1	05/11/21 19:09	05/11/21 20:00	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1669307	1	05/12/21 23:08	05/14/21 12:50	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1670863	10	05/25/21 14:49	05/25/21 14:49	MSP	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1670763	1	05/12/21 23:08	05/14/21 13:08	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1666102	1	05/07/21 06:29	05/07/21 06:29	KPS	Mt. Juliet, TN

SME 10 L1349027-13 WW

Collected by: Elizabeth Bavis
Collected date/time: 05/05/21 10:30
Received date/time: 05/06/21 15:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1668694	1	05/11/21 19:09	05/11/21 20:00	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1669307	1	05/12/21 23:08	05/14/21 12:58	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1670863	10	05/25/21 14:54	05/25/21 14:54	MSP	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1670763	1	05/12/21 23:08	05/14/21 13:13	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1666102	1	05/07/21 06:30	05/07/21 06:30	KPS	Mt. Juliet, TN

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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.



Jason Romer
Project Manager

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Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	43.7		9.25	1	05/12/2021 12:48	WG1669080

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	05/13/2021 17:03	WG1669304

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	6.86		1.00	10	05/25/2021 14:26	WG1670863

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	0.157		0.100	1	05/15/2021 02:28	WG1670842

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	0.121		0.0300	1	05/07/2021 07:04	WG1665895

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Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	35.7		7.15	1	05/12/2021 12:48	WG1669080

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.796		0.250	1	05/13/2021 16:29	WG1669304

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	7.03		1.00	10	05/25/2021 14:29	WG1670863

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	05/15/2021 02:29	WG1670842

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	05/07/2021 07:05	WG1665895

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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	05/12/2021 12:48	WG1669080

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.892		0.250	1	05/13/2021 16:30	WG1669304

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	7.91		1.00	10	05/25/2021 14:38	WG1670863

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	05/15/2021 02:31	WG1670842

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	05/07/2021 07:05	WG1665895

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Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	10.5		4.23	1	05/12/2021 12:48	WG1669080

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	1.41		0.250	1	05/13/2021 16:34	WG1669304

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	7.64		1.00	10	05/25/2021 14:39	WG1670863

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	0.160		0.100	1	05/15/2021 02:32	WG1670842

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	0.0960		0.0300	1	05/07/2021 07:05	WG1665895

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Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	6.27		3.33	1	05/12/2021 12:48	WG1669080

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	1.06		0.250	1	05/13/2021 16:36	WG1669304

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	7.85		1.00	10	05/25/2021 14:40	WG1670863

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	05/15/2021 02:33	WG1670842

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	0.0730		0.0300	1	05/07/2021 07:06	WG1665895

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Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	16.4		3.33	1	05/12/2021 12:48	WG1669080

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	05/13/2021 16:37	WG1669304

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	7.26		1.00	10	05/25/2021 14:42	WG1670863

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	05/15/2021 02:37	WG1670842

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	05/07/2021 07:06	WG1665895

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Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	6.80		3.33	1	05/12/2021 12:48	WG1669080

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.768		0.250	1	05/13/2021 16:38	WG1669304

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.560		0.100	1	05/25/2021 14:43	WG1670863

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	05/15/2021 02:38	WG1670842

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	05/07/2021 07:06	WG1665895

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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	05/12/2021 12:48	WG1669080

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.542		0.250	1	05/14/2021 12:41	WG1669307

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	7.95		1.00	10	05/25/2021 14:44	WG1670863

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	0.124	B	0.100	1	05/14/2021 12:59	WG1670763

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	05/07/2021 07:07	WG1665895

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Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	10.9		3.58	1	05/12/2021 12:48	WG1669080

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	1.17		0.250	1	05/14/2021 12:43	WG1669307

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	7.78		1.00	10	05/25/2021 14:45	WG1670863

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	0.200	B	0.100	1	05/14/2021 13:00	WG1670763

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	05/07/2021 07:07	WG1665895

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Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	60.3		6.75	1	05/12/2021 12:48	WG1669080

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.366		0.250	1	05/19/2021 02:31	WG1671165

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.597		0.100	1	05/25/2021 14:47	WG1670863

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	0.118	B P1	0.100	1	05/14/2021 13:02	WG1670763

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	05/07/2021 06:27	WG1666102

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Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	36.4		5.00	1	05/12/2021 12:48	WG1669080

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	1.24		0.250	1	05/14/2021 12:48	WG1669307

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	1.09		0.100	1	05/25/2021 14:48	WG1670863

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	0.244	B	0.100	1	05/14/2021 13:04	WG1670763

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	0.112		0.0300	1	05/07/2021 06:27	WG1666102

ADEM Watermark

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	42.8		8.63	1	05/11/2021 20:00	WG1668694

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.381	J5 P1	0.250	1	05/14/2021 12:50	WG1669307

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	7.78		1.00	10	05/25/2021 14:49	WG1670863

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	0.460	B	0.100	1	05/14/2021 13:08	WG1670763

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	0.145		0.0300	1	05/07/2021 06:29	WG1666102

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Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	52.0		10.0	1	05/11/2021 20:00	WG1668694

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.338		0.250	1	05/14/2021 12:58	WG1669307

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	8.53		1.00	10	05/25/2021 14:54	WG1670863

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	0.269	B	0.100	1	05/14/2021 13:13	WG1670763

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	0.117		0.0300	1	05/07/2021 06:30	WG1666102

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Method Blank (MB)

(MB) R3653599-1 05/11/21 20:00

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Suspended Solids	U		2.50	2.50

L1348750-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1348750-01 05/11/21 20:00 • (DUP) R3653599-3 05/11/21 20:00

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Suspended Solids	28.0	32.0	1	13.3	P1	5

L1348783-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1348783-01 05/11/21 20:00 • (DUP) R3653599-4 05/11/21 20:00

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Suspended Solids	178	213	1	17.9	P1	5

Laboratory Control Sample (LCS)

(LCS) R3653599-2 05/11/21 20:00

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Suspended Solids	773	816	106	85.7-114	

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Method Blank (MB)

(MB) R3654160-1 05/12/21 12:48

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Suspended Solids	U		2.50	2.50

L1348857-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1348857-01 05/12/21 12:48 • (DUP) R3654160-3 05/12/21 12:48

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Suspended Solids	110	118	1	6.59	P1	5

L1348857-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1348857-02 05/12/21 12:48 • (DUP) R3654160-4 05/12/21 12:48

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Suspended Solids	4880	6330	1	25.9	J3	5

Laboratory Control Sample (LCS)

(LCS) R3654160-2 05/12/21 12:48

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Suspended Solids	773	796	103	85.7-114	

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Method Blank (MB)

(MB) R3654200-1 05/13/21 16:01

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Kjeldahl Nitrogen, TKN	U		0.140	0.250

L1348916-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1348916-05 05/13/21 16:04 • (DUP) R3654200-3 05/13/21 16:06

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Kjeldahl Nitrogen, TKN	0.661	0.686	1	3.71		20

L1348916-07 Original Sample (OS) • Duplicate (DUP)

(OS) L1348916-07 05/13/21 16:11 • (DUP) R3654200-6 05/13/21 16:12

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Kjeldahl Nitrogen, TKN	0.402	0.451	1	11.5		20

Laboratory Control Sample (LCS)

(LCS) R3654200-2 05/13/21 16:03

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Kjeldahl Nitrogen, TKN	15.2	14.8	97.4	75.2-121	

L1348916-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1348916-06 05/13/21 16:07 • (MS) R3654200-4 05/13/21 16:08 • (MSD) R3654200-5 05/13/21 16:10

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	0.564	5.59	5.61	101	101	1	90.0-110			0.357	20

L1348916-08 Original Sample (OS) • Matrix Spike (MS)

(OS) L1348916-08 05/13/21 16:14 • (MS) R3654200-7 05/13/21 16:18

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	0.576	5.97	108	1	90.0-110	

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Method Blank (MB)

(MB) R3654515-1 05/14/21 12:39

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Kjeldahl Nitrogen, TKN	U		0.140	0.250

L1349027-12 Original Sample (OS) • Duplicate (DUP)

(OS) L1349027-12 05/14/21 12:50 • (DUP) R3654515-3 05/14/21 12:51

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Kjeldahl Nitrogen, TKN	0.381	0.510	1	29.0	P1	20

Laboratory Control Sample (LCS)

(LCS) R3654515-2 05/14/21 12:40

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Kjeldahl Nitrogen, TKN	15.2	14.8	97.4	75.2-121	

L1349027-12 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1349027-12 05/14/21 12:50 • (MS) R3654515-4 05/14/21 12:55 • (MSD) R3654515-5 05/14/21 12:56

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	0.381	6.01	6.06	113	114	1	90.0-110	J5	J5	0.829	20

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Method Blank (MB)

(MB) R3656166-1 05/19/21 02:28

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Kjeldahl Nitrogen, TKN	U		0.140	0.250

L1350507-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1350507-01 05/19/21 02:54 • (DUP) R3656166-5 05/19/21 02:55

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Kjeldahl Nitrogen, TKN	0.502	0.510	1	1.58		20

L1350574-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1350574-01 05/19/21 03:01 • (DUP) R3656166-7 05/19/21 03:02

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Kjeldahl Nitrogen, TKN	0.279	0.262	1	6.28		20

Laboratory Control Sample (LCS)

(LCS) R3656166-2 05/19/21 02:29

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Kjeldahl Nitrogen, TKN	15.2	14.5	95.4	75.2-121	

L1350506-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1350506-02 05/19/21 02:46 • (MS) R3656166-3 05/19/21 02:47 • (MSD) R3656166-4 05/19/21 02:48

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	0.340	4.78	5.17	88.8	96.6	1	90.0-110	J6		7.84	20

L1350572-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1350572-01 05/19/21 02:58 • (MS) R3656166-6 05/19/21 02:59

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	0.354	4.98	92.5	1	90.0-110	

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Method Blank (MB)

(MB) R3659019-1 05/25/21 14:23

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Nitrate-Nitrite	U		0.0500	0.100

L1349027-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1349027-01 05/25/21 14:26 • (DUP) R3659019-3 05/25/21 14:28

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Nitrate-Nitrite	6.86	6.84	10	0.292		20

L1349278-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1349278-03 05/25/21 14:56 • (DUP) R3659019-6 05/25/21 14:57

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Nitrate-Nitrite	0.136	0.138	1	1.46		20

Laboratory Control Sample (LCS)

(LCS) R3659019-2 05/25/21 14:24

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Nitrate-Nitrite	2.50	2.70	108	90.0-110	

L1349027-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1349027-02 05/25/21 14:30 • (MS) R3659019-4 05/25/21 14:31 • (MSD) R3659019-5 05/25/21 14:33

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 %
Nitrate-Nitrite	2.50	6.81	8.82	8.86	80.4	82.0	1	90.0-110	E J6	E J6	0.452	20

L1349278-04 Original Sample (OS) • Matrix Spike (MS)

(OS) L1349278-04 05/25/21 14:58 • (MS) R3659019-7 05/25/21 14:59

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Nitrate-Nitrite	2.50	5.32	7.45	85.2	1	90.0-110	E J6

ADEM Watermark

Method Blank (MB)

(MB) R3654594-2 05/14/21 12:55

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Phosphorus,Total	0.0878	J	0.0350	0.100

L1349027-10 Original Sample (OS) • Duplicate (DUP)

(OS) L1349027-10 05/14/21 13:02 • (DUP) R3654594-4 05/14/21 13:03

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Phosphorus,Total	0.118	0.251	1	72.1	P1	20

L1349027-12 Original Sample (OS) • Duplicate (DUP)

(OS) L1349027-12 05/14/21 13:08 • (DUP) R3654594-5 05/14/21 13:09

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Phosphorus,Total	0.460	0.442	1	3.99		20

Laboratory Control Sample (LCS)

(LCS) R3654594-3 05/14/21 12:57

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Phosphorus,Total	3.16	3.13	99.2	81.2-118	

L1349027-12 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1349027-12 05/14/21 13:08 • (MS) R3654594-6 05/14/21 13:11 • (MSD) R3654594-7 05/14/21 13:12

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	0.460	3.02	2.94	102	99.2	1	90.0-110			2.68	20

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Method Blank (MB)

(MB) R3654769-1 05/15/21 02:06

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Phosphorus,Total	U		0.0350	0.100

L1348916-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1348916-05 05/15/21 02:13 • (DUP) R3654769-3 05/15/21 02:14

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

L1350114-14 Original Sample (OS) • Duplicate (DUP)

(OS) L1350114-14 05/15/21 02:42 • (DUP) R3654769-6 05/15/21 02:43

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Phosphorus,Total	ND	0.152	1	43.4	P1	20

Laboratory Control Sample (LCS)

(LCS) R3654769-2 05/15/21 02:08

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Phosphorus,Total	3.16	3.04	96.4	81.2-118	

L1349027-07 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1349027-07 05/15/21 02:38 • (MS) R3654769-4 05/15/21 02:40 • (MSD) R3654769-5 05/15/21 02:41

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	2.36	2.50	94.4	100	1	90.0-110			5.76	20

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QUALITY CONTROL SUMMARY

L1349027-01,02,03,04,05,06,07,08,09

Method Blank (MB)

(MB) R3651444-1 05/07/21 07:00

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Phosphate,Ortho	U		0.0140	0.0300

L1348916-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1348916-01 05/07/21 07:00 • (DUP) R3651444-3 05/07/21 07:00

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

L1348916-11 Original Sample (OS) • Duplicate (DUP)

(OS) L1348916-11 05/07/21 07:04 • (DUP) R3651444-6 05/07/21 07:04

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) R3651444-2 05/07/21 07:00

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Phosphate,Ortho	0.245	0.258	106	85.0-115	

L1348916-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1348916-02 05/07/21 07:00 • (MS) R3651444-4 05/07/21 07:01 • (MSD) R3651444-5 05/07/21 07:01

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 %
Phosphate,Ortho	0.500	ND	0.473	0.505	91.4	97.8	1	80.0-120			6.54	20

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Method Blank (MB)

(MB) R3651436-1 05/07/21 06:27

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Phosphate,Ortho	U		0.0140	0.0300

L1349027-10 Original Sample (OS) • Duplicate (DUP)

(OS) L1349027-10 05/07/21 06:27 • (DUP) R3651436-3 05/07/21 06:27

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) R3651436-2 05/07/21 06:27

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Phosphate,Ortho	0.245	0.257	105	85.0-115	

L1349027-11 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1349027-11 05/07/21 06:27 • (MS) R3651436-4 05/07/21 06:27 • (MSD) R3651436-5 05/07/21 06:28

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 %
Phosphate,Ortho	0.500	0.112	0.594	0.595	96.4	96.6	1	80.0-120			0.168	20

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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
B	The same analyte is found in the associated blank.
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.
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.

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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.

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Company Name/Address:
S&ME - Huntsville
360 D Quality Circle NW
Suite 450
Huntsville, AL 35806

Billing Information:
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Huntsville, AL 35806

Pres Chk

Analysis / Container / Preservative

Chain of Custody Page ___ of ___

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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

SDG # L1349027

Table # G242

Collected by (print): Elizabeth Davis

Site/Facility ID # LAND

P.O. #

Acctnum: QOREHAL

Template: T181690

Prelogin: P838026

PM: 034 - Craig Cothron

PB: BF 3/27/21

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

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)
AT 5	Grab	WW		5/5/21	1339	4	X	X	X	X								-01
GD 8		WW			1326	4	X	X	X	X								02
RC 2		WW			1315	4	X	X	X	X								03
SS 13		WW			1240	4	X	X	X	X								04
SS 14		WW			1246	4	X	X	X	X								05
GD 12		WW			1300	4	X	X	X	X								06
SME2		WW			1215	4	X	X	X	X								07
GD 6		WW			1207	4	X	X	X	X								08
CO 15		WW			1150	4	X	X	X	X								09
SME 7		WW			1130	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 # 9517 5761 7587 9617 5761 7576

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]	5/5	2:40		A7 BB	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: +0 °C 3.5 3.5	Bottles Received: 52
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature) [signature]	Date: 5/6/21	Time: 1545

If preservation required by Login: Date/Time

Hold:

Condition: NCF / OK

4.6 + .2 = 4.8 A3 BB

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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 ___

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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

SDG # L1349027

Table #

Collected by (print): Elizabeth Davis

Site/Facility ID # LAND

P.O. #

Acctnum: QOREHAL
Template: T181690
Prelogin: P838026
PM: 034 - Craig Cothron
PB: BF 3/27/21
Shipped Via: FedEX Ground

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

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	Grab	WW		5/5/21	1030	4	X	X	X	X		-11
SME 9	↓	WW		↓	1200	4	X	X	X	X		12
SME 10	↓	WW		↓	1030	4	X	X	X	X		13
	N	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 # 9517576 17587 9617576 17576

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]	5/5	2:00		0.7 BB
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: +0 °C 3.5 3.5 Bottles Received: 52
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature) Bailey Robin	Date: 5/6/21 Time: 1545

If preservation required by Login: Date/Time

Hold:

Condition: NCF / OK

4.6+.2 = 4.8 A3B6

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ANALYTICAL REPORT

May 20, 2021

S&ME - Huntsville

Sample Delivery Group:	L1348916
Samples Received:	05/06/2021
Project Number:	4482-20-044
Description:	Gadsden MS4

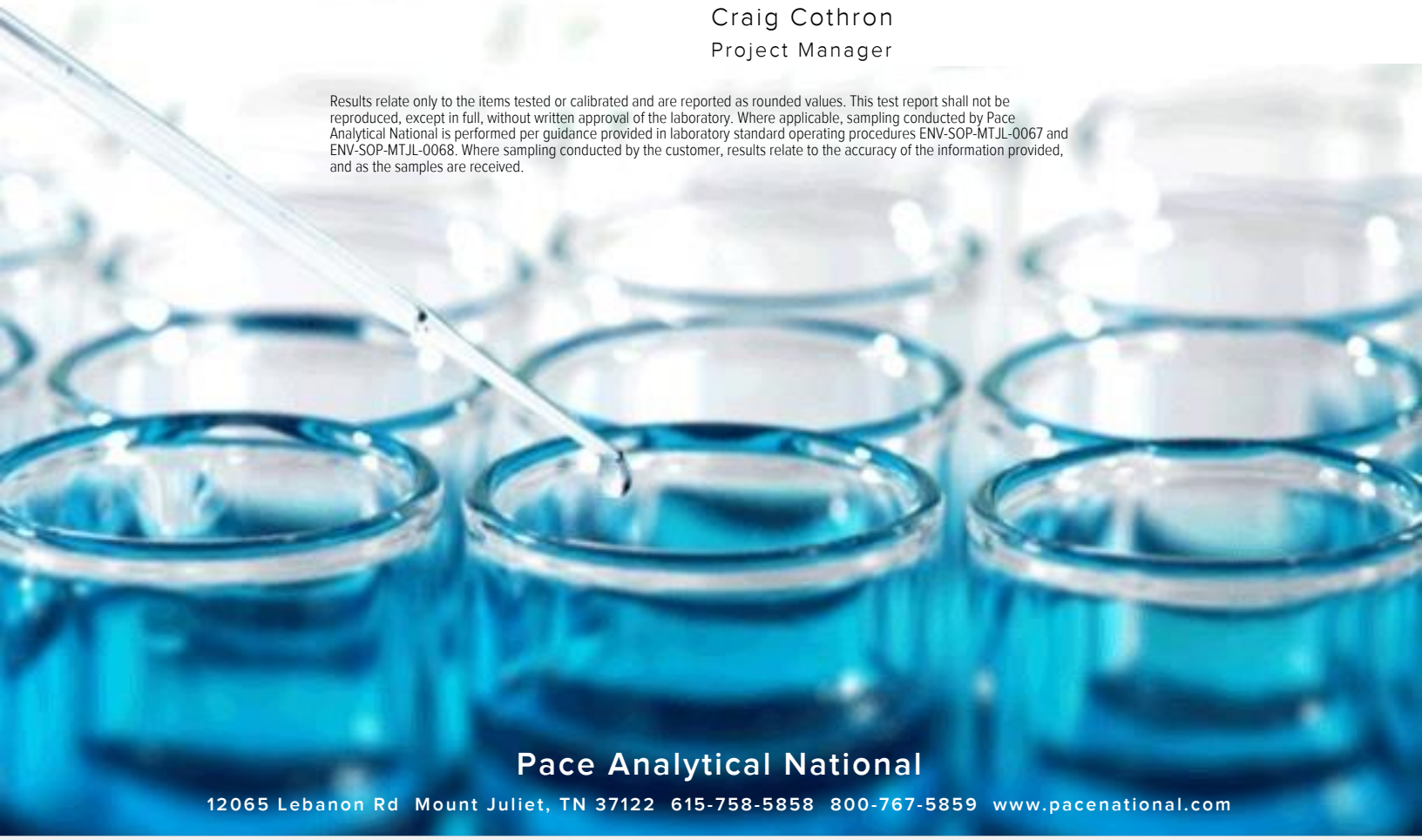
Report To:

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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GD7 L1348916-05 11
GD9 L1348916-06 12
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ADEM Watermark

HB3 L1348916-01 WW

Collected by: Grant Williams | Collected date/time: 05/05/21 11:00 | Received date/time: 05/06/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1668826	1	05/12/21 02:07	05/12/21 03:54	VRP	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1669301	1	05/12/21 15:53	05/13/21 09:39	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1667976	1	05/20/21 03:06	05/20/21 03:06	SDL	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1669704	1	05/12/21 15:53	05/13/21 08:43	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1665895	1	05/07/21 07:00	05/07/21 07:00	KPS	Mt. Juliet, TN

SME11 L1348916-02 WW

Collected by: Grant Williams | Collected date/time: 05/05/21 11:05 | Received date/time: 05/06/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1668826	1	05/12/21 02:07	05/12/21 03:54	VRP	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1669301	1	05/12/21 15:53	05/13/21 09:44	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1667976	1	05/20/21 03:09	05/20/21 03:09	SDL	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1669704	1	05/12/21 15:53	05/13/21 08:45	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1665895	1	05/07/21 07:00	05/07/21 07:00	KPS	Mt. Juliet, TN

SME4 L1348916-03 WW

Collected by: Grant Williams | Collected date/time: 05/05/21 11:15 | Received date/time: 05/06/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1668835	1	05/12/21 03:51	05/12/21 07:02	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1669301	1	05/12/21 15:53	05/13/21 09:48	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1667976	1	05/20/21 03:19	05/20/21 03:19	SDL	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1669704	1	05/12/21 15:53	05/13/21 08:49	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1665895	1	05/07/21 07:01	05/07/21 07:01	KPS	Mt. Juliet, TN

GD5 L1348916-04 WW

Collected by: Grant Williams | Collected date/time: 05/05/21 11:30 | Received date/time: 05/06/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1668835	1	05/12/21 03:51	05/12/21 07:02	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1669301	1	05/12/21 15:53	05/13/21 09:51	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1667976	1	05/20/21 03:21	05/20/21 03:21	SDL	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1669704	1	05/12/21 15:53	05/13/21 08:54	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1665895	1	05/07/21 07:02	05/07/21 07:02	KPS	Mt. Juliet, TN

GD7 L1348916-05 WW

Collected by: Grant Williams | Collected date/time: 05/05/21 11:45 | Received date/time: 05/06/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1668835	1	05/12/21 03:51	05/12/21 07:02	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1669304	1	05/12/21 15:54	05/13/21 16:04	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1667976	1	05/20/21 03:22	05/20/21 03:22	SDL	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1670842	1	05/14/21 15:18	05/15/21 02:13	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1665895	1	05/07/21 07:02	05/07/21 07:02	KPS	Mt. Juliet, TN

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GD9 L1348916-06 WW

Collected by: Grant Williams | Collected date/time: 05/05/21 12:00 | Received date/time: 05/06/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1668835	1	05/12/21 03:51	05/12/21 07:02	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1669304	1	05/12/21 15:54	05/13/21 16:07	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1667976	1	05/20/21 03:23	05/20/21 03:23	SDL	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1670842	1	05/14/21 15:18	05/15/21 02:15	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1665895	1	05/07/21 07:02	05/07/21 07:02	KPS	Mt. Juliet, TN

SME1 L1348916-07 WW

Collected by: Grant Williams | Collected date/time: 05/05/21 12:10 | Received date/time: 05/06/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1668835	1	05/12/21 03:51	05/12/21 07:02	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1669304	1	05/12/21 15:54	05/13/21 16:11	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1667976	1	05/20/21 03:24	05/20/21 03:24	SDL	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1670842	1	05/14/21 15:18	05/15/21 02:16	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1665895	1	05/07/21 07:02	05/07/21 07:02	KPS	Mt. Juliet, TN

SS5 L1348916-08 WW

Collected by: Grant Williams | Collected date/time: 05/05/21 13:05 | Received date/time: 05/06/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1668835	1	05/12/21 03:51	05/12/21 07:02	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1669304	1	05/12/21 15:54	05/13/21 16:14	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1667976	1	05/20/21 03:26	05/20/21 03:26	SDL	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1670241	1	05/12/21 15:54	05/13/21 16:46	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1665895	1	05/07/21 07:03	05/07/21 07:03	KPS	Mt. Juliet, TN

SME5 L1348916-09 WW

Collected by: Grant Williams | Collected date/time: 05/05/21 13:20 | Received date/time: 05/06/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1668835	1	05/12/21 03:51	05/12/21 07:02	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1669304	1	05/12/21 15:54	05/13/21 16:19	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1667976	1	05/20/21 03:27	05/20/21 03:27	SDL	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1670842	1	05/14/21 15:18	05/15/21 02:18	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1665895	1	05/07/21 07:03	05/07/21 07:03	KPS	Mt. Juliet, TN

SMEC L1348916-10 WW

Collected by: Grant Williams | Collected date/time: 05/05/21 13:35 | Received date/time: 05/06/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1668835	1	05/12/21 03:51	05/12/21 07:02	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1669304	1	05/12/21 15:54	05/13/21 16:20	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1667976	1	05/20/21 03:28	05/20/21 03:28	SDL	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1670842	1	05/14/21 15:18	05/15/21 02:22	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1665895	1	05/07/21 07:04	05/07/21 07:04	KPS	Mt. Juliet, TN

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SAMPLE SUMMARY

RC14 L1348916-11 WW

Collected by: Grant Williams
Collected date/time: 05/05/21 13:45
Received date/time: 05/06/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1668835	1	05/12/21 03:51	05/12/21 07:02	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1669304	1	05/12/21 15:54	05/13/21 16:22	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1667976	1	05/20/21 03:30	05/20/21 03:30	SDL	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1670842	1	05/14/21 15:18	05/15/21 02:23	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1665895	1	05/07/21 07:04	05/07/21 07:04	KPS	Mt. Juliet, TN

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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

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Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	35.1		2.50	1	05/12/2021 03:54	WG1668826

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	05/13/2021 09:39	WG1669301

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.207		0.100	1	05/20/2021 03:06	WG1667976

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	05/13/2021 08:43	WG1669704

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	05/07/2021 07:00	WG1665895

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Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	24.8		2.50	1	05/12/2021 03:54	WG1668826

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	05/13/2021 09:44	WG1669301

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.207		0.100	1	05/20/2021 03:09	WG1667976

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	05/13/2021 08:45	WG1669704

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	05/07/2021 07:00	WG1665895

ADEM Watermark

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	27.5		2.50	1	05/12/2021 07:02	WG1668835

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	05/13/2021 09:48	WG1669301

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.213		0.100	1	05/20/2021 03:19	WG1667976

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	05/13/2021 08:49	WG1669704

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	05/07/2021 07:01	WG1665895

ADEM Watermark

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	36.8		5.00	1	05/12/2021 07:02	WG1668835

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	05/13/2021 09:51	WG1669301

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.204		0.100	1	05/20/2021 03:21	WG1667976

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	05/13/2021 08:54	WG1669704

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	05/07/2021 07:02	WG1665895

ADEM Watermark

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	40.3		2.50	1	05/12/2021 07:02	WG1668835

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.661		0.250	1	05/13/2021 16:04	WG1669304

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	05/20/2021 03:22	WG1667976

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	05/15/2021 02:13	WG1670842

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	05/07/2021 07:02	WG1665895

ADEM Watermark

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	29.0		5.00	1	05/12/2021 07:02	WG1668835

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.564		0.250	1	05/13/2021 16:07	WG1669304

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	05/20/2021 03:23	WG1667976

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	05/15/2021 02:15	WG1670842

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	0.0360		0.0300	1	05/07/2021 07:02	WG1665895

ADEM Watermark

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Suspended Solids	34.0		5.00	1	05/12/2021 07:02	WG1668835

Wet Chemistry by Method 351.2

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	0.402		0.250	1	05/13/2021 16:11	WG1669304

Wet Chemistry by Method 353.2

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	0.122		0.100	1	05/20/2021 03:24	WG1667976

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	05/15/2021 02:16	WG1670842

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	05/07/2021 07:02	WG1665895

ADEM Watermark

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Suspended Solids	32.2		5.00	1	05/12/2021 07:02	WG1668835

Wet Chemistry by Method 351.2

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	0.576		0.250	1	05/13/2021 16:14	WG1669304

Wet Chemistry by Method 353.2

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	0.108		0.100	1	05/20/2021 03:26	WG1667976

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	05/13/2021 16:46	WG1670241

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	05/07/2021 07:03	WG1665895

ADEM Watermark

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	60.6		5.00	1	05/12/2021 07:02	WG1668835

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.410		0.250	1	05/13/2021 16:19	WG1669304

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	05/20/2021 03:27	WG1667976

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	05/15/2021 02:18	WG1670842

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	05/07/2021 07:03	WG1665895

ADEM Watermark

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Suspended Solids	82.8		10.0	1	05/12/2021 07:02	WG1668835

Wet Chemistry by Method 351.2

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	0.403		0.250	1	05/13/2021 16:20	WG1669304

Wet Chemistry by Method 353.2

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	0.183		0.100	1	05/20/2021 03:28	WG1667976

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	05/15/2021 02:22	WG1670842

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	05/07/2021 07:04	WG1665895

ADEM Watermark

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	30.4		5.00	1	05/12/2021 07:02	WG1668835

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	05/13/2021 16:22	WG1669304

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	05/20/2021 03:30	WG1667976

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	05/15/2021 02:23	WG1670842

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	05/07/2021 07:04	WG1665895

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Method Blank (MB)

(MB) R3653622-1 05/12/21 03:54

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Suspended Solids	U		2.50	2.50

L1348623-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1348623-04 05/12/21 03:54 • (DUP) R3653622-3 05/12/21 03:54

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Suspended Solids	125	175	1	33.3	J3	5

L1348639-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1348639-01 05/12/21 03:54 • (DUP) R3653622-4 05/12/21 03:54

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Suspended Solids	25.6	28.0	1	8.96	P1	5

Laboratory Control Sample (LCS)

(LCS) R3653622-2 05/12/21 03:54

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Suspended Solids	773	756	97.8	85.7-114	

ADEM Watermark

Method Blank (MB)

(MB) R3653624-1 05/12/21 07:02

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Suspended Solids	U		2.50	2.50

L1348683-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1348683-02 05/12/21 07:02 • (DUP) R3653624-3 05/12/21 07:02

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Suspended Solids	128	123	1	3.98		5

L1348916-10 Original Sample (OS) • Duplicate (DUP)

(OS) L1348916-10 05/12/21 07:02 • (DUP) R3653624-4 05/12/21 07:02

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Suspended Solids	82.8	86.0	1	3.79		5

Laboratory Control Sample (LCS)

(LCS) R3653624-2 05/12/21 07:02

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Suspended Solids	773	836	108	85.7-114	

ADEM Watermark

Method Blank (MB)

(MB) R3653867-1 05/13/21 09:26

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Kjeldahl Nitrogen, TKN	U		0.140	0.250

L1346509-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1346509-02 05/13/21 09:29 • (DUP) R3653867-3 05/13/21 09:31

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Kjeldahl Nitrogen, TKN	ND	ND	10	0.000		20

Sample Narrative:

OS: dilution due to nitrate interference

L1348916-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1348916-01 05/13/21 09:39 • (DUP) R3653867-4 05/13/21 09:43

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

L1348916-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1348916-03 05/13/21 09:48 • (DUP) R3653867-7 05/13/21 09:50

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) R3653867-2 05/13/21 09:28

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Kjeldahl Nitrogen, TKN	15.2	13.7	90.1	75.2-121	

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L1348916-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1348916-02 05/13/21 09:44 • (MS) R3653867-5 05/13/21 09:45 • (MSD) R3653867-6 05/13/21 09:47

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	5.06	5.01	97.6	96.6	1	90.0-110			0.993	20

L1348916-04 Original Sample (OS) • Matrix Spike (MS)

(OS) L1348916-04 05/13/21 09:51 • (MS) R3653867-8 05/13/21 09:52

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	5.23	105	1	90.0-110	

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QUALITY CONTROL SUMMARY

L1348916-05,06,07,08,09,10,11

Method Blank (MB)

(MB) R3654200-1 05/13/21 16:01

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Kjeldahl Nitrogen, TKN	U		0.140	0.250

L1348916-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1348916-05 05/13/21 16:04 • (DUP) R3654200-3 05/13/21 16:06

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Kjeldahl Nitrogen, TKN	0.661	0.686	1	3.71		20

L1348916-07 Original Sample (OS) • Duplicate (DUP)

(OS) L1348916-07 05/13/21 16:11 • (DUP) R3654200-6 05/13/21 16:12

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Kjeldahl Nitrogen, TKN	0.402	0.451	1	11.5		20

Laboratory Control Sample (LCS)

(LCS) R3654200-2 05/13/21 16:03

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Kjeldahl Nitrogen, TKN	15.2	14.8	97.4	75.2-121	

L1348916-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1348916-06 05/13/21 16:07 • (MS) R3654200-4 05/13/21 16:08 • (MSD) R3654200-5 05/13/21 16:10

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	0.564	5.59	5.61	101	101	1	90.0-110			0.357	20

L1348916-08 Original Sample (OS) • Matrix Spike (MS)

(OS) L1348916-08 05/13/21 16:14 • (MS) R3654200-7 05/13/21 16:18

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	0.576	5.97	108	1	90.0-110	

ADEM Watermark

QUALITY CONTROL SUMMARY

L1348916-01,02,03,04,05,06,07,08,09,10,11

Method Blank (MB)

(MB) R3656758-1 05/20/21 02:59

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Nitrate-Nitrite	U		0.0500	0.100

L1348916-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1348916-01 05/20/21 03:06 • (DUP) R3656758-4 05/20/21 03:08

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Nitrate-Nitrite	0.207	0.210	1	1.44		20

L1348437-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1348437-01 05/20/21 03:55 • (DUP) R3656758-8 05/20/21 03:56

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Nitrate-Nitrite	5.55	5.75	5	3.54		20

Laboratory Control Sample (LCS)

(LCS) R3656758-2 05/20/21 03:00

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Nitrate-Nitrite	2.50	2.31	92.4	90.0-110	

L1348744-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1348744-01 05/20/21 03:51 • (MS) R3656758-3 05/20/21 03:05

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	2.27	90.8	1	90.0-110	

L1349159-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1349159-03 05/20/21 03:37 • (MS) R3656758-5 05/20/21 03:39 • (MSD) R3656758-6 05/20/21 03:40

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	2.52	4.51	4.47	79.6	78.0	1	90.0-110	J6	J6	0.891	20

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Method Blank (MB)

(MB) R3653846-2 05/13/21 08:23

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Phosphorus,Total	0.0711	J	0.0350	0.100

L1348916-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1348916-01 05/13/21 08:43 • (DUP) R3653846-4 05/13/21 08:44

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

L1348916-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1348916-03 05/13/21 08:49 • (DUP) R3653846-7 05/13/21 08:50

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

Laboratory Control Sample (LCS)

(LCS) R3653846-3 05/13/21 08:25

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Phosphorus,Total	3.16	2.97	94.1	81.2-118	

L1348916-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1348916-02 05/13/21 08:45 • (MS) R3653846-5 05/13/21 08:46 • (MSD) R3653846-6 05/13/21 08:48

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	2.25	2.41	90.0	96.4	1	90.0-110			6.87	20

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Method Blank (MB)

(MB) R3654216-2 05/13/21 16:35

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Phosphorus,Total	0.229		0.0350	0.100

Laboratory Control Sample (LCS)

(LCS) R3654216-3 05/13/21 16:36

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Phosphorus,Total	3.16	3.13	99.2	81.2-118	

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Method Blank (MB)

(MB) R3654769-1 05/15/21 02:06

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Phosphorus,Total	U		0.0350	0.100

L1348916-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1348916-05 05/15/21 02:13 • (DUP) R3654769-3 05/15/21 02:14

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

L1350114-14 Original Sample (OS) • Duplicate (DUP)

(OS) L1350114-14 05/15/21 02:42 • (DUP) R3654769-6 05/15/21 02:43

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Phosphorus,Total	ND	0.152	1	43.4	P1	20

Laboratory Control Sample (LCS)

(LCS) R3654769-2 05/15/21 02:08

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Phosphorus,Total	3.16	3.04	96.4	81.2-118	

L1349027-07 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1349027-07 05/15/21 02:38 • (MS) R3654769-4 05/15/21 02:40 • (MSD) R3654769-5 05/15/21 02:41

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	2.36	2.50	94.4	100	1	90.0-110			5.76	20

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QUALITY CONTROL SUMMARY

L1348916-01,02,03,04,05,06,07,08,09,10,11

Method Blank (MB)

(MB) R3651444-1 05/07/21 07:00

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Phosphate,Ortho	U		0.0140	0.0300

L1348916-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1348916-01 05/07/21 07:00 • (DUP) R3651444-3 05/07/21 07:00

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

L1348916-11 Original Sample (OS) • Duplicate (DUP)

(OS) L1348916-11 05/07/21 07:04 • (DUP) R3651444-6 05/07/21 07:04

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) R3651444-2 05/07/21 07:00

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Phosphate,Ortho	0.245	0.258	106	85.0-115	

L1348916-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1348916-02 05/07/21 07:00 • (MS) R3651444-4 05/07/21 07:01 • (MSD) R3651444-5 05/07/21 07:01

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 %
Phosphate,Ortho	0.500	ND	0.473	0.505	91.4	97.8	1	80.0-120			6.54	20

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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
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.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.

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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.

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S&ME - Huntsville

360 D Quality Circle NW
Suite 450
Huntsville, AL 35806

Billing Information:
Accounts Payable
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Report to: Ms. ~~Deborah Jones~~ Sarah Yeldell

Email To: djones@smeinc.com

Project Description: ~~High Point Chert Pit~~ Gadsden MSW

City/State Collected: Gadsden

Please Circle: PT MT CT ET

Phone: 256-837-8882

Client Project # ~~4482-17-038~~ 4482-20-044

Lab Project # QOREHAL-~~448217038~~ 448220044

Collected by (print): Grant Williams

Site/Facility ID #

P.O. #

Collected by (signature): Grant Williams

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	TSS 1L-HDPE NoPres	PT/TKN/NO2NO3 500ml HDPE H2SO4	PORTHO 100 ml amb No Pres	L2								Remarks	Sample # (lab only)
HB3	Grab	WW	5ft	5/5/21	11:00	3	X	X	X										-01
SME11				5/5/21	11:05	3	X	X	X										-02
SME4					11:15	3	X	X	X										-03
GD5					11:30	3	X	X	X										-04
GD7					11:45	3	X	X	X										-05
GD9					12:00	3	X	X	X										-06
SME1					12:10	3	X	X	X										-07
SS5					1:05	3	X	X	X										-08
SME5					1:20	3	X	X	X										-09
SMEC					1:35	3	X	X	X										-10

Chain of Custody Page ___ of ___

Pace Analytical® National Center for Testing & Innovation

L1348916

12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

SDG # D211

Tabl

Acctnum: QOREHAL
Template: T128166
Prelogin: P770306
PM: 034 - Craig Cothron
PB: CB 4/28/2020
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 # 5016 1216 7253 / 7264

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)
Grant Williams	5/5/21	3:04	
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: 1.6+0.2=1.6 °C Bottles Received: 33

Date: 5/6/21 Time: 9:30

If preservation required by Login: Date/Time

Hold:

Condition: NCF / OK

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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. ~~Deborah Jones~~ Sarah Yeldell

Email To: djones@smeinc.com

Project Description: **High Point Chert Pit**

City/State Collected:

Please Circle: PT MT CT ET

Phone: **256-837-8882**
Fax: **256-837-6931**

Client Project # **4482-~~17-038~~ 20-044**

Lab Project # **QOREHAL-4482~~17038~~ 20044**

Site/Facility ID #

P.O. #

Collected by (print): Grant Williams

Collected by (signature): Grant Williams

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

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	TSS 1L-HDPE NoPres	PT/TKN/NO2NO3 500 mL HDPE H2SO4	PORTHO 100ml Amb No Pres								Remarks	Sample # (lab only)
RC 14	Grab	WW	SFC	5/5/21	1:45	3	X	X	X									-11

Analysis / Container / Preservative

Chain of Custody Page ___ of ___

Pace Analytical® National Center for Testing & Innovation

12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

SDG # L1348916

Table #

Acctnum: **QOREHAL**

Template: **T128166**

Prelogin: **P737643**

PM: **034 - Craig Cothron**

PB: LC 10/29

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

	Date:	Time:		
Relinquished by : (Signature) Grant Williams	5/5/21	3:04	Received by: (Signature)	Trip Blank Received: Yes / No HCL / MeoH TBR
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: 1.6 +0.1.6 °C Bottles Received: 5
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 5/6/21 Time: 9:30

If preservation required by Login: Date/Time

Hold: Condition: NCF / OK

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Monitoring Report Third Quarter 2021
Gadsden Alabama Urbanized Area
Phase II Small MS4
NPDES General Permit ALR040000
Gadsden, Etowah County, Alabama
S&ME Project No. 4482-20-044

PREPARED FOR:

Gadsden-Etowah MS4 Steering Committee

PREPARED BY:

S&ME, Inc.
360D Quality Circle NW, Ste 450
Huntsville, AL 35806

May 11, 2022

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Laboratory Report No. L1398813, dated September 3, 2021

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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. 44-2000256, dated September 18, 2020. Authorization date and responsible official for each entity are provided in Table 1.1.

Table 1-1 Responsible Official and Authorization Dates

Entity	Name	Date
City of Attalla	Larry Means, Mayor	October 20, 2020
City of Gadsden	Sherman Guyton, Mayor	October 22, 2020
City of Glencoe	Chris Hare, Mayor	October 19, 2020
City of Hokes Bluff	Scott Reeves, Mayor	November 10, 2020
City of Rainbow City	Joe Taylor, Mayor	October 20, 2020
City of Southside	Dana Snyder, Mayor	October 26, 2020
Etowah County	Tim Graves, Engineer	April 6, 2020

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 1-2: 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

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Entity	ADEM Permit Number
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 January 1, 2017, 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 August 30 – 31, 2021, 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**.

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Table 2-1 Quarterly Rainfall Data

Gauge Name	Location	Lat.	Long.	Precip 8/30/21	Precip 8/31/21
KGAD	Gadsden Municipal Airport	33.973°	-86.088°	0.40 in.	1.92 in.
KALHOKES2	Hokes Bluff Hokes Bluff, AL	33.993°	-85.806°	0.36 in.	1.31 in.
KALGADSD3	Noccalula Falls Gadsden, AL	34.056°	-85.994°	0.45 in.	1.42 in.
KALRAINB19	Rainbow City, AL	33.942°	-86.030°	0.25 in.	1.43 in.

3.0 Monitoring Event

On September 2, 2021, S&ME personnel mobilized to conduct storm water monitoring at the land and boat access monitoring points for the third quarter of 2021.

Land and boat access monitoring was successfully sampled on September 2, 2021. The quarterly monitoring events are carried out in accordance with Section 2 of the Gadsden-Etowah MS4 Storm Water Management Program (SWMPP), dated January 1, 2017.

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
SME 2	34.002461°	-86.001571°	LAND	U.T. to Coosa River
GD 6	34.015350°	-85.995617°	LAND	Town Creek
CO 15	33.972280°	-85.965354°	LAND	U.T. to Neely Henry Lake

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Outfall ID	Latitude	Longitude	Access	Waterbody Evaluated
SME 7	34.006225°	-86.111277°	LAND	Big Wills Creek
SME 8	34.004730°	-85.873852°	LAND	U.T. to Coosa River
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 CO14, SME 3, and GD3 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.

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:

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- Turbidity
- pH
- Dissolved Oxygen (DO)
- Temperature

Field parameters were measured using a combination of the following instruments:

- YSI Pro DSS Multi-Probe Meter

The YSI Pro DSS Multi-Probe Meter used by the land sampling crew had a faulty readings for turbidity and pH therefore the readings were not included on **Table B.1** and **Table B.2** in **Appendix II**. The recorded field parameters for DO and temperature are included on **Table** B.1 and **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	HDPE - 250 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 9. One duplicate sample of monitoring

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point SME 7 was collected by the land team during the sampling event and labeled as SME 10. One duplicate sample of monitoring point HB 3 was collected by the boat team during the sampling event and labeled as SME 11. Due to an oversight the duplicate sample for monitoring point HB3 was not collected by the boat team for the 3rd quarter of monitoring.

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 September 2, 2021, 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. S&ME recommends monitoring reports 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.

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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.

Grant Williams, E.I
Associate Project Manager

Deborah J. Jones, P.E.
Senior Engineer

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Appendices

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Appendix I

Figure 1 – Gadsden, Alabama Urbanized Area

Figure 2 – MS4 Monitoring Locations Map

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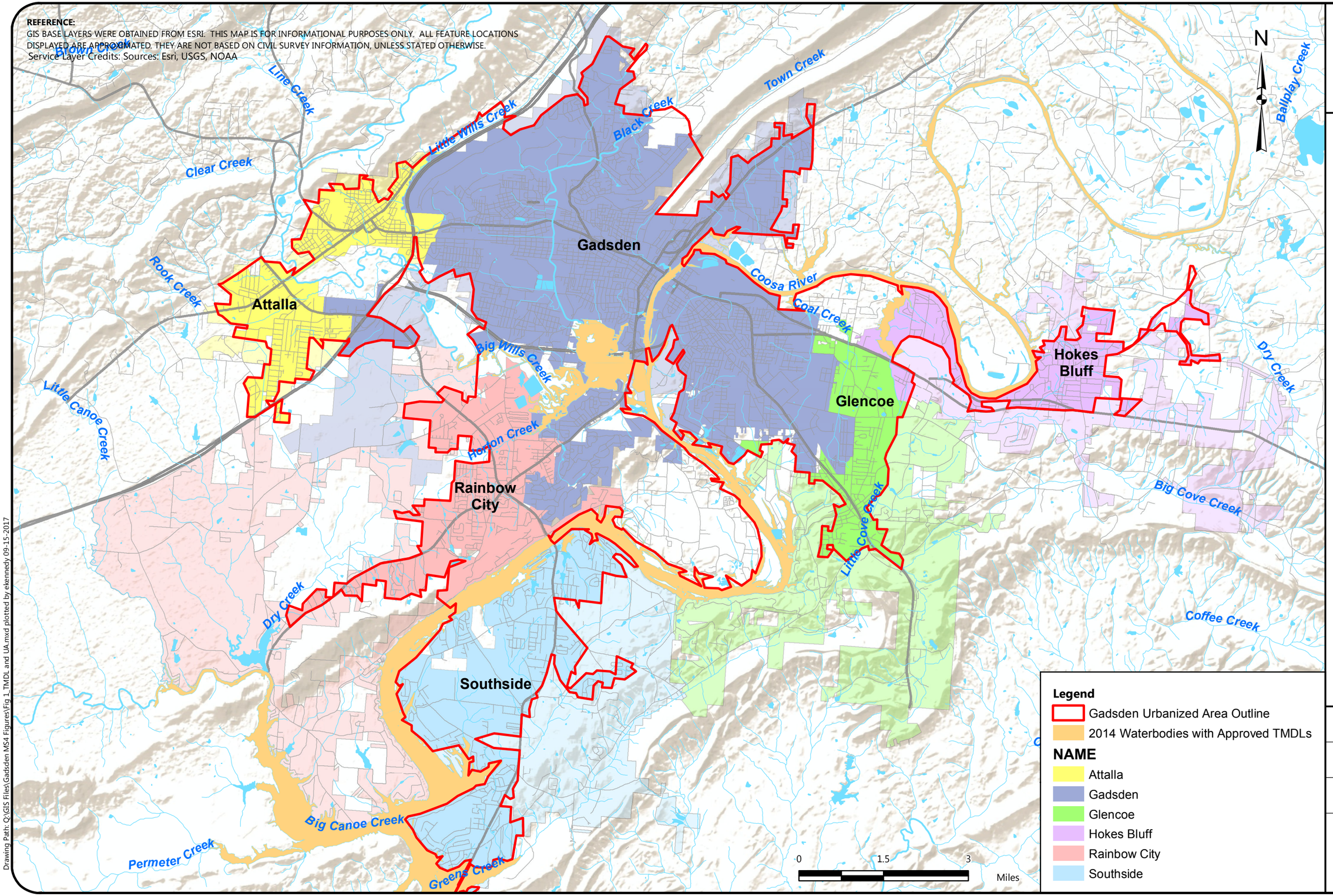
REFERENCE:
GIS BASE LAYERS WERE OBTAINED FROM ESRI. THIS MAP IS FOR INFORMATIONAL PURPOSES ONLY. ALL FEATURE LOCATIONS DISPLAYED ARE APPROXIMATED. THEY ARE NOT BASED ON CIVIL SURVEY INFORMATION, UNLESS STATED OTHERWISE.
Service Layer Credits: Sources: Esri, USGS, NOAA



Drawing Path: Q:\GIS Files\Gadsden MS4 Figures\Fig 1_TMDL and UA.mxd plotted by ekennedy 09-15-2017

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

ADEM Watermark

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

N

Brown Creek
Line Creek
Clear Creek
Little Wills Creek
Black Creek
Town Creek
Ballplay Creek
Rook Creek
Dry Creek
Coosa River
Coal Creek
Big Wills Creek
Little Canoe Creek
Horton Creek
Big Cove Creek
Little Cove Creek
Coffee Creek
Greens Creek
Ohatchee
Big Canoe Creek
Permeter Creek

Gadsden
Attalla
Rainbow City
Glencoe
Hokes Bluff
Southside

KALGADSD3
KALGADSD7
KALHOKES2
KALRAINB7

SME 7
AT 5
GD 6
GD 7
SME 2
GD 8
SME 3
GD 5
HB 3
SME 8
SME 4
SME 1
GD 9
CO 15
RC 2
GD 12
SME 5
SS 5
RC 14
SS 13
SS 14
SME 6

0 1.5 3 Miles

Legend

MS4 Monitoring Locations
- MS4 Monitoring Locations
- Rain Gauges
- Gadsden Urbanized Area Outline

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

MS4 MONITORING LOCATIONS

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

SCALE: 1:100,000
DATE: 05-13-21
PROJECT NUMBER 4482-20-044
FIGURE NO. 2

Drawing Path: R:\CADData\Huntsville\GIS Files\Gadsden MS4 Figures\Fig 2_Monitoring Locations.mxd plotted by ekennedy 05-13-2021

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Appendix II

Table B.1 – Field Observations

Table B.2 – Analytical Data

Tables B.3 to B.26 – Historical Analytical Data

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TABLE B.1 - FIELD OBSERVATIONS

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

	Outfall ID	Temperature (°C)	Depth of Sample Collection (Ft)	Weather Conditions	Waterbody conditions	Date	Time	Sampler
LAND	AT 5	23.4	-3	Sunny	Fast / Rough	9/2/2021	12:50	L. Bavis & N. Wade
	GD 8	24.5	-3	Sunny	Slow / Smooth	9/2/2021	12:35	L. Bavis & N. Wade
	RC 2	25.0	-3	Sunny	Slow / Smooth	9/2/2021	12:25	L. Bavis & N. Wade
	SS 13	28.7	-3	Sunny	Slow / Smooth	9/2/2021	11:50	L. Bavis & N. Wade
	SS 14	26.3	-3	Sunny	Slow / Smooth	9/2/2021	12:00	L. Bavis & N. Wade
	GD 12	24.4	-3	Sunny	Slow / Smooth	9/2/2021	12:15	L. Bavis & N. Wade
	SME 2	27.5	-3	Sunny	Slow / Smooth	9/2/2021	11:00	L. Bavis & N. Wade
	GD 6	27.1	-3	Sunny	Slow / Smooth	9/2/2021	10:50	L. Bavis & N. Wade
	CO 15	24.3	-3	Sunny	Slow / Smooth	9/2/2021	9:50	L. Bavis & N. Wade
	SME 7	25.9	-3	Sunny	Slow / Smooth	9/2/2021	10:30	L. Bavis & N. Wade
	SME 8	22.6	-3	Sunny	Fast / Rough	9/2/2021	9:20	L. Bavis & N. Wade
BOAT	HB 3	27.4	-5	Sunny	Smooth	9/2/2021	10:45	G. Williams
	SME 4	27.4	-5	Sunny	Smooth	9/2/2021	10:55	G. Williams
	GD 5	26.5	-5	Sunny	Smooth	9/2/2021	11:05	G. Williams
	SME 3	26.3	-5	Sunny	Smooth	9/2/2021	11:20	G. Williams
	GD 7	27.6	-5	Sunny	Smooth	9/2/2021	11:40	G. Williams
	GD 9	27.9	-5	Sunny	Smooth	9/2/2021	12:00	G. Williams
	SME 1	25.8	-5	Sunny	Smooth	9/2/2021	12:18	G. Williams
	SS 5	28.6	-5	Sunny	Smooth	9/2/2021	13:10	G. Williams
	SME 5	28.2	-5	Sunny	Smooth	9/2/2021	13:05	G. Williams
	SME 6	27.7	-5	Sunny	Smooth	9/2/2021	13:30	G. Williams
	RC 14	25.7	-5	Sunny	Smooth	9/2/2021	13:50	G. Williams

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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	9/2/2021	*	*	7.75	23.4	0.482	0.131	0.262	0.969	67.4
GD 8	9/2/2021	*	*	8.04	24.5	0.241	<0.0300	<0.100	0.611	18.3
RC 2	9/2/2021	*	*	6.52	25.0	0.122	<0.0300	<0.100	0.802	3.4
SS 13	9/2/2021	*	*	8.50	**28.7**	0.189	<0.0300	0.108	1.33	13.4
SS 14	9/2/2021	*	*	7.80	26.3	**0.552**	0.0980	0.128	0.935	3.0
GD 12	9/2/2021	*	*	7.34	24.4	0.245	<0.0300	<0.100	0.779	3.5
CO 14	Removed monitoring point from Stormwater Monitoring Program in September 2020									
SME 2	9/2/2021	*	*	6.31	27.5	0.134	<0.0300	<0.100	0.562	11.8
GD 6	9/2/2021	*	*	6.24	27.1	0.139	<0.0300	0.305	**3.44**	25.4
CO 15	9/2/2021	*	*	7.81	24.3	<0.100	<0.0300	<0.100	0.926	13.8
SME 7	9/2/2021	*	*	7.87	25.9	0.150	<0.0300	<0.100	0.269	39.2
SME 8	9/2/2021	*	*	7.91	22.6	0.491	0.179	0.275	2.49	77.6
SME 9	9/2/2021	DUPLICATE OF AT 5				0.482	0.168	0.191	0.800	64.0
SME 10	9/2/2021	DUPLICATE OF SME 8				0.487	0.174	0.234	1.73	65.2
HB 3	9/2/2021	19.21	7.61	5.30	27.4	<0.100	<0.0300	<0.100	0.689	23.6
SME 4	9/2/2021	DUPLICATE OF HB 3				<0.100	<0.0300	<0.100	0.609	28.4
GD 5	9/2/2021	10.28	7.84	6.90	26.5	<0.100	<0.0300	<0.100	0.510	16.1
GD 7	9/2/2021	13.57	7.75	6.38	27.6	0.107	<0.0300	0.122	0.324	34.4
GD 9	9/2/2021	13.46	7.73	6.29	27.9	<0.100	<0.0300	<0.100	0.311	25.8
SME 1	9/2/2021	23.89	7.80	6.93	25.8	0.458	**0.190**	0.218	0.353	35.8
GD 3	Removed monitoring point from Stormwater Monitoring Program in September 2020									
SME 3	9/2/2021	**102.33**	7.75	5.64	26.3	<0.100	0.057	0.234	1.24	**267**
SS 5	9/2/2021	9.62	8.00	**8.54**	28.6	<0.100	<0.0300	<0.100	0.431	14.4
SME 5	9/2/2021	15.15	8.02	6.42	28.2	0.128	<0.0300	<0.100	0.325	31.8
SME 6	9/2/2021	13.32	**8.19**	6.72	27.7	0.131	<0.0300	**0.430**	0.353	19.0
RC 14	9/2/2021	16.75	7.87	7.11	25.7	0.210	0.040	<0.100	0.350	23.2

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

ADEM Watermark

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

ADEM Watermark

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

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - meter malfunctioned in field

ADEM Watermark

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

ADEM Watermark

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

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - meter malfunctioned in field

ADEM Watermark

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

ADEM Watermark

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

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - meter malfunctioned in field

ADEM Watermark

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

ADEM Watermark

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

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - meter malfunctioned in field

ADEM Watermark

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

ADEM Watermark

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

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - meter malfunctioned in field

ADEM Watermark

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

ADEM Watermark

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

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - meter malfunctioned in field

ADEM Watermark

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

ADEM Watermark

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

ADEM Watermark

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

ADEM Watermark

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

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - meter malfunctioned in field

ADEM Watermark

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

ADEM Watermark

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

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - meter malfunctioned in field

ADEM Watermark

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

ADEM Watermark

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

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

*** - outfall was dry

* - meter malfunctioned in field

ADEM Watermark

TABLE B.14 - 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	0.30	7.72	11.22	9.10	0.312	<0.030	<0.100	<0.25	25.9
SME 7	3/18/2021	48.8	8.17	9.47	18.0	0.183	<0.030	<0.100	0.460	17.7
SME 7	5/5/2021	3.3	7.11	9.39	18.5	0.597	<0.030	0.118	0.366	60.3
SME 7	9/2/2021	*	*	7.87	25.9	0.150	<0.030	<0.100	0.269	39.2

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - meter malfunctioned in field

ADEM Watermark

TABLE B.13 - 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	16.76	8.10	11.01	11.5	0.884	0.094	<0.100	0.541	19.4
SME 8	3/18/2021	111.0	8.93	10.25	18.3	0.429	0.093	0.270	0.407	78.2
SME 8	5/5/2021	8.2	6.06	8.01	18.4	1.09	0.112	0.244	1.24	36.4
SME 8	9/2/2021	*	*	7.91	22.6	0.491	0.179	0.275	2.49	77.6

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - meter malfunctioned in field

ADEM Watermark

TABLE B.23 - 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

ADEM Watermark

TABLE B.23 - 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

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

ADEM Watermark

TABLE B.20 - 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

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TABLE B.20 - 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

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

ADEM Watermark

TABLE B.19 - 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

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TABLE B.19 - 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

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

ADEM Watermark

TABLE B.18 - 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

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TABLE B.18 - 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

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

ADEM Watermark

TABLE B.17 - 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

ADEM Watermark

TABLE B.17 - 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

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

ADEM Watermark

TABLE B.21 - 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

ADEM Watermark

TABLE B.21 - 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

ADEM Watermark

TABLE B.22 - 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

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TABLE B.22 - 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

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

ADEM Watermark

TABLE B.16 - 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

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TABLE B.16 - 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

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

ADEM Watermark

TABLE B.25 - 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

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

ADEM Watermark

TABLE B.26 - 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

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

ADEM Watermark

TABLE B.15 - 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

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TABLE B.15 - 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

NTU - Nephelometric Turbidity Units

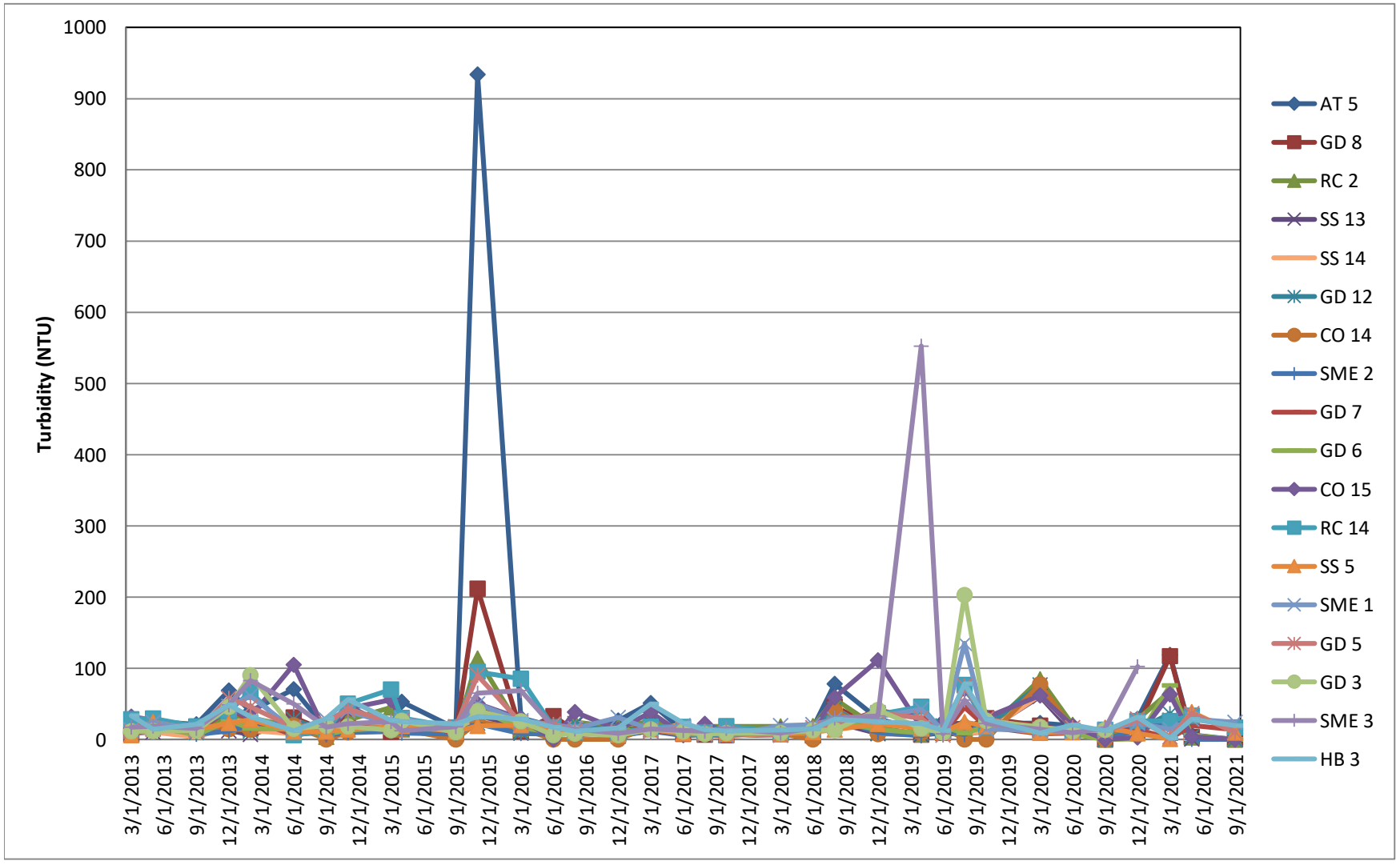
mg/L - milligrams per liter

NS - Not Sampled

ADEM Watermark

CHART 1 - TURBIDITY ANALYTICAL DATA

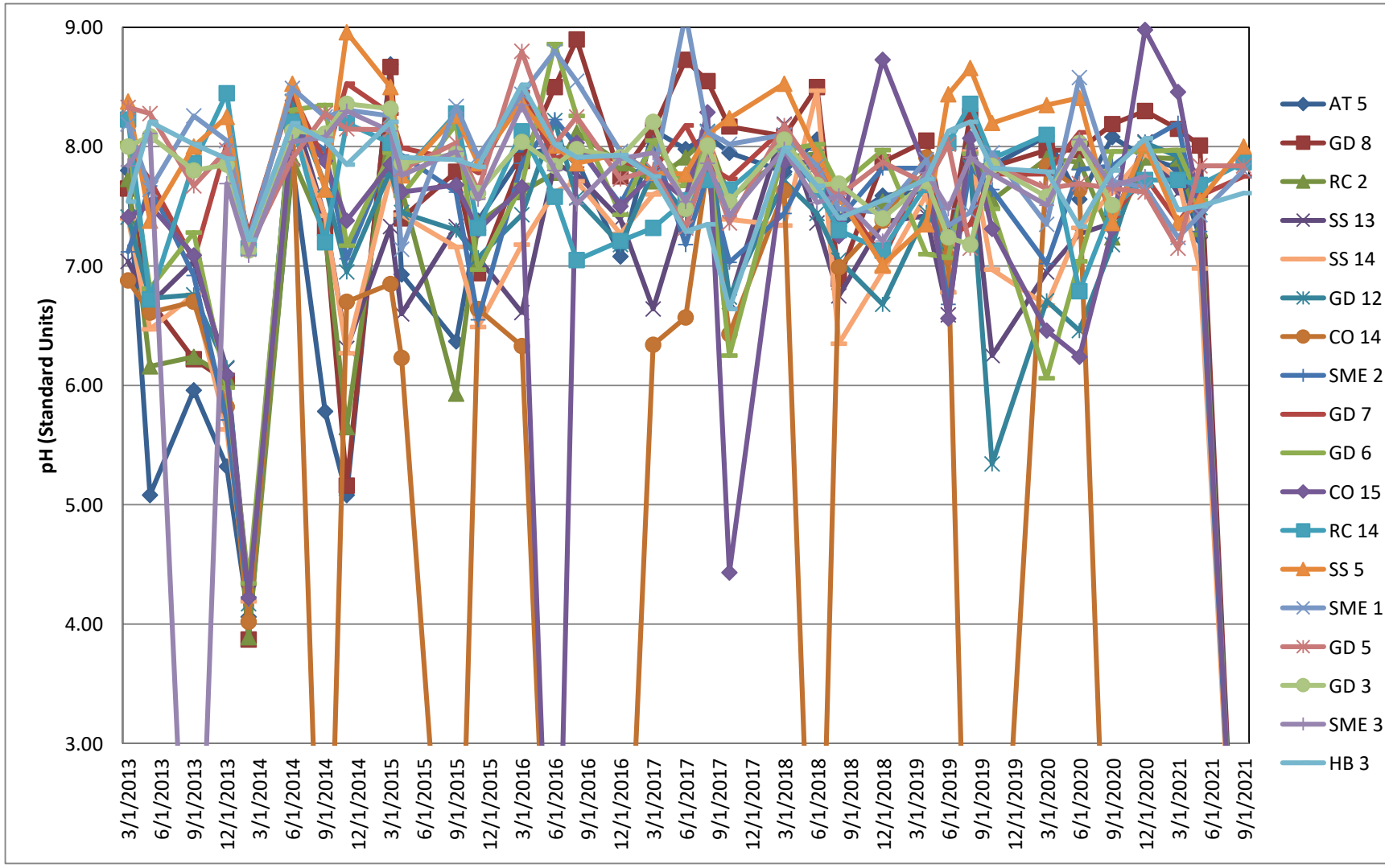
GADSDEN-ETOWAH MS4 MONITORING
NPDES PERMIT NO. ALR040009



ADEM Watermark

CHART 2 - pH ANALYTICAL DATA

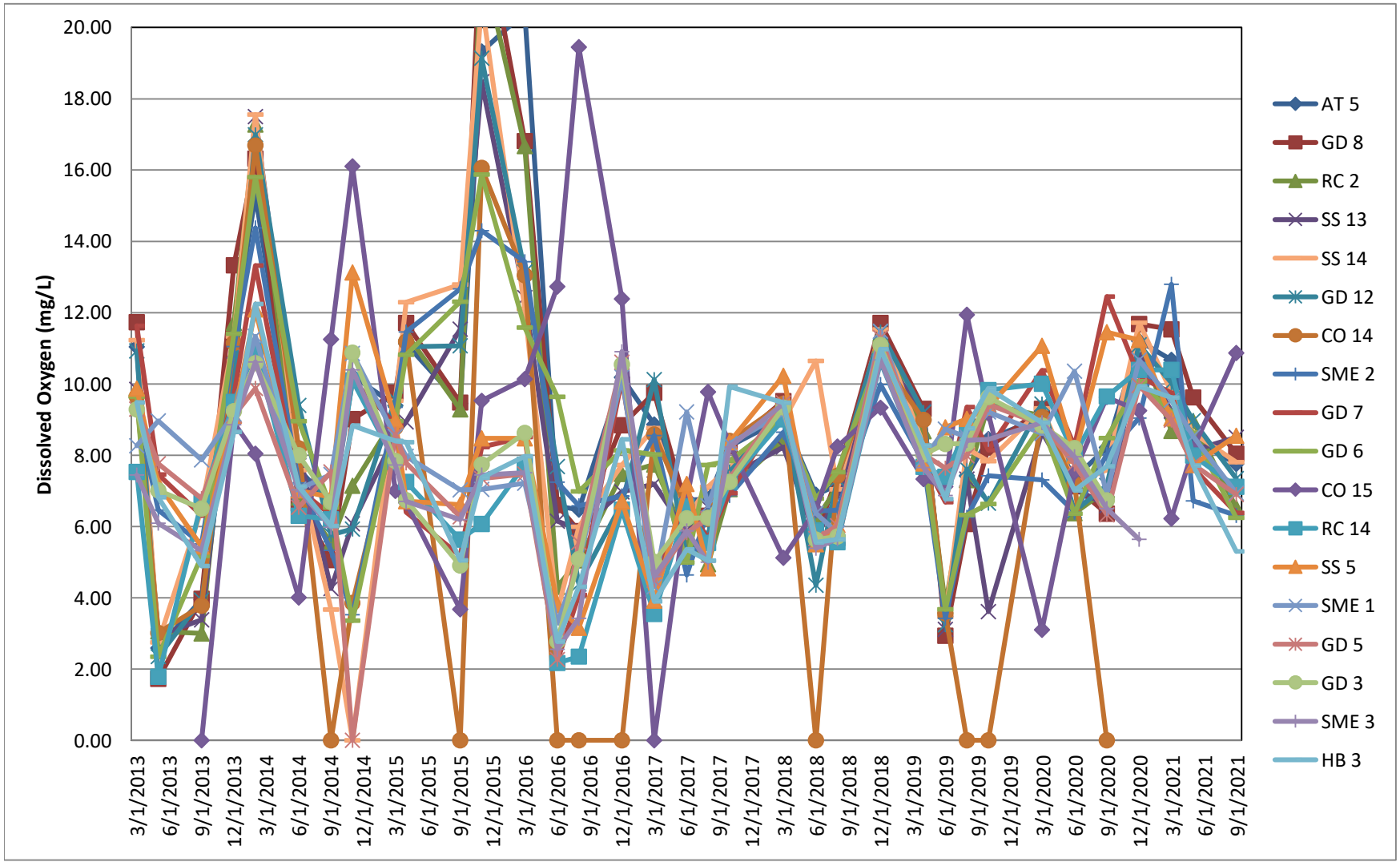
GADSDEN-ETOWAH MS4 MONITORING
NPDES PERMIT NO. ALR040009



ADEM Watermark

CHART 3 - DISSOLVED OXYGEN ANALYTICAL DATA

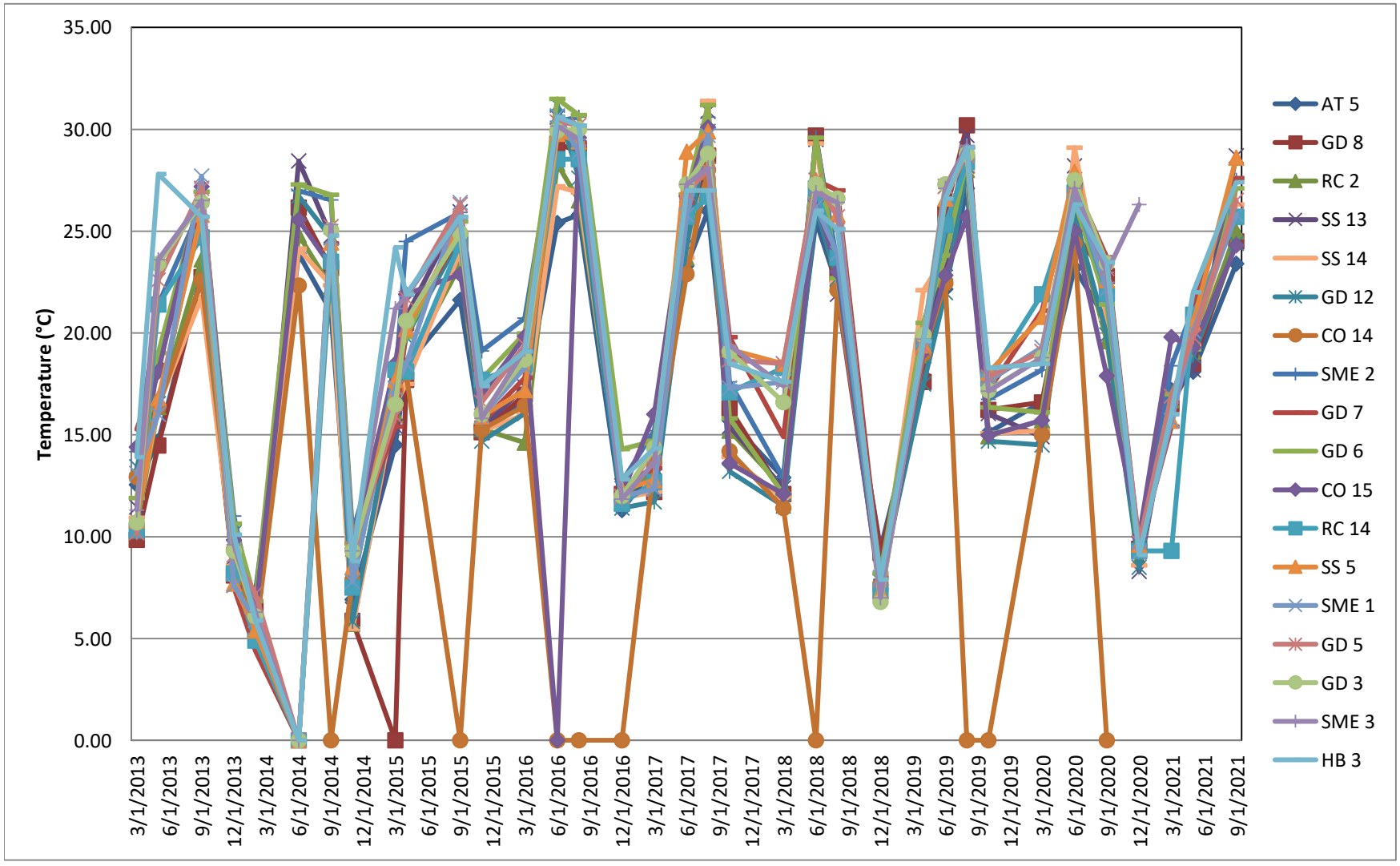
GADSDEN-ETOWAH MS4 MONITORING
NPDES PERMIT NO. ALR040009



ADEM Watermark

CHART 4 - TEMPERATURE ANALYTICAL DATA

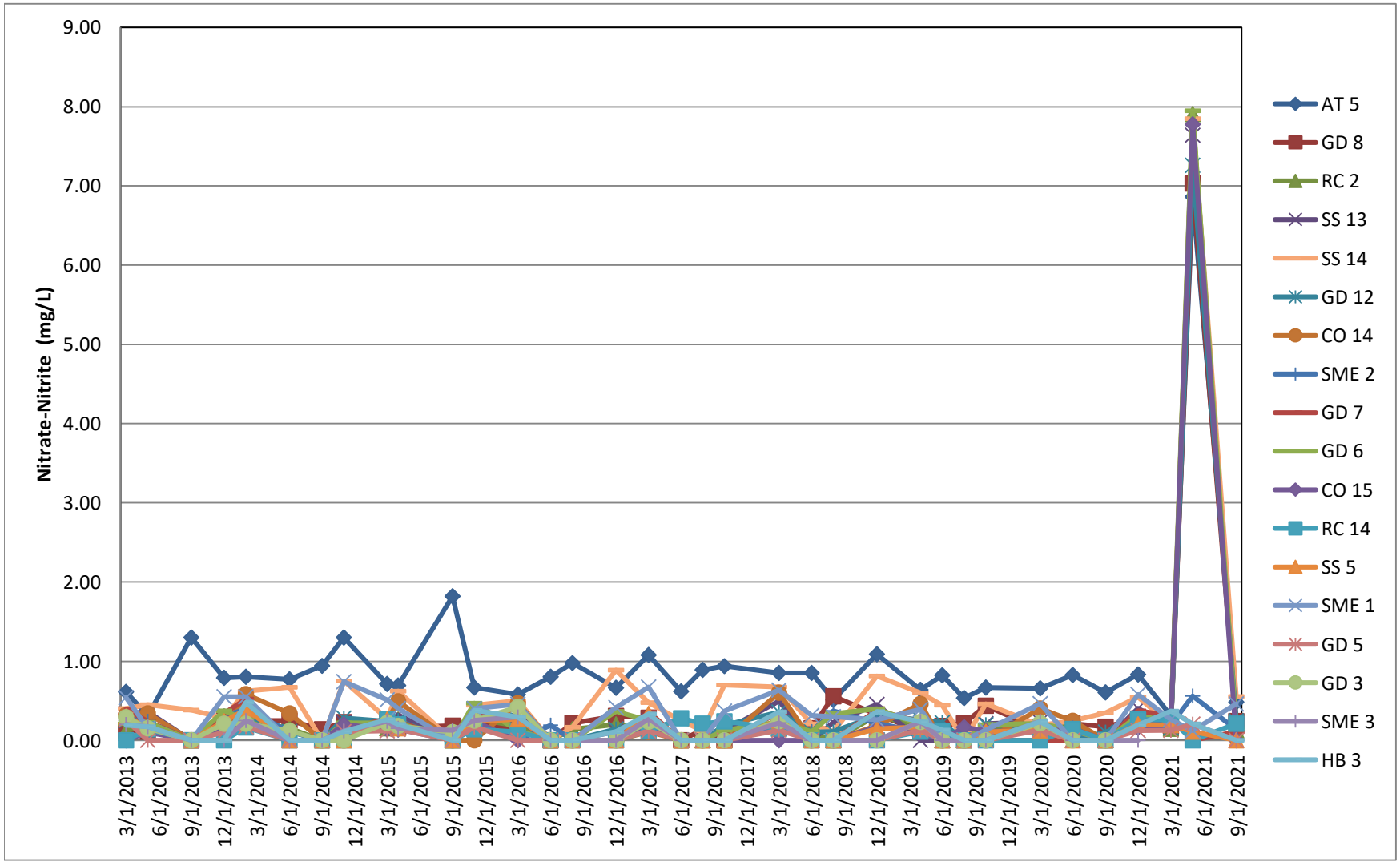
GADSDEN-ETOWAH MS4 MONITORING
NPDES PERMIT NO. ALR040009



ADEM Watermark

CHART 5 - NITRATE-NITRITE ANALYTICAL DATA

GADSDEN-ETOWAH MS4 MONITORING
NPDES PERMIT NO. ALR040009



ADEM Watermark

CHART 6 - ORTHOPHOSPHATE ANALYTICAL DATA

GADSDEN-ETOWAH MS4 MONITORING
NPDES PERMIT NO. ALR040009

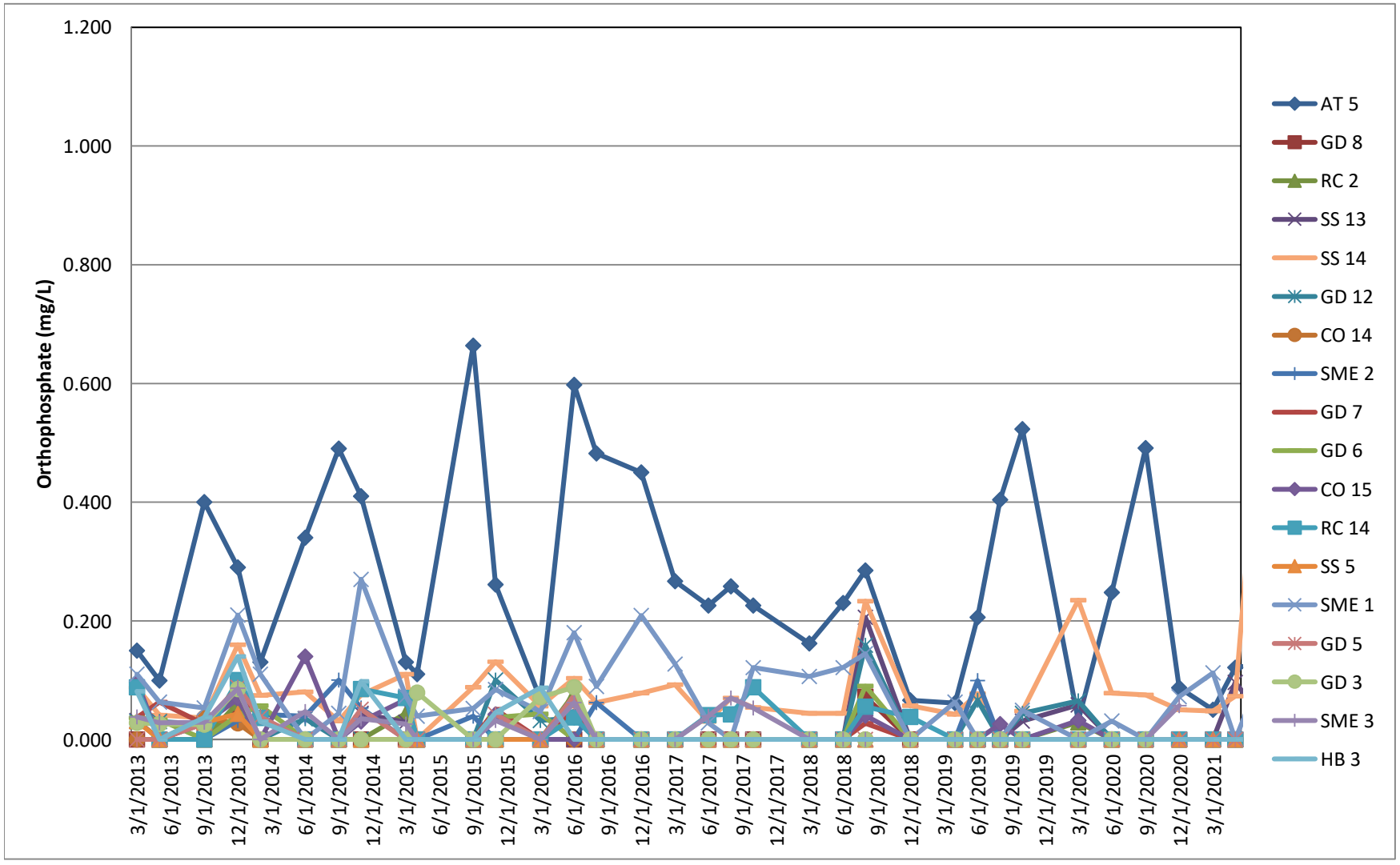


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CHART 7 - TOTAL PHOSPHOROUS ANALYTICAL DATA

GADSDEN-ETOWAH MS4 MONITORING
NPDES PERMIT NO. ALR040009

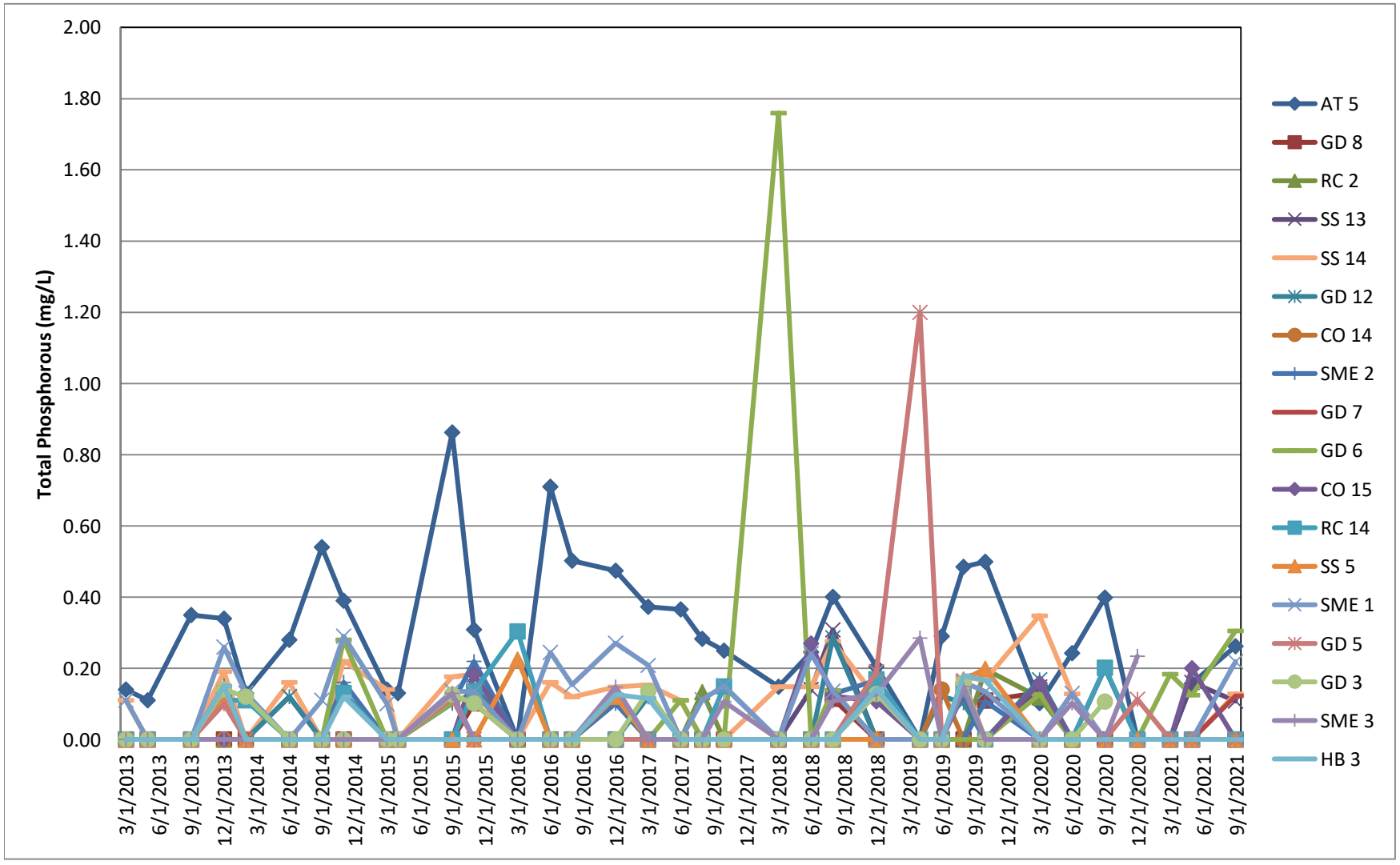

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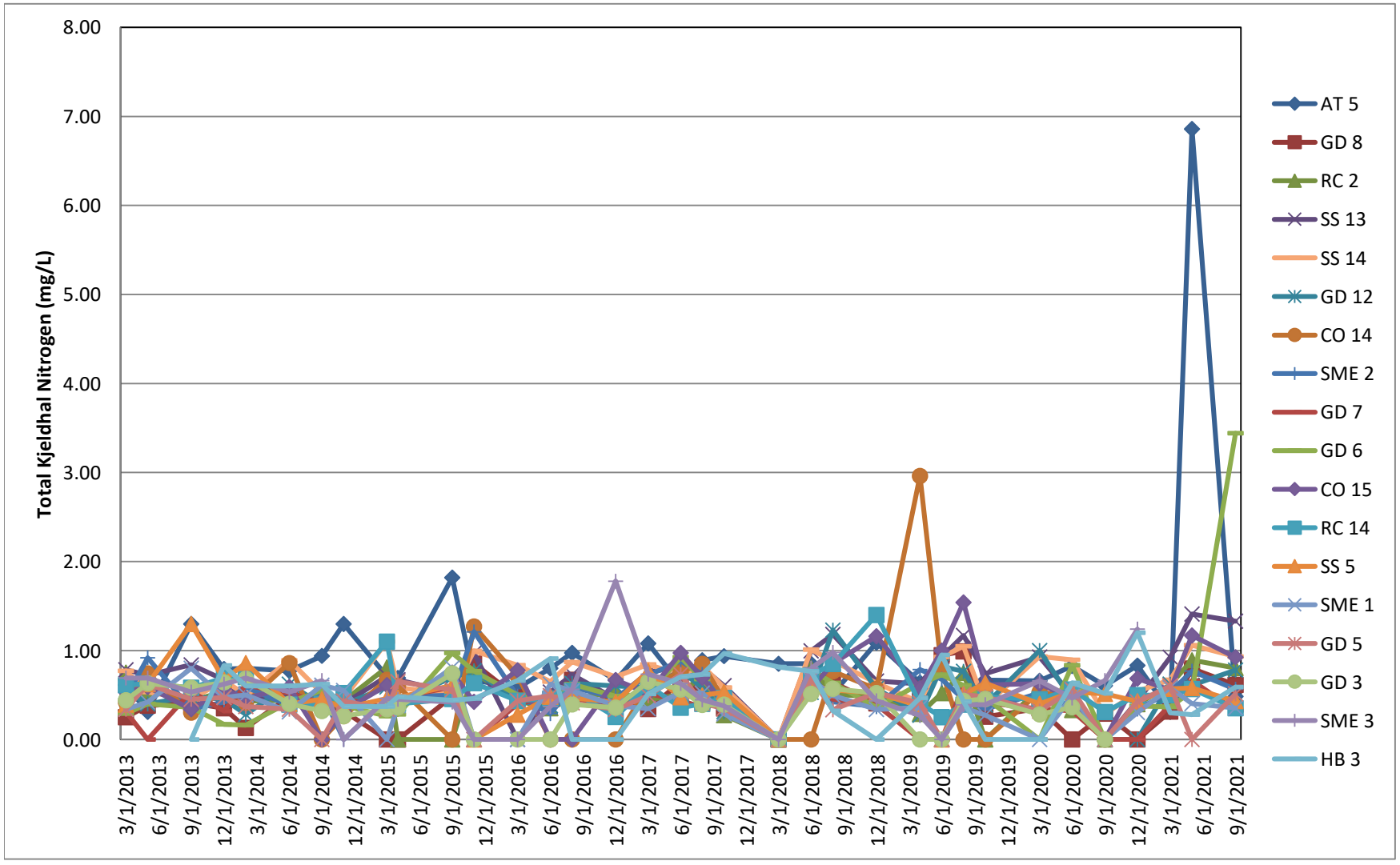
CHART 8 - TOTAL KJELDAHL NITROGEN ANALYTICAL DATA

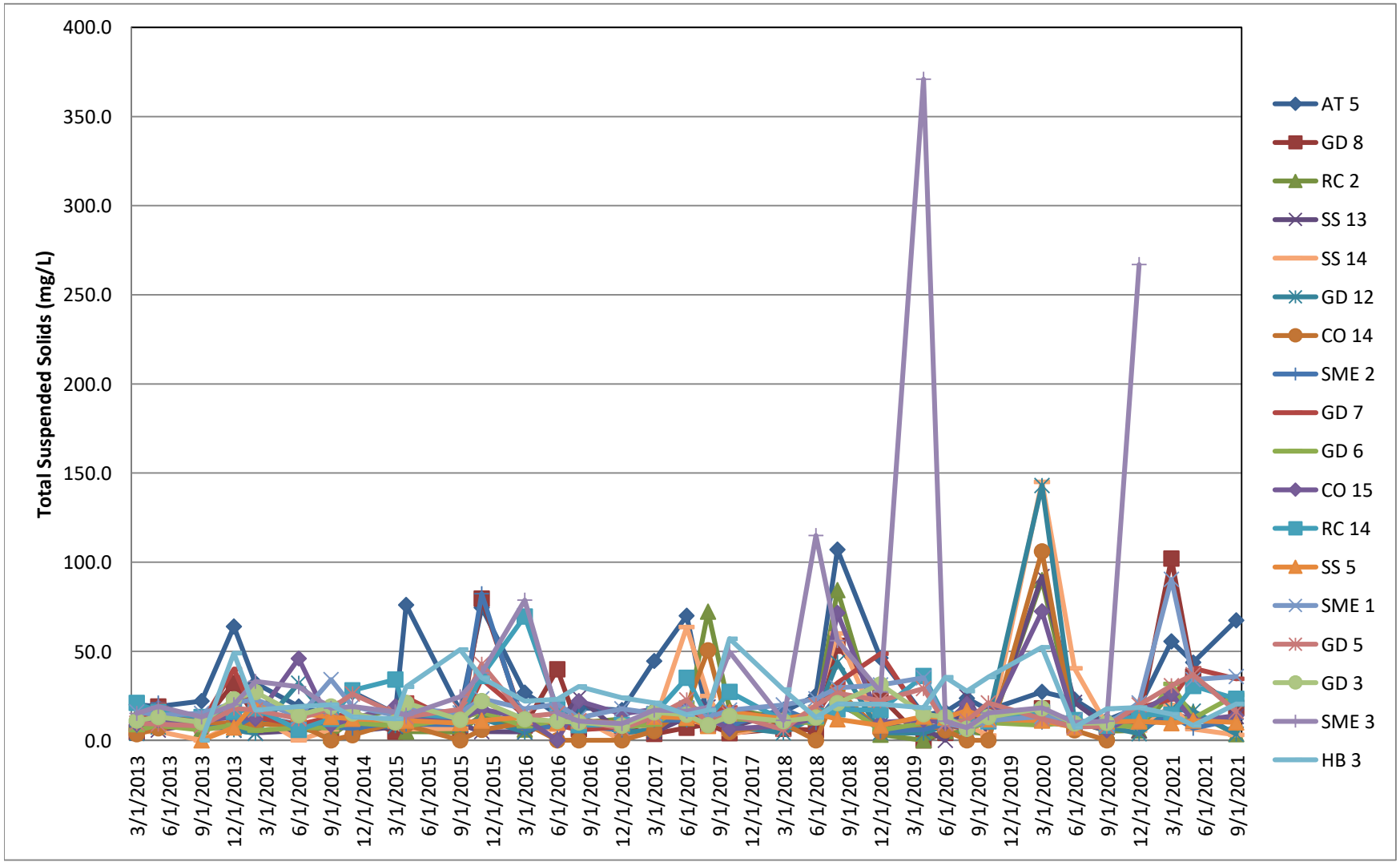
GADSDEN-ETOWAH MS4 MONITORING
NPDES PERMIT NO. ALR040009



ADEM Watermark

CHART 9 - TOTAL SUSPENDED SOLIDS ANALYTICAL DATA

GADSDEN-ETOWAH MS4 MONITORING
NPDES PERMIT NO. ALR040009



ADEM Watermark

CHART 7 - TOTAL PHOSPHOROUS ANALYTICAL DATA

GADSDEN-ETOWAH MS4 MONITORING
NPDES PERMIT NO. ALR040009

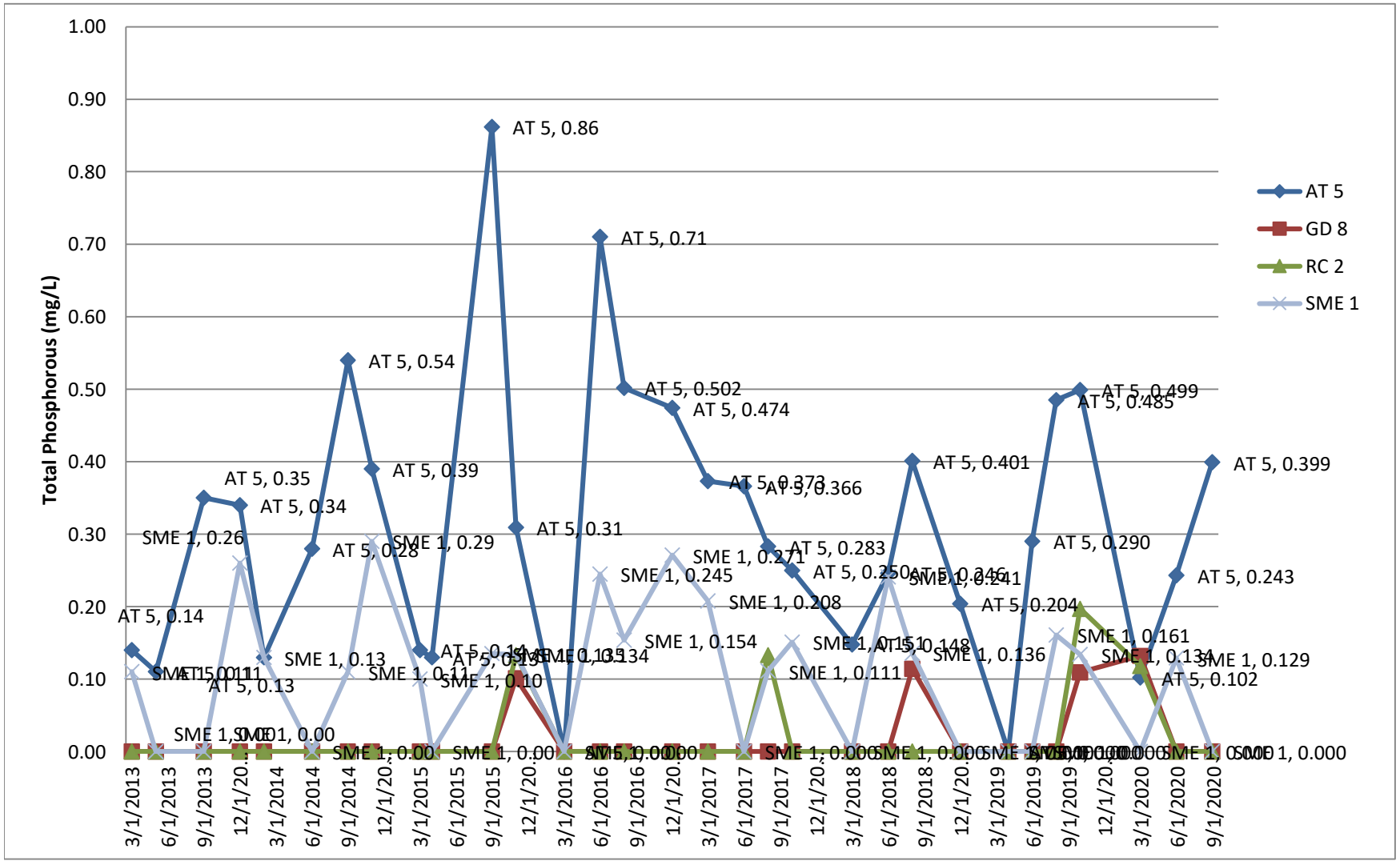


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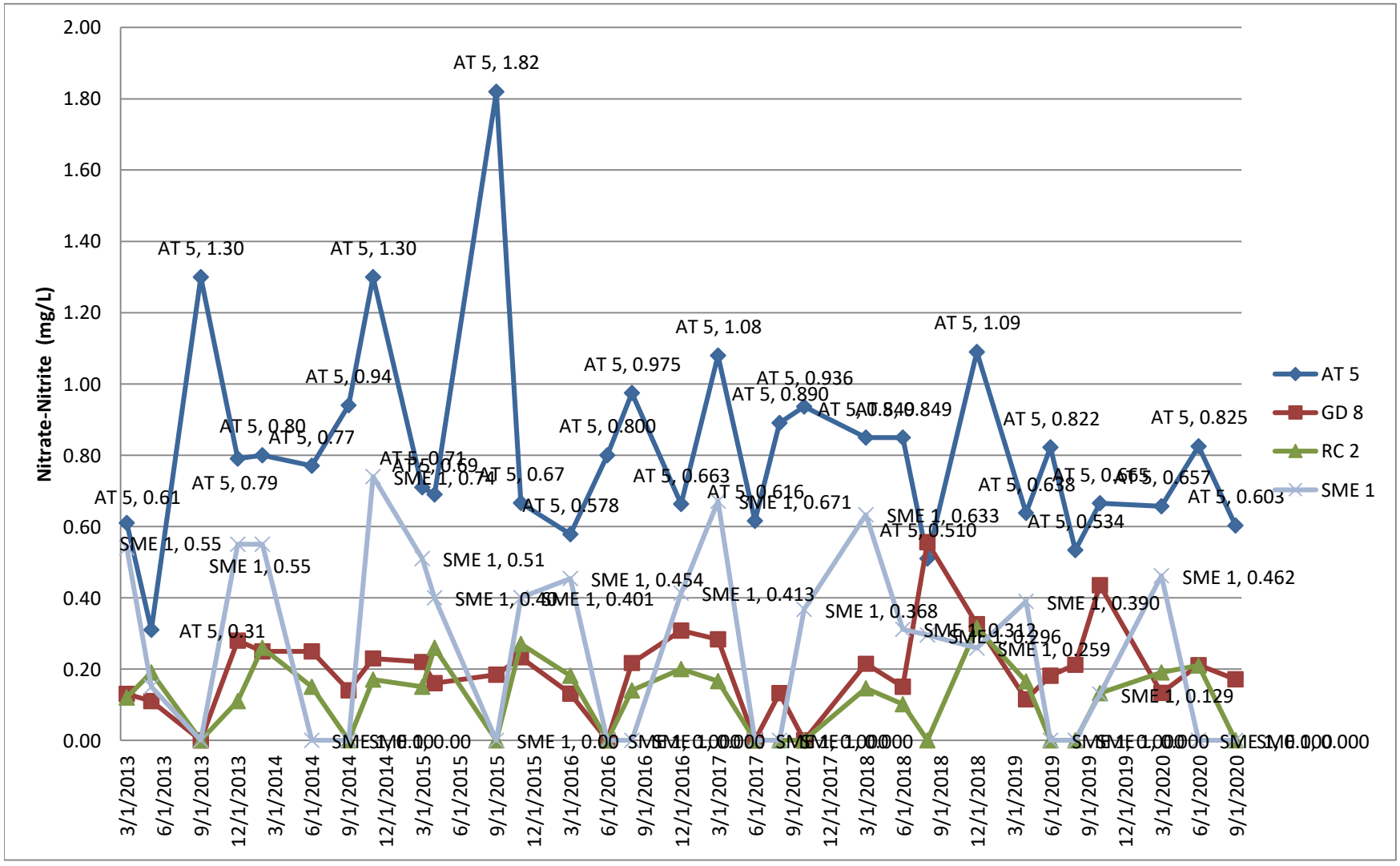
CHART 5 - NITRATE-NITRITE ANALYTICAL DATA

GADSDEN-ETOWAH MS4 MONITORING
NPDES PERMIT NO. ALR040009



ADEM Watermark

CHART 9 - TOTAL SUSPENDED SOLIDS ANALYTICAL DATA

GADSDEN-ETOWAH MS4 MONITORING
NPDES PERMIT NO. ALR040009

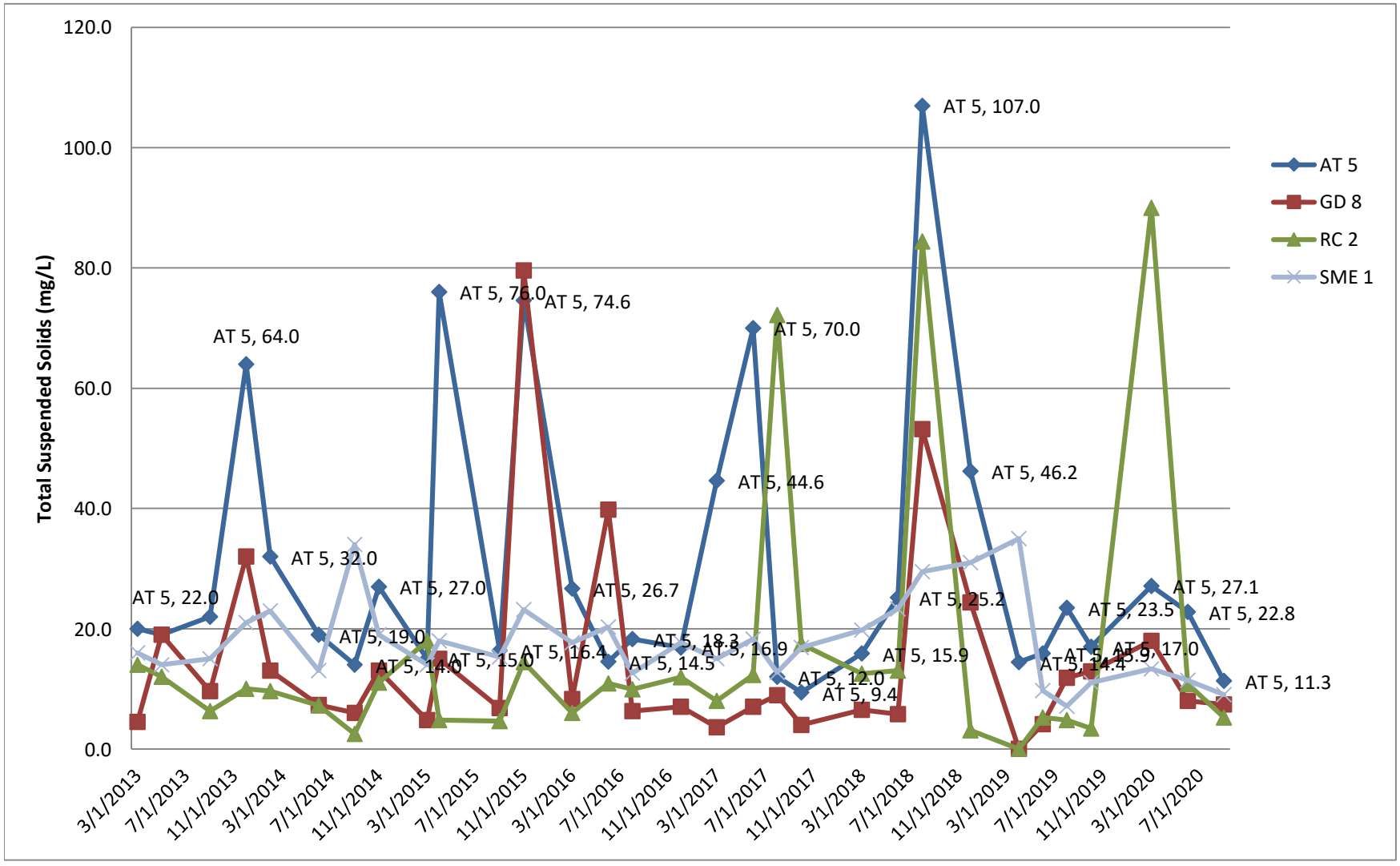


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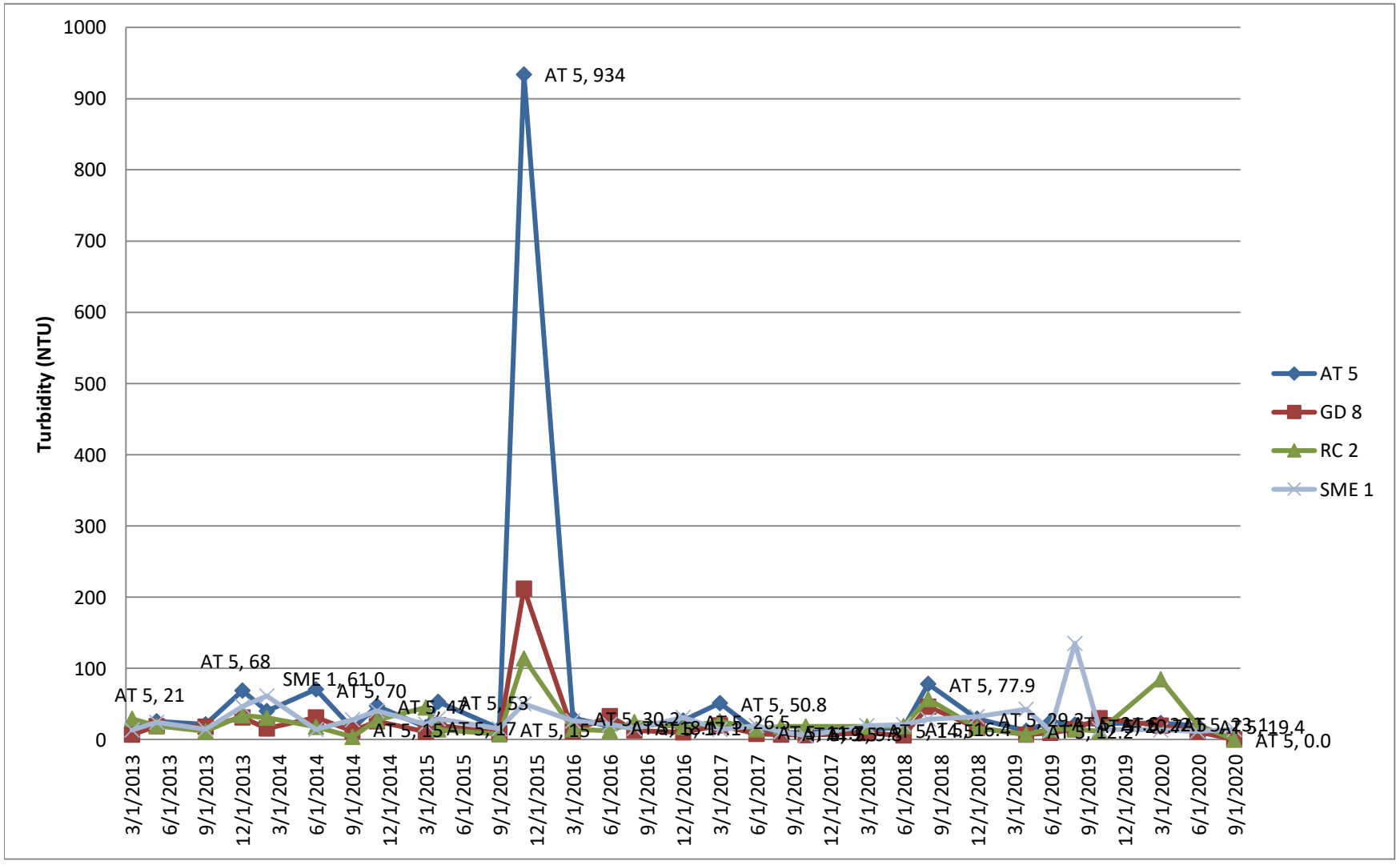
CHART 1 - TURBIDITY ANALYTICAL DATA

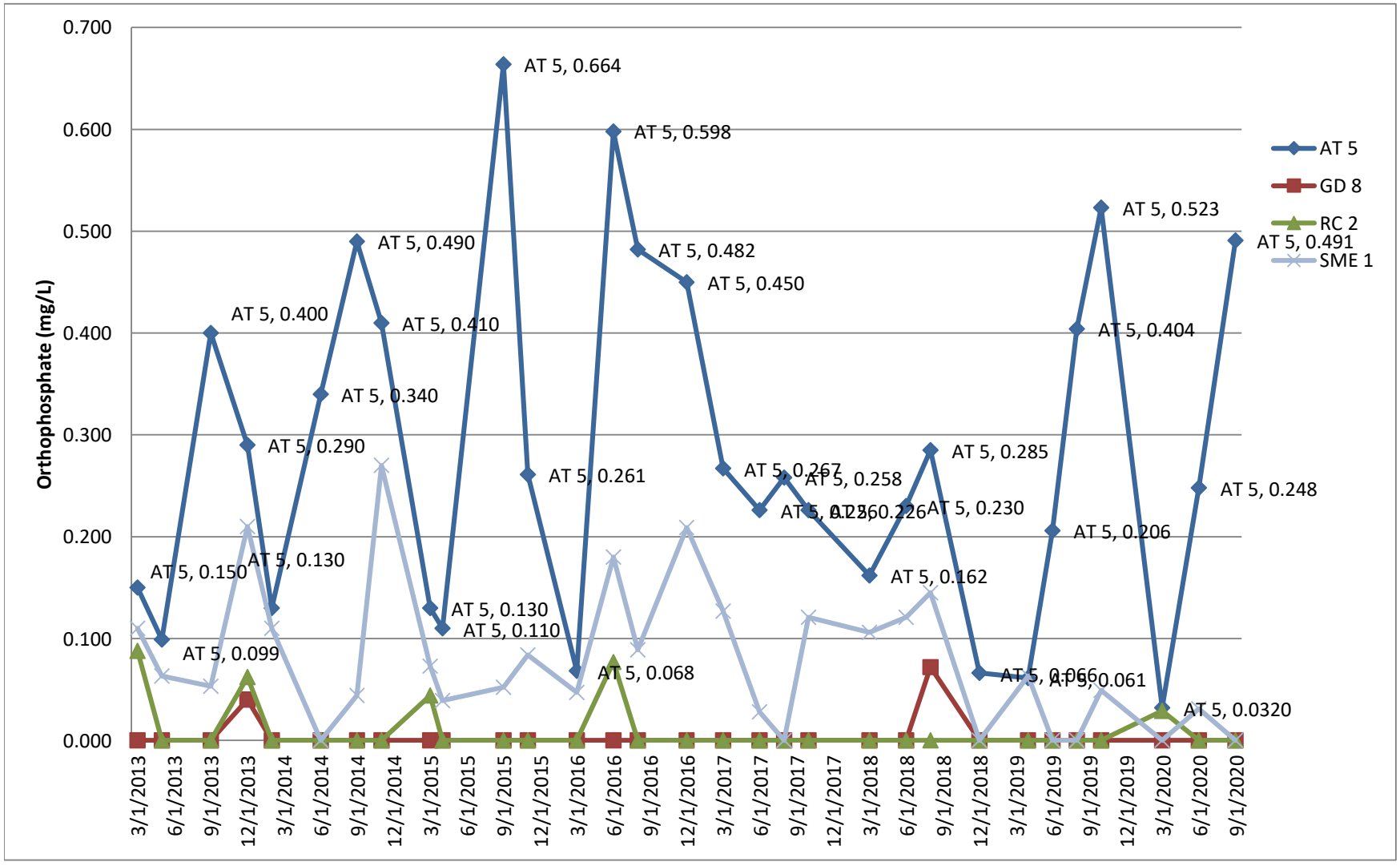
GADSDEN-ETOWAH MS4 MONITORING
NPDES PERMIT NO. ALR040009



ADEM Watermark

CHART 6 - ORTHOPHOSPHATE ANALYTICAL DATA

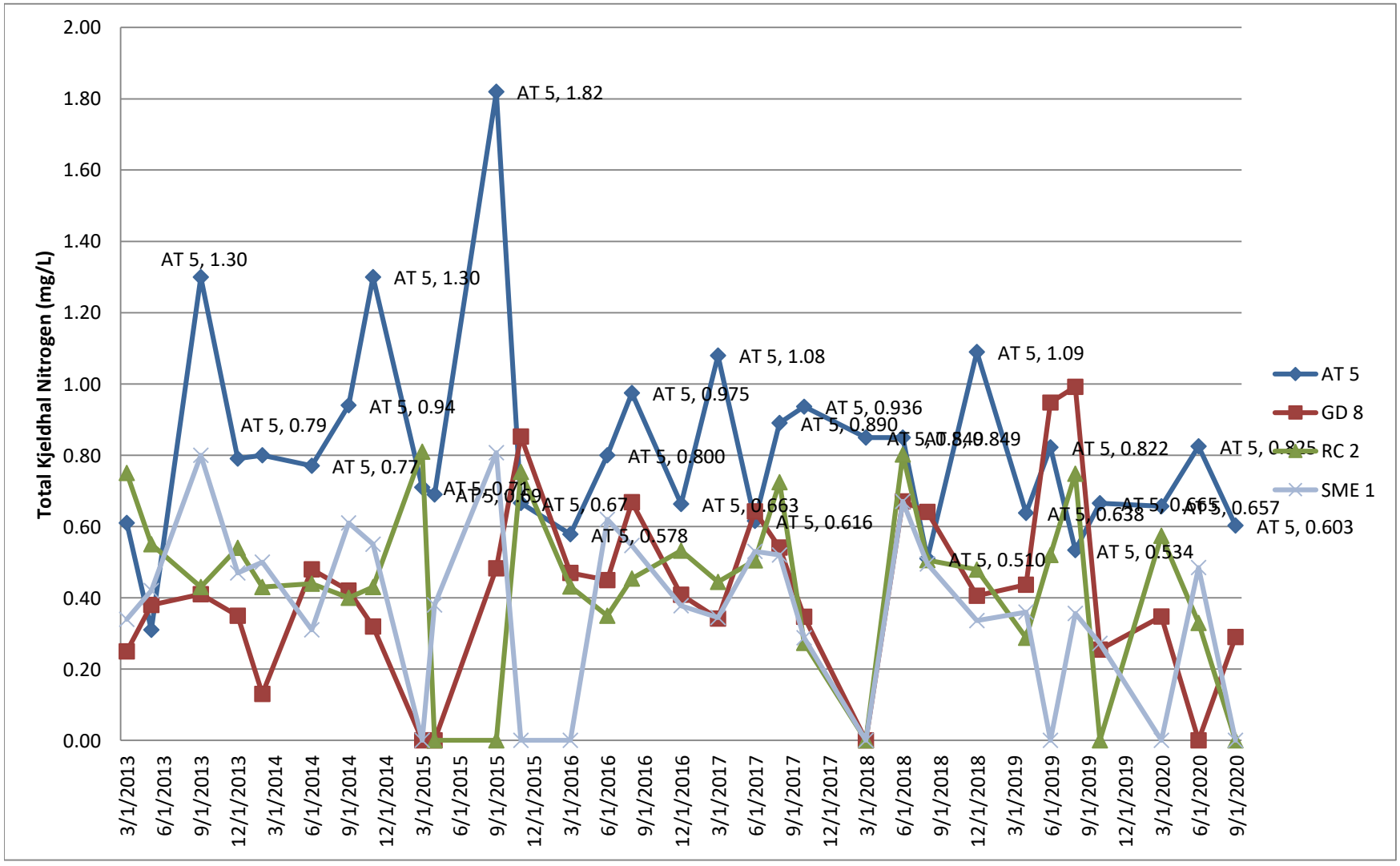
GADSDEN-ETOWAH MS4 MONITORING
NPDES PERMIT NO. ALR040009



ADEM Watermark

CHART 8 - TOTAL KJELDAHL NITROGEN ANALYTICAL DATA

GADSDEN-ETOWAH MS4 MONITORING
NPDES PERMIT NO. ALR040009



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Appendix III

Laboratory Report No. L1398804, dated September 14, 2021

Laboratory Report No. L1398813, dated September 14, 2021

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ANALYTICAL REPORT

September 10, 2021

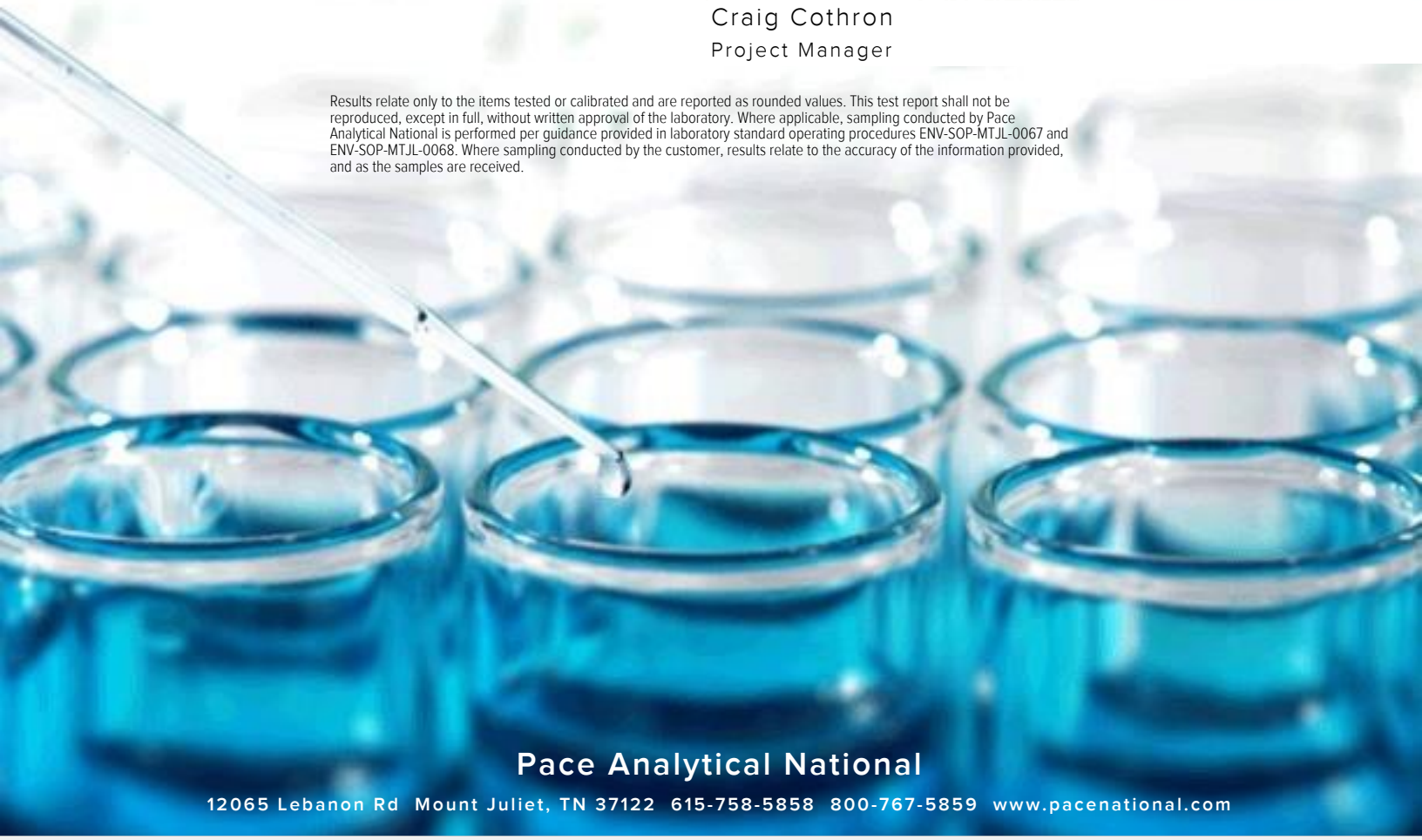
S&ME - Huntsville

Sample Delivery Group:	L1398804
Samples Received:	09/03/2021
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 L1398804-01 WW

Collected by: Elizabeth Bavis | Collected date/time: 09/02/21 12:50 | Received date/time: 09/03/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1734931	1	09/03/21 18:58	09/03/21 20:49	BRG	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1737176	1	09/08/21 11:31	09/08/21 22:58	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1734678	1	09/03/21 23:29	09/03/21 23:29	SDL	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1736740	1	09/08/21 11:31	09/08/21 21:31	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1734679	1	09/03/21 15:46	09/03/21 15:46	CRB	Mt. Juliet, TN

GD 8 L1398804-02 WW

Collected by: Elizabeth Bavis | Collected date/time: 09/02/21 12:35 | Received date/time: 09/03/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1734931	1	09/03/21 18:58	09/03/21 20:49	BRG	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1737176	1	09/08/21 11:31	09/08/21 23:00	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1734678	1	09/03/21 23:31	09/03/21 23:31	SDL	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1736740	1	09/08/21 11:31	09/08/21 21:32	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1734679	1	09/03/21 15:47	09/03/21 15:47	CRB	Mt. Juliet, TN

RC 2 L1398804-03 WW

Collected by: Elizabeth Bavis | Collected date/time: 09/02/21 12:25 | Received date/time: 09/03/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1734931	1	09/03/21 18:58	09/03/21 20:49	BRG	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1737209	1	09/08/21 18:00	09/08/21 23:46	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1734678	1	09/03/21 23:32	09/03/21 23:32	SDL	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1737044	1	09/08/21 18:00	09/08/21 23:18	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1734679	1	09/03/21 15:47	09/03/21 15:47	CRB	Mt. Juliet, TN

SS 13 L1398804-04 WW

Collected by: Elizabeth Bavis | Collected date/time: 09/02/21 11:50 | Received date/time: 09/03/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1734931	1	09/03/21 18:58	09/03/21 20:49	BRG	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1737209	1	09/08/21 18:00	09/08/21 23:54	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1734678	1	09/03/21 23:33	09/03/21 23:33	SDL	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1737044	1	09/08/21 18:00	09/08/21 23:23	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1734679	1	09/03/21 15:47	09/03/21 15:47	CRB	Mt. Juliet, TN

SS 14 L1398804-05 WW

Collected by: Elizabeth Bavis | Collected date/time: 09/02/21 12:10 | Received date/time: 09/03/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1734931	1	09/03/21 18:58	09/03/21 20:49	BRG	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1737209	1	09/08/21 18:00	09/08/21 23:55	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1734678	1	09/03/21 23:34	09/03/21 23:34	SDL	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1737044	1	09/08/21 18:00	09/08/21 23:24	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1734679	1	09/03/21 15:48	09/03/21 15:48	CRB	Mt. Juliet, TN

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GD 12 L1398804-06 WW

Collected by: Elizabeth Bavis | Collected date/time: 09/02/21 12:15 | Received date/time: 09/03/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1734931	1	09/03/21 18:58	09/03/21 20:49	BRG	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1737209	1	09/08/21 18:00	09/08/21 23:57	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1734678	1	09/03/21 23:36	09/03/21 23:36	SDL	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1737044	1	09/08/21 18:00	09/08/21 23:25	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1734679	1	09/03/21 15:49	09/03/21 15:49	CRB	Mt. Juliet, TN

SME2 L1398804-07 WW

Collected by: Elizabeth Bavis | Collected date/time: 09/02/21 11:10 | Received date/time: 09/03/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1734931	1	09/03/21 18:58	09/03/21 20:49	BRG	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1737209	1	09/08/21 18:00	09/08/21 23:58	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1734678	1	09/03/21 23:37	09/03/21 23:37	SDL	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1737044	1	09/08/21 18:00	09/08/21 23:29	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1734679	1	09/03/21 15:49	09/03/21 15:49	CRB	Mt. Juliet, TN

GD 6 L1398804-08 WW

Collected by: Elizabeth Bavis | Collected date/time: 09/02/21 11:50 | Received date/time: 09/03/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1734931	1	09/03/21 18:58	09/03/21 20:49	BRG	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1737209	1	09/08/21 18:00	09/08/21 23:59	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1734678	1	09/03/21 23:38	09/03/21 23:38	SDL	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1737044	1	09/08/21 18:00	09/08/21 23:30	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1734679	1	09/03/21 15:49	09/03/21 15:49	CRB	Mt. Juliet, TN

CO 15 L1398804-09 WW

Collected by: Elizabeth Bavis | Collected date/time: 09/02/21 09:00 | Received date/time: 09/03/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1734931	1	09/03/21 18:58	09/03/21 20:49	BRG	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1737209	1	09/08/21 18:00	09/09/21 00:01	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1734678	1	09/03/21 23:39	09/03/21 23:39	SDL	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1737044	1	09/08/21 18:00	09/08/21 23:32	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1734679	1	09/03/21 15:50	09/03/21 15:50	CRB	Mt. Juliet, TN

SME 7 L1398804-10 WW

Collected by: Elizabeth Bavis | Collected date/time: 09/02/21 10:30 | Received date/time: 09/03/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1734931	1	09/03/21 18:58	09/03/21 20:49	BRG	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1737209	1	09/08/21 18:00	09/09/21 00:02	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1734678	1	09/03/21 23:41	09/03/21 23:41	SDL	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1737044	1	09/08/21 18:00	09/08/21 23:33	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1734679	1	09/03/21 15:51	09/03/21 15:51	CRB	Mt. Juliet, TN

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SME 8 L1398804-11 WW

Collected by: Elizabeth Bavis
Collected date/time: 09/02/21 09:20
Received date/time: 09/03/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1734931	1	09/03/21 18:58	09/03/21 20:49	BRG	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1737209	1	09/08/21 18:00	09/09/21 00:04	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1734678	1	09/03/21 23:46	09/03/21 23:46	SDL	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1737044	1	09/08/21 18:00	09/08/21 23:34	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1734679	1	09/03/21 15:51	09/03/21 15:51	CRB	Mt. Juliet, TN

SME 9 L1398804-12 WW

Collected by: Elizabeth Bavis
Collected date/time: 09/02/21 12:00
Received date/time: 09/03/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1734931	1	09/03/21 18:58	09/03/21 20:49	BRG	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1737209	1	09/08/21 18:00	09/09/21 00:05	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1734678	1	09/03/21 23:47	09/03/21 23:47	SDL	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1737044	1	09/08/21 18:00	09/08/21 23:35	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1734679	1	09/03/21 15:52	09/03/21 15:52	CRB	Mt. Juliet, TN

SME 10 L1398804-13 WW

Collected by: Elizabeth Bavis
Collected date/time: 09/02/21 12:10
Received date/time: 09/03/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1734931	1	09/03/21 18:58	09/03/21 20:49	BRG	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1737209	1	09/08/21 18:00	09/09/21 00:09	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1734678	1	09/03/21 23:50	09/03/21 23:50	SDL	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1737044	1	09/08/21 18:00	09/08/21 23:37	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1734679	1	09/03/21 15:52	09/03/21 15:52	CRB	Mt. Juliet, TN

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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

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Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	67.4		7.15	1	09/03/2021 20:49	WG1734931

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.969		0.250	1	09/08/2021 22:58	WG1737176

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.482		0.100	1	09/03/2021 23:29	WG1734678

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	0.262	B	0.100	1	09/08/2021 21:31	WG1736740

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	0.131		0.0300	1	09/03/2021 15:46	WG1734679

ADEM Watermark

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	18.3		2.50	1	09/03/2021 20:49	WG1734931

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.611	J6	0.250	1	09/08/2021 23:00	WG1737176

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.241		0.100	1	09/03/2021 23:31	WG1734678

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	ND	J3 J6	0.100	1	09/08/2021 21:32	WG1736740

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	09/03/2021 15:47	WG1734679

ADEM Watermark

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Suspended Solids	3.40		2.50	1	09/03/2021 20:49	WG1734931

Wet Chemistry by Method 351.2

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	0.802	J5	0.250	1	09/08/2021 23:46	WG1737209

Wet Chemistry by Method 353.2

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	0.122		0.100	1	09/03/2021 23:32	WG1734678

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	09/08/2021 23:18	WG1737044

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	09/03/2021 15:47	WG1734679

ADEM Watermark

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	13.4		5.00	1	09/03/2021 20:49	WG1734931

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	1.33		0.250	1	09/08/2021 23:54	WG1737209

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	09/03/2021 23:33	WG1734678

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	0.108		0.100	1	09/08/2021 23:23	WG1737044

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	09/03/2021 15:47	WG1734679

ADEM Watermark

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	3.00		2.50	1	09/03/2021 20:49	WG1734931

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.935		0.250	1	09/08/2021 23:55	WG1737209

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.552		0.100	1	09/03/2021 23:34	WG1734678

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	0.128		0.100	1	09/08/2021 23:24	WG1737044

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	0.0980		0.0300	1	09/03/2021 15:48	WG1734679

ADEM Watermark

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	3.50		2.50	1	09/03/2021 20:49	WG1734931

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.779		0.250	1	09/08/2021 23:57	WG1737209

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.245		0.100	1	09/03/2021 23:36	WG1734678

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	09/08/2021 23:25	WG1737044

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	09/03/2021 15:49	WG1734679

ADEM Watermark

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	11.8		2.50	1	09/03/2021 20:49	WG1734931

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.562		0.250	1	09/08/2021 23:58	WG1737209

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.134		0.100	1	09/03/2021 23:37	WG1734678

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	09/08/2021 23:29	WG1737044

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	09/03/2021 15:49	WG1734679

ADEM Watermark

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	09/03/2021 20:49	WG1734931

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	3.44		0.250	1	09/08/2021 23:59	WG1737209

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.139		0.100	1	09/03/2021 23:38	WG1734678

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	0.305		0.100	1	09/08/2021 23:30	WG1737044

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	09/03/2021 15:49	WG1734679

ADEM Watermark

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	09/03/2021 20:49	WG1734931

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.926		0.250	1	09/09/2021 00:01	WG1737209

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	09/03/2021 23:39	WG1734678

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	09/08/2021 23:32	WG1737044

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	09/03/2021 15:50	WG1734679

ADEM Watermark

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Suspended Solids	39.2		5.00	1	09/03/2021 20:49	WG1734931

Wet Chemistry by Method 351.2

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	0.269		0.250	1	09/09/2021 00:02	WG1737209

Wet Chemistry by Method 353.2

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	0.150		0.100	1	09/03/2021 23:41	WG1734678

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	09/08/2021 23:33	WG1737044

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	09/03/2021 15:51	WG1734679

ADEM Watermark

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	77.6		10.0	1	09/03/2021 20:49	WG1734931

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	2.49		0.250	1	09/09/2021 00:04	WG1737209

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.491		0.100	1	09/03/2021 23:46	WG1734678

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	0.275		0.100	1	09/08/2021 23:34	WG1737044

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	0.179		0.0300	1	09/03/2021 15:51	WG1734679

ADEM Watermark

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	64.0		10.0	1	09/03/2021 20:49	WG1734931

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.800		0.250	1	09/09/2021 00:05	WG1737209

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.482		0.100	1	09/03/2021 23:47	WG1734678

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	0.191		0.100	1	09/08/2021 23:35	WG1737044

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	0.168		0.0300	1	09/03/2021 15:52	WG1734679

ADEM Watermark

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	65.2		10.0	1	09/03/2021 20:49	WG1734931

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	1.73		0.250	1	09/09/2021 00:09	WG1737209

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.487	J5	0.100	1	09/03/2021 23:50	WG1734678

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	0.234		0.100	1	09/08/2021 23:37	WG1737044

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	0.174		0.0300	1	09/03/2021 15:52	WG1734679

ADEM Watermark

Method Blank (MB)

(MB) R3700488-1 09/03/21 20:49

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
Suspended Solids	U		2.50	2.50

L1398804-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1398804-01 09/03/21 20:49 • (DUP) R3700488-3 09/03/21 20:49

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Suspended Solids	67.4	70.9	1	4.96		5

L1398804-11 Original Sample (OS) • Duplicate (DUP)

(OS) L1398804-11 09/03/21 20:49 • (DUP) R3700488-4 09/03/21 20:49

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Suspended Solids	77.6	80.4	1	3.54		5

Laboratory Control Sample (LCS)

(LCS) R3700488-2 09/03/21 20:49

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	mg/l	mg/l	%	%	
Suspended Solids	773	812	105	85.7-114	

ADEM Watermark

Method Blank (MB)

(MB) R3701963-1 09/08/21 22:32

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Kjeldahl Nitrogen, TKN	U		0.140	0.250

L1398487-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1398487-03 09/08/21 22:49 • (DUP) R3701963-3 09/08/21 22:50

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Kjeldahl Nitrogen, TKN	0.509	0.518	1	1.75		20

L1398804-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1398804-02 09/08/21 23:00 • (DUP) R3701963-5 09/08/21 23:01

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Kjeldahl Nitrogen, TKN	0.611	0.578	1	5.55		20

Laboratory Control Sample (LCS)

(LCS) R3701963-2 09/08/21 22:34

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Kjeldahl Nitrogen, TKN	14.9	14.5	97.3	75.2-121	

L1398487-03 Original Sample (OS) • Matrix Spike (MS)

(OS) L1398487-03 09/08/21 22:49 • (MS) R3701963-4 09/08/21 22:51

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	0.509	5.31	96.0	1	90.0-110	

L1398804-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1398804-02 09/08/21 23:00 • (MS) R3701963-6 09/08/21 23:10 • (MSD) R3701963-7 09/08/21 23:11

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	0.611	4.59	4.45	79.6	76.8	1	90.0-110	J6	J6	3.10	20

ADEM Watermark

QUALITY CONTROL SUMMARY

L1398804-03,04,05,06,07,08,09,10,11,12,13

Method Blank (MB)

(MB) R3701977-1 09/08/21 23:36

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Kjeldahl Nitrogen, TKN	U		0.140	0.250

L1398804-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1398804-03 09/08/21 23:46 • (DUP) R3701977-3 09/08/21 23:47

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Kjeldahl Nitrogen, TKN	0.802	0.717	1	11.2		20

L1398813-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1398813-01 09/09/21 00:10 • (DUP) R3701977-6 09/09/21 00:12

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Kjeldahl Nitrogen, TKN	0.689	0.641	1	7.22		20

Laboratory Control Sample (LCS)

(LCS) R3701977-2 09/08/21 23:38

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Kjeldahl Nitrogen, TKN	15.2	15.0	98.7	75.2-121	

L1398804-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1398804-03 09/08/21 23:46 • (MS) R3701977-4 09/08/21 23:49 • (MSD) R3701977-5 09/08/21 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	0.802	6.44	6.26	113	109	1	90.0-110	J5		2.83	20

L1398813-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1398813-01 09/09/21 00:10 • (MS) R3701977-7 09/09/21 00:13

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	0.689	6.12	109	1	90.0-110	

ADEM Watermark

QUALITY CONTROL SUMMARY

L1398804-01,02,03,04,05,06,07,08,09,10,11,12,13

Method Blank (MB)

(MB) R3700300-1 09/03/21 23:13

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Nitrate-Nitrite	U		0.0500	0.100

L1398088-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1398088-01 09/03/21 23:18 • (DUP) R3700300-4 09/03/21 23:19

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Nitrate-Nitrite	ND	ND	1	0.312		20

L1398804-12 Original Sample (OS) • Duplicate (DUP)

(OS) L1398804-12 09/03/21 23:47 • (DUP) R3700300-5 09/03/21 23:48

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Nitrate-Nitrite	0.482	0.480	1	0.416		20

Laboratory Control Sample (LCS)

(LCS) R3700300-2 09/03/21 23:14

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Nitrate-Nitrite	2.50	2.63	105	90.0-110	

L1398085-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1398085-01 09/03/21 23:15 • (MS) R3700300-3 09/03/21 23:17

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Nitrate-Nitrite	2.50	9.75	12.2	100	5	90.0-110	

L1398804-13 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1398804-13 09/03/21 23:50 • (MS) R3700300-6 09/03/21 23:51 • (MSD) R3700300-7 09/03/21 23:52

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	0.487	3.28	3.39	112	116	1	90.0-110	J5	J5	3.30	20

ADEM Watermark

QUALITY CONTROL SUMMARY

L1398804-01,02

Method Blank (MB)

(MB) R3701927-2 09/08/21 21:12

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Phosphorus,Total	0.0569	J	0.0350	0.100

L1398487-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1398487-03 09/08/21 21:16 • (DUP) R3701927-4 09/08/21 21:17

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Phosphorus,Total	0.595	0.606	1	1.83		20

L1398804-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1398804-02 09/08/21 21:32 • (DUP) R3701927-5 09/08/21 21:33

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

Laboratory Control Sample (LCS)

(LCS) R3701927-3 09/08/21 21:13

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Phosphorus,Total	3.16	2.86	90.6	81.2-118	

L1398804-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1398804-02 09/08/21 21:32 • (MS) R3701927-6 09/08/21 21:35 • (MSD) R3701927-7 09/08/21 21:36

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	1.96	95.8	76.2	1	90.0-110		J3 J6	22.2	20

ADEM Watermark

QUALITY CONTROL SUMMARY

L1398804-03,04,05,06,07,08,09,10,11,12,13

Method Blank (MB)

(MB) R3701972-1 09/08/21 23:14

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Phosphorus,Total	U		0.0350	0.100

L1398804-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1398804-03 09/08/21 23:18 • (DUP) R3701972-3 09/08/21 23:19

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

L1398813-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1398813-01 09/08/21 23:38 • (DUP) R3701972-6 09/08/21 23:39

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Phosphorus,Total	ND	0.160	1	61.5	P1	20

Laboratory Control Sample (LCS)

(LCS) R3701972-2 09/08/21 23:15

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Phosphorus,Total	3.16	2.92	92.6	81.2-118	

L1398804-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1398804-03 09/08/21 23:18 • (MS) R3701972-4 09/08/21 23:20 • (MSD) R3701972-5 09/08/21 23:21

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	2.31	2.29	90.9	90.1	1	90.0-110			0.870	20

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QUALITY CONTROL SUMMARY

L1398804-01,02,03,04,05,06,07,08,09,10,11,12,13

Method Blank (MB)

(MB) R3700197-1 09/03/21 15:45

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Phosphate,Ortho	U		0.0140	0.0300

L1398804-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1398804-01 09/03/21 15:46 • (DUP) R3700197-3 09/03/21 15:46

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Phosphate,Ortho	0.131	0.130	1	0.766		20

L1398813-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1398813-02 09/03/21 15:53 • (DUP) R3700197-6 09/03/21 15:54

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) R3700197-2 09/03/21 15:45

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Phosphate,Ortho	0.245	0.274	112	85.0-115	

L1398804-09 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1398804-09 09/03/21 15:50 • (MS) R3700197-4 09/03/21 15:50 • (MSD) R3700197-5 09/03/21 15:50

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 %
Phosphate,Ortho	0.500	ND	0.513	0.514	103	103	1	80.0-120			0.195	20

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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
B	The same analyte is found in the associated blank.
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.
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.

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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.

ADEM Watermark

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):
Elizabeth Davis

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)
AT 5	Grab	WW	surf	9/2/21	12:50	4	X	X	X	X								-01
GD 8		WW			12:35	4	X	X	X	X								-02
RC 2		WW			12:25	4	X	X	X	X								-03
SS 13		WW			11:50	4	X	X	X	X								-04
SS 14		WW			12:00	4	X	X	X	X								-05
GD 12		WW			12:15	4	X	X	X	X								-06
SME2		WW			11:00	4	X	X	X	X								-07
GD 6		WW			10:50	4	X	X	X	X								-08
CO 15		WW			9:30	4	X	X	X	X								-09
SME 7		WW			10:30	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 # 531899391941

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: 9/2/21	Time: 17:10	Received by: (Signature)	Trip Blank Received: Yes / No HCL / MeoH TBR	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: 0.3+0.5=0.5 °C Bottles Received: 57	If preservation required by Login: Date/Time
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 9/3/21 Time: 9:30	Hold: Condition: NCF / OK

Chain of Custody Page ___ of ___

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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 # L1398804

Table # C094

Acctnum: **QOREHAL**
Template: **T181690**
Prelogin: **P858057**
PM: **034 - Craig Cothron**
PB: CC 9/20/21
Shipped Via: **FedEX Ground**

ADEM Watermark

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):
Elizabeth Bevis

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

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)
SME 8	Grab	WW	Surf	9/2/21	9:20	4	X	X	X	X							-11
SME 9	↓	WW	↓	↓	12:40	4	X	X	X	X							-12
SME 10	↓	WW	↓	↓	12:10	4	X	X	X	X							-13
		WW				4	X	X	X	X							
		WW				4	X	X	X	X							

Chain of Custody Page ___ of ___

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SDG # L1398804

Table #

Acctnum: **QOREHAL**

Template: **T181690**

Prelogin: **P858057**

PM: **034 - Craig Cothron**

PB: 8/26/21

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	If preservation required by Login: Date/Time
	9/2/21	1:10			
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: 3.6 °C Bottles Received: 5	
				0.5±0.0-0.5	
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 9/3/21 Time: 9:30	Hold: Condition: NCF / OK
			K. Holder		

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ANALYTICAL REPORT

September 14, 2021

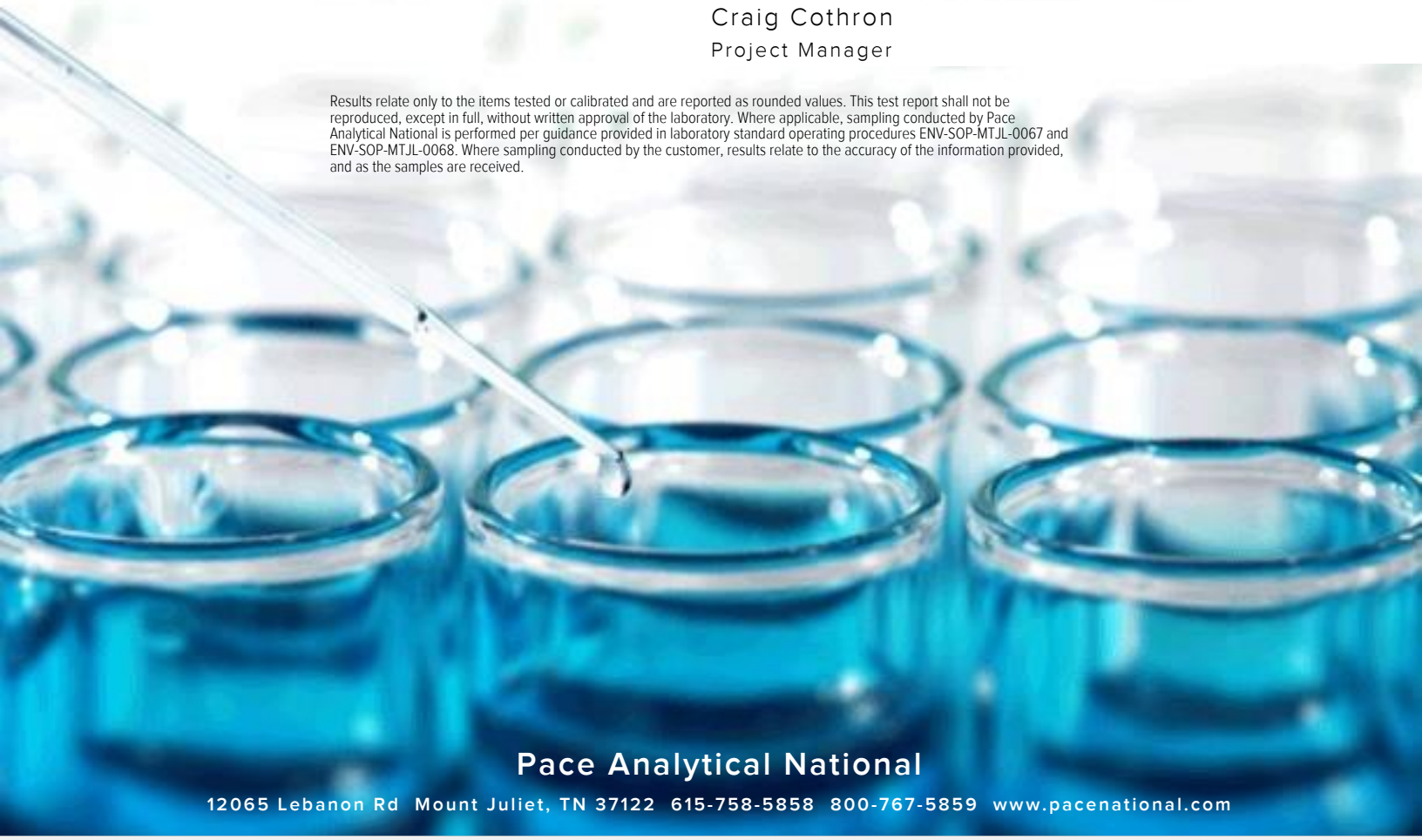
S&ME - Huntsville

Sample Delivery Group:	L1398813
Samples Received:	09/03/2021
Project Number:	4482-20-044
Description:	
Site:	BOAT
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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SAMPLE SUMMARY

HB3 L1398813-01 WW

Collected by: Grant Williams | Collected date/time: 09/02/21 10:45 | Received date/time: 09/03/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1734939	1	09/03/21 20:02	09/03/21 22:47	BRG	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1737209	1	09/08/21 18:00	09/09/21 00:10	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1734680	1	09/04/21 00:11	09/04/21 00:11	SDL	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1737044	1	09/08/21 18:00	09/08/21 23:38	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1734679	1	09/03/21 15:52	09/03/21 15:52	CRB	Mt. Juliet, TN

SME 4 L1398813-02 WW

Collected by: Grant Williams | Collected date/time: 09/02/21 10:55 | Received date/time: 09/03/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1734939	1	09/03/21 20:02	09/03/21 22:47	BRG	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1737209	1	09/08/21 18:00	09/09/21 00:14	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1734680	1	09/04/21 00:12	09/04/21 00:12	SDL	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1737044	1	09/08/21 18:00	09/08/21 23:41	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1734679	1	09/03/21 15:53	09/03/21 15:53	CRB	Mt. Juliet, TN

GD 5 L1398813-03 WW

Collected by: Grant Williams | Collected date/time: 09/02/21 11:05 | Received date/time: 09/03/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1734939	1	09/03/21 20:02	09/03/21 22:47	BRG	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1737209	1	09/08/21 18:00	09/09/21 00:16	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1734680	1	09/04/21 00:13	09/04/21 00:13	SDL	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1737044	1	09/08/21 18:00	09/08/21 23:44	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1734679	1	09/03/21 15:54	09/03/21 15:54	CRB	Mt. Juliet, TN

SME 3 L1398813-04 WW

Collected by: Grant Williams | Collected date/time: 09/02/21 11:20 | Received date/time: 09/03/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1734939	1	09/03/21 20:02	09/03/21 22:47	BRG	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1737209	1	09/08/21 18:00	09/09/21 00:17	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1734680	1	09/04/21 00:15	09/04/21 00:15	SDL	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1737044	1	09/08/21 18:00	09/08/21 23:46	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1734679	1	09/03/21 15:55	09/03/21 15:55	CRB	Mt. Juliet, TN

GD 7 L1398813-05 WW

Collected by: Grant Williams | Collected date/time: 09/02/21 11:40 | Received date/time: 09/03/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1734939	1	09/03/21 20:02	09/03/21 22:47	BRG	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1737903	1	09/08/21 20:24	09/09/21 21:54	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1734680	1	09/04/21 00:20	09/04/21 00:20	SDL	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1739363	1	09/10/21 14:24	09/13/21 13:47	KEG	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1734679	1	09/03/21 15:55	09/03/21 15:55	CRB	Mt. Juliet, TN

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GD 9 L1398813-06 WW

Collected by: Grant Williams | Collected date/time: 09/02/21 12:00 | Received date/time: 09/03/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1734939	1	09/03/21 20:02	09/03/21 22:47	BRG	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1737903	1	09/08/21 20:24	09/09/21 21:59	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1734680	1	09/04/21 00:21	09/04/21 00:21	SDL	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1737046	1	09/08/21 20:24	09/09/21 19:58	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1734679	1	09/03/21 15:56	09/03/21 15:56	CRB	Mt. Juliet, TN

SME1 L1398813-07 WW

Collected by: Grant Williams | Collected date/time: 09/02/21 12:18 | Received date/time: 09/03/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1734939	1	09/03/21 20:02	09/03/21 22:47	BRG	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1737903	1	09/08/21 20:24	09/09/21 22:06	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1734680	1	09/04/21 00:24	09/04/21 00:24	SDL	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1737046	1	09/08/21 20:24	09/09/21 20:01	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1734679	1	09/03/21 15:56	09/03/21 15:56	CRB	Mt. Juliet, TN

SSS L1398813-08 WW

Collected by: Grant Williams | Collected date/time: 09/02/21 13:10 | Received date/time: 09/03/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1734939	1	09/03/21 20:02	09/03/21 22:47	BRG	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1737903	1	09/08/21 20:24	09/09/21 22:07	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1734680	1	09/04/21 00:25	09/04/21 00:25	SDL	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1737046	1	09/08/21 20:24	09/09/21 20:05	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1734681	1	09/03/21 16:06	09/03/21 16:06	CRB	Mt. Juliet, TN

SME 5 L1398813-09 WW

Collected by: Grant Williams | Collected date/time: 09/02/21 13:05 | Received date/time: 09/03/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1734939	1	09/03/21 20:02	09/03/21 22:47	BRG	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1737903	1	09/08/21 20:24	09/09/21 22:09	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1734680	1	09/04/21 00:26	09/04/21 00:26	SDL	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1737046	1	09/08/21 20:24	09/09/21 20:06	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1734681	1	09/03/21 16:07	09/03/21 16:07	CRB	Mt. Juliet, TN

SME 6 L1398813-10 WW

Collected by: Grant Williams | Collected date/time: 09/02/21 13:30 | Received date/time: 09/03/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1734939	1	09/03/21 20:02	09/03/21 22:47	BRG	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1737903	1	09/08/21 20:24	09/09/21 22:10	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1734680	1	09/04/21 00:27	09/04/21 00:27	SDL	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1737046	1	09/08/21 20:24	09/09/21 20:08	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1734681	1	09/03/21 16:07	09/03/21 16:07	CRB	Mt. Juliet, TN

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SAMPLE SUMMARY

RC 14 L1398813-11 WW

Collected by: Grant Williams
Collected date/time: 09/02/21 13:50
Received date/time: 09/03/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1734939	1	09/03/21 20:02	09/03/21 22:47	BRG	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1737903	1	09/08/21 20:24	09/09/21 22:11	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1734680	1	09/04/21 00:30	09/04/21 00:30	SDL	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1737046	1	09/08/21 20:24	09/09/21 20:09	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1734681	1	09/03/21 16:10	09/03/21 16:10	CRB	Mt. Juliet, TN

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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

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Gravimetric Analysis by Method 2540 D-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Suspended Solids	23.6	P1	10.0	1	09/03/2021 22:47	WG1734939

Wet Chemistry by Method 351.2

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	0.689		0.250	1	09/09/2021 00:10	WG1737209

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	09/04/2021 00:11	WG1734680

Wet Chemistry by Method 365.4

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Phosphorus,Total	ND	P1	0.100	1	09/08/2021 23:38	WG1737044

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	09/03/2021 15:52	WG1734679

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Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	28.4		5.00	1	09/03/2021 22:47	WG1734939

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.609		0.250	1	09/09/2021 00:14	WG1737209

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	09/04/2021 00:12	WG1734680

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	09/08/2021 23:41	WG1737044

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	09/03/2021 15:53	WG1734679

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Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	16.1		2.50	1	09/03/2021 22:47	WG1734939

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.510		0.250	1	09/09/2021 00:16	WG1737209

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	09/04/2021 00:13	WG1734680

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	09/08/2021 23:44	WG1737044

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	09/03/2021 15:54	WG1734679

ADEM Watermark

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	267		10.0	1	09/03/2021 22:47	WG1734939

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	1.24		0.250	1	09/09/2021 00:17	WG1737209

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	09/04/2021 00:15	WG1734680

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	0.234		0.100	1	09/08/2021 23:46	WG1737044

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	0.0570		0.0300	1	09/03/2021 15:55	WG1734679

ADEM Watermark

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	34.4		5.00	1	09/03/2021 22:47	WG1734939

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.324		0.250	1	09/09/2021 21:54	WG1737903

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	09/04/2021 00:20	WG1734680

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	0.122	B	0.100	1	09/13/2021 13:47	WG1739363

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	09/03/2021 15:55	WG1734679

ADEM Watermark

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	25.8		5.00	1	09/03/2021 22:47	WG1734939

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.311	P1	0.250	1	09/09/2021 21:59	WG1737903

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	ND	J5	0.100	1	09/04/2021 00:21	WG1734680

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	09/09/2021 19:58	WG1737046

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	09/03/2021 15:56	WG1734679

ADEM Watermark

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	09/03/2021 22:47	WG1734939

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.353		0.250	1	09/09/2021 22:06	WG1737903

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.458		0.100	1	09/04/2021 00:24	WG1734680

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	0.218	B	0.100	1	09/09/2021 20:01	WG1737046

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	0.190		0.0300	1	09/03/2021 15:56	WG1734679

ADEM Watermark

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Suspended Solids	14.4		5.00	1	09/03/2021 22:47	WG1734939

Wet Chemistry by Method 351.2

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	0.431		0.250	1	09/09/2021 22:07	WG1737903

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	09/04/2021 00:25	WG1734680

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	09/09/2021 20:05	WG1737046

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	09/03/2021 16:06	WG1734681

ADEM Watermark

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	31.8		5.00	1	09/03/2021 22:47	WG1734939

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.325		0.250	1	09/09/2021 22:09	WG1737903

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.128		0.100	1	09/04/2021 00:26	WG1734680

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	09/09/2021 20:06	WG1737046

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	09/03/2021 16:07	WG1734681

ADEM Watermark

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	19.0		5.00	1	09/03/2021 22:47	WG1734939

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.353		0.250	1	09/09/2021 22:10	WG1737903

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	09/04/2021 00:27	WG1734680

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	0.430	B	0.100	1	09/09/2021 20:08	WG1737046

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	09/03/2021 16:07	WG1734681

ADEM Watermark

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Suspended Solids	23.2		5.00	1	09/03/2021 22:47	WG1734939

Wet Chemistry by Method 351.2

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	0.350		0.250	1	09/09/2021 22:11	WG1737903

Wet Chemistry by Method 353.2

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	0.210		0.100	1	09/04/2021 00:30	WG1734680

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	09/09/2021 20:09	WG1737046

Wet Chemistry by Method 4500P E-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Phosphate,Ortho	0.0400		0.0300	1	09/03/2021 16:10	WG1734681

ADEM Watermark

Method Blank (MB)

(MB) R3700489-1 09/03/21 22:47

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Suspended Solids	U		2.50	2.50

L1397423-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1397423-01 09/03/21 22:47 • (DUP) R3700489-3 09/03/21 22:47

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Suspended Solids	69.0	42.0	1	48.6	P1	5

L1398813-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1398813-01 09/03/21 22:47 • (DUP) R3700489-4 09/03/21 22:47

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Suspended Solids	23.6	26.4	1	11.2	P1	5

Laboratory Control Sample (LCS)

(LCS) R3700489-2 09/03/21 22:47

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Suspended Solids	773	772	99.9	85.7-114	

ADEM Watermark

Method Blank (MB)

(MB) R3701977-1 09/08/21 23:36

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Kjeldahl Nitrogen, TKN	U		0.140	0.250

L1398804-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1398804-03 09/08/21 23:46 • (DUP) R3701977-3 09/08/21 23:47

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Kjeldahl Nitrogen, TKN	0.802	0.717	1	11.2		20

L1398813-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1398813-01 09/09/21 00:10 • (DUP) R3701977-6 09/09/21 00:12

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Kjeldahl Nitrogen, TKN	0.689	0.641	1	7.22		20

Laboratory Control Sample (LCS)

(LCS) R3701977-2 09/08/21 23:38

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Kjeldahl Nitrogen, TKN	15.2	15.0	98.7	75.2-121	

L1398804-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1398804-03 09/08/21 23:46 • (MS) R3701977-4 09/08/21 23:49 • (MSD) R3701977-5 09/08/21 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	0.802	6.44	6.26	113	109	1	90.0-110	J5		2.83	20

L1398813-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1398813-01 09/09/21 00:10 • (MS) R3701977-7 09/09/21 00:13

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	0.689	6.12	109	1	90.0-110	

ADEM Watermark

QUALITY CONTROL SUMMARY

L1398813-05,06,07,08,09,10,11

Method Blank (MB)

(MB) R3702569-1 09/09/21 21:50

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Kjeldahl Nitrogen, TKN	U		0.140	0.250

L1398813-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1398813-05 09/09/21 21:54 • (DUP) R3702569-3 09/09/21 21:55

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Kjeldahl Nitrogen, TKN	0.324	0.329	1	1.53		20

L1398813-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1398813-06 09/09/21 21:59 • (DUP) R3702569-6 09/09/21 22:00

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Kjeldahl Nitrogen, TKN	0.311	0.588	1	61.6	P1	20

Laboratory Control Sample (LCS)

(LCS) R3702569-2 09/09/21 21:51

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Kjeldahl Nitrogen, TKN	14.9	14.4	96.6	75.2-121	

L1398813-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1398813-05 09/09/21 21:54 • (MS) R3702569-4 09/09/21 21:56 • (MSD) R3702569-5 09/09/21 21:58

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	0.324	5.70	5.50	108	104	1	90.0-110			3.57	20

L1398813-06 Original Sample (OS) • Matrix Spike (MS)

(OS) L1398813-06 09/09/21 21:59 • (MS) R3702569-7 09/09/21 22:02

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	0.311	5.62	106	1	90.0-110	

ADEM Watermark

QUALITY CONTROL SUMMARY

L1398813-01,02,03,04,05,06,07,08,09,10,11

Method Blank (MB)

(MB) R3700307-1 09/04/21 00:03

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Nitrate-Nitrite	U		0.0500	0.100

L1398598-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1398598-01 09/04/21 00:06 • (DUP) R3700307-3 09/04/21 00:07

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Nitrate-Nitrite	1.83	1.83	1	0.000		20

L1398813-10 Original Sample (OS) • Duplicate (DUP)

(OS) L1398813-10 09/04/21 00:27 • (DUP) R3700307-5 09/04/21 00:29

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Nitrate-Nitrite	0.131	0.132	1	0.760		20

Laboratory Control Sample (LCS)

(LCS) R3700307-2 09/04/21 00:04

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Nitrate-Nitrite	2.50	2.65	106	90.0-110	

L1398813-06 Original Sample (OS) • Matrix Spike (MS)

(OS) L1398813-06 09/04/21 00:21 • (MS) R3700307-4 09/04/21 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	ND	3.12	121	1	90.0-110	J5

L1398825-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1398825-02 09/04/21 00:36 • (MS) R3700307-6 09/04/21 00:38 • (MSD) R3700307-7 09/04/21 00:39

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 %
Nitrate-Nitrite	2.50	0.654	3.50	3.58	114	117	1	90.0-110	J5	J5	2.26	20

ADEM Watermark

Method Blank (MB)

(MB) R3701972-1 09/08/21 23:14

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Phosphorus,Total	U		0.0350	0.100

L1398804-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1398804-03 09/08/21 23:18 • (DUP) R3701972-3 09/08/21 23:19

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

L1398813-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1398813-01 09/08/21 23:38 • (DUP) R3701972-6 09/08/21 23:39

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Phosphorus,Total	ND	0.160	1	61.5	P1	20

Laboratory Control Sample (LCS)

(LCS) R3701972-2 09/08/21 23:15

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Phosphorus,Total	3.16	2.92	92.6	81.2-118	

L1398804-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1398804-03 09/08/21 23:18 • (MS) R3701972-4 09/08/21 23:20 • (MSD) R3701972-5 09/08/21 23:21

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	2.31	2.29	90.9	90.1	1	90.0-110			0.870	20

ADEM Watermark

Method Blank (MB)

(MB) R3702533-2 09/09/21 19:50

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Phosphorus,Total	0.0462	J	0.0350	0.100

L1398813-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1398813-06 09/09/21 19:58 • (DUP) R3702533-6 09/09/21 19:59

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) R3702533-3 09/09/21 19:51

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Phosphorus,Total	3.16	2.88	91.3	81.2-118	

L1398813-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1398813-05 09/09/21 19:52 • (MS) R3702533-4 09/09/21 19:55 • (MSD) R3702533-5 09/09/21 19:56

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	2.20	2.51	85.0	97.4	1	90.0-110	J6		13.2	20

ADEM Watermark

Method Blank (MB)

(MB) R3703618-1 09/13/21 13:44

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Phosphorus,Total	0.0752	J	0.0350	0.100

L1399872-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1399872-01 09/13/21 14:00 • (DUP) R3703618-3 09/13/21 14:01

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Phosphorus,Total	1.03	1.11	1	7.48		20

L1399908-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1399908-01 09/13/21 14:03 • (DUP) R3703618-6 09/13/21 14:05

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Phosphorus,Total	0.651	0.724	1	10.6		20

L1399908-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1399908-01 09/13/21 14:03 • (DUP) R3703618-9 09/13/21 14:17

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Phosphorus,Total	0.651	0.712	1	8.95		20

Laboratory Control Sample (LCS)

(LCS) R3703618-2 09/13/21 13:46

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Phosphorus,Total	3.16	2.83	89.7	81.2-118	

ADEM Watermark

L1399872-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1399872-01 09/13/21 14:00 • (MS) R3703618-5 09/13/21 14:02

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Phosphorus,Total	2.50	1.03	1.13	4.00	1	90.0-110	J6

L1399908-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1399908-01 09/13/21 14:03 • (MS) R3703618-7 09/13/21 14:06 • (MSD) R3703618-8 09/13/21 14:07

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 %
Phosphorus,Total	2.50	0.651	2.67	2.73	80.8	83.2	1	90.0-110	J6	J6	2.22	20

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QUALITY CONTROL SUMMARY

L1398813-01,02,03,04,05,06,07

Method Blank (MB)

(MB) R3700197-1 09/03/21 15:45

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Phosphate,Ortho	U		0.0140	0.0300

L1398804-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1398804-01 09/03/21 15:46 • (DUP) R3700197-3 09/03/21 15:46

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Phosphate,Ortho	0.131	0.130	1	0.766		20

L1398813-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1398813-02 09/03/21 15:53 • (DUP) R3700197-6 09/03/21 15:54

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) R3700197-2 09/03/21 15:45

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Phosphate,Ortho	0.245	0.274	112	85.0-115	

L1398804-09 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1398804-09 09/03/21 15:50 • (MS) R3700197-4 09/03/21 15:50 • (MSD) R3700197-5 09/03/21 15:50

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 %
Phosphate,Ortho	0.500	ND	0.513	0.514	103	103	1	80.0-120			0.195	20

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Method Blank (MB)

(MB) R3700203-1 09/03/21 16:05

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Phosphate,Ortho	U		0.0140	0.0300

L1398813-11 Original Sample (OS) • Duplicate (DUP)

(OS) L1398813-11 09/03/21 16:10 • (DUP) R3700203-5 09/03/21 16:10

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Phosphate,Ortho	0.0400	0.0400	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3700203-2 09/03/21 16:06

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Phosphate,Ortho	0.245	0.278	114	85.0-115	

L1398813-10 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1398813-10 09/03/21 16:07 • (MS) R3700203-3 09/03/21 16:07 • (MSD) R3700203-4 09/03/21 16:08

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 %
Phosphate,Ortho	0.500	ND	0.523	0.510	101	98.4	1	80.0-120			2.52	20

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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
B	The same analyte is found in the associated blank.
J	The identification of the analyte is acceptable; the reported value is an estimate.
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.

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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.

ADEM Watermark

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 Analytical®

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

Lab Project # QOREHAL-448220044

SDG # L1398813

E213

Collected by (print): Grant Williams

Site/Facility ID # ~~LAND~~ Boat

P.O. #

Acctnum: QOREHAL

Template: T181690

Prelogin: P858056

PM: 034 - Craig Cothron

PB: CJ 6/26/21

Collected by (signature): [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

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)
~~AT 5~~ HB3		WW		9/2	10:45	4	X	X	X	X								-01
~~GD 8~~ SME4		WW			10:55	4	X	X	X	X								-02
~~RC 2~~ GD5		WW			11:05	4	X	X	X	X								-03
~~SS 13~~ SME3		WW			11:20	4	X	X	X	X								-04
~~SS 14~~ GD7		WW			11:40	4	X	X	X	X								-05
~~GD 12~~ GD9		WW			12:00	4	X	X	X	X								-06
~~SME2~~ SME1		WW			12:18	4	X	X	X	X								-07
~~GD 6~~ SS5		WW			13:10	4	X	X	X	X								-08
~~CO 15~~ SME5		WW			13:05	4	X	X	X	X								-09
~~SME 7~~ SME6		WW			13:30	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 # 5163 7703 4824 / 41798

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]	9/2/21	3:00		0
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: 0340°C 3.5+.0=3.5 Bottles Received: 4d
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature) [signature]	Date: 9/3/21 Time: 9:30

If preservation required by Login: Date/Time

Hold:

Condition: NCF / OK

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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 ___

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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

SDG # L1398813

Table #

Acctnum: **QOREHAL**

Template: **T181690**

Prelogin: **P858056**

PM: **034 - Craig Cothron**

PB: CS 6/26/21

Shipped Via: **FedEx Ground**

Collected by (print):
Grant Williams

Site/Facility ID #
~~LAND~~ Bent

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

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~~ RC14		WW		9/2	1350	4	X	X	X	X		-11
~~SME 9~~		~~WW~~				~~4~~	X	X	X	X		
~~SME 10~~		~~WW~~				~~4~~	X	X	X	X		
		~~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	If preservation required by Login: Date/Time
	9/2/21	3:00		0	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: 0.3+6=3.5 °C Bottles Received: 4 HCl	
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 9/3/21 Time: 9:30	Hold: / Condition: NCF / OK

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Monitoring Report Fourth Quarter 2021
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

May 25, 2022

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Appendices

Appendix I

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Appendix II

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Table B.2 – Analytical Data
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Appendix III

Laboratory Report No. L1435038, dated December 29, 2021
Laboratory Report No. L1435216, dated December 29, 2021

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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. 219065.

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

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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 January 1, 2017, 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 November 21-22, 2021, 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 11/21/21	Precip 11/22/21
KGAD	Gadsden Municipal Airport	33.973°	-86.088°	0.83 in.	0.00 in.
KALHOKES2	Hokes Bluff Hokes Bluff, AL	33.993°	-85.806°	0.69 in.	0.11 in.
KALGADSD3	Noccalula Falls Gadsden, AL	34.056°	-85.994°	0.52 in.	0.05 in.
KALRAINB19	Rainbow City, AL	33.942°	-86.030°	0.65 in.	0.14 in.

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3.0 Monitoring Event

On November 23, 2021, S&ME personnel mobilized to conduct storm water monitoring at the land and boat access monitoring points for the fourth quarter of 2021.

Land and boat access monitoring was successfully sampled on November 23, 2021. The quarterly monitoring events are carried out in accordance with Section 2 of the Gadsden-Etowah MS4 Storm Water Management Program (SWMPP), dated January 1, 2017.

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
SME 2	34.002461°	-86.001571°	LAND	U.T. to Coosa River
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 8	34.004730°	-85.873852°	LAND	U.T. to Coosa River
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

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Following evaluation of the monitoring program for the Annual Report in May of 2020, monitoring points CO14, SME 3, and GD3 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. Due to an oversight, SME3 was not collected during the 2021 Q4 monitoring 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 YSI Pro DSS Multi-Probe Meter had a faulty reading for the pH for the land sampling. 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.

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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	HDPE - 250 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 9. One duplicate sample of monitoring point SME 8 was collected by the land team during the sampling event and labeled as SME 10. 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 November 23, 2021 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**. SME 7 was labeled SME 8 and SME 8 was labeled SME 7 in the field notes and laboratory report.

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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.

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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.

Grant Williams, E.I
Associate Project Manager

Deborah J. Jones, P.E.
Senior Engineer

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Appendices

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Appendix I

Figure 1 – Gadsden, Alabama Urbanized Area

Figure 2 – MS4 Monitoring Locations Map

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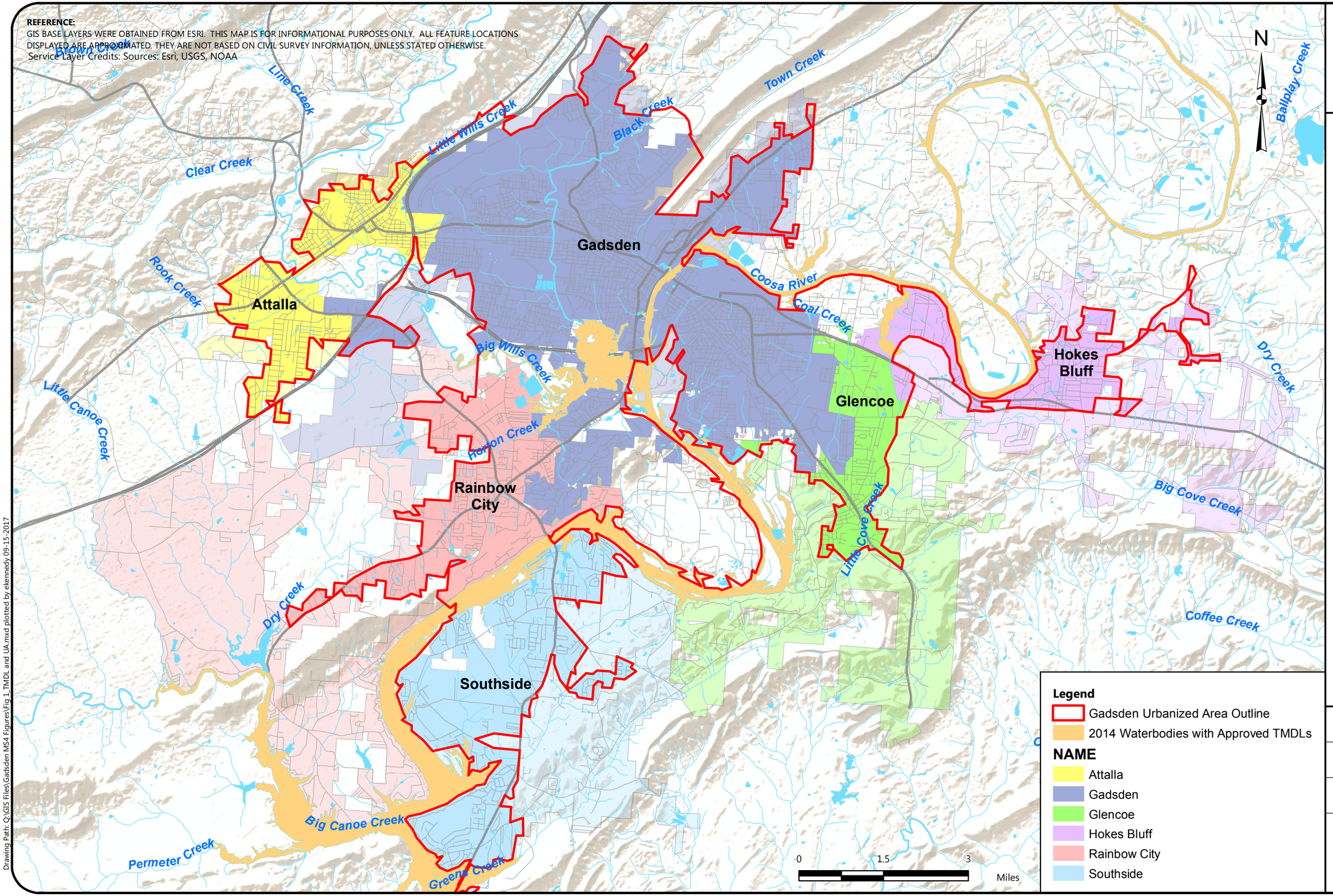
REFERENCE:
GIS BASE LAYERS WERE OBTAINED FROM ESRI. THIS MAP IS FOR INFORMATIONAL PURPOSES ONLY. ALL FEATURE LOCATIONS DISPLAYED ARE APPROXIMATED. THEY ARE NOT BASED ON CIVIL SURVEY INFORMATION, UNLESS STATED OTHERWISE.
Service Layer Credits: Sources: Esri, USGS, NOAA



Drawing Path: Q:\GIS Files\Gadsden MS4 Figures\Fig 1_TMDL and UA.mxd plotted by ekennedy 09-15-2017

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

ADEM Watermark

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

N

Brown Creek
Line Creek
Clear Creek
Little Wills Creek
Black Creek
Town Creek
Ballplay Creek
Rook Creek
Dry Creek
Coosa River
Coal Creek
Big Wills Creek
Little Canoe Creek
Horton Creek
Big Cove Creek
Little Cove Creek
Coffee Creek
Greens Creek
Ohatchee
Big Canoe Creek
Permeter Creek

Gadsden
Attalla
Rainbow City
Glencoe
Hokes Bluff
Southside

KALGADSD3
KALGADSD7
KALHOKES2
KALRAINB7

SME 7
AT 5
GD 6
GD 7
SME 2
GD 8
SME 3
GD 5
HB 3
SME 8
SME 4
SME 1
GD 9
CO 15
RC 2
GD 12
SME 5
SS 5
RC 14
SS 13
SS 14
SME 6

0 1.5 3 Miles

Legend

MS4 Monitoring Locations
- MS4 Monitoring Locations
- Rain Gauges
- Gadsden Urbanized Area Outline

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

MS4 MONITORING LOCATIONS

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

SCALE: 1:100,000
DATE: 05-13-21
PROJECT NUMBER 4482-20-044
FIGURE NO. 2

Drawing Path: R:\CADData\Huntsville\GIS Files\Gadsden MS4 Figures\Fig 2_Monitoring Locations.mxd plotted by ekennedy 05-13-2021

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Appendix II

Table B.1 – Field Observations

Table B.2 – Analytical Data

Tables B.3 to B.26 – Historical Analytical Data

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TABLE B.1 - FIELD OBSERVATIONS

GADSDEN-ETOWAH MS4 MONITORING

MONITORING POINT ID	DATE	TIME	DEPTH (FT)	PERSONNEL	WEATHER CONDITIONS	WATERBODY CONDITIONS
AT 5	11/23/2021	14:30	-2'	EAB/DJ	Sunny	Slow, smooth
GD 8	11/23/2021	14:15	-2'	EAB/DJ	Sunny	Slow, smooth
RC 2	11/23/2021	14:00	-2'	EAB/DJ	Sunny	Slow, smooth
SS 13	11/23/2021	13:00	-2'	EAB/DJ	Sunny	Slow, smooth
SS 14	11/23/2021	13:20	-2'	EAB/DJ	Sunny	Slow, smooth
GD 12	11/23/2021	13:40	-2'	EAB/DJ	Sunny	Slow, smooth
CO 14	Removed monitoring point from Stormwater Monitoring Program in September 2020					
SME 2	11/23/2021	11:45	-2'	EAB/DJ	Sunny	Slow, smooth
GD 6	11/23/2021	11:30	-2'	EAB/DJ	Sunny	Very Slow, smooth
CO 15	11/23/2021	10:50	-2'	EAB/DJ	Sunny	Very Slow, smooth
SME 7	11/23/2021	10:00	-2'	EAB/DJ	Sunny	Slow, smooth
SME 8	Dry					
HB 3	11/23/2021	10:00	-5'	PC	Sunny	Smooth
SME 4	11/23/2021	9:32	-5'	PC	Sunny	Smooth
GD 5	11/23/2021	10:20	-5'	PC	Sunny	Smooth
GD 7	11/23/2021	10:46	-5'	PC	Sunny	Smooth
GD 9	11/23/2021	11:00	-5'	PC	Sunny	Smooth
SME 1	11/23/2021	11:15	-5'	PC	Sunny	Smooth
GD 3	Removed monitoring point from Stormwater Monitoring Program in September 2020					
SME 3	Not Sampled					
SS 5	11/23/2021	12:20	-5'	PC	Sunny	Smooth
SME 5	11/23/2021	12:10	-5'	PC	Sunny	Smooth
SME 6	11/23/2021	12:44	-5'	PC	Sunny	Smooth
RC 14	11/23/2021	13:06	-5'	PC	Sunny	Smooth

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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	11/23/2021	<1.0	**8.13**	11.09	12.9	0.343	<0.0300	0.253	<0.250	2.60
GD 8	11/23/2021	<1.0	8.04	10.73	12.5	<0.100	<0.0300	<0.100	<0.250	2.70
RC 2	11/23/2021	3.5	7.66	8.33	12.2	0.124	<0.0300	<0.100	0.340	19.20
SS 13	11/23/2021	<1.0	7.11	8.26	14.8	0.16	<0.0300	<0.100	0.33	5.30
SS 14	11/23/2021	<1.0	7.46	10.28	12.7	0.315	0.1080	0.178	**0.370**	2.55
GD 12	11/23/2021	<1.0	7.80	**11.27**	12.5	<0.100	<0.0300	<0.100	<0.250	2.80
CO 14	Removed monitoring point from Stormwater Monitoring Program in September 2020									
SME 2	11/23/2021	<1.0	7.98	10.03	14.6	0.170	<0.0300	<0.100	<0.250	9.20
GD 6	11/23/2021	<1.0	7.61	8.28	**15.6**	0.132	<0.0300	0.102	0.35	8.50
CO 15	11/23/2021	2	7.87	10.67	15.2	<0.100	<0.030	<0.100	0.270	25.90
SME 7	11/23/2021	<1.0	7.78	10.45	12.2	**0.367**	**0.472**	**0.516**	<0.250	<2.50
SME 8	11/23/2021	DRY								
SME 9	11/23/2021	DUPLICATE OF AT 5				0.329	0.161	0.225	<0.250	3.10
SME 10	11/23/2021	DUPLICATE OF SME 7				**0.367**	0.355	0.440	<0.250	3.10
HB 3	11/23/2021	51.55	7.15	10.59	11.2	0.137	<0.0300	<0.100	<0.250	10.50
SME 4	11/23/2021	48.51	7.64	10.41	10.6	0.164	<0.0300	<0.100	<0.250	9.20
GD 5	11/23/2021	27.69	7.70	10.54	11.3	<0.100	<0.0300	<0.100	<0.250	8.80
GD 7	11/23/2021	25.18	7.62	11.21	11.7	0.197	<0.0300	<0.100	<0.250	11.10
GD 9	11/23/2021	39.41	7.84	10.71	13.9	0.113	<0.0300	0.124	<0.250	33.90
SME 1	11/23/2021	18.42	7.91	11.34	12.4	<0.100	0.076	0.165	<0.250	12.70
GD 3	Removed monitoring point from Stormwater Monitoring Program in September 2020									
SME 3	11/23/2021	Not Sampled								
SS 5	11/23/2021	10.84	7.40	10.89	13.7	0.126	<0.0300	<0.100	<0.250	7.70
SME 5	11/23/2021	**68.29**	7.78	10.42	14.9	0.231	<0.0300	<0.100	<0.250	14.00
SME 6	11/23/2021	9.79	7.68	10.35	15.1	0.231	<0.0300	<0.100	<0.250	11.20
RC 14	11/23/2021	24.60	7.96	10.57	13.3	<0.100	<0.0300	0.103	<0.250	**40.20**

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

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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
AT 5	12/11/2018	29.2	7.59	10.73	9.4	1.09	0.066	0.204	0.579	46.2

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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	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

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - meter malfunctioned in field

ADEM Watermark

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
GD 8	12/11/2018	16.0	7.87	11.71	9.2	0.326	<0.025	<0.100	0.406	24.4

ADEM Watermark

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	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

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - meter malfunctioned in field

ADEM Watermark

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
RC 2	12/11/2018	16.0	7.54	11.41	7.7	0.316	<0.025	<0.100	0.479	3.1

ADEM Watermark

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	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

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - meter malfunctioned in field

ADEM Watermark

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
SS 13	12/11/2018	8.2	7.37	10.79	7.4	0.451	<0.025	<0.100	0.655	8.6

ADEM Watermark

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	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	0.33	5.30

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - meter malfunctioned in field

ADEM Watermark

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
SS 14	12/11/2018	8.4	6.95	11.53	7.4	0.812	0.057	0.117	0.635	4.3

ADEM Watermark

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	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

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - meter malfunctioned in field

ADEM Watermark

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
GD 12	12/11/2018	9.5	6.68	11.46	7.8	0.313	<0.025	<0.100	0.574	4.3

ADEM Watermark

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	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

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - meter malfunctioned in field

ADEM Watermark

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
CO 14	12/11/2018	7.6	7.38	10.74	7.7	0.184	<0.025	<0.100	0.567	4.9

ADEM Watermark

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	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

ADEM Watermark

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
SME 2	12/11/2018	9.7	7.82	9.99	7.9	0.212	<0.025	0.166	0.368	5.1

ADEM Watermark

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

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - meter malfunctioned in field

ADEM Watermark

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
GD 6	12/11/2018	13.8	7.97	10.92	8.2	0.397	<0.025	<0.100	0.362	5.8

ADEM Watermark

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	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

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - meter malfunctioned in field

ADEM Watermark

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
CO 15	12/11/2018	111.3	8.73	11.94	7.0	0.168	<0.025	0.107	1.16	10.1

ADEM Watermark

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	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

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

*** - outfall was dry

* - meter malfunctioned in field

ADEM Watermark

TABLE B.14 - 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	12.20	0.37	0.472	0.52	<0.250	<2.50

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - meter malfunctioned in field

ADEM Watermark

TABLE B.13 - 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

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - meter malfunctioned in field

ADEM Watermark

TABLE B.23 - 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

ADEM Watermark

TABLE B.23 - 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	7.3
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	51.6	7.15	10.59	11.2	0.137	<0.0300	<0.100	<0.250	10.5

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

ADEM Watermark

TABLE B.25 - 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

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

ADEM Watermark

TABLE B.20 - 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

ADEM Watermark

TABLE B.20 - 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

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

ADEM Watermark

TABLE B.19 - 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

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TABLE B.19 - 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

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

ADEM Watermark

TABLE B.18 - 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

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TABLE B.18 - 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

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

ADEM Watermark

TABLE B.17 - 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

ADEM Watermark

TABLE B.17 - 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

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

ADEM Watermark

TABLE B.21 - 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

ADEM Watermark

TABLE B.21 - 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
GD3	removed Monitoring Point from Stormwater Monitoring Program in September 2020									

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

ADEM Watermark

TABLE B.22 - 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

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TABLE B.22 - 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

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

ADEM Watermark

TABLE B.16 - 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

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TABLE B.16 - 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

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

ADEM Watermark

TABLE B.25 - 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	14.90	0.23	<0.0300	<0.100	<0.250	14.0

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

ADEM Watermark

TABLE B.26 - 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	15.10	0.23	<0.0300	<0.100	<0.250	11.2

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

ADEM Watermark

TABLE B.15 - 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

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TABLE B.15 - 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

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

ADEM Watermark

CHART 1 - TURBIDITY ANALYTICAL DATA

GADSDEN-ETOWAH MS4 MONITORING
NPDES PERMIT NO. ALR040009

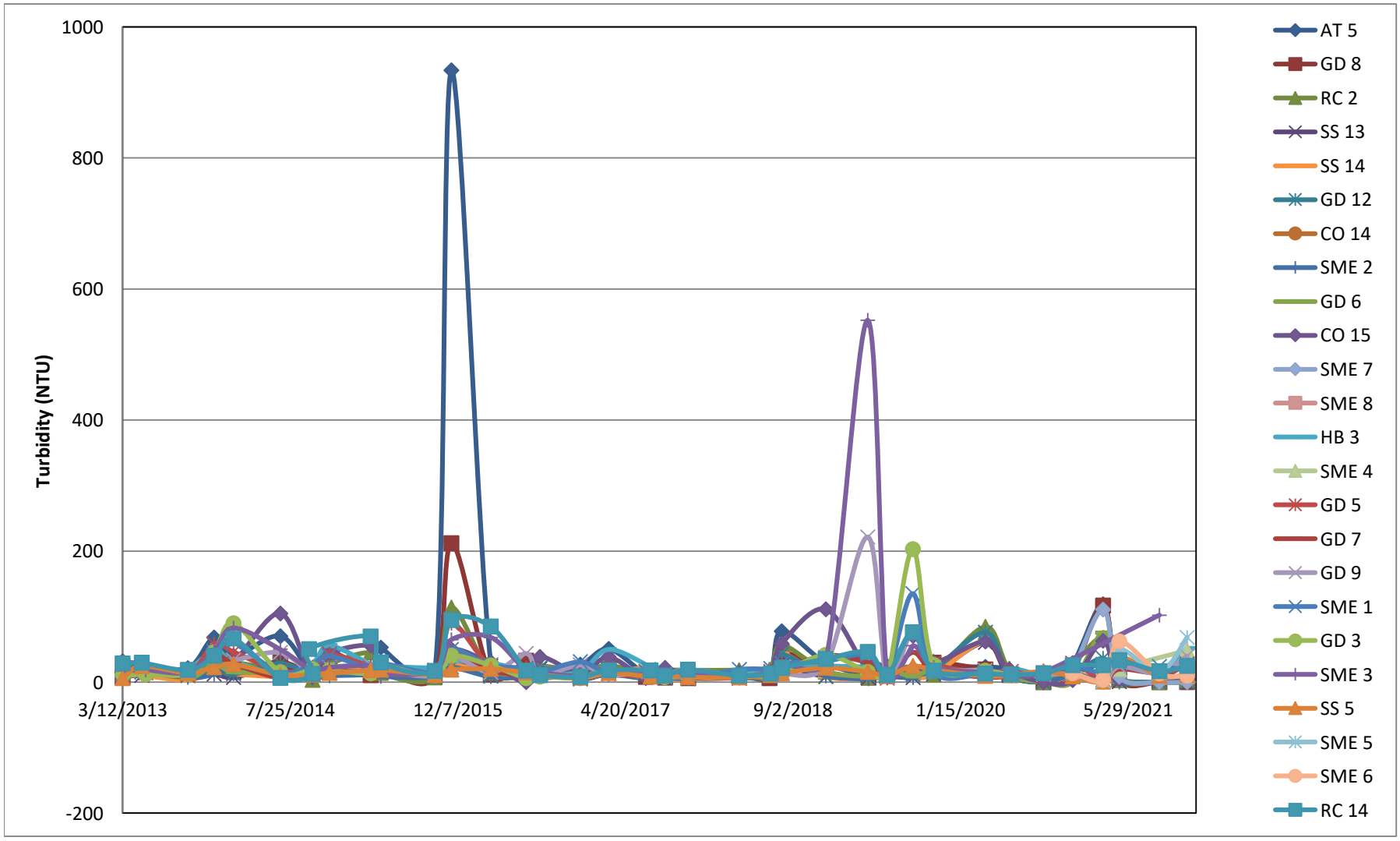

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CHART 2 - pH ANALYTICAL DATA

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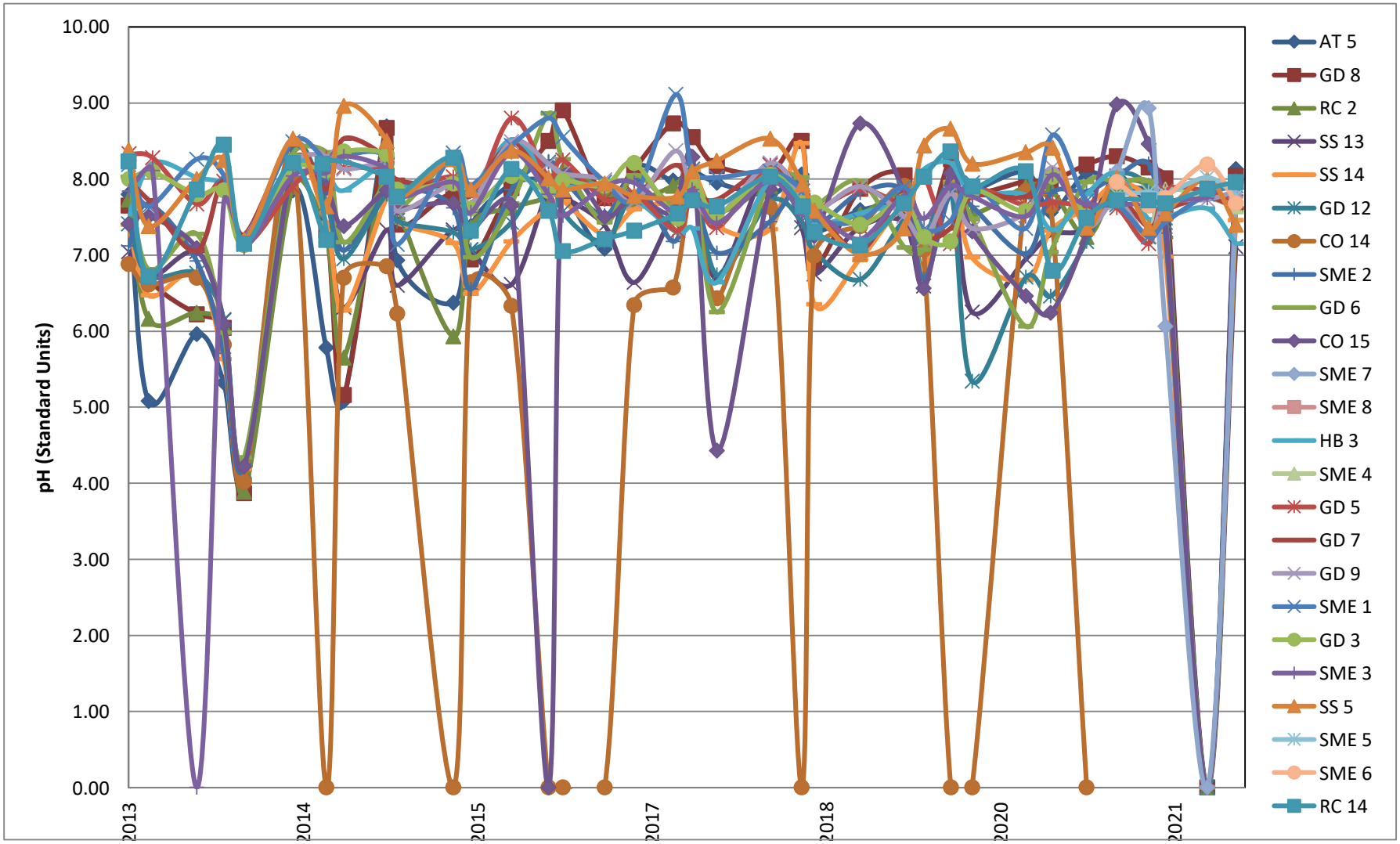

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CHART 3 - DISSOLVED OXYGEN ANALYTICAL DATA

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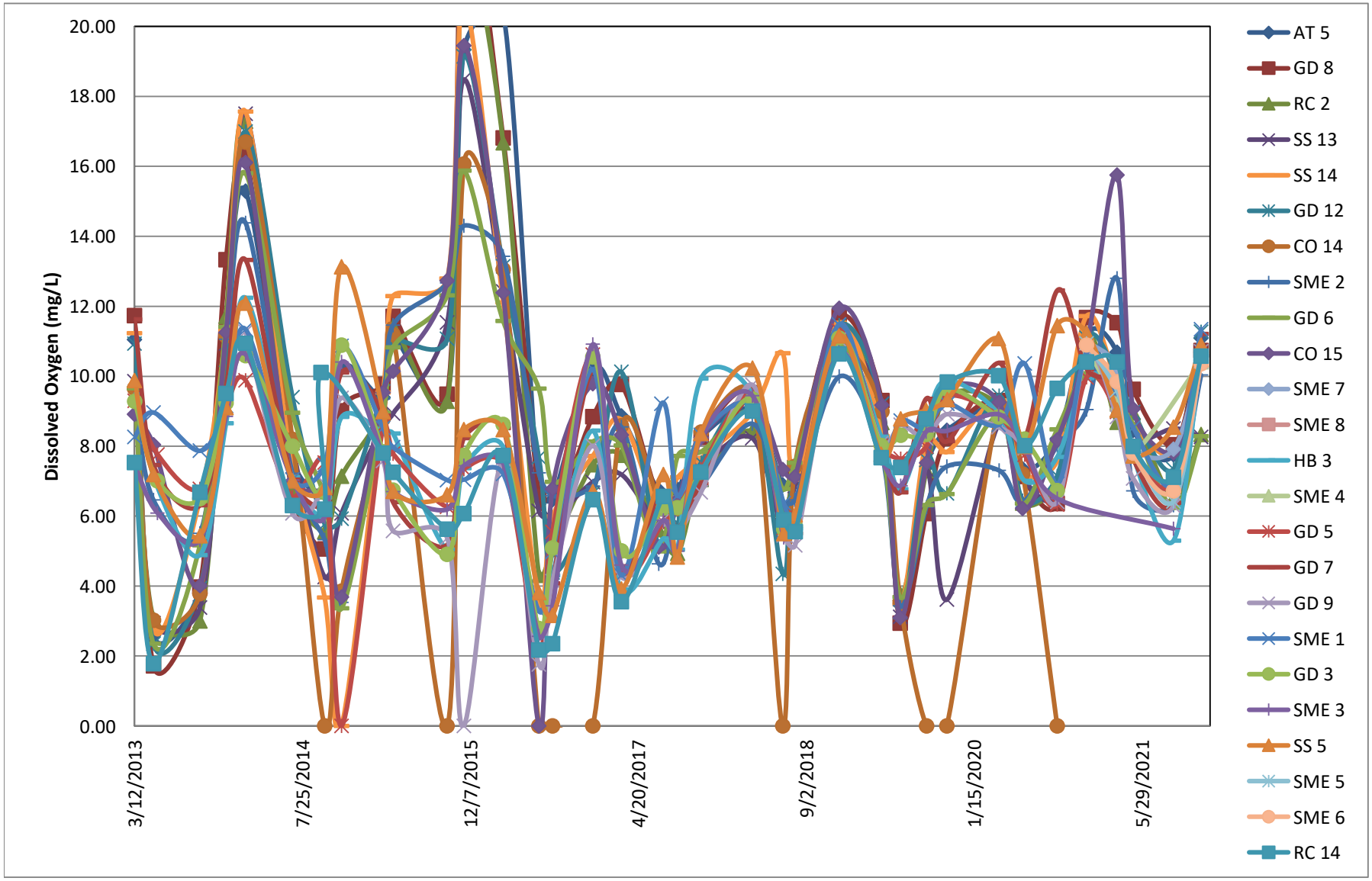

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CHART 4 - TEMPERATURE ANALYTICAL DATA

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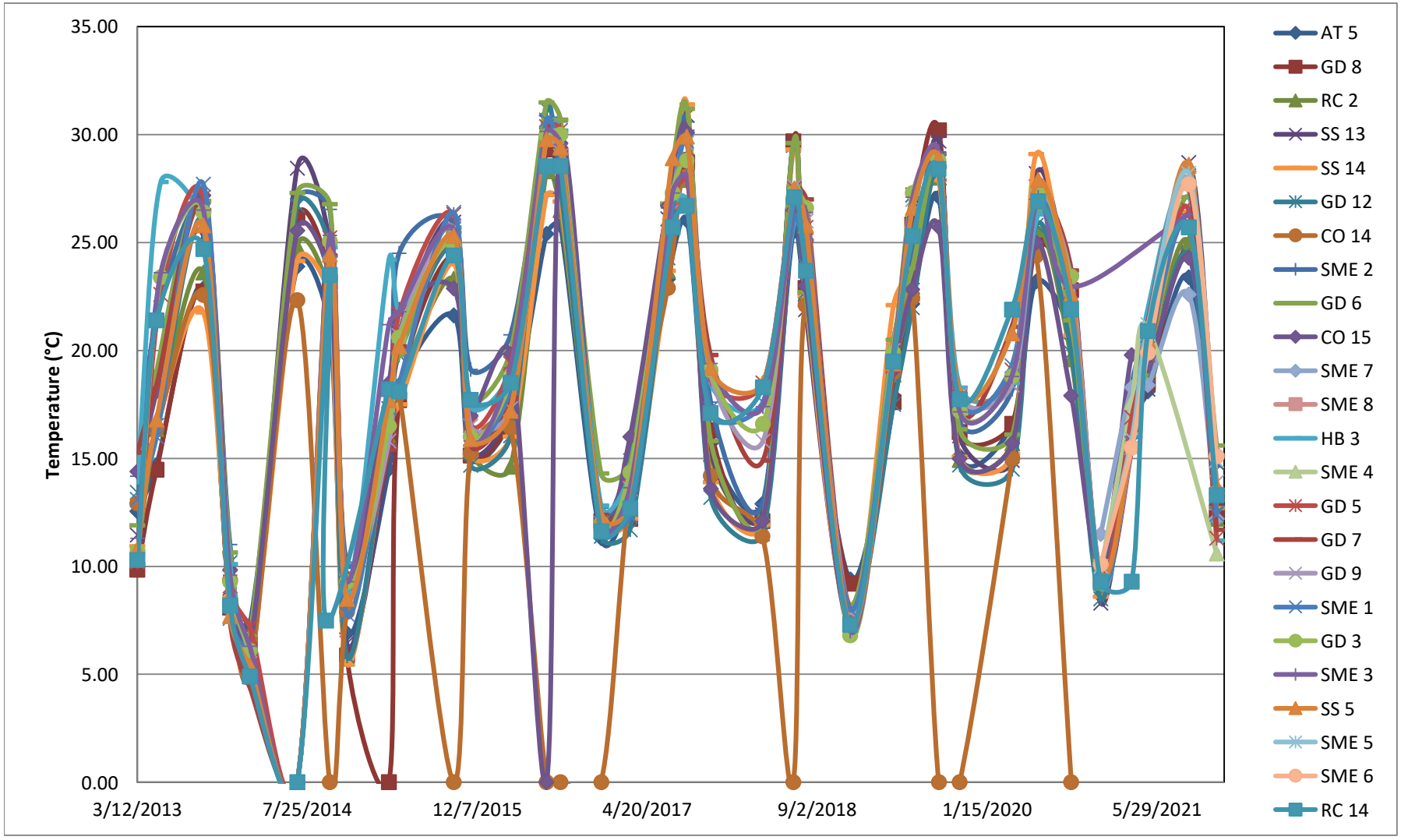

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CHART 5 - NITRATE-NITRITE ANALYTICAL DATA

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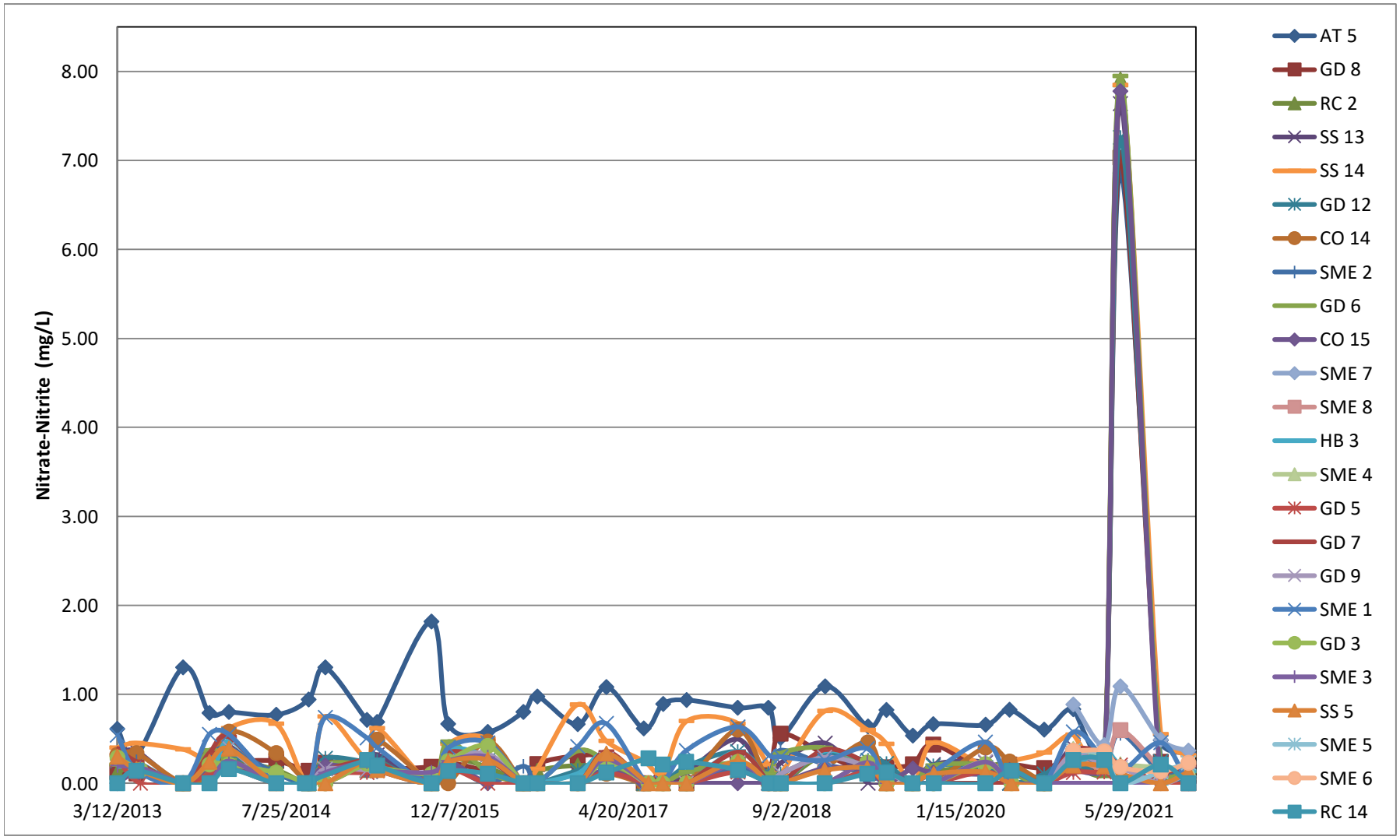

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CHART 6 - ORTHOPHOSPHATE ANALYTICAL DATA

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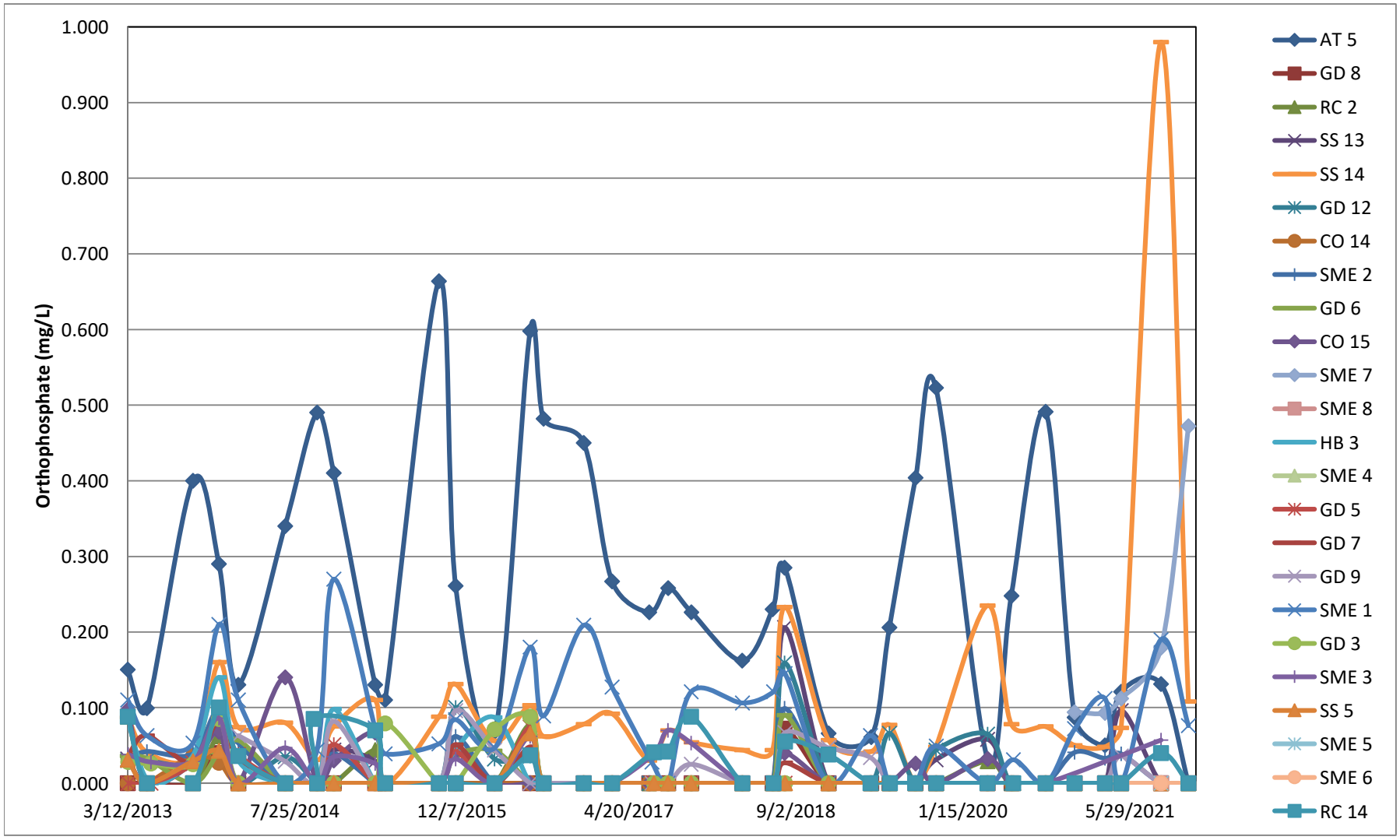

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CHART 7 - TOTAL PHOSPHOROUS ANALYTICAL DATA

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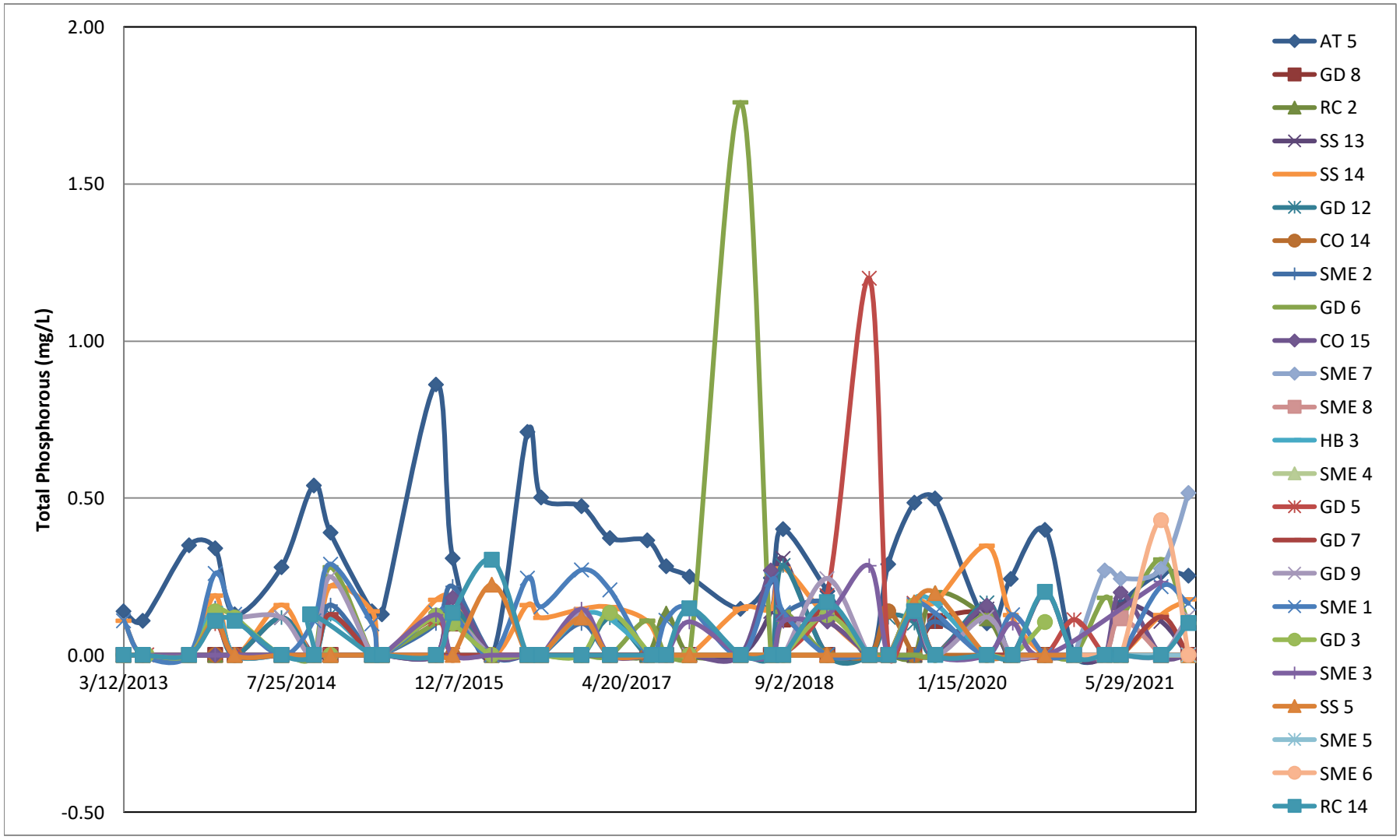

ADEM Watermark

CHART 8 - TOTAL KJELDAHL NITROGEN ANALYTICAL DATA

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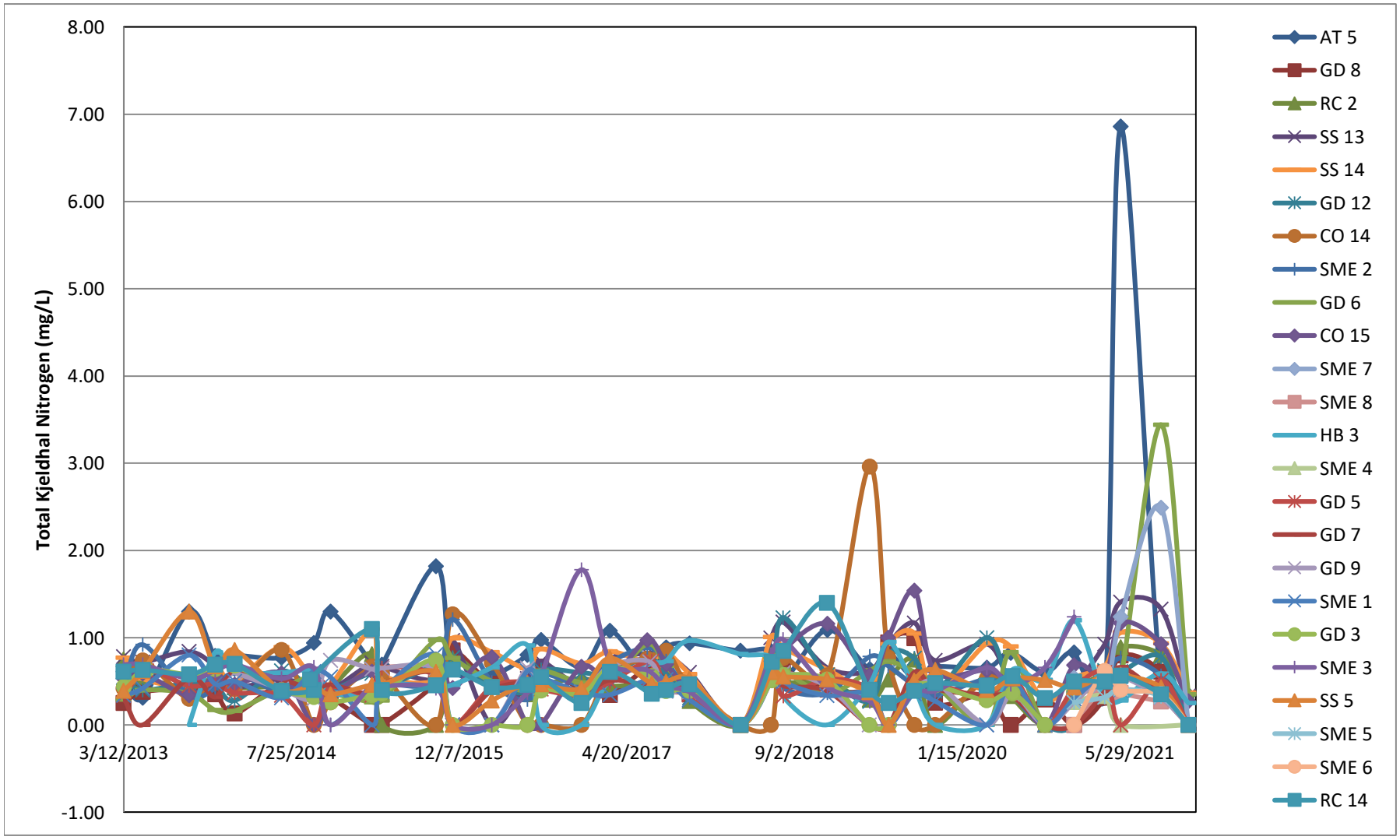
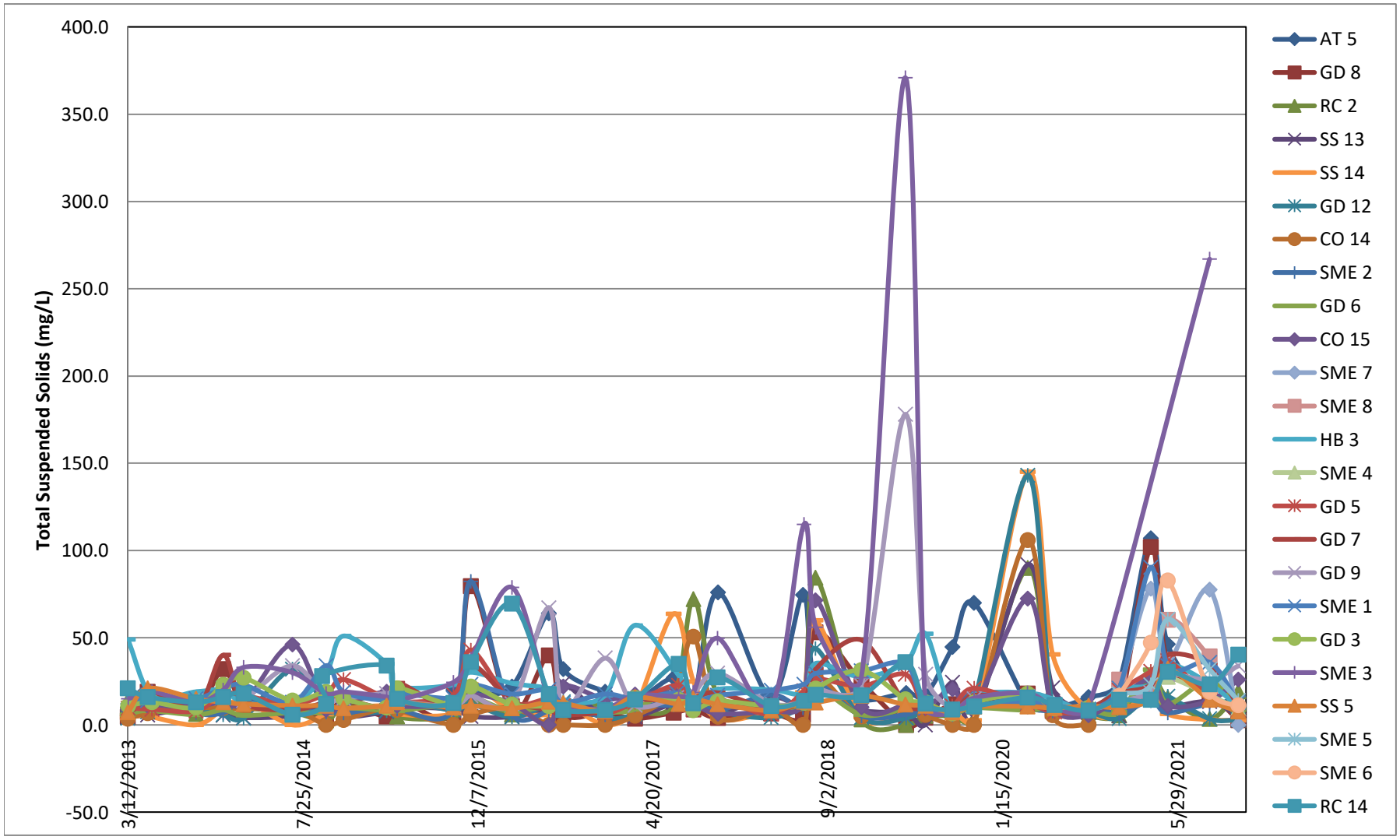


ADEM Watermark

CHART 9 - TOTAL SUSPENDED SOLIDS ANALYTICAL DATA

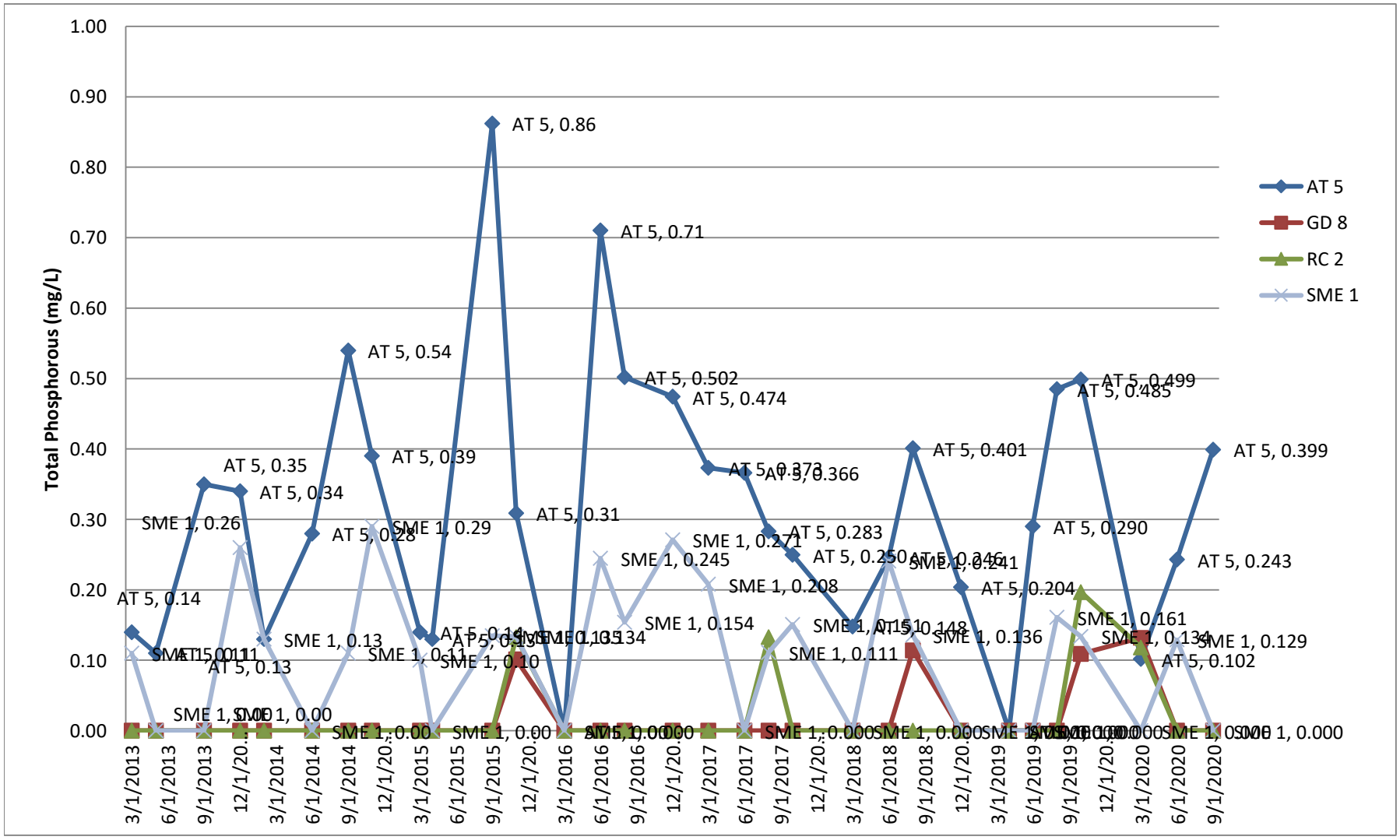
GADSDEN-ETOWAH MS4 MONITORING
NPDES PERMIT NO. ALR040009



ADEM Watermark

CHART 7 - TOTAL PHOSPHOROUS ANALYTICAL DATA

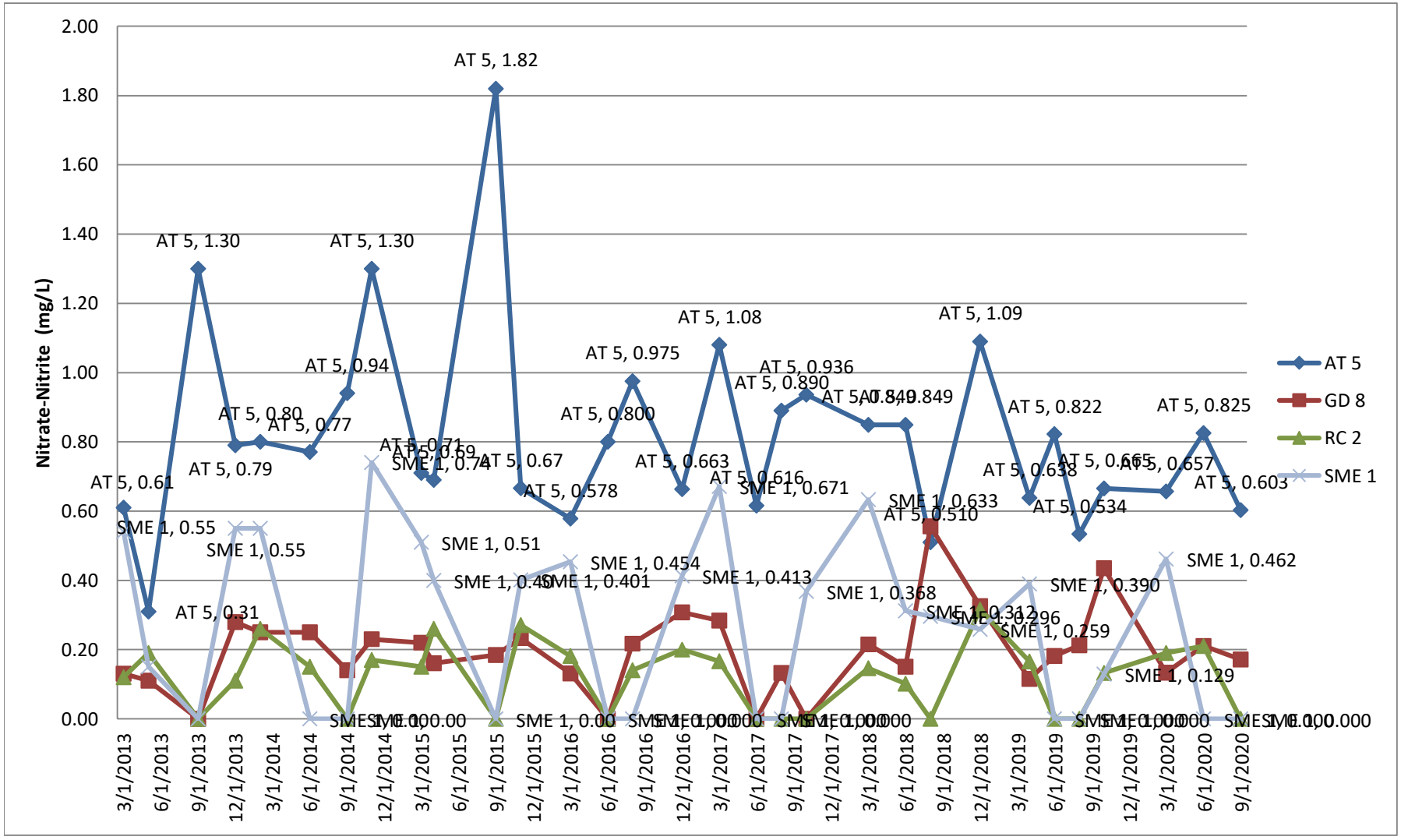
GADSDEN-ETOWAH MS4 MONITORING
NPDES PERMIT NO. ALR040009



ADEM Watermark

CHART 5 - NITRATE-NITRITE ANALYTICAL DATA

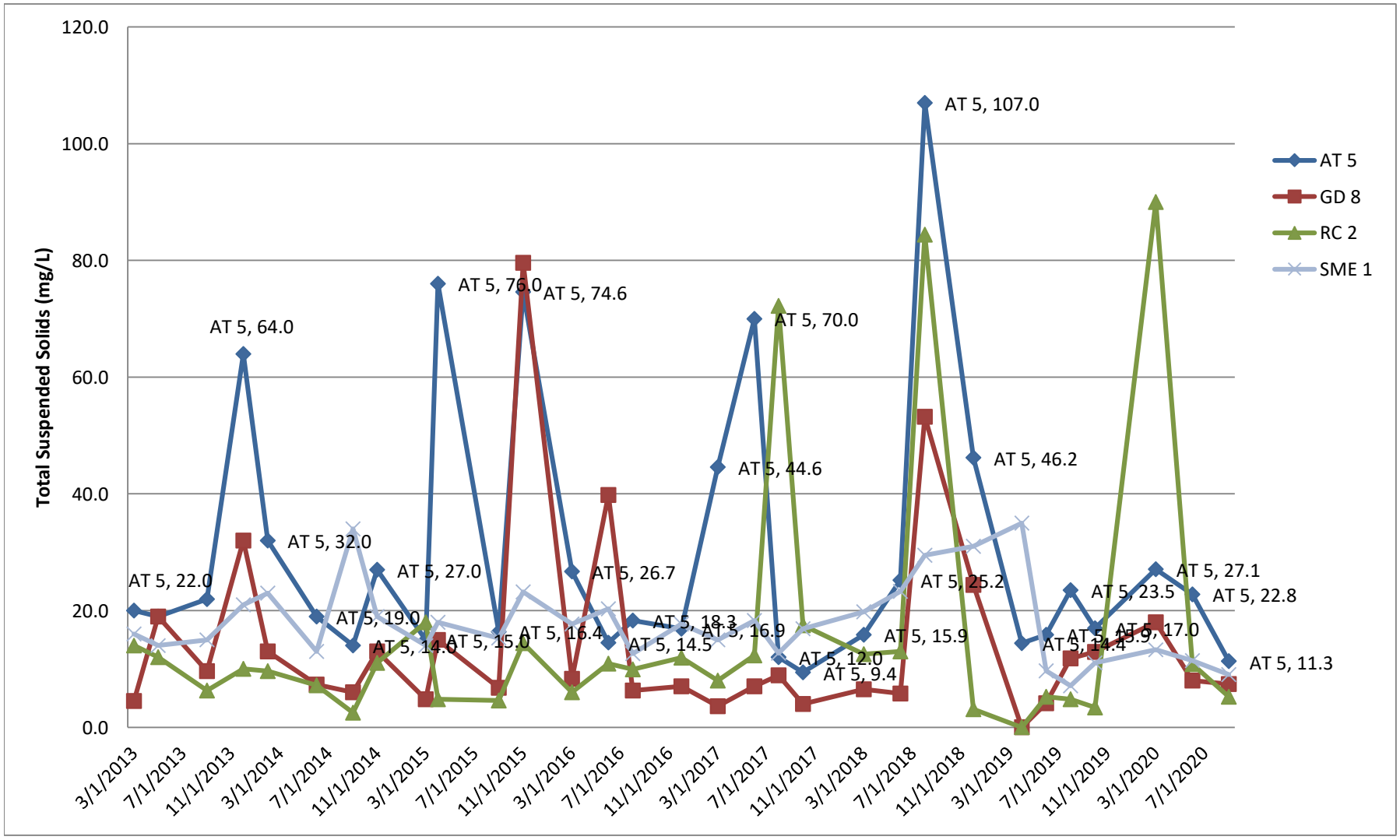
GADSDEN-ETOWAH MS4 MONITORING
NPDES PERMIT NO. ALR040009



ADEM Watermark

CHART 9 - TOTAL SUSPENDED SOLIDS ANALYTICAL DATA

GADSDEN-ETOWAH MS4 MONITORING
NPDES PERMIT NO. ALR040009



ADEM Watermark

CHART 1 - TURBIDITY ANALYTICAL DATA

GADSDEN-ETOWAH MS4 MONITORING
NPDES PERMIT NO. ALR040009

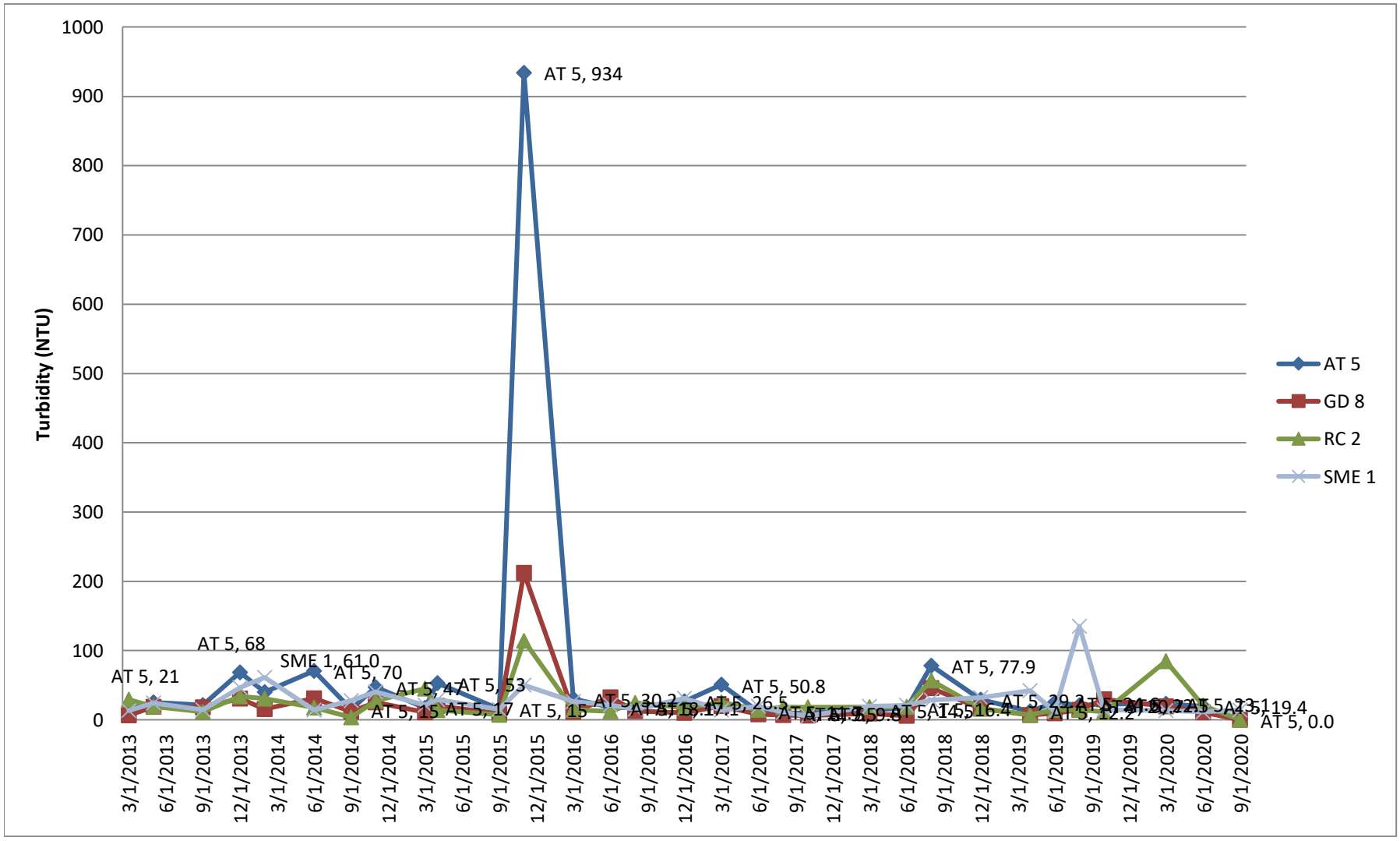


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CHART 6 - ORTHOPHOSPHATE ANALYTICAL DATA

GADSDEN-ETOWAH MS4 MONITORING
NPDES PERMIT NO. ALR040009

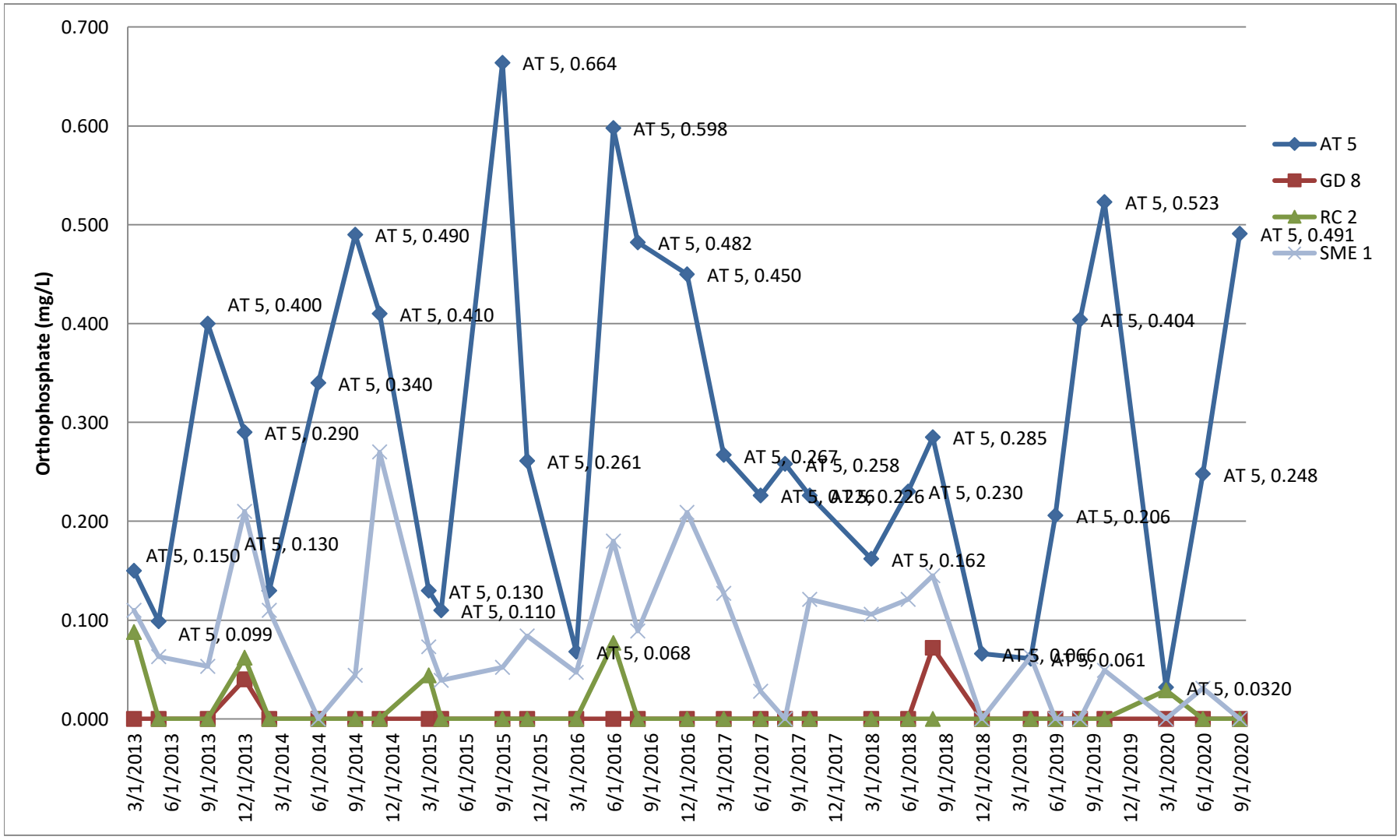

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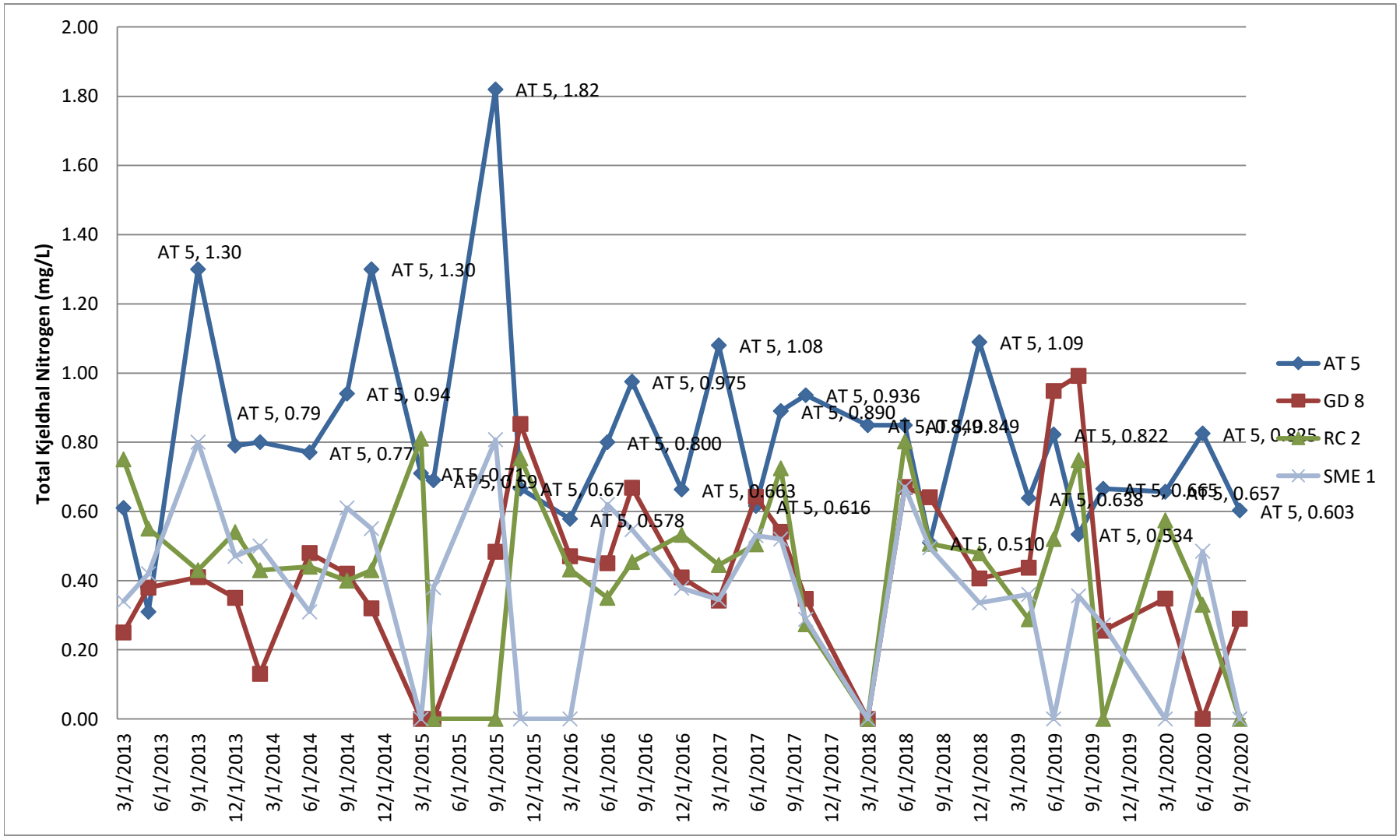
CHART 8 - TOTAL KJELDAHL NITROGEN ANALYTICAL DATA

GADSDEN-ETOWAH MS4 MONITORING
NPDES PERMIT NO. ALR040009



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Appendix III

Laboratory Report No. L1435038, dated November 24, 2021

Laboratory Report No. L1435216, dated November 24, 2021

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ANALYTICAL REPORT

December 29, 2021

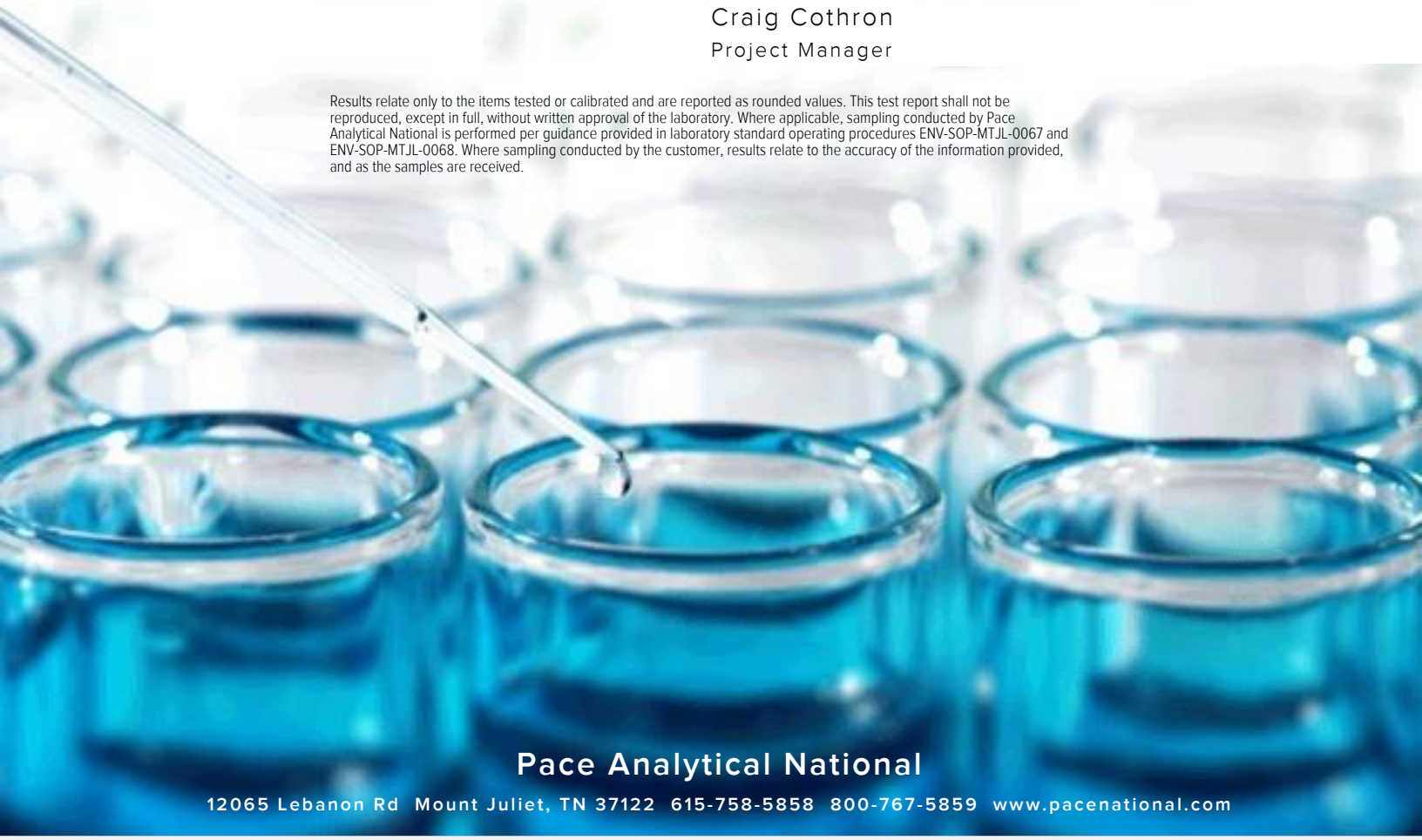
S&ME - Huntsville

Sample Delivery Group:	L1435038
Samples Received:	11/24/2021
Project Number:	4482-20-044
Description:	Gadsden Water MS4 Samples
Site:	BOAT
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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SAMPLE SUMMARY

HB3 L1435038-01 WW

Collected by: Pat Curwen | Collected date/time: 11/23/21 10:00 | Received date/time: 11/24/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1780748	1	11/28/21 04:03	11/28/21 05:55	BRG	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1794599	1	12/15/21 12:59	12/24/21 15:35	MCG	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1790483	1	12/21/21 13:29	12/21/21 13:29	LDT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1789564	1	12/15/21 12:59	12/24/21 09:30	MCG	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1779807	1	11/24/21 17:34	11/24/21 17:34	UNP	Mt. Juliet, TN

SME4 L1435038-02 WW

Collected by: Pat Curwen | Collected date/time: 11/23/21 09:32 | Received date/time: 11/24/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1782062	1	11/30/21 19:47	11/30/21 22:39	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1794599	1	12/15/21 12:59	12/24/21 15:36	MCG	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1790483	1	12/21/21 13:30	12/21/21 13:30	LDT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1789564	1	12/15/21 12:59	12/24/21 09:32	MCG	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1779807	1	11/24/21 17:34	11/24/21 17:34	UNP	Mt. Juliet, TN

GD5 L1435038-03 WW

Collected by: Pat Curwen | Collected date/time: 11/23/21 10:20 | Received date/time: 11/24/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1782062	1	11/30/21 19:47	11/30/21 22:39	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1794599	1	12/15/21 12:59	12/24/21 15:40	MCG	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1790483	1	12/21/21 13:35	12/21/21 13:35	LDT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1789564	1	12/15/21 12:59	12/24/21 09:33	MCG	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1779807	1	11/24/21 17:35	11/24/21 17:35	UNP	Mt. Juliet, TN

GD7 L1435038-04 WW

Collected by: Pat Curwen | Collected date/time: 11/23/21 11:00 | Received date/time: 11/24/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1782062	1	11/30/21 19:47	11/30/21 22:39	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1794599	1	12/15/21 12:59	12/24/21 15:42	MCG	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1790483	1	12/21/21 13:38	12/21/21 13:38	LDT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1789564	1	12/15/21 12:59	12/24/21 09:37	MCG	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1779807	1	11/24/21 17:35	11/24/21 17:35	UNP	Mt. Juliet, TN

GD9 L1435038-05 WW

Collected by: Pat Curwen | Collected date/time: 11/23/21 11:15 | Received date/time: 11/24/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1782062	1	11/30/21 19:47	11/30/21 22:39	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1790400	1	12/16/21 12:28	12/16/21 17:39	KEG	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1790483	1	12/21/21 13:42	12/21/21 13:42	LDT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1790793	1	12/16/21 12:28	12/26/21 09:05	MCG	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1779807	1	11/24/21 17:36	11/24/21 17:36	UNP	Mt. Juliet, TN

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SME1 L1435038-06 WW

Collected by: Pat Curwen | Collected date/time: 11/23/21 10:46 | Received date/time: 11/24/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1782062	1	11/30/21 19:47	11/30/21 22:39	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1790400	1	12/16/21 12:28	12/16/21 17:40	KEG	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1790483	1	12/21/21 13:43	12/21/21 13:43	LDT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1790793	1	12/16/21 12:28	12/26/21 09:07	MCG	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1779807	1	11/24/21 17:38	11/24/21 17:38	UNP	Mt. Juliet, TN

SS5 L1435038-07 WW

Collected by: Pat Curwen | Collected date/time: 11/23/21 12:20 | Received date/time: 11/24/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1782062	1	11/30/21 19:47	11/30/21 22:39	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1790400	1	12/16/21 12:28	12/16/21 17:41	KEG	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1790483	1	12/21/21 13:44	12/21/21 13:44	LDT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1790793	1	12/16/21 12:28	12/26/21 09:08	MCG	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1779807	1	11/24/21 17:39	11/24/21 17:39	UNP	Mt. Juliet, TN

SME5 L1435038-08 WW

Collected by: Pat Curwen | Collected date/time: 11/23/21 12:10 | Received date/time: 11/24/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1782062	1	11/30/21 19:47	11/30/21 22:39	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1790400	1	12/16/21 12:28	12/16/21 17:43	KEG	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1790483	1	12/21/21 13:47	12/21/21 13:47	LDT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1790793	1	12/16/21 12:28	12/26/21 09:09	MCG	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1779807	1	11/24/21 17:39	11/24/21 17:39	UNP	Mt. Juliet, TN

SME6 L1435038-09 WW

Collected by: Pat Curwen | Collected date/time: 11/23/21 12:44 | Received date/time: 11/24/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1782062	1	11/30/21 19:47	11/30/21 22:39	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1790400	1	12/16/21 12:28	12/16/21 17:44	KEG	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1790483	1	12/21/21 13:53	12/21/21 13:53	LDT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1790793	1	12/16/21 12:28	12/26/21 09:11	MCG	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1779807	1	11/24/21 17:39	11/24/21 17:39	UNP	Mt. Juliet, TN

RC14 L1435038-10 WW

Collected by: Pat Curwen | Collected date/time: 11/23/21 13:06 | Received date/time: 11/24/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1782064	1	11/30/21 19:27	11/30/21 23:53	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1794769	1	12/19/21 10:51	12/28/21 16:30	LDT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1790483	1	12/21/21 13:54	12/21/21 13:54	LDT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1791866	1	12/19/21 10:51	12/25/21 17:54	MCG	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1779807	1	11/24/21 17:40	11/24/21 17:40	UNP	Mt. Juliet, TN

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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

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Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	10.5		2.50	1	11/28/2021 05:55	WG1780748

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	12/24/2021 15:35	WG1794599

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.137		0.100	1	12/21/2021 13:29	WG1790483

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	12/24/2021 09:30	WG1789564

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	11/24/2021 17:34	WG1779807

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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	11/30/2021 22:39	WG1782062

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	12/24/2021 15:36	WG1794599

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.164		0.100	1	12/21/2021 13:30	WG1790483

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	12/24/2021 09:32	WG1789564

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	11/24/2021 17:34	WG1779807

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Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	8.80		2.50	1	11/30/2021 22:39	WG1782062

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	12/24/2021 15:40	WG1794599

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	12/21/2021 13:35	WG1790483

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	12/24/2021 09:33	WG1789564

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	11/24/2021 17:35	WG1779807

ADEM Watermark

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	11/30/2021 22:39	WG1782062

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	12/24/2021 15:42	WG1794599

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.197		0.100	1	12/21/2021 13:38	WG1790483

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	12/24/2021 09:37	WG1789564

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	11/24/2021 17:35	WG1779807

ADEM Watermark

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	33.9		2.58	1	11/30/2021 22:39	WG1782062

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	12/16/2021 17:39	WG1790400

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	12/21/2021 13:42	WG1790483

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	0.124	B	0.100	1	12/26/2021 09:05	WG1790793

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	11/24/2021 17:36	WG1779807

ADEM Watermark

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	12.7		2.50	1	11/30/2021 22:39	WG1782062

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	12/16/2021 17:40	WG1790400

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	12/21/2021 13:43	WG1790483

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	0.165	B	0.100	1	12/26/2021 09:07	WG1790793

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	0.0760		0.0300	1	11/24/2021 17:38	WG1779807

ADEM Watermark

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	7.70		2.50	1	11/30/2021 22:39	WG1782062

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	12/16/2021 17:41	WG1790400

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	12/21/2021 13:44	WG1790483

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	12/26/2021 09:08	WG1790793

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	11/24/2021 17:39	WG1779807

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Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	14.0		2.63	1	11/30/2021 22:39	WG1782062

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	12/16/2021 17:43	WG1790400

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.231		0.100	1	12/21/2021 13:47	WG1790483

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	12/26/2021 09:09	WG1790793

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	11/24/2021 17:39	WG1779807

ADEM Watermark

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	11.2		2.50	1	11/30/2021 22:39	WG1782062

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	12/16/2021 17:44	WG1790400

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.231		0.100	1	12/21/2021 13:53	WG1790483

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	12/26/2021 09:11	WG1790793

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	11/24/2021 17:39	WG1779807

ADEM Watermark

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	40.2		5.00	1	11/30/2021 23:53	WG1782064

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	12/28/2021 16:30	WG1794769

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	12/21/2021 13:54	WG1790483

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	0.103	B	0.100	1	12/25/2021 17:54	WG1791866

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	11/24/2021 17:40	WG1779807

ADEM Watermark

Method Blank (MB)

(MB) R3735954-1 11/28/21 05:55

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Suspended Solids	U		2.50	2.50

L1435035-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1435035-01 11/28/21 05:55 • (DUP) R3735954-3 11/28/21 05:55

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Suspended Solids	40.0	46.4	1	14.8	P1	5

L1435043-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1435043-02 11/28/21 05:55 • (DUP) R3735954-4 11/28/21 05:55

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Suspended Solids	10.0	10.8	1	7.69	P1	5

Laboratory Control Sample (LCS)

(LCS) R3735954-2 11/28/21 05:55

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Suspended Solids	773	764	98.8	85.7-114	

ADEM Watermark

QUALITY CONTROL SUMMARY

L1435038-02,03,04,05,06,07,08,09

Method Blank (MB)

(MB) R3735932-1 11/30/21 22:39

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Suspended Solids	U		2.50	2.50

L1434563-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1434563-03 11/30/21 22:39 • (DUP) R3735932-3 11/30/21 22:39

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Suspended Solids	202	202	1	0.000		5

L1435029-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1435029-01 11/30/21 22:39 • (DUP) R3735932-4 11/30/21 22:39

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Suspended Solids	59.0	69.0	1	15.6	P1	5

Laboratory Control Sample (LCS)

(LCS) R3735932-2 11/30/21 22:39

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Suspended Solids	773	752	97.3	85.7-114	

ADEM Watermark

Method Blank (MB)

(MB) R3735956-1 11/30/21 23:53

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Suspended Solids	U		2.50	2.50

L1435421-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1435421-01 11/30/21 23:53 • (DUP) R3735956-3 11/30/21 23:53

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Suspended Solids	66.0	72.0	1	8.70	P1	5

L1435620-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1435620-01 11/30/21 23:53 • (DUP) R3735956-4 11/30/21 23:53

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Suspended Solids	149	156	1	4.59		5

Laboratory Control Sample (LCS)

(LCS) R3735956-2 11/30/21 23:53

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Suspended Solids	773	796	103	85.7-114	

ADEM Watermark

QUALITY CONTROL SUMMARY

L1435038-05,06,07,08,09

Method Blank (MB)

(MB) R3741679-1 12/16/21 17:36

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Kjeldahl Nitrogen, TKN	U		0.140	0.250

L1435038-09 Original Sample (OS) • Duplicate (DUP)

(OS) L1435038-09 12/16/21 17:44 • (DUP) R3741679-3 12/16/21 17:45

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) R3741679-2 12/16/21 17:37

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Kjeldahl Nitrogen, TKN	10.2	10.4	102	75.2-121	

L1435038-09 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1435038-09 12/16/21 17:44 • (MS) R3741679-4 12/16/21 17:47 • (MSD) R3741679-5 12/16/21 17:48

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	5.44	5.28	109	106	1	90.0-110			2.99	20

L1435386-02 Original Sample (OS) • Matrix Spike (MS)

(OS) L1435386-02 12/16/21 17:55 • (MS) R3741679-6 12/16/21 17:56

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	0.688	5.14	89.0	1	90.0-110	J6

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QUALITY CONTROL SUMMARY

L1435038-01,02,03,04

Method Blank (MB)

(MB) R3744721-1 12/24/21 15:08

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Kjeldahl Nitrogen, TKN	U		0.140	0.250

L1434772-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1434772-01 12/24/21 15:12 • (DUP) R3744721-3 12/24/21 15:13

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Kjeldahl Nitrogen, TKN	0.519	0.598	1	14.1		20

L1434783-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1434783-01 12/24/21 15:17 • (DUP) R3744721-6 12/24/21 15:19

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Kjeldahl Nitrogen, TKN	ND	ND	1	38.3	P1	20

Laboratory Control Sample (LCS)

(LCS) R3744721-2 12/24/21 15:09

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Kjeldahl Nitrogen, TKN	10.2	10.3	101	75.2-121	

L1434772-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1434772-01 12/24/21 15:12 • (MS) R3744721-4 12/24/21 15:15 • (MSD) R3744721-5 12/24/21 15:16

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	0.519	5.94	5.57	108	101	1	90.0-110			6.43	20

L1434783-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1434783-01 12/24/21 15:17 • (MS) R3744721-7 12/24/21 15:20

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	ND	5.26	101	1	90.0-110	

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Method Blank (MB)

(MB) R3745684-1 12/28/21 16:14

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Kjeldahl Nitrogen, TKN	U		0.140	0.250

Laboratory Control Sample (LCS)

(LCS) R3745684-2 12/28/21 16:15

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Kjeldahl Nitrogen, TKN	10.2	10.5	103	75.2-121	

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QUALITY CONTROL SUMMARY

L1435038-01,02,03,04,05,06,07,08,09,10

Method Blank (MB)

(MB) R3743258-1 12/21/21 13:20

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Nitrate-Nitrite	U		0.0500	0.100

L1435038-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1435038-03 12/21/21 13:35 • (DUP) R3743258-3 12/21/21 13:37

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

L1435038-07 Original Sample (OS) • Duplicate (DUP)

(OS) L1435038-07 12/21/21 13:44 • (DUP) R3743258-6 12/21/21 13:46

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Nitrate-Nitrite	0.126	0.125	1	0.797		20

Laboratory Control Sample (LCS)

(LCS) R3743258-2 12/21/21 13:21

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Nitrate-Nitrite	2.50	2.64	106	90.0-110	

L1435038-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1435038-04 12/21/21 13:38 • (MS) R3743258-4 12/21/21 13:39 • (MSD) R3743258-5 12/21/21 13:40

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	0.197	2.62	2.79	96.9	104	1	90.0-110			6.28	20

L1435038-08 Original Sample (OS) • Matrix Spike (MS)

(OS) L1435038-08 12/21/21 13:47 • (MS) R3743258-7 12/21/21 13:52

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Nitrate-Nitrite	2.50	0.231	2.61	95.2	1	90.0-110	

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Method Blank (MB)

(MB) R3744655-1 12/24/21 09:07

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Phosphorus,Total	0.0641	J	0.0350	0.100

L1434772-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1434772-01 12/24/21 09:10 • (DUP) R3744655-3 12/24/21 09:11

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Phosphorus,Total	0.808	0.888	1	9.43		20

L1434783-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1434783-01 12/24/21 09:15 • (DUP) R3744655-6 12/24/21 09:16

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Phosphorus,Total	0.462	0.465	1	0.647		20

Laboratory Control Sample (LCS)

(LCS) R3744655-2 12/24/21 09:09

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Phosphorus,Total	1.33	1.39	105	81.2-118	

L1434772-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1434772-01 12/24/21 09:10 • (MS) R3744655-4 12/24/21 09:12 • (MSD) R3744655-5 12/24/21 09:14

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 %
Phosphorus,Total	2.50	0.808	3.33	3.20	101	95.7	1	90.0-110			3.98	20

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Method Blank (MB)

(MB) R3744758-1 12/26/21 09:03

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Phosphorus,Total	0.0395	J	0.0350	0.100

L1435038-09 Original Sample (OS) • Duplicate (DUP)

(OS) L1435038-09 12/26/21 09:11 • (DUP) R3744758-3 12/26/21 09:12

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) R3744758-2 12/26/21 09:04

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Phosphorus,Total	1.33	1.38	104	81.2-118	

L1435038-09 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1435038-09 12/26/21 09:11 • (MS) R3744758-4 12/26/21 09:13 • (MSD) R3744758-5 12/26/21 09:14

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 %
Phosphorus,Total	2.50	ND	2.57	2.52	100	98.1	1	90.0-110			1.96	20

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QUALITY CONTROL SUMMARY

L1435038-10

Method Blank (MB)

(MB) R3744734-1 12/25/21 17:42

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Phosphorus,Total	0.0407	J	0.0350	0.100

L1434964-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1434964-01 12/25/21 17:45 • (DUP) R3744734-3 12/25/21 17:46

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Phosphorus,Total	2.78	2.70	1	2.92		20

L1435216-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1435216-03 12/25/21 18:02 • (DUP) R3744734-6 12/25/21 18:03

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) R3744734-2 12/25/21 17:44

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Phosphorus,Total	1.33	1.39	105	81.2-118	

L1434964-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1434964-01 12/25/21 17:45 • (MS) R3744734-4 12/25/21 17:48 • (MSD) R3744734-5 12/25/21 17:49

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 %
Phosphorus,Total	2.50	2.78	5.06	5.00	91.2	88.8	1	90.0-110	E	J6	1.19	20

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QUALITY CONTROL SUMMARY

L1435038-01,02,03,04,05,06,07,08,09,10

Method Blank (MB)

(MB) R3733743-1 11/24/21 17:32

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Phosphate,Ortho	U		0.0140	0.0300

L1435038-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1435038-02 11/24/21 17:34 • (DUP) R3733743-3 11/24/21 17:35

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

L1435038-10 Original Sample (OS) • Duplicate (DUP)

(OS) L1435038-10 11/24/21 17:40 • (DUP) R3733743-6 11/24/21 17:41

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) R3733743-2 11/24/21 17:32

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	

L1435038-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1435038-05 11/24/21 17:36 • (MS) R3733743-4 11/24/21 17:37 • (MSD) R3733743-5 11/24/21 17:37

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	0.506	0.543	101	109	1	80.0-120			7.05	20

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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
B	The same analyte is found in the associated blank.
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.
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.

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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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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: Gadsden Water MS4 Samples

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): Pat Curwen

Site/Facility ID # ~~LAND~~ Boat

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

Chain of Custody Page ___ of ___

Pace Analytical®

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 # L1435038

1033

Acctnum: **QOREHAL**
Template: **T181690**
Prelogin: **P877143**
PM: **034 - Craig Cothron**
PB: BF 9/28/21
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)
~~AT-5~~ MB3	Grab	WW	5'	11-23	10:00	4	X	X	X	X		-01
~~GD-8~~ SME4	Grab	WW	5'	11-23	09:32	4	X	X	X	X		-02
~~RC-2~~ GD5	Grab	WW	5'	11-23	10:20	4	X	X	X	X		-03
~~SS-13~~ GD7	Grab	WW	5'	11-23	11:00	4	X	X	X	X		-04
~~SS-11~~ GD9	Grab	WW	5'	11-23	11:15	4	X	X	X	X		-05
~~GD-12~~ SME1	Grab	WW	5'	11-23	10:46	4	X	X	X	X		-06
~~SME2~~ SS5	Grab	WW	5'	11-23	12:20	4	X	X	X	X		-07
~~GD-6~~ SME5	Grab	WW	5'	11-23	12:10	4	X	X	X	X		-08
~~CO-15~~ SME6	Grab	WW	5'	11-23	12:44	4	X	X	X	X		-09
~~SME-2~~ RC14	Grab	WW	5'	11-23	13:06	4	X	X	X	X		-10

See Attached

* 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 # 5318 9949 3877

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

	Date:	Time:		
Relinquished by : (Signature)			Received by: (Signature)	Trip Blank Received: Yes / No HCL / MeoH TBR
Relinquished by : (Signature)			Received by: (Signature)	Temp: °C Bottles Received: 0.3 + .1 = 0.4 40
Relinquished by : (Signature)			Received for lab by: (Signature)	Date: 4/24/21 Time: 0915

If preservation required by Login: Date/Time

Hold:

Condition: NCF / OK

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L1435038

Tracking Numbers		Temperature
5318 9949 3688		2.1 ± 0 = 2.0 CofC Sent — NO
5318 9949 3686		1.5 ± 0 = 1.5 CofC Sent NO
5318 9949 3877		0.3 ± .1 = 0.4 CofC Sent - YES

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ANALYTICAL REPORT

December 29, 2021

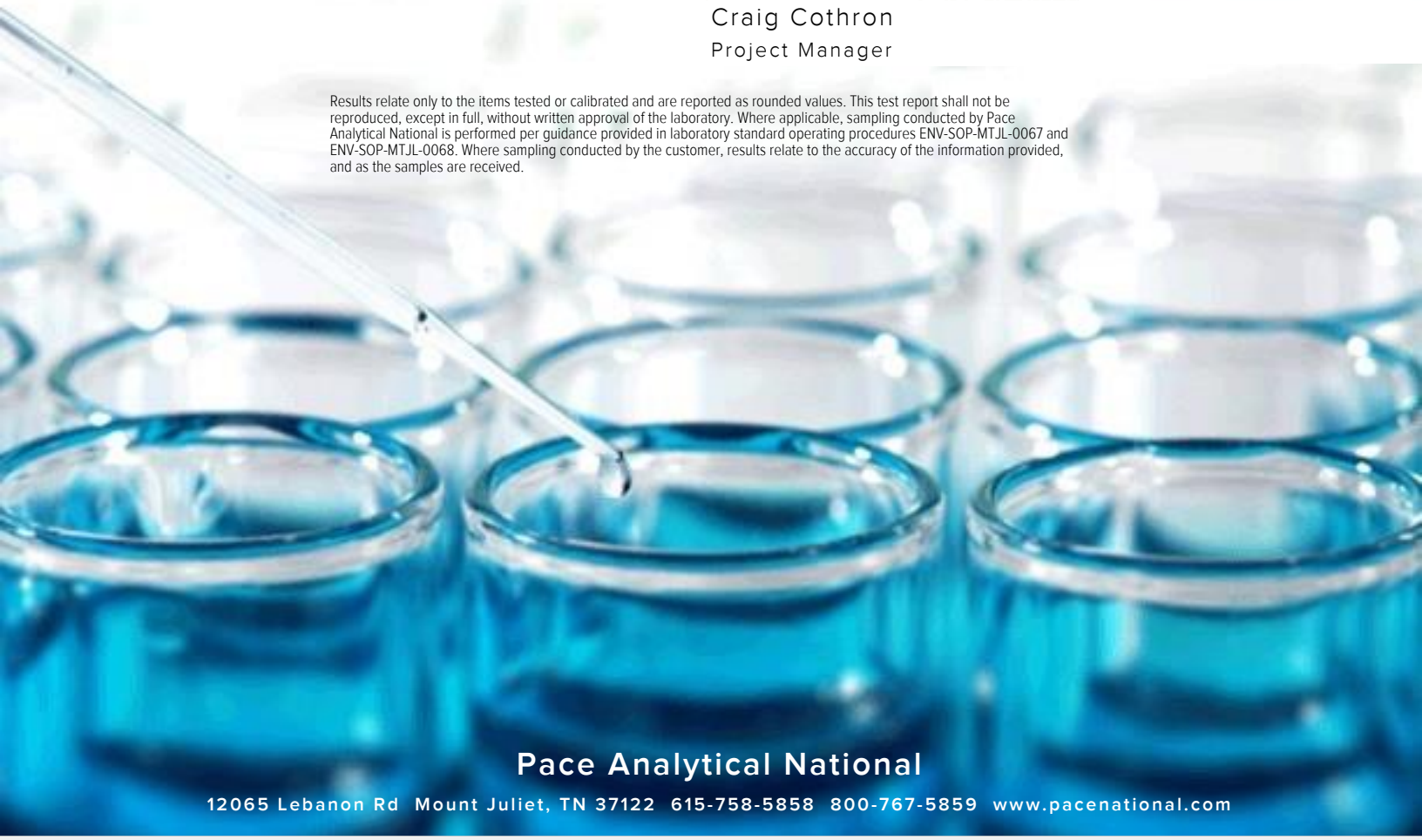
S&ME - Huntsville

Sample Delivery Group:	L1435216
Samples Received:	11/24/2021
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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SS 13 L1435216-01 WW

Collected by: DJ/EB | Collected date/time: 11/23/21 13:00 | Received date/time: 11/24/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1780736	1	11/28/21 00:11	11/28/21 02:46	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1794769	1	12/19/21 10:51	12/28/21 16:31	LDT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1790484	1	12/21/21 15:19	12/21/21 15:19	LDT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1791866	1	12/19/21 10:51	12/25/21 17:59	MCG	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1780073	1	11/24/21 18:45	11/24/21 18:45	UNP	Mt. Juliet, TN

SS 14 L1435216-02 WW

Collected by: DJ/EB | Collected date/time: 11/23/21 13:20 | Received date/time: 11/24/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1780736	1	11/28/21 00:11	11/28/21 02:46	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1794769	1	12/19/21 10:51	12/28/21 16:33	LDT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1790484	1	12/21/21 15:22	12/21/21 15:22	LDT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1791866	1	12/19/21 10:51	12/25/21 18:00	MCG	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1780073	1	11/24/21 18:45	11/24/21 18:45	UNP	Mt. Juliet, TN

GD 12 L1435216-03 WW

Collected by: DJ/EB | Collected date/time: 11/23/21 13:40 | Received date/time: 11/24/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1780736	1	11/28/21 00:11	11/28/21 02:46	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1794769	1	12/19/21 10:51	12/28/21 16:34	LDT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1790484	1	12/21/21 15:23	12/21/21 15:23	LDT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1791866	1	12/19/21 10:51	12/25/21 18:02	MCG	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1780073	1	11/24/21 18:45	11/24/21 18:45	UNP	Mt. Juliet, TN

SME2 L1435216-04 WW

Collected by: DJ/EB | Collected date/time: 11/23/21 11:45 | Received date/time: 11/24/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1780736	1	11/28/21 00:11	11/28/21 02:46	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1794769	1	12/19/21 10:51	12/28/21 16:38	LDT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1790484	1	12/21/21 15:24	12/21/21 15:24	LDT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1791866	1	12/19/21 10:51	12/25/21 18:04	MCG	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1780073	1	11/24/21 18:46	11/24/21 18:46	UNP	Mt. Juliet, TN

GD 6 L1435216-05 WW

Collected by: DJ/EB | Collected date/time: 11/23/21 11:30 | Received date/time: 11/24/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1780736	1	11/28/21 00:11	11/28/21 02:46	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1790400	1	12/16/21 12:28	12/16/21 17:52	KEG	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1790484	1	12/21/21 15:25	12/21/21 15:25	LDT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1790793	1	12/16/21 12:28	12/26/21 09:18	MCG	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1780073	1	11/24/21 18:47	11/24/21 18:47	UNP	Mt. Juliet, TN

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CO 15 L1435216-06 WW

Collected by: DJ/EB | Collected date/time: 11/23/21 10:50 | Received date/time: 11/24/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1780736	1	11/28/21 00:11	11/28/21 02:46	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1790400	1	12/16/21 12:28	12/16/21 17:54	KEG	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1790484	1	12/21/21 15:33	12/21/21 15:33	LDT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1790793	1	12/16/21 12:28	12/26/21 09:20	MCG	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1780073	1	11/24/21 18:48	11/24/21 18:48	UNP	Mt. Juliet, TN

AT 5 L1435216-07 WW

Collected by: DJ/EB | Collected date/time: 11/23/21 14:30 | Received date/time: 11/26/21 10:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1780736	1	11/28/21 00:11	11/28/21 02:46	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1794769	1	12/19/21 10:51	12/28/21 16:39	LDT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1790484	1	12/21/21 15:34	12/21/21 15:34	LDT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1791866	1	12/19/21 10:51	12/25/21 18:05	MCG	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1782258	1	12/01/21 11:22	12/01/21 11:22	MRM	Mt. Juliet, TN

GD 8 L1435216-08 WW

Collected by: DJ/EB | Collected date/time: 11/23/21 14:15 | Received date/time: 11/26/21 10:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1780736	1	11/28/21 00:11	11/28/21 02:46	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1794768	1	12/19/21 10:44	12/28/21 14:58	LDT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1790484	1	12/21/21 15:35	12/21/21 15:35	LDT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1791868	1	12/19/21 10:44	12/25/21 17:00	MCG	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1780529	1	11/26/21 17:27	11/26/21 17:27	CRB	Mt. Juliet, TN

RC 2 L1435216-09 WW

Collected by: DJ/EB | Collected date/time: 11/23/21 14:00 | Received date/time: 11/26/21 10:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1780736	1	11/28/21 00:11	11/28/21 02:46	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1794768	1	12/19/21 10:44	12/28/21 14:59	LDT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1790484	1	12/21/21 15:37	12/21/21 15:37	LDT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1791868	1	12/19/21 10:44	12/25/21 17:01	MCG	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1780529	1	11/26/21 17:27	11/26/21 17:27	CRB	Mt. Juliet, TN

SME 8 L1435216-10 WW

Collected by: DJ/EB | Collected date/time: 11/23/21 10:00 | Received date/time: 11/26/21 10:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1780736	1	11/28/21 00:11	11/28/21 02:46	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1794768	1	12/19/21 10:44	12/28/21 15:01	LDT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1790484	1	12/21/21 15:38	12/21/21 15:38	LDT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1791868	1	12/19/21 10:44	12/25/21 17:02	MCG	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1780529	1	11/26/21 17:28	11/26/21 17:28	CRB	Mt. Juliet, TN

ADEM Watermark

SME 9 L1435216-11 WW

Collected by: DJ/EB
Collected date/time: 11/23/21 14:45
Received date/time: 11/26/21 10:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1780736	1	11/28/21 00:11	11/28/21 02:46	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1794768	1	12/19/21 10:44	12/28/21 15:06	LDT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1790484	1	12/21/21 15:41	12/21/21 15:41	LDT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1791868	1	12/19/21 10:44	12/25/21 17:08	MCG	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1780529	1	11/26/21 17:29	11/26/21 17:29	CRB	Mt. Juliet, TN

SME 10 L1435216-12 WW

Collected by: DJ/EB
Collected date/time: 11/23/21 10:15
Received date/time: 11/26/21 10:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1780736	1	11/28/21 00:11	11/28/21 02:46	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1794768	1	12/19/21 10:44	12/28/21 15:13	LDT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1790484	1	12/21/21 15:43	12/21/21 15:43	LDT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1791868	1	12/19/21 10:44	12/25/21 17:13	MCG	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1780529	1	11/26/21 17:33	11/26/21 17:33	CRB	Mt. Juliet, TN

ADEM Watermark

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

ADEM Watermark

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	11/28/2021 02:46	WG1780736

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.331		0.250	1	12/28/2021 16:31	WG1794769

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	12/21/2021 15:19	WG1790484

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	12/25/2021 17:59	WG1791866

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	11/24/2021 18:45	WG1780073

ADEM Watermark

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	2.55		2.55	1	11/28/2021 02:46	WG1780736

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.370		0.250	1	12/28/2021 16:33	WG1794769

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.315		0.100	1	12/21/2021 15:22	WG1790484

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	0.178	B	0.100	1	12/25/2021 18:00	WG1791866

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	0.108		0.0300	1	11/24/2021 18:45	WG1780073

ADEM Watermark

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	11/28/2021 02:46	WG1780736

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	12/28/2021 16:34	WG1794769

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	12/21/2021 15:23	WG1790484

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	12/25/2021 18:02	WG1791866

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	11/24/2021 18:45	WG1780073

ADEM Watermark

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	11/28/2021 02:46	WG1780736

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	12/28/2021 16:38	WG1794769

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.170		0.100	1	12/21/2021 15:24	WG1790484

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	12/25/2021 18:04	WG1791866

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	11/24/2021 18:46	WG1780073

ADEM Watermark

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Suspended Solids	8.50		2.50	1	11/28/2021 02:46	WG1780736

Wet Chemistry by Method 351.2

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	0.350		0.250	1	12/16/2021 17:52	WG1790400

Wet Chemistry by Method 353.2

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	0.132		0.100	1	12/21/2021 15:25	WG1790484

Wet Chemistry by Method 365.4

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Phosphorus,Total	0.102	B	0.100	1	12/26/2021 09:18	WG1790793

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	11/24/2021 18:47	WG1780073

ADEM Watermark

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	25.9		2.60	1	11/28/2021 02:46	WG1780736

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.270		0.250	1	12/16/2021 17:54	WG1790400

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	12/21/2021 15:33	WG1790484

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	12/26/2021 09:20	WG1790793

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	11/24/2021 18:48	WG1780073

ADEM Watermark

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Suspended Solids	2.60		2.50	1	11/28/2021 02:46	WG1780736

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	12/28/2021 16:39	WG1794769

Wet Chemistry by Method 353.2

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	0.343		0.100	1	12/21/2021 15:34	WG1790484

Wet Chemistry by Method 365.4

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Phosphorus,Total	0.253	B	0.100	1	12/25/2021 18:05	WG1791866

Wet Chemistry by Method 4500P E-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Phosphate,Ortho	ND	T8	0.0300	1	12/01/2021 11:22	WG1782258

ADEM Watermark

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	11/28/2021 02:46	WG1780736

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	12/28/2021 14:58	WG1794768

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	12/21/2021 15:35	WG1790484

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	12/25/2021 17:00	WG1791868

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	ND	T8	0.0300	1	11/26/2021 17:27	WG1780529

ADEM Watermark

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Suspended Solids	19.2	P1	5.00	1	11/28/2021 02:46	WG1780736

Wet Chemistry by Method 351.2

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	0.340		0.250	1	12/28/2021 14:59	WG1794768

Wet Chemistry by Method 353.2

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	0.124		0.100	1	12/21/2021 15:37	WG1790484

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	12/25/2021 17:01	WG1791868

Wet Chemistry by Method 4500P E-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Phosphate,Ortho	ND	T8	0.0300	1	11/26/2021 17:27	WG1780529

ADEM Watermark

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	11/28/2021 02:46	WG1780736

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	12/28/2021 15:01	WG1794768

Wet Chemistry by Method 353.2

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	0.367		0.100	1	12/21/2021 15:38	WG1790484

Wet Chemistry by Method 365.4

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Phosphorus,Total	0.516		0.100	1	12/25/2021 17:02	WG1791868

Wet Chemistry by Method 4500P E-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Phosphate,Ortho	0.472	T8	0.0300	1	11/26/2021 17:28	WG1780529

ADEM Watermark

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	3.10		2.50	1	11/28/2021 02:46	WG1780736

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	12/28/2021 15:06	WG1794768

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.329		0.100	1	12/21/2021 15:41	WG1790484

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	0.225	B	0.100	1	12/25/2021 17:08	WG1791868

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	0.161	T8	0.0300	1	11/26/2021 17:29	WG1780529

ADEM Watermark

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	3.10		2.50	1	11/28/2021 02:46	WG1780736

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	12/28/2021 15:13	WG1794768

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.367		0.100	1	12/21/2021 15:43	WG1790484

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	0.440		0.100	1	12/25/2021 17:13	WG1791868

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	0.355	T8	0.0300	1	11/26/2021 17:33	WG1780529

ADEM Watermark

Method Blank (MB)

(MB) R3735899-1 11/28/21 02:46

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Suspended Solids	U		2.50	2.50

L1434524-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1434524-01 11/28/21 02:46 • (DUP) R3735899-3 11/28/21 02:46

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Suspended Solids	108	122	1	12.2	P1	5

L1435216-09 Original Sample (OS) • Duplicate (DUP)

(OS) L1435216-09 11/28/21 02:46 • (DUP) R3735899-4 11/28/21 02:46

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Suspended Solids	19.2	21.0	1	8.96	P1	5

Laboratory Control Sample (LCS)

(LCS) R3735899-2 11/28/21 02:46

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Suspended Solids	773	820	106	85.7-114	

ADEM Watermark

QUALITY CONTROL SUMMARY

L1435216-05,06

Method Blank (MB)

(MB) R3741679-1 12/16/21 17:36

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Kjeldahl Nitrogen, TKN	U		0.140	0.250

L1435038-09 Original Sample (OS) • Duplicate (DUP)

(OS) L1435038-09 12/16/21 17:44 • (DUP) R3741679-3 12/16/21 17:45

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) R3741679-2 12/16/21 17:37

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Kjeldahl Nitrogen, TKN	10.2	10.4	102	75.2-121	

L1435038-09 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1435038-09 12/16/21 17:44 • (MS) R3741679-4 12/16/21 17:47 • (MSD) R3741679-5 12/16/21 17:48

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	5.44	5.28	109	106	1	90.0-110			2.99	20

L1435386-02 Original Sample (OS) • Matrix Spike (MS)

(OS) L1435386-02 12/16/21 17:55 • (MS) R3741679-6 12/16/21 17:56

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	0.688	5.14	89.0	1	90.0-110	J6

ADEM Watermark

Method Blank (MB)

(MB) R3745621-1 12/28/21 14:54

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Kjeldahl Nitrogen, TKN	U		0.140	0.250

L1435216-10 Original Sample (OS) • Duplicate (DUP)

(OS) L1435216-10 12/28/21 15:01 • (DUP) R3745621-3 12/28/21 15:02

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

L1435216-11 Original Sample (OS) • Duplicate (DUP)

(OS) L1435216-11 12/28/21 15:06 • (DUP) R3745621-6 12/28/21 15:10

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) R3745621-2 12/28/21 14:55

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Kjeldahl Nitrogen, TKN	10.2	10.8	106	75.2-121	

L1435216-10 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1435216-10 12/28/21 15:01 • (MS) R3745621-4 12/28/21 15:04 • (MSD) R3745621-5 12/28/21 15:05

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 %
Kjeldahl Nitrogen, TKN	5.00	ND	5.40	5.26	108	105	1	90.0-110			2.63	20

L1435216-11 Original Sample (OS) • Matrix Spike (MS)

(OS) L1435216-11 12/28/21 15:06 • (MS) R3745621-7 12/28/21 15:12

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	5.19	104	1	90.0-110	

ADEM Watermark

Method Blank (MB)

(MB) R3745684-1 12/28/21 16:14

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Kjeldahl Nitrogen, TKN	U		0.140	0.250

L1434964-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1434964-01 12/28/21 16:22 • (DUP) R3745684-3 12/28/21 16:23

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Kjeldahl Nitrogen, TKN	0.813	0.838	1	3.03		20

L1435216-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1435216-03 12/28/21 16:34 • (DUP) R3745684-6 12/28/21 16:35

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) R3745684-2 12/28/21 16:15

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Kjeldahl Nitrogen, TKN	10.2	10.5	103	75.2-121	

L1434964-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1434964-01 12/28/21 16:22 • (MS) R3745684-4 12/28/21 16:24 • (MSD) R3745684-5 12/28/21 16:26

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	0.813	6.00	5.76	104	98.9	1	90.0-110			4.08	20

L1435216-03 Original Sample (OS) • Matrix Spike (MS)

(OS) L1435216-03 12/28/21 16:34 • (MS) R3745684-7 12/28/21 16:37

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	5.33	107	1	90.0-110	

ADEM Watermark

QUALITY CONTROL SUMMARY

L1435216-01,02,03,04,05,06,07,08,09,10,11,12

Method Blank (MB)

(MB) R3743370-1 12/21/21 15:16

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Nitrate-Nitrite	U		0.0500	0.100

L1435216-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1435216-01 12/21/21 15:19 • (DUP) R3743370-3 12/21/21 15:20

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Nitrate-Nitrite	0.160	0.153	1	4.47		20

L1435216-10 Original Sample (OS) • Duplicate (DUP)

(OS) L1435216-10 12/21/21 15:38 • (DUP) R3743370-6 12/21/21 15:39

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Nitrate-Nitrite	0.367	0.367	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3743370-2 12/21/21 15:18

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Nitrate-Nitrite	2.50	2.67	107	90.0-110	

L1435216-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1435216-05 12/21/21 15:25 • (MS) R3743370-4 12/21/21 15:27 • (MSD) R3743370-5 12/21/21 15:32

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	0.132	2.70	2.66	103	101	1	90.0-110			1.49	20

L1435216-11 Original Sample (OS) • Matrix Spike (MS)

(OS) L1435216-11 12/21/21 15:41 • (MS) R3743370-7 12/21/21 15:42

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Nitrate-Nitrite	2.50	0.329	2.58	90.0	1	90.0-110	

ADEM Watermark

Method Blank (MB)

(MB) R3744758-1 12/26/21 09:03

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Phosphorus,Total	0.0395	J	0.0350	0.100

L1435038-09 Original Sample (OS) • Duplicate (DUP)

(OS) L1435038-09 12/26/21 09:11 • (DUP) R3744758-3 12/26/21 09:12

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) R3744758-2 12/26/21 09:04

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Phosphorus,Total	1.33	1.38	104	81.2-118	

L1435038-09 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1435038-09 12/26/21 09:11 • (MS) R3744758-4 12/26/21 09:13 • (MSD) R3744758-5 12/26/21 09:14

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 %
Phosphorus,Total	2.50	ND	2.57	2.52	100	98.1	1	90.0-110			1.96	20

ADEM Watermark

QUALITY CONTROL SUMMARY

L1435216-01,02,03,04,07

Method Blank (MB)

(MB) R3744734-1 12/25/21 17:42

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Phosphorus,Total	0.0407	J	0.0350	0.100

L1434964-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1434964-01 12/25/21 17:45 • (DUP) R3744734-3 12/25/21 17:46

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Phosphorus,Total	2.78	2.70	1	2.92		20

L1435216-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1435216-03 12/25/21 18:02 • (DUP) R3744734-6 12/25/21 18:03

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) R3744734-2 12/25/21 17:44

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Phosphorus,Total	1.33	1.39	105	81.2-118	

L1434964-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1434964-01 12/25/21 17:45 • (MS) R3744734-4 12/25/21 17:48 • (MSD) R3744734-5 12/25/21 17:49

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 %
Phosphorus,Total	2.50	2.78	5.06	5.00	91.2	88.8	1	90.0-110	E	J6	1.19	20

ADEM Watermark

Method Blank (MB)

(MB) R3744731-1 12/25/21 16:57

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Phosphorus,Total	0.0385	J	0.0350	0.100

L1435216-10 Original Sample (OS) • Duplicate (DUP)

(OS) L1435216-10 12/25/21 17:02 • (DUP) R3744731-3 12/25/21 17:04

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Phosphorus,Total	0.516	0.584	1	12.4		20

L1435216-11 Original Sample (OS) • Duplicate (DUP)

(OS) L1435216-11 12/25/21 17:08 • (DUP) R3744731-6 12/25/21 17:09

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Phosphorus,Total	0.225	0.246	1	8.92		20

Laboratory Control Sample (LCS)

(LCS) R3744731-2 12/25/21 16:59

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Phosphorus,Total	1.33	1.39	105	81.2-118	

L1435216-10 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1435216-10 12/25/21 17:02 • (MS) R3744731-4 12/25/21 17:05 • (MSD) R3744731-5 12/25/21 17:06

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	0.516	2.97	2.89	98.2	95.0	1	90.0-110			2.73	20

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QUALITY CONTROL SUMMARY

L1435216-01,02,03,04,05,06

Method Blank (MB)

(MB) R3733754-1 11/24/21 18:44

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
Phosphate,Ortho	U		0.0140	0.0300

L1435216-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1435216-05 11/24/21 18:47 • (DUP) R3733754-5 11/24/21 18:48

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Phosphate,Ortho	ND	ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3733754-2 11/24/21 18:44

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	mg/l	mg/l	%	%	
Phosphate,Ortho	0.245	0.251	103	85.0-115	

L1435216-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1435216-03 11/24/21 18:45 • (MS) R3733754-3 11/24/21 18:45 • (MSD) R3733754-4 11/24/21 18:46

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	%	%		%			%	%
Phosphate,Ortho	0.500	ND	0.522	0.521	104	104	1	80.0-120			0.192	20

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QUALITY CONTROL SUMMARY

L1435216-08,09,10,11,12

Method Blank (MB)

(MB) R3734191-1 11/26/21 17:25

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Phosphate,Ortho	U		0.0140	0.0300

L1435216-09 Original Sample (OS) • Duplicate (DUP)

(OS) L1435216-09 11/26/21 17:27 • (DUP) R3734191-3 11/26/21 17:28

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) R3734191-2 11/26/21 17:26

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Phosphate,Ortho	0.245	0.220	90.0	85.0-115	

L1435216-10 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1435216-10 11/26/21 17:28 • (MS) R3734191-4 11/26/21 17:28 • (MSD) R3734191-5 11/26/21 17:29

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	0.472	0.891	0.889	83.8	83.4	1	80.0-120			0.225	20

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QUALITY CONTROL SUMMARY

L1435216-07

Method Blank (MB)

(MB) R3735734-1 12/01/21 11:17

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Phosphate,Ortho	U		0.0140	0.0300

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3735734-2 12/01/21 11:18 • (LCSD) R3735734-3 12/01/21 11:19

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Phosphate,Ortho	0.245	0.247	0.252	101	103	85.0-115			2.00	20

L1436239-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1436239-01 12/01/21 11:22 • (MS) R3735734-4 12/01/21 11:23 • (MSD) R3735734-5 12/01/21 11:24

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	0.455	0.885	0.883	86.0	85.6	1	80.0-120			0.226	20

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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
B	The same analyte is found in the associated blank.
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.
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.
T8	Sample(s) received past/too close to holding time expiration.

ADEM Watermark

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.

ADEM Watermark

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):
D. Jones & E. Bavis

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

Chain of Custody Page 1 of 2

Pace Analytical®
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 # L1435216

T: 1050

Acctnum: QOREHAL
Template: T181690
Prelogin: P877144
PM: 034 - Craig Cothron
PB: BF 9/28/21
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	Pres Chk							Remarks	Sample # (lab only)
								<2	<2										
AT 5	G	WW	2'	11/23/21	1430	4	X	X	X	X									-07
GD 8	G	WW	2	11/23/21	1415	4	X	X	X	X									-08
RC 2	G	WW	2'	11/23/21	1402	4	X	X	X	X									-09
SS 13	G	WW	2'	11/23/21	1300	4	X	X	X	X									-01
SS 14	G	WW	2	11/23/21	1320	4	X	X	X	X									-02
GD 12	G	WW	2'	11/23/21	1340	4	X	X	X	X									-03
SME2	G	WW	2'	11/23/21	1145	4	X	X	X	X									-04
GD 6	G	WW	2'	11/23/21	1130	4	X	X	X	X									-05
CO 15	G	WW	2'	11/23/21	1050	4	X	X	X	X									-06
~~SME 7~~ DRY	~~G~~	~~WW~~	~~2'~~	~~11/23/21~~		~~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 # 4380 6866 8324

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
	11/23/21	1500			
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: °C 0.5 to 0.5 / Bottles Received: 24	
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 11/26/21 Time: 1030	Hold: / Condition: NCF / OK

ADEM Watermark

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):
D. Jones & L. Davis

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

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						Remarks	Sample # (lab only)
SME 8	Grab	WW	2'	11/23/21	1000	4	X	X	X	X							-10
SME 9	Grab	WW	2'	11/23/21	1445	4	X	X	X	X							-11
SME 10	Grab	WW	2'	11/23/21	1015	4	X	X	X	X							-12
		WW				4	X	X	X	X							
		WW				4	X	X	X	X							

Chain of Custody Page 2 of 2

Pace Analytical®

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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 # L1435046

Table #

Acctnum: **QOREHAL**

Template: **T181690**

Prelogin: **P877144**

PM: **034 - Craig Cothron**

PB: BF 9/28/21

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 # 4

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
	11/23/21	1500		
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: °C Bottles Received: 24 0.5+0=0.5
				If preservation required by Login: Date/Time
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 11/26/21 Time: 1030
				Hold: Condition: NCF / OK

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11/24-NCF-QOREHAL L1435216

Shortholds

Time estimate: oh **Time spent:** oh

Members

HM Hailey Melson (responsible) CC Craig Cothron

Due on *27 November 2021 8:00 AM* for target *Done*

- [ ] 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
- [ ] Client informed by Email
- [x] Client informed by Voicemail
- [x] Date/Time:_11/29/21 1300_____
- [x] PM initials:__cc_____
- [x] Client Contact:_Liz Bavis_____

Comments

Hailey Melson *24 November 2021 11:22 AM*

Received IDs: SME2, SS13, SS14, GS6, GS12, CO15 not listed on COC. Containers have the same P and T number on the labels.

Craig Cothron *24 November 2021 12:55 PM*

Log for same analysis as others. Waiting for a client COC

Hailey Melson *24 November 2021 12:55 PM*

Should I add it to this SDG or should this be a separate SDG?

Craig Cothron *24 November 2021 12:56 PM*

same SDG

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Craig Cothron *24 November 2021 1:13 PM*

update - log to a separate SDG. There should also be 4 coolers for this client. Have we found all 4? that may solve this

Hailey Melson *24 November 2021 1:14 PM*

We only received 3. It may come in on the second truck. I will keep an eye out for it.

Hailey Melson *24 November 2021 2:26 PM*

Samples logged to L1435216. Did not receive another cooler on second truck that I am aware of. I will scan in COC once it arrives or when you send it.

Hailey Melson *26 November 2021 11:09 AM*

Missing samples and COC arrived today. All Portho samples are out of hold.

Craig Cothron *29 November 2021 1:12 PM*

run portho out of hold.

Matthew Shacklock *29 November 2021 2:22 PM*

Done

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Monitoring Report First 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

May 25, 2022

ADEM Watermark

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Appendices

Appendix I

Figure 1 – Gadsden, Alabama Urbanized Area
Figure 2 – MS4 Monitoring Locations Map

Appendix II

Table B.1 – Field Observations
Table B.2 – Analytical Data
Tables B.3 to B.26 – Historical Analytical Data

Appendix III

Laboratory Report No. L1449692, dated January 31, 2022
Laboratory Report No. L1450663, dated February 4, 2022

ADEM Watermark

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. 219065.

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

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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 January 1, 2017, 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 January 9, 2021, a rain event was observed at three 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 1/9/21
KGAD	Gadsden Municipal Airport	33.973°	-86.088°	0.64 in.
KALHOKES2	Hokes Bluff Hokes Bluff, AL	33.993°	-85.806°	0.56 in.
KALGADSD3	Noccalula Falls Gadsden, AL	34.056°	-85.994°	0.61 in.

3.0 Monitoring Event

On January 10-11, 2022, S&ME personnel mobilized to conduct storm water monitoring at the land and boat access monitoring points for the first quarter of 2022.

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Land and boat access monitoring was successfully sampled on January 10-11, 2022. The quarterly monitoring events are carried out in accordance with Section 2 of the Gadsden-Etowah MS4 Storm Water Management Program (SWMPP), dated January 1, 2017.

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
SME 2	34.002461°	-86.001571°	LAND	U.T. to Coosa River
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 8	34.004730°	-85.873852°	LAND	U.T. to Coosa River
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 CO14, SME 3, and GD3 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

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fourth quarter sampling event. SME 3 has been reinstated as part of the monitoring program beginning with the 2021 third 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:

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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 9. One duplicate sample of monitoring point SME 8 was collected by the land team during the sampling event and labeled as SME 10. 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 January 10-11, 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**. SME 7 was labeled SME 8 and SME 8 was labeled SME 7 in the field notes and laboratory report.

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.

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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.

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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

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Appendices

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Appendix I

Figure 1 – Gadsden, Alabama Urbanized Area

Figure 2 – MS4 Monitoring Locations Map

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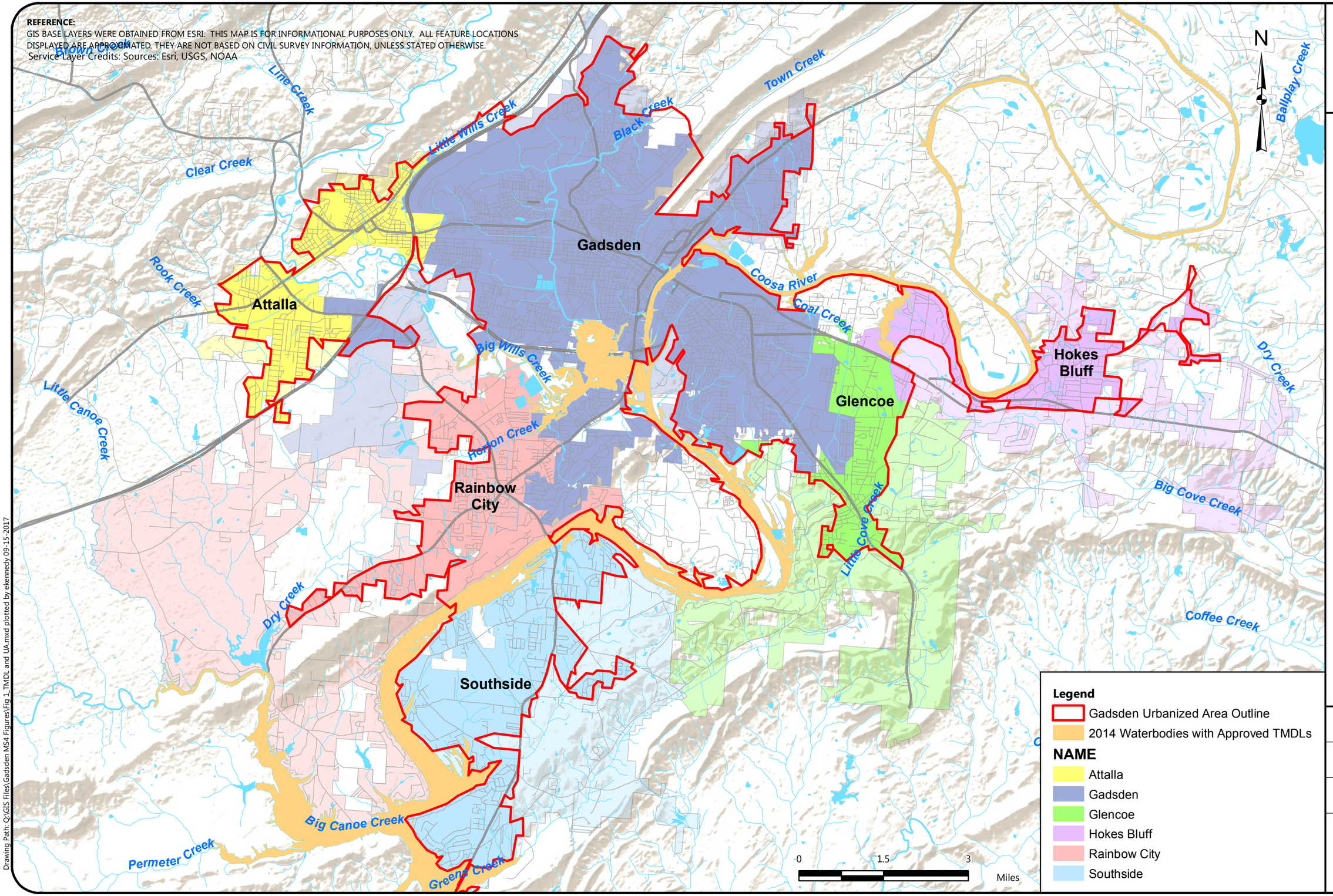
REFERENCE:
GIS BASE LAYERS WERE OBTAINED FROM ESRI. THIS MAP IS FOR INFORMATIONAL PURPOSES ONLY. ALL FEATURE LOCATIONS DISPLAYED ARE APPROXIMATED. THEY ARE NOT BASED ON CIVIL SURVEY INFORMATION, UNLESS STATED OTHERWISE.
Service Layer Credits: Sources: Esri, USGS, NOAA



Drawing Path: Q:\GIS Files\Gadsden MS4 Figures\Fig 1_TMDL and UA.mxd plotted by ekennedy 09-15-2017

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

ADEM Watermark

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

N

Brown Creek
Line Creek
Clear Creek
Little Wills Creek
Black Creek
Town Creek
Ballplay Creek
Rook Creek
Dry Creek
Coosa River
Coal Creek
Big Wills Creek
Little Canoe Creek
Horton Creek
Big Cove Creek
Little Cove Creek
Coffee Creek
Greens Creek
Ohatchee
Big Canoe Creek
Permeter Creek

Gadsden
Attalla
Rainbow City
Glencoe
Hokes Bluff
Southside

KALGADSD3
KALGADSD7
KALHOKES2
KALRAINB7

SME 7
AT 5
GD 6
GD 7
SME 2
GD 8
SME 3
GD 5
HB 3
SME 8
SME 4
SME 1
GD 9
CO 15
RC 2
GD 12
SME 5
SS 5
RC 14
SS 13
SS 14
SME 6

0 1.5 3 Miles

Legend

MS4 Monitoring Locations
- MS4 Monitoring Locations
- Rain Gauges
- Gadsden Urbanized Area Outline

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

MS4 MONITORING LOCATIONS

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

SCALE: 1:100,000
DATE: 05-13-21
PROJECT NUMBER 4482-20-044
FIGURE NO. 2

Drawing Path: R:\CADData\Huntsville\GIS Files\Gadsden MS4 Figures\Fig 2_Monitoring Locations.mxd plotted by ekennedy 05-13-2021

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Appendix II

Table B.1 – Field Observations

Table B.2 – Analytical Data

Tables B.3 to B.26 – Historical Analytical Data

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TABLE B.1 - FIELD OBSERVATIONS

GADSDEN-ETOWAH MS4 MONITORING

MONITORING POINT ID	DATE	TIME	DEPTH (FT)	PERSONNEL	WEATHER CONDITIONS	WATERBODY CONDITIONS
AT 5	1/10/2022	12:25	-2'	EAB/NW	Sunny	Fast, Rough
GD 8	1/10/2022	12:15	-2'	EAB/NW	Sunny	Slow, Smooth
RC 2	1/10/2022	12:05	-2'	EAB/NW	Sunny	Slow, Smooth
SS 13	1/10/2022	11:30	-2'	EAB/NW	Sunny	Slow, Smooth
SS 14	1/10/2022	11:40	-2'	EAB/NW	Sunny	Slow, Smooth
GD 12	1/10/2022	11:50	-2'	EAB/NW	Sunny	Fast, Smooth
CO 14	Removed monitoring point from Stormwater Monitoring Program in September 2020					
SME 2	1/10/2022	11:10	-2'	EAB/NW	Sunny	Slow, Smooth
GD 6	1/10/2022	11:00	-2'	EAB/NW	Sunny	Slow, Smooth
CO 15	1/10/2022	10:20	-2'	EAB/NW	Sunny	Slow, Smooth
SME 7	1/10/2022	9:45	-2'	EAB/NW	Sunny	Fast, Smooth
SME 8	1/10/2022	10:40	-2'	EAB/NW	Sunny	Slow, Smooth
HB 3	1/11/2022	10:50	-5'	PC	Sunny	Smooth
SME 4	1/11/2022	11:10	-5'	PC	Sunny	Fast Flowing
GD 5	1/11/2022	11:25	-5'	PC	Sunny	Smooth
GD 7	1/11/2022	12:00	-5'	PC	Sunny	Fast Flowing
GD 9	1/11/2022	12:10	-5'	PC	Sunny	Smooth
SME 1	1/11/2022	12:25	-5'	PC	Sunny	Smooth
GD 3	Removed monitoring point from Stormwater Monitoring Program in September 2020					
SME 3	1/11/2022	11:40	-5'	PC	Sunny	Smooth
SS 5	1/11/2022	13:30	-5'	PC	Sunny	Smooth
SME 5	1/11/2022	13:20	-5'	PC	Sunny	Fast Flowing
SME 6	1/11/2022	13:55	-5'	PC	Sunny	Smooth
RC 14	1/11/2022	14:15	-5'	PC	Sunny	Smooth

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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	1/10/2022	20.8	7.39	11.46	10.0	0.769	0.126	0.184	0.279	29.70
GD 8	1/10/2022	18.9	7.60	12.25	9.2	0.222	<0.0300	0.122	0.277	20.80
RC 2	1/10/2022	32.1	7.27	11.50	8.4	0.185	<0.0300	<0.100	0.501	9.00
SS 13	1/10/2022	9.1	7.71	11.23	8.8	0.295	<0.0300	<0.100	0.73	7.00
SS 14	1/10/2022	9.8	7.12	11.84	8.8	0.385	0.0680	0.136	0.674	4.40
GD 12	1/10/2022	10.7	7.29	12.18	8.5	0.23	<0.0300	<0.100	0.325	3.70
CO 14	Removed monitoring point from Stormwater Monitoring Program in September 2020									
SME 2	1/10/2022	14.5	7.84	11.04	8.8	0.338	<0.0300	0.117	0.672	16.10
GD 6	1/10/2022	14.2	8.05	10.58	9.5	0.238	0.037	0.147	0.85	10.20
CO 15	1/10/2022	24.3	7.90	11.64	9.8	0.196	<0.0300	<0.100	<2.50	9.60
SME 7	1/10/2022	19.2	7.97	10.98	11.9	0.823	0.140	0.211	0.805	34.70
SME 8	1/10/2022	9.5	7.42	11.82	11.9	0.328	<0.0300	<0.100	0.832	33.50
SME 9	1/10/2022	DUPLICATE OF AT 5				0.779	0.125	0.192	0.291	35.40
SME 10	1/10/2022	DUPLICATE OF SME 7				0.812	0.148	0.188	0.99	39.20
HB 3	1/11/2022	26.90	7.75	11.26	12.8	0.2	<0.0300	<0.10	0.550	23.60
SME 4	1/11/2022	17.30	7.39	11.35	13.4	0.44	<0.0300	<0.10	0.970	15.60
GD 5	1/11/2022	26.80	7.28	12.25	10.1	0.3	<0.0300	<0.10	0.510	12.10
GD 7	1/11/2022	46.00	7.38	12.59	9.7	0.41	<0.0300	<0.10	<0.50	15.20
GD 9	1/11/2022	271.50	7.42	11.43	10.4	0.36	<0.030	<0.10	0.760	13.30
SME 1	1/11/2022	161.20	7.55	11.29	10.2	8.2	0.054	<0.10	1.800	17.00
GD 3	Removed monitoring point from Stormwater Monitoring Program in September 2020									
SME 3	1/11/2022	109.40	7.58	11.17	9.9	0.39	<0.0300	<0.10	0.520	15.40
SS 5	1/11/2022	46.00	7.64	11.13	11.1	0.32	<0.0300	<0.10	1.300	10.40
SME 5	1/11/2022	24.90	7.66	10.46	14.7	0.45	0.035	<0.10	1.500	16.60
SME 6	1/11/2022	24.40	7.72	11.24	10.2	0.45	<0.0300	<0.10	2.400	16.90
RC 14	1/11/2022	66.40	7.40	11.82	10.4	0.170	<0.0300	<0.10	1.500	20.60
SME 11	1/11/2022	DUPLICATE OF HB 3				0.47	<0.0300	<0.10	0.770	78.40

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

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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
AT 5	12/11/2018	29.2	7.59	10.73	9.4	1.09	0.066	0.204	0.579	46.2

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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	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

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - meter malfunctioned in field

ADEM Watermark

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
GD 8	12/11/2018	16.0	7.87	11.71	9.2	0.326	<0.025	<0.100	0.406	24.4

ADEM Watermark

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	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

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - meter malfunctioned in field

ADEM Watermark

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
RC 2	12/11/2018	16.0	7.54	11.41	7.7	0.316	<0.025	<0.100	0.479	3.1

ADEM Watermark

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	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

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - meter malfunctioned in field

ADEM Watermark

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
SS 13	12/11/2018	8.2	7.37	10.79	7.4	0.451	<0.025	<0.100	0.655	8.6

ADEM Watermark

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	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	0.33	5.30
SS 13	1/10/2022	9.1	7.71	11.23	8.8	0.295	<0.0300	<0.100	0.73	7.0

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - meter malfunctioned in field

ADEM Watermark

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
SS 14	12/11/2018	8.4	6.95	11.53	7.4	0.812	0.057	0.117	0.635	4.3

ADEM Watermark

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	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

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - meter malfunctioned in field

ADEM Watermark

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
GD 12	12/11/2018	9.5	6.68	11.46	7.8	0.313	<0.025	<0.100	0.574	4.3

ADEM Watermark

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	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

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - meter malfunctioned in field

ADEM Watermark

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
CO 14	12/11/2018	7.6	7.38	10.74	7.7	0.184	<0.025	<0.100	0.567	4.9

ADEM Watermark

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	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

ADEM Watermark

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
SME 2	12/11/2018	9.7	7.82	9.99	7.9	0.212	<0.025	0.166	0.368	5.1

ADEM Watermark

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

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - meter malfunctioned in field

ADEM Watermark

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
GD 6	12/11/2018	13.8	7.97	10.92	8.2	0.397	<0.025	<0.100	0.362	5.8

ADEM Watermark

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	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

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - meter malfunctioned in field

ADEM Watermark

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
CO 15	12/11/2018	111.3	8.73	11.94	7.0	0.168	<0.025	0.107	1.16	10.1

ADEM Watermark

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	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

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

*** - outfall was dry

* - meter malfunctioned in field

ADEM Watermark

TABLE B.14 - 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

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - meter malfunctioned in field

ADEM Watermark

TABLE B.13 - 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

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - meter malfunctioned in field

ADEM Watermark

TABLE B.23 - 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

ADEM Watermark

TABLE B.23 - 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	7.3
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

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

ADEM Watermark

TABLE B.25 - 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

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

ADEM Watermark

TABLE B.20 - 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

ADEM Watermark

TABLE B.20 - 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

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

ADEM Watermark

TABLE B.19 - 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

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TABLE B.19 - 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

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

ADEM Watermark

TABLE B.18 - 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

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TABLE B.18 - 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

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

ADEM Watermark

TABLE B.17 - 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

ADEM Watermark

TABLE B.17 - 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	161.20	7.55	11.29	10.2	8.200	0.054	<0.10	1.800	17.0

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

ADEM Watermark

TABLE B.21 - 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

ADEM Watermark

TABLE B.21 - 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
GD3	removed Monitoring Point from Stormwater Monitoring Program in September 2020									

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

ADEM Watermark

TABLE B.22 - 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

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TABLE B.22 - 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

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

ADEM Watermark

TABLE B.16 - 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

ADEM Watermark

TABLE B.16 - 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	46.00	7.64	11.13	11.1	0.320	<0.0300	<0.10	1.300	10.4

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

ADEM Watermark

TABLE B.25 - 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	14.90	0.23	<0.0300	<0.100	<0.250	14.0
SME 5	1/11/2022	24.90	7.66	10.46	14.70	0.45	0.035	<0.10	1.50	16.6

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

ADEM Watermark

TABLE B.26 - 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	15.10	0.23	<0.0300	<0.100	<0.250	11.2
SME 6	1/11/2022	24.40	7.72	11.24	10.20	0.45	<0.0300	<0.10	2.40	16.9

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

ADEM Watermark

TABLE B.15 - 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

ADEM Watermark

TABLE B.15 - 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

NTU - Nephelometric Turbidity Units

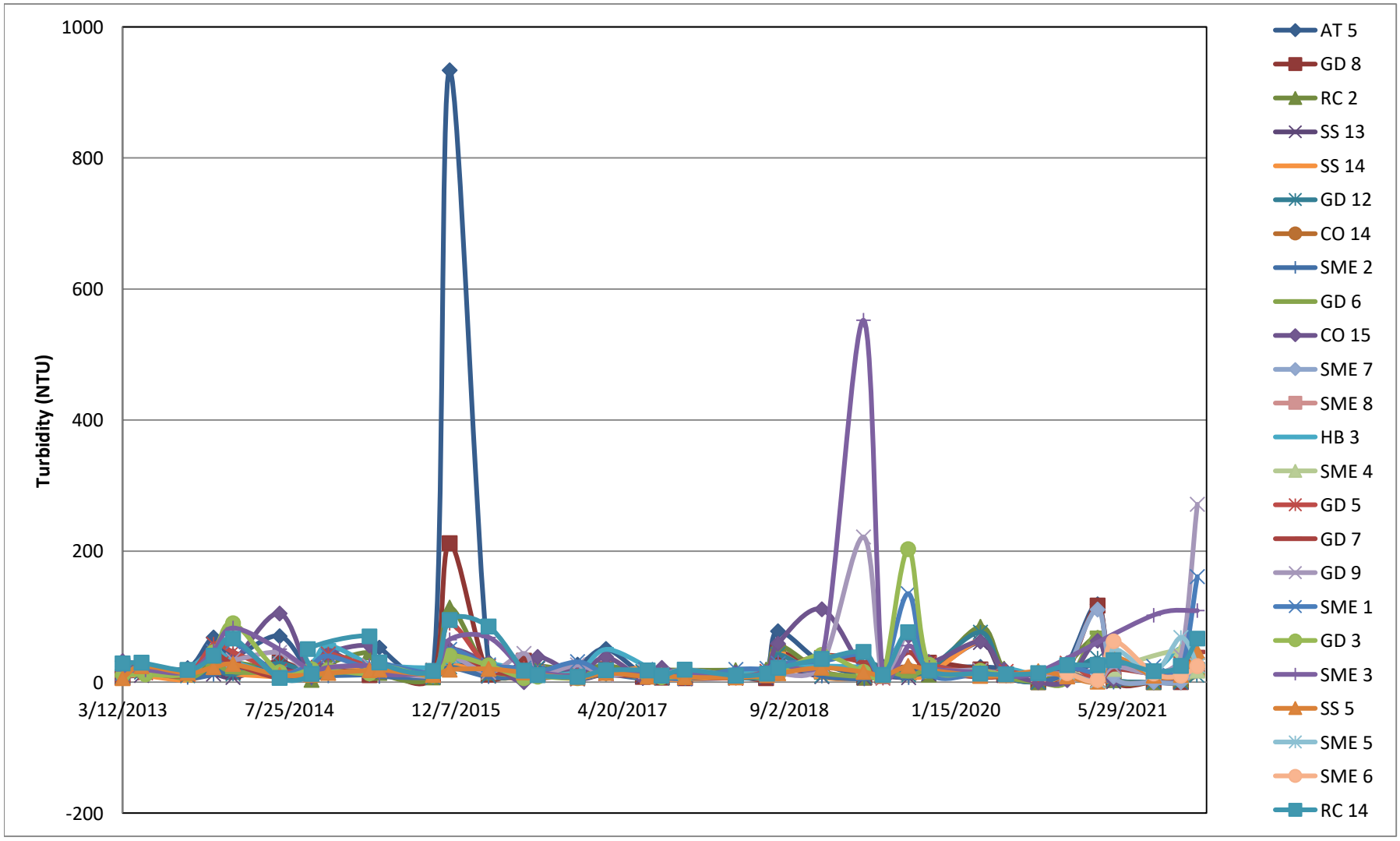
mg/L - milligrams per liter

NS - Not Sampled

ADEM Watermark

CHART 1 - TURBIDITY ANALYTICAL DATA

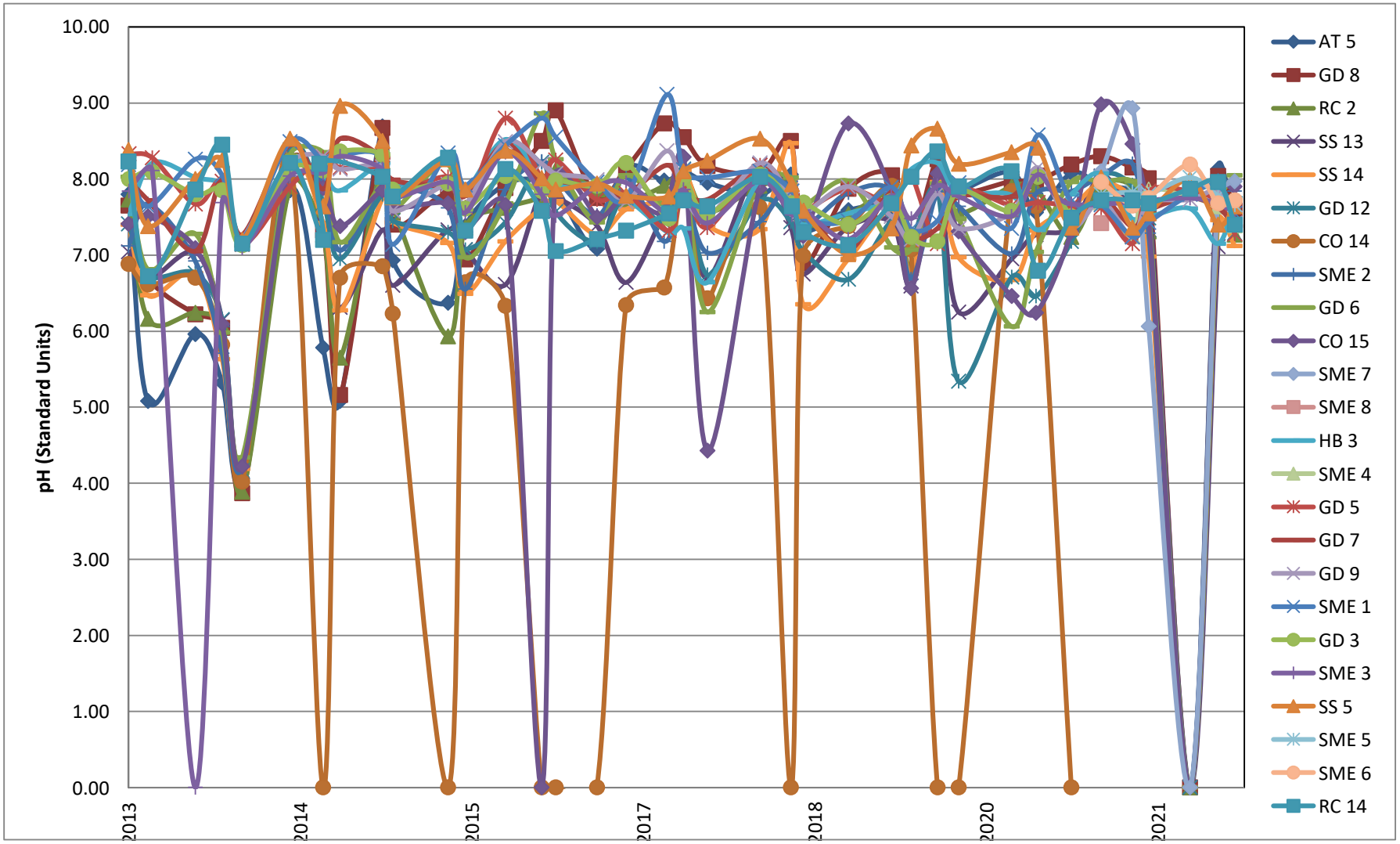
GADSDEN-ETOWAH MS4 MONITORING
NPDES PERMIT NO. ALR040009



ADEM Watermark

CHART 2 - pH ANALYTICAL DATA

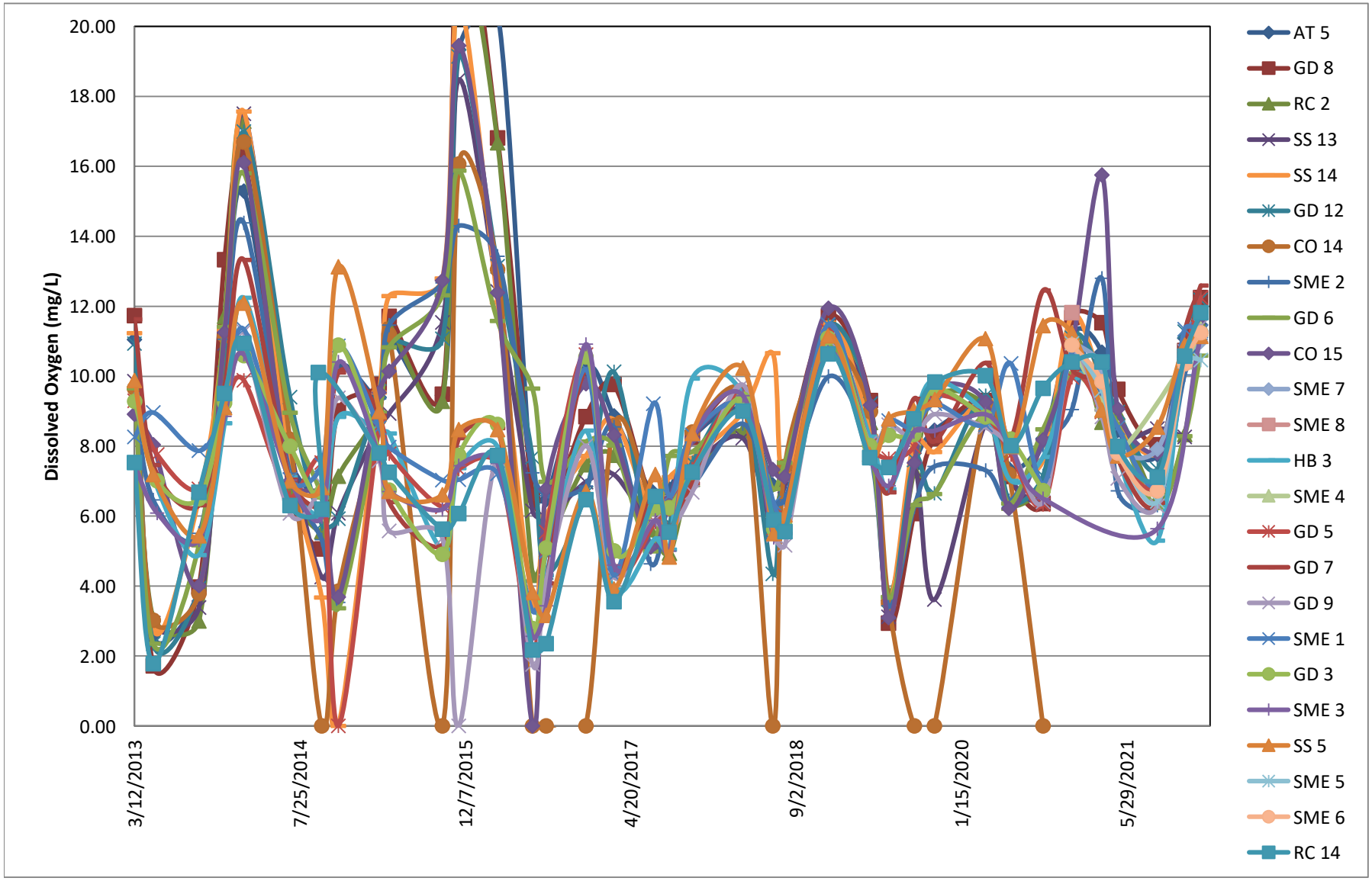
GADSDEN-ETOWAH MS4 MONITORING
NPDES PERMIT NO. ALR040009



ADEM Watermark

CHART 3 - DISSOLVED OXYGEN ANALYTICAL DATA

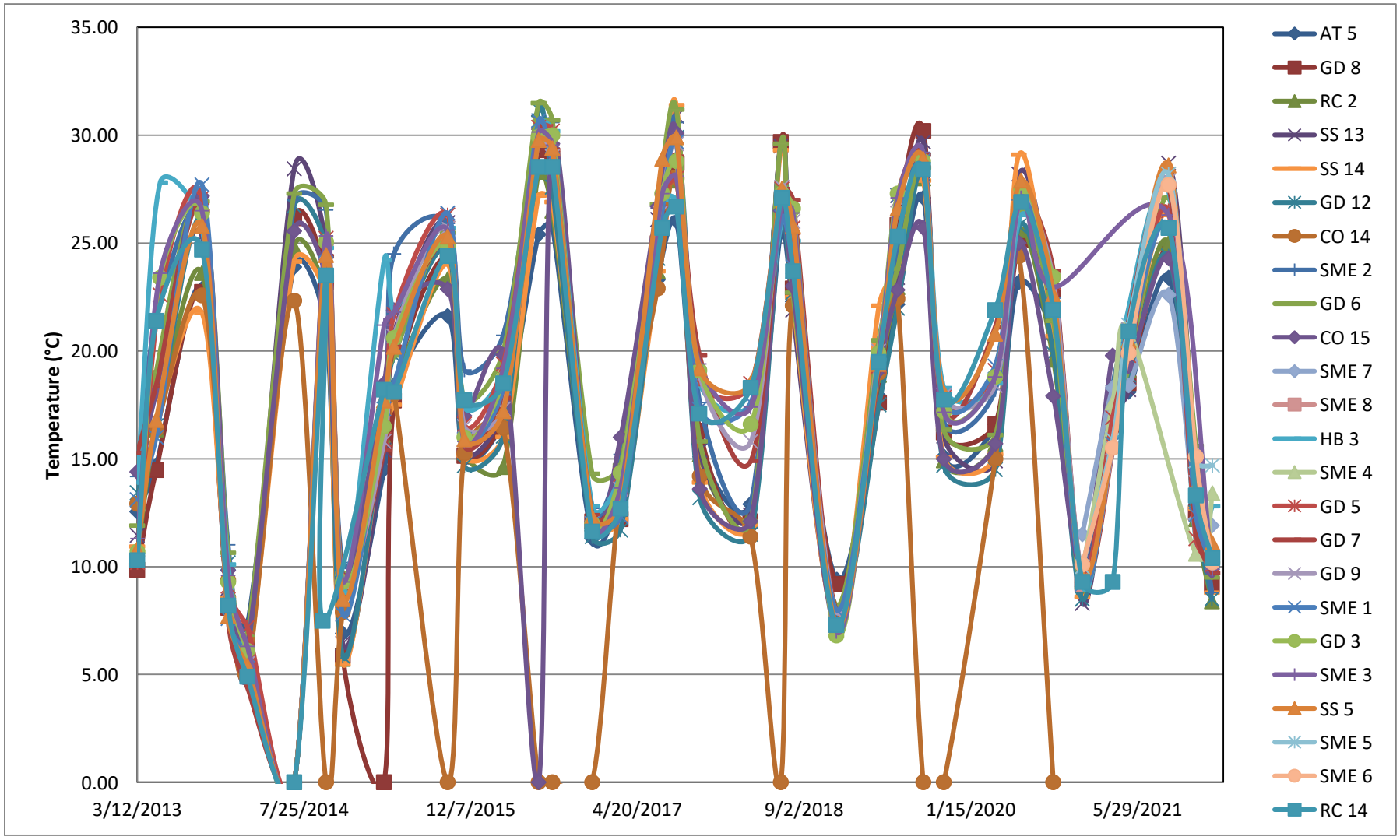
GADSDEN-ETOWAH MS4 MONITORING
NPDES PERMIT NO. ALR040009



ADEM Watermark

CHART 4 - TEMPERATURE ANALYTICAL DATA

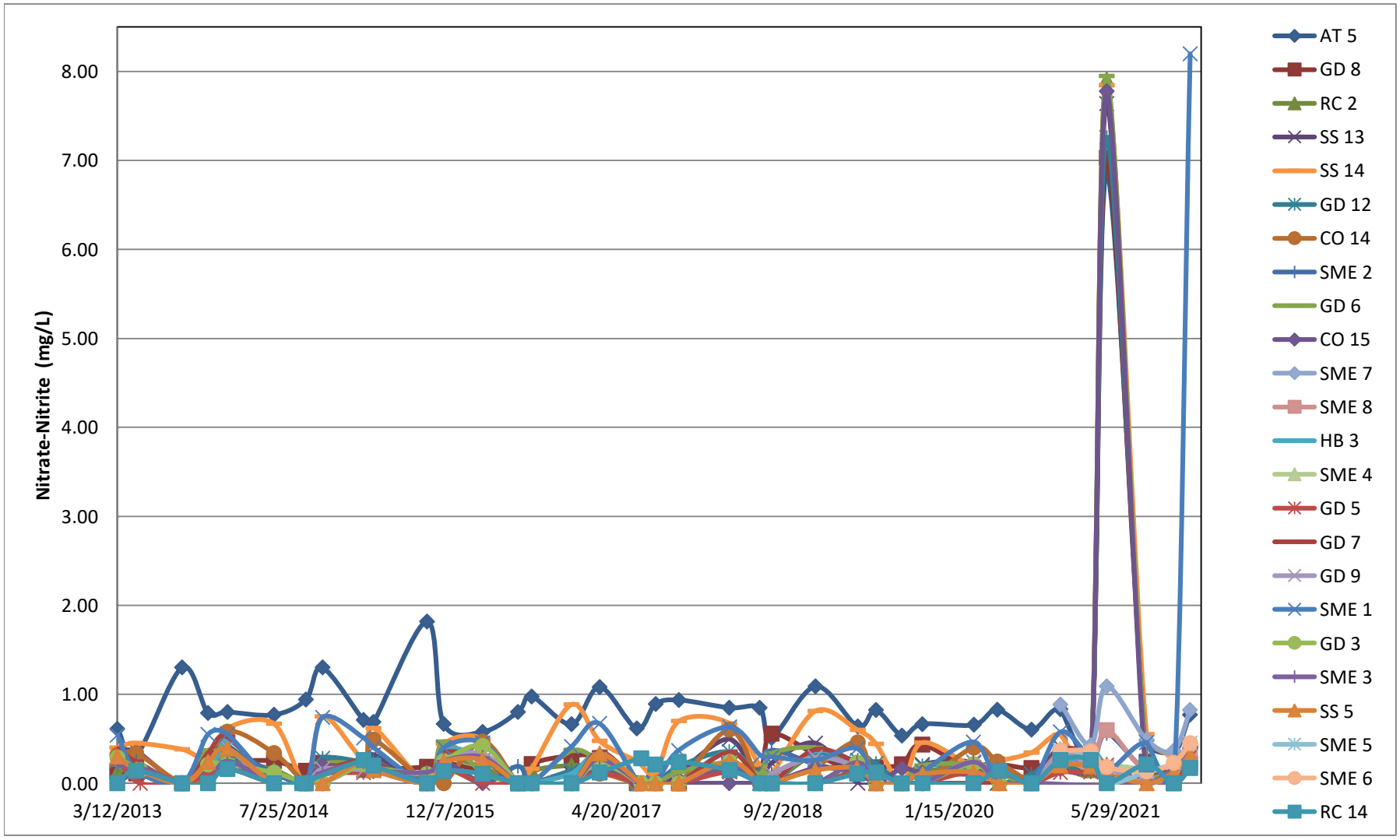
GADSDEN-ETOWAH MS4 MONITORING
NPDES PERMIT NO. ALR040009



ADEM Watermark

CHART 5 - NITRATE-NITRITE ANALYTICAL DATA

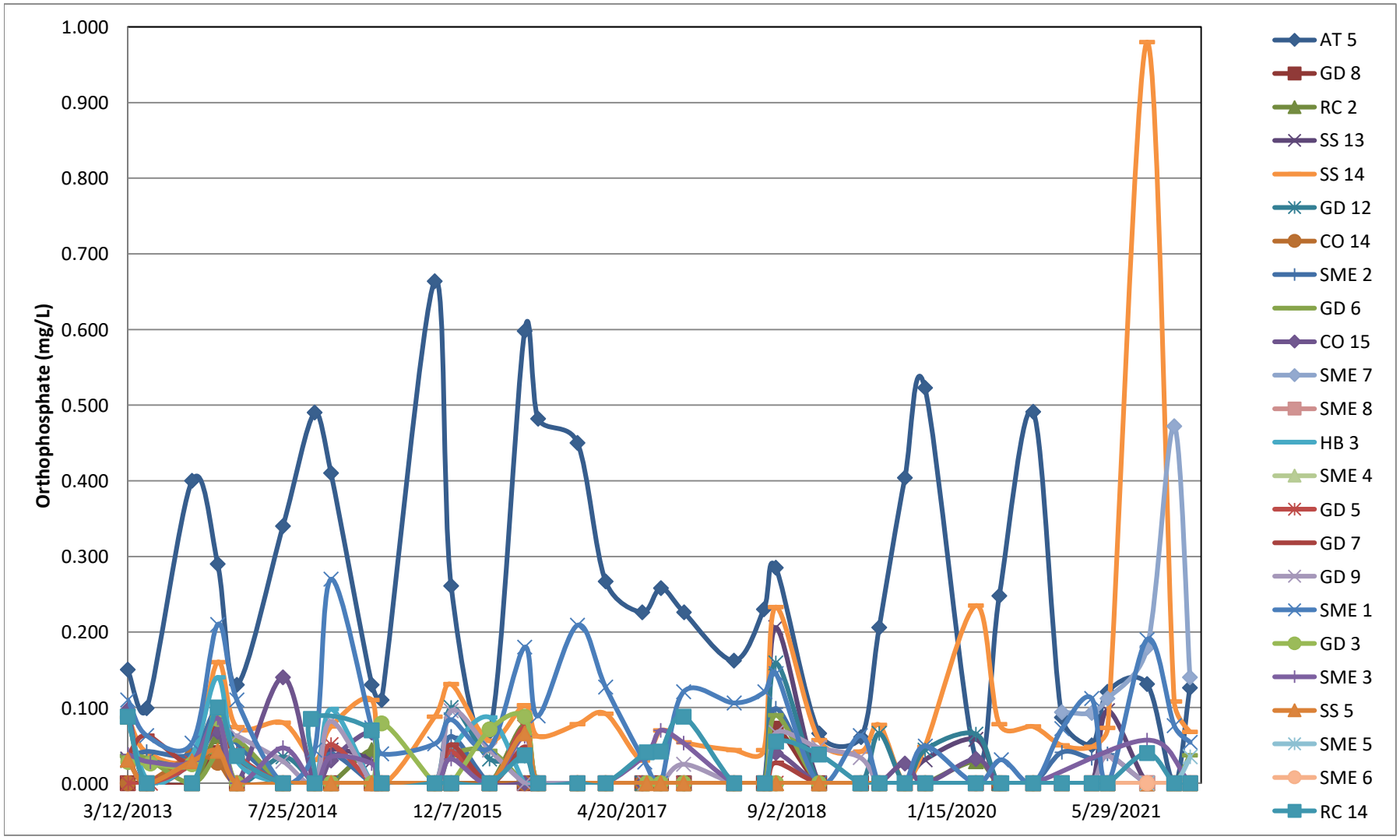
GADSDEN-ETOWAH MS4 MONITORING
NPDES PERMIT NO. ALR040009



ADEM Watermark

CHART 6 - ORTHOPHOSPHATE ANALYTICAL DATA

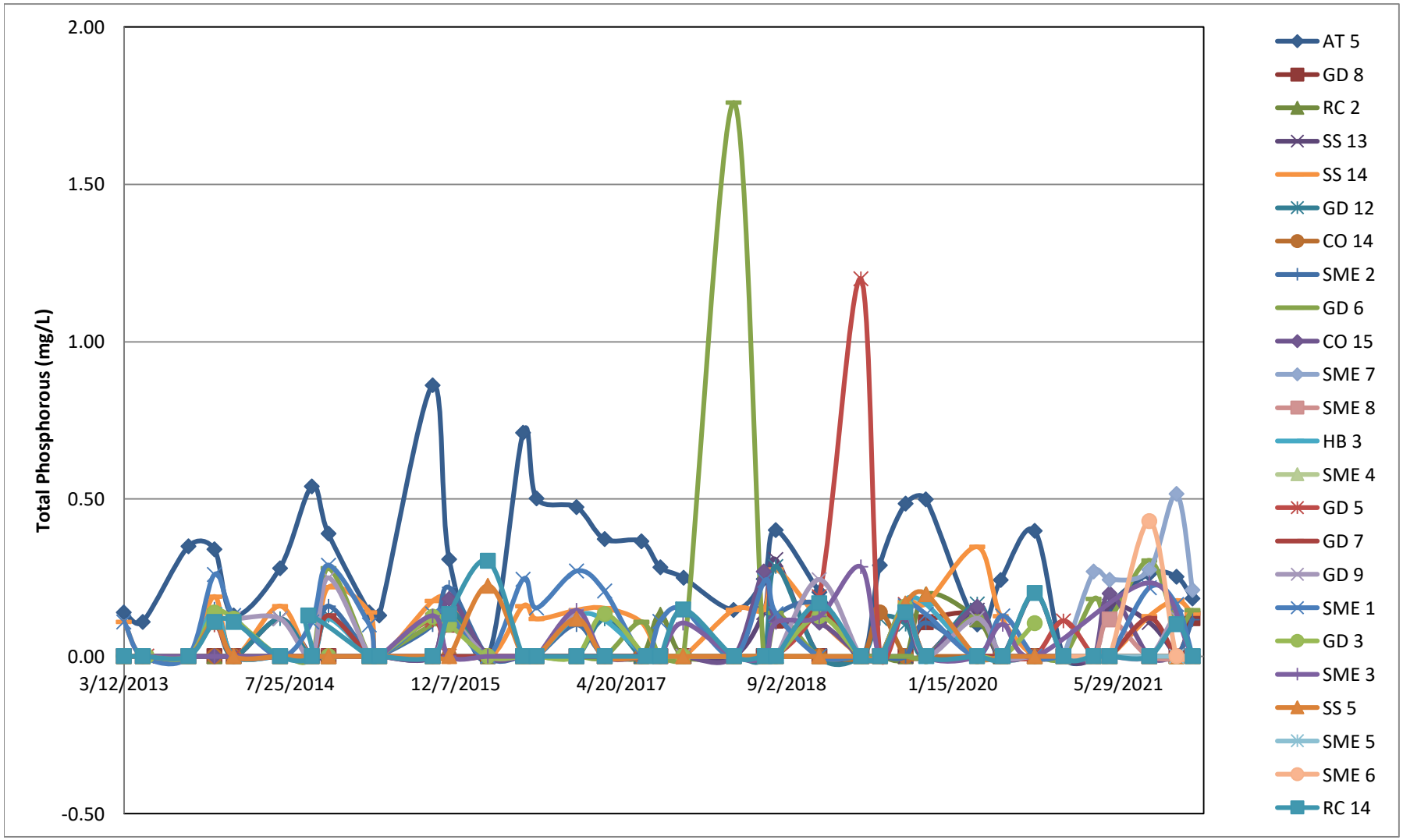
GADSDEN-ETOWAH MS4 MONITORING
NPDES PERMIT NO. ALR040009



ADEM Watermark

CHART 7 - TOTAL PHOSPHOROUS ANALYTICAL DATA

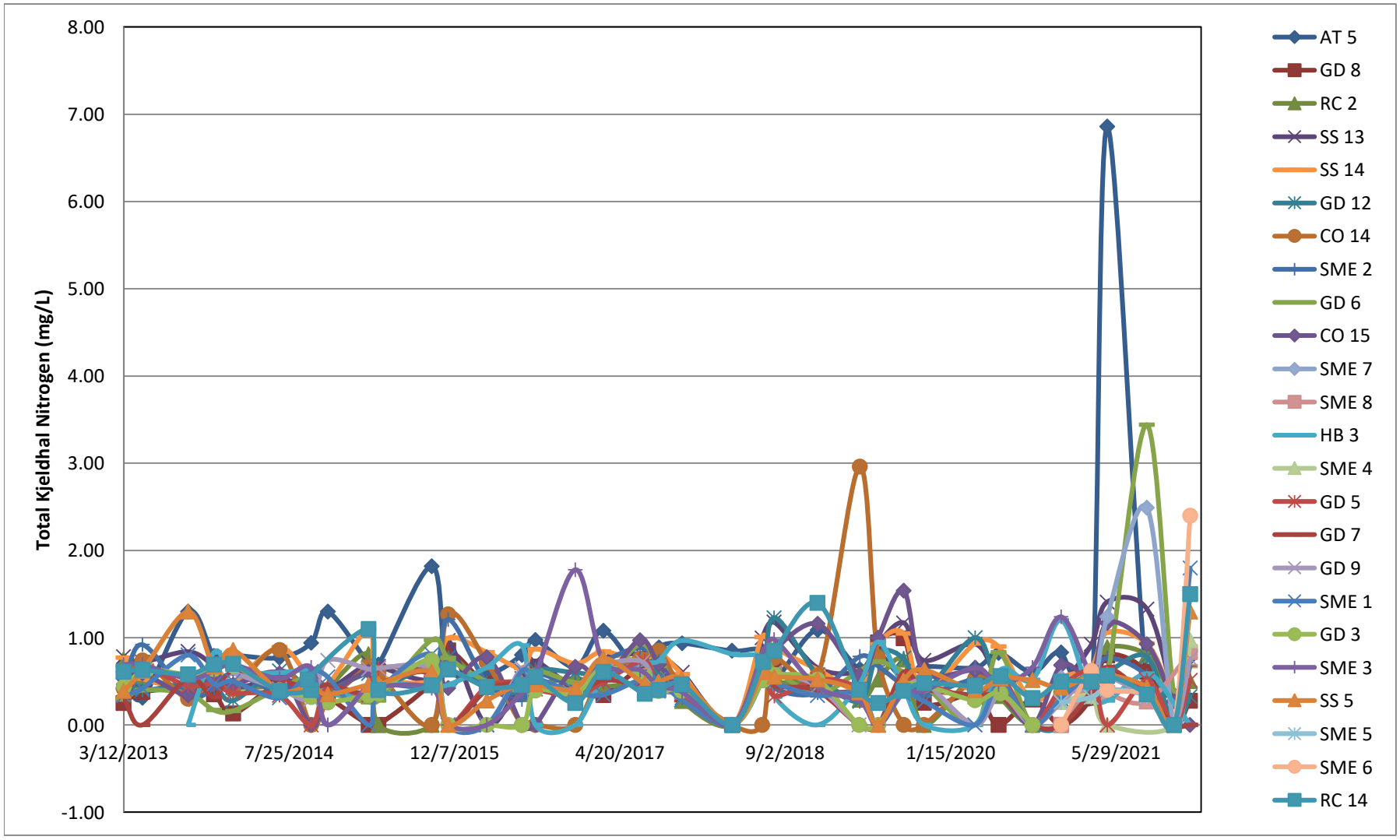
GADSDEN-ETOWAH MS4 MONITORING
NPDES PERMIT NO. ALR040009



ADEM Watermark

CHART 8 - TOTAL KJELDAHL NITROGEN ANALYTICAL DATA

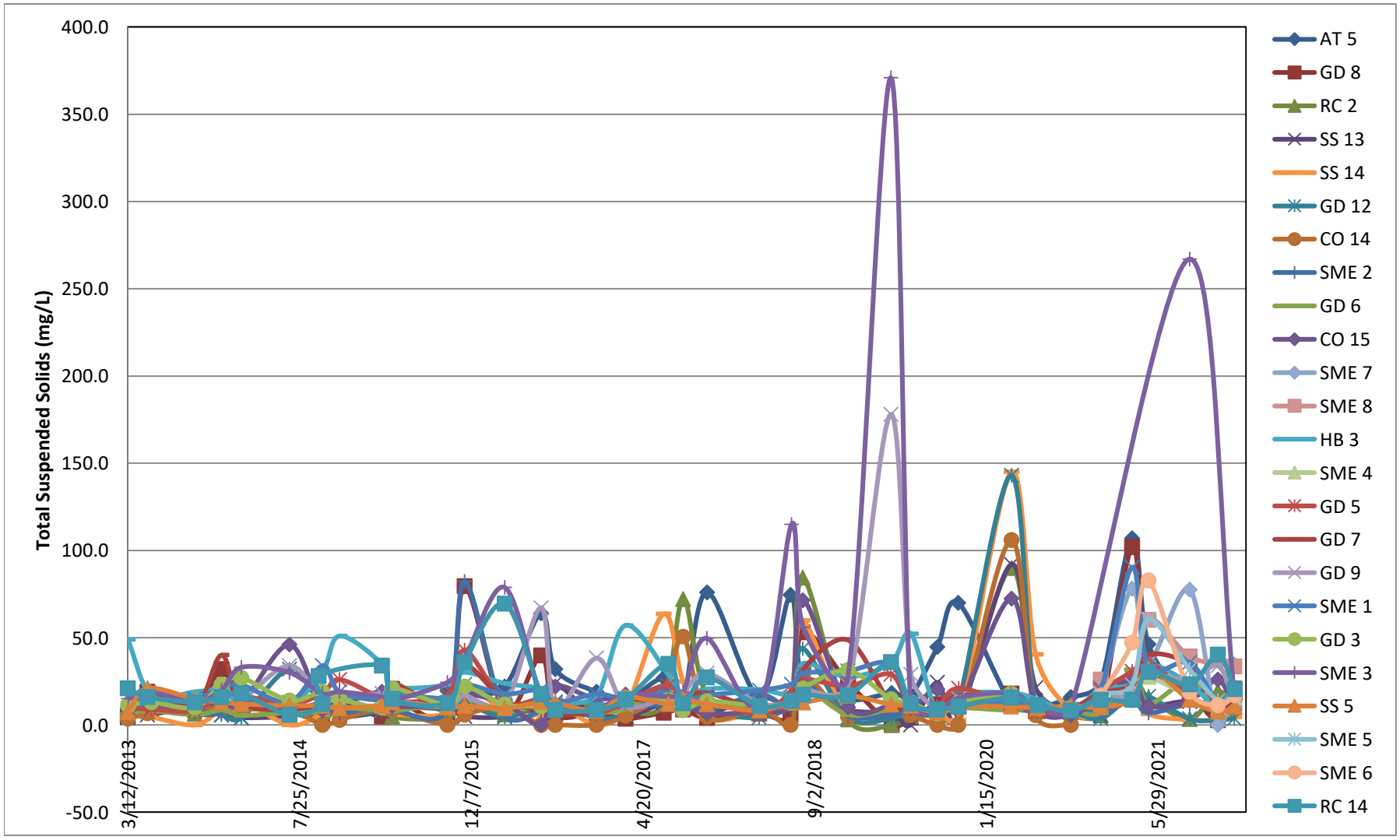
GADSDEN-ETOWAH MS4 MONITORING
NPDES PERMIT NO. ALR040009



ADEM Watermark

CHART 9 - TOTAL SUSPENDED SOLIDS ANALYTICAL DATA

GADSDEN-ETOWAH MS4 MONITORING
NPDES PERMIT NO. ALR040009



ADEM Watermark

CHART 7 - TOTAL PHOSPHOROUS ANALYTICAL DATA

GADSDEN-ETOWAH MS4 MONITORING
NPDES PERMIT NO. ALR040009

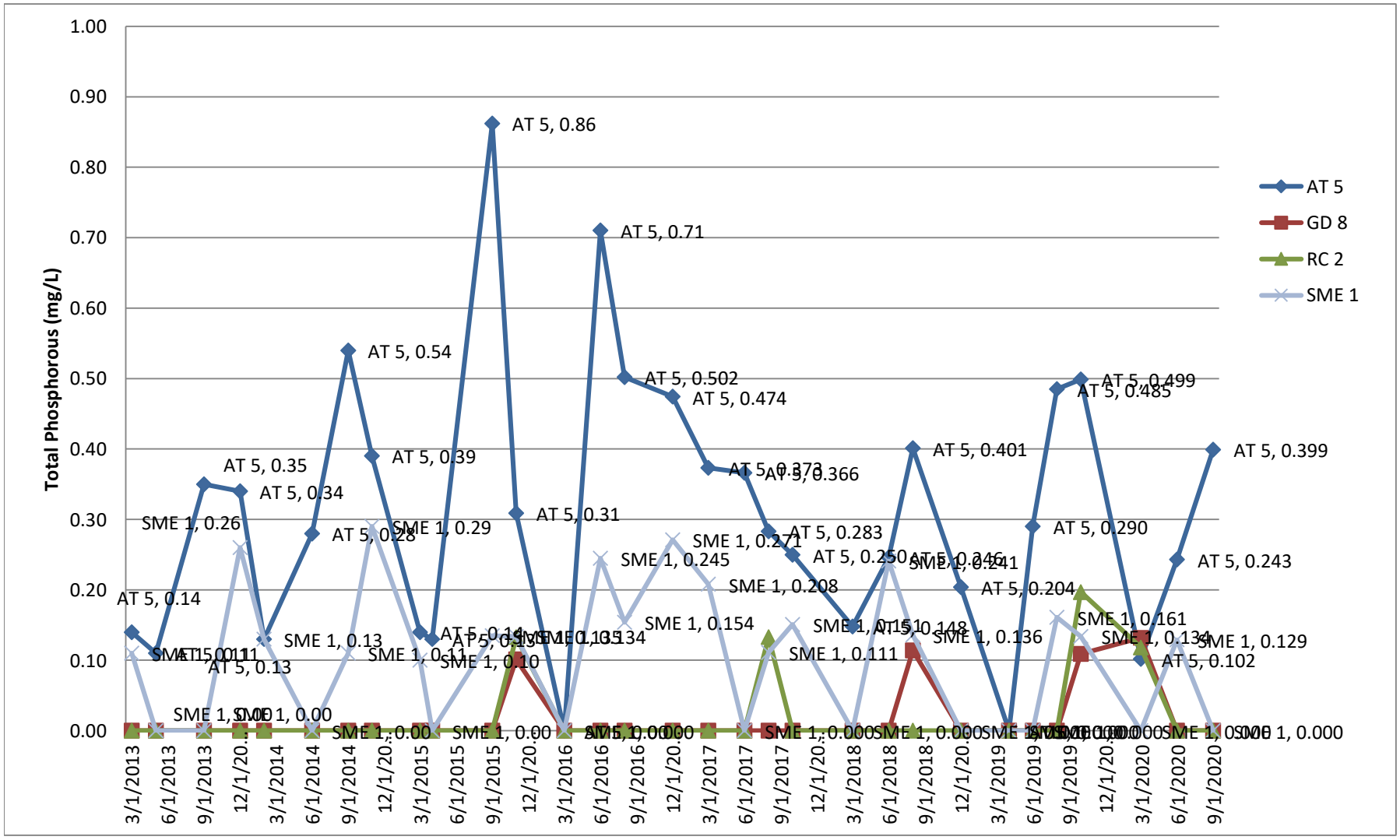


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CHART 5 - NITRATE-NITRITE ANALYTICAL DATA

GADSDEN-ETOWAH MS4 MONITORING
NPDES PERMIT NO. ALR040009

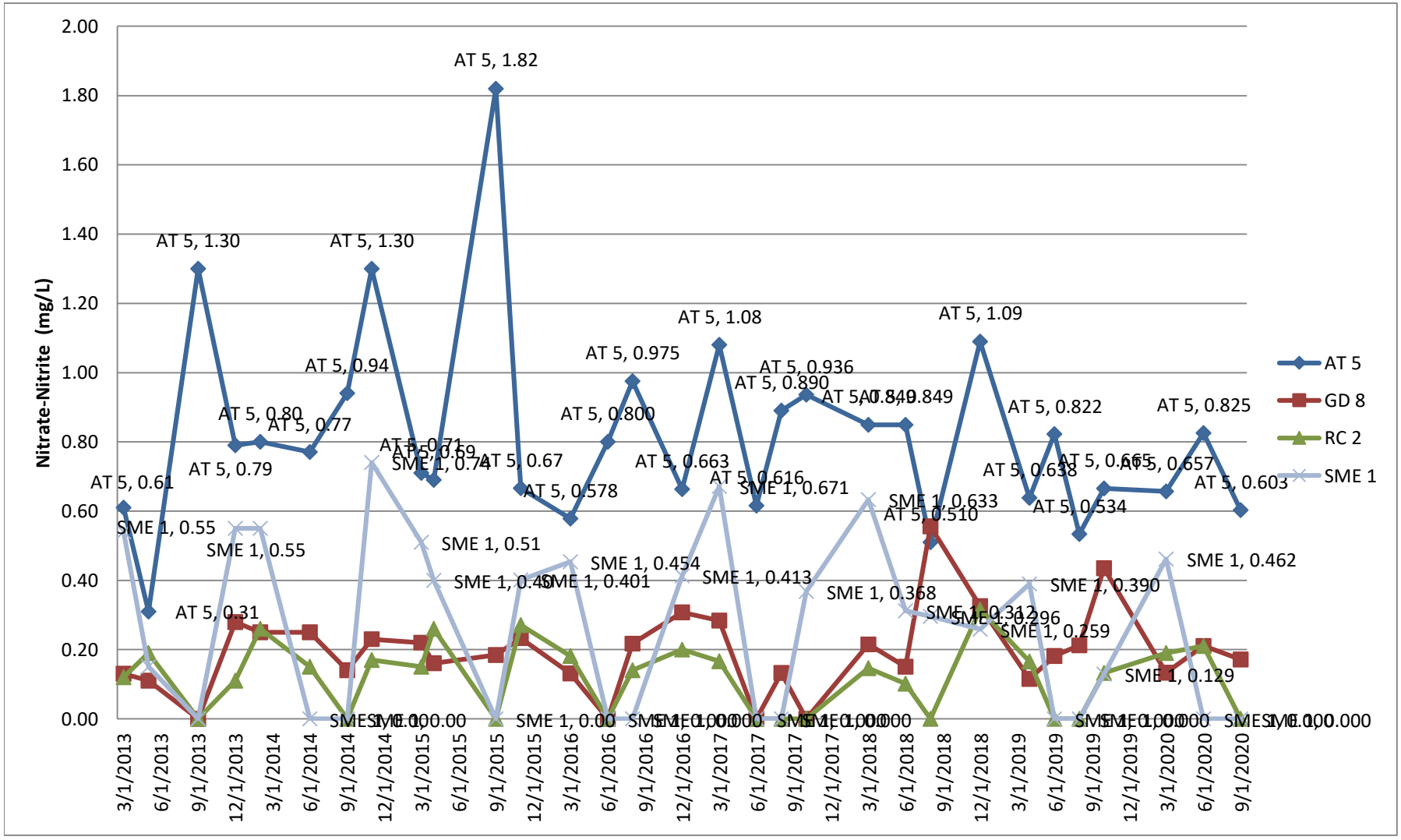

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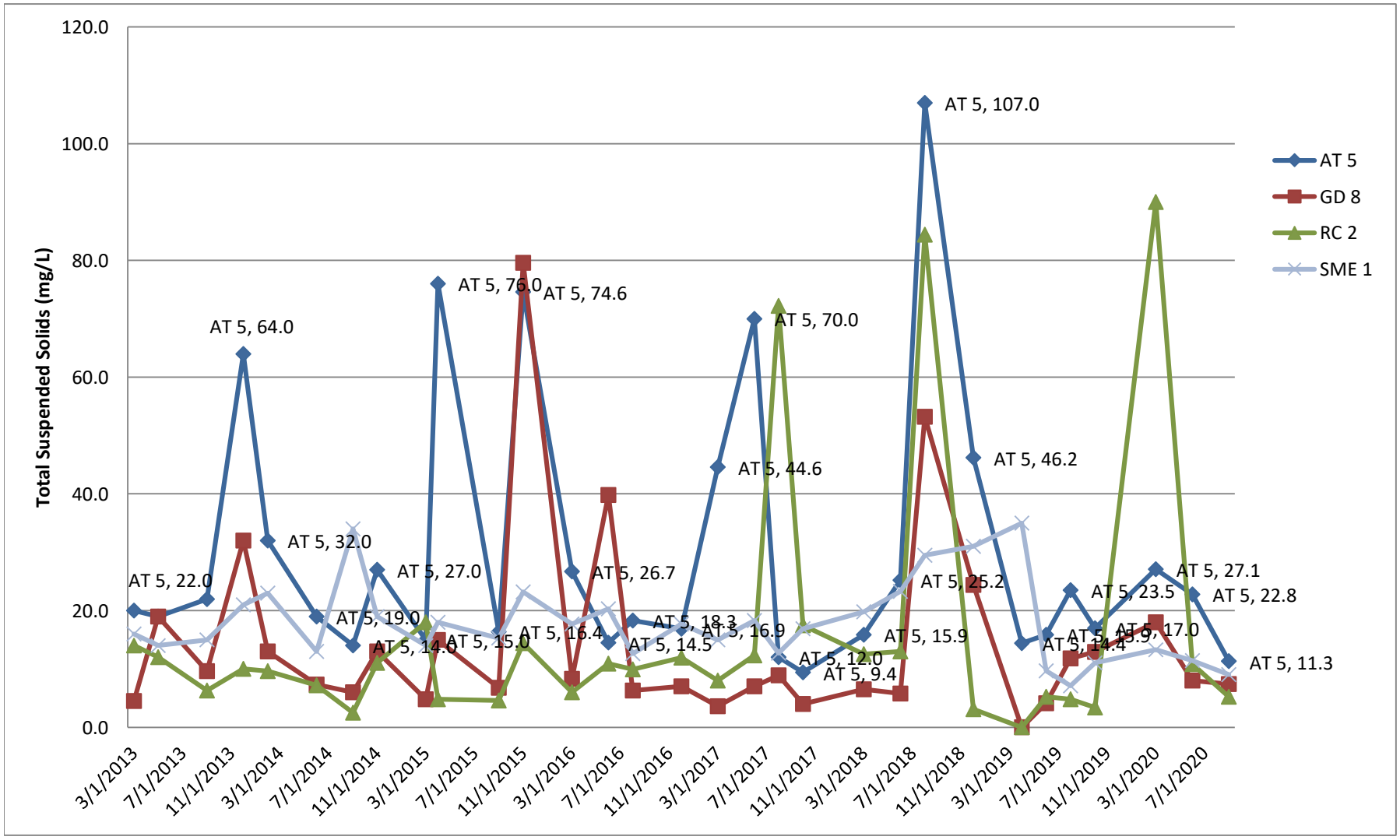
CHART 9 - TOTAL SUSPENDED SOLIDS ANALYTICAL DATA

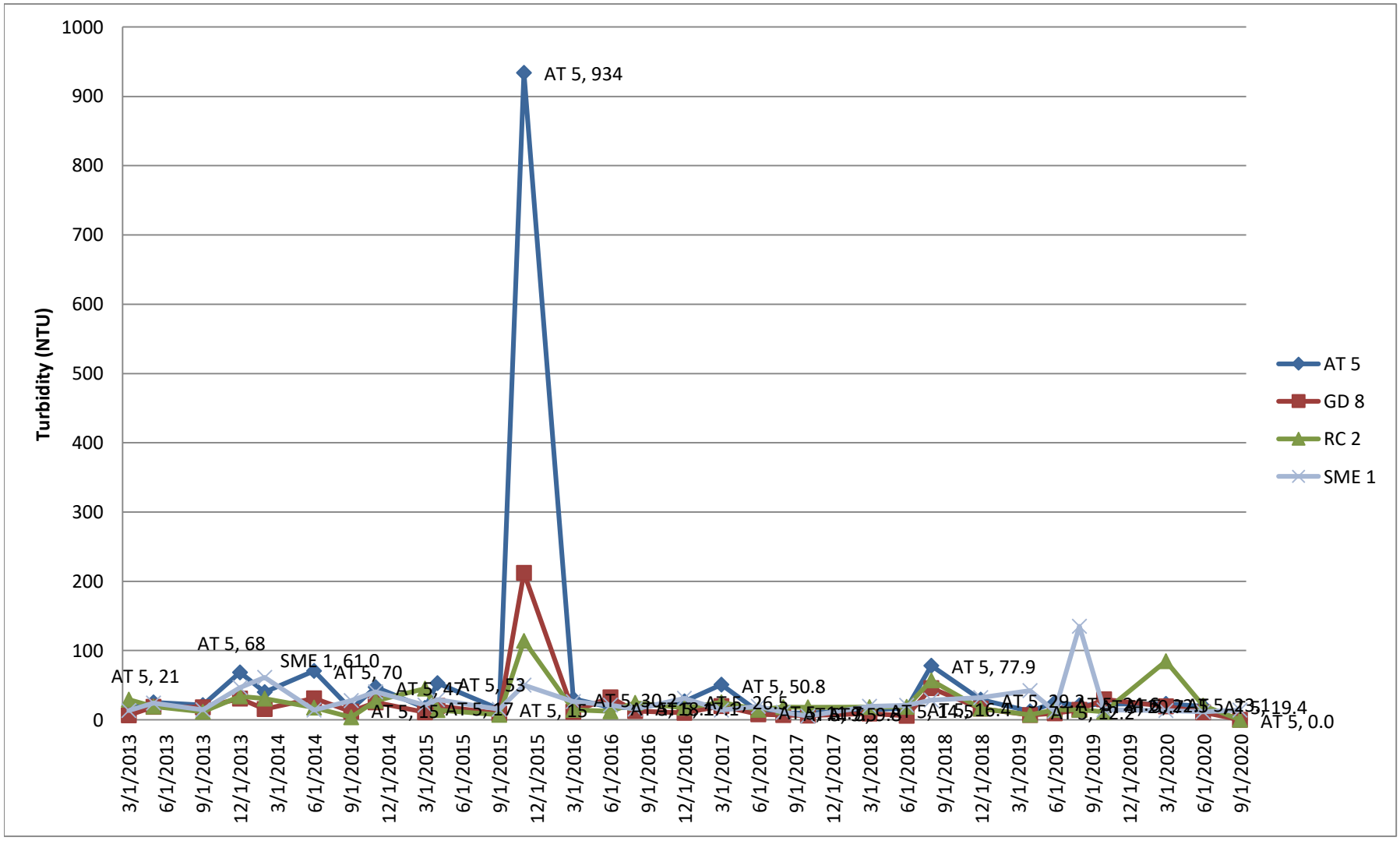
GADSDEN-ETOWAH MS4 MONITORING
NPDES PERMIT NO. ALR040009



ADEM Watermark

CHART 1 - TURBIDITY ANALYTICAL DATA

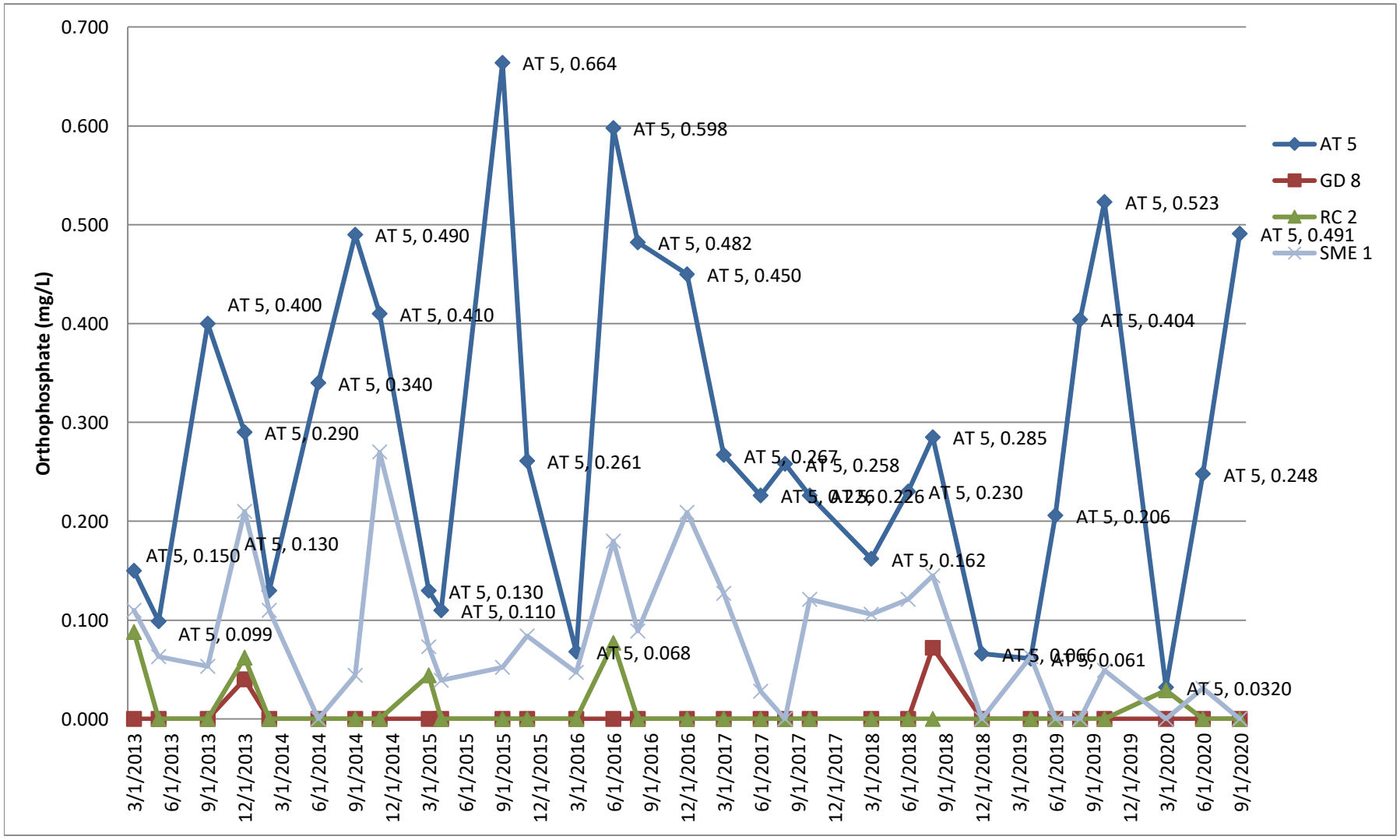
GADSDEN-ETOWAH MS4 MONITORING
NPDES PERMIT NO. ALR040009



ADEM Watermark

CHART 6 - ORTHOPHOSPHATE ANALYTICAL DATA

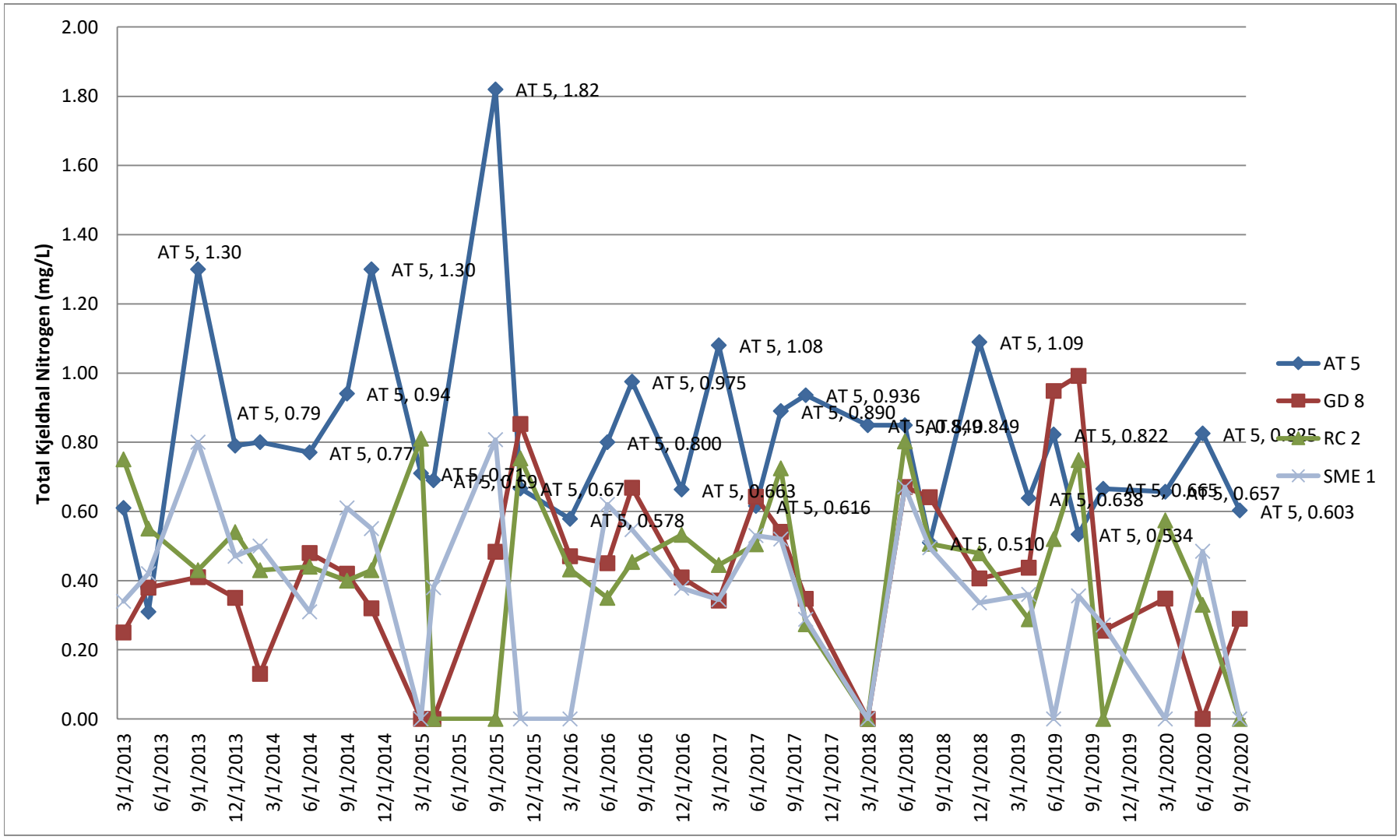
GADSDEN-ETOWAH MS4 MONITORING
NPDES PERMIT NO. ALR040009



ADEM Watermark

CHART 8 - TOTAL KJELDAHL NITROGEN ANALYTICAL DATA

GADSDEN-ETOWAH MS4 MONITORING
NPDES PERMIT NO. ALR040009



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Appendix III

Laboratory Report No. L1449692, dated January 31, 2022

Laboratory Report No. L1450663, dated February 4, 2022

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ANALYTICAL REPORT

January 31, 2022

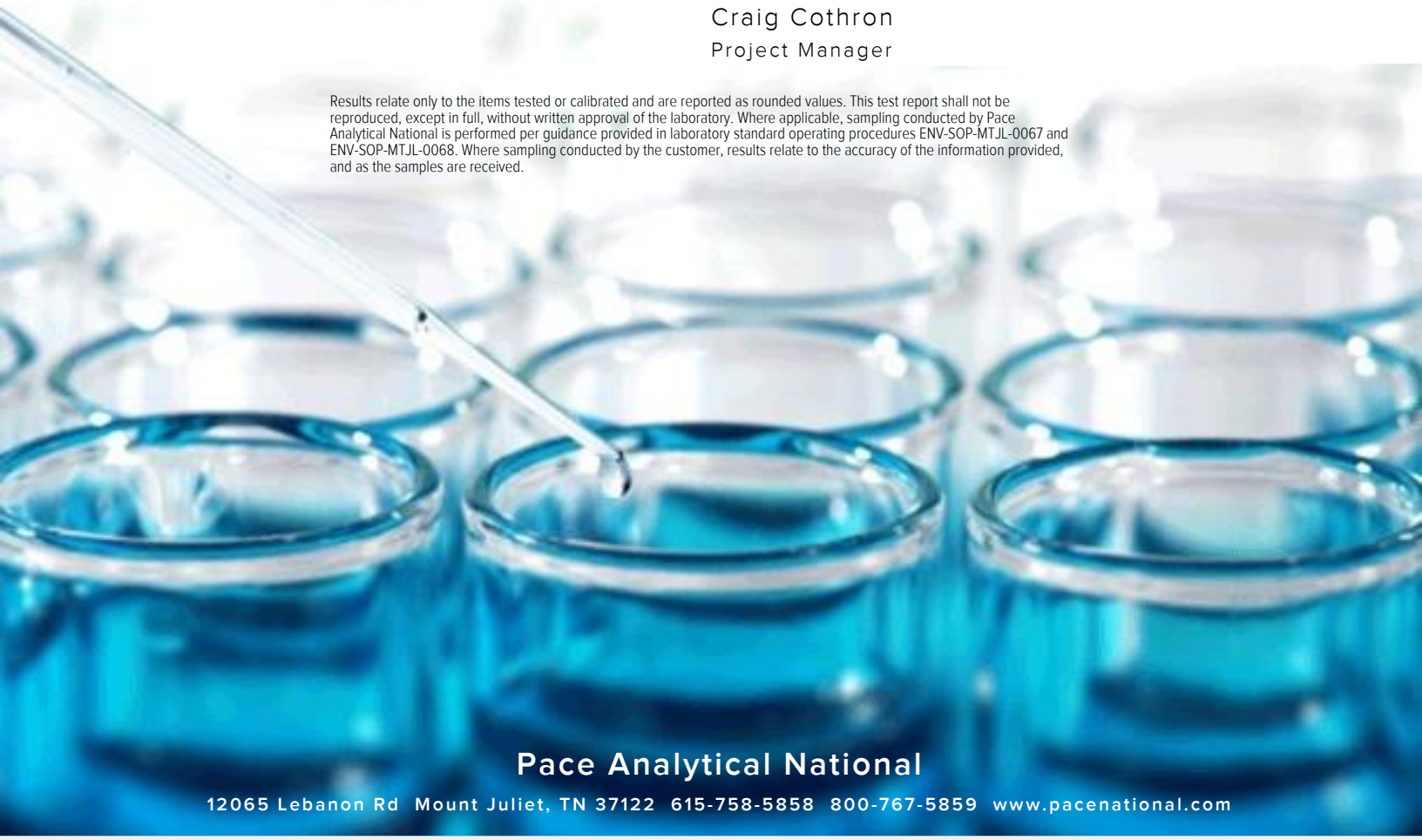
S&ME - Huntsville

Sample Delivery Group:	L1449692
Samples Received:	01/11/2022
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 L1449692-01 WW

Collected by: NW/LB | Collected date/time: 01/10/22 12:25 | Received date/time: 01/11/22 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1800714	1	01/11/22 23:39	01/12/22 01:56	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1806235	1	01/25/22 18:42	01/26/22 12:42	LDT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1806230	1	01/24/22 00:43	01/24/22 00:43	CAT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1807971	1	01/25/22 18:42	01/28/22 17:51	LDT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1799913	1	01/11/22 20:30	01/11/22 20:30	ARM	Mt. Juliet, TN

GD 8 L1449692-02 WW

Collected by: NW/LB | Collected date/time: 01/10/22 12:15 | Received date/time: 01/11/22 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1800714	1	01/11/22 23:39	01/12/22 01:56	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1806238	1	01/25/22 22:29	01/27/22 19:55	LDT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1806230	1	01/24/22 00:45	01/24/22 00:45	CAT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1809450	1	01/25/22 22:29	01/27/22 19:18	LDT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1799913	1	01/11/22 20:31	01/11/22 20:31	ARM	Mt. Juliet, TN

RC 2 L1449692-03 WW

Collected by: NW/LB | Collected date/time: 01/10/22 12:05 | Received date/time: 01/11/22 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1800714	1	01/11/22 23:39	01/12/22 01:56	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1806238	1	01/25/22 22:29	01/27/22 20:01	LDT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1806230	1	01/24/22 00:46	01/24/22 00:46	CAT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1809450	1	01/25/22 22:29	01/27/22 19:26	LDT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1799913	1	01/11/22 20:34	01/11/22 20:34	ARM	Mt. Juliet, TN

SS 13 L1449692-04 WW

Collected by: NW/LB | Collected date/time: 01/10/22 11:30 | Received date/time: 01/11/22 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1800714	1	01/11/22 23:39	01/12/22 01:56	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1806238	1	01/25/22 22:29	01/27/22 20:05	LDT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1806230	1	01/24/22 00:47	01/24/22 00:47	CAT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1809450	1	01/25/22 22:29	01/27/22 19:29	LDT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1799913	1	01/11/22 20:34	01/11/22 20:34	ARM	Mt. Juliet, TN

SS 14 L1449692-05 WW

Collected by: NW/LB | Collected date/time: 01/10/22 11:40 | Received date/time: 01/11/22 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1800714	1	01/11/22 23:39	01/12/22 01:56	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1806238	1	01/25/22 22:29	01/27/22 20:09	LDT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1806230	1	01/24/22 00:48	01/24/22 00:48	CAT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1809450	1	01/25/22 22:29	01/27/22 19:31	LDT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1799913	1	01/11/22 20:35	01/11/22 20:35	ARM	Mt. Juliet, TN

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GD 12 L1449692-06 WW

Collected by: NW/LB | Collected date/time: 01/10/22 11:50 | Received date/time: 01/11/22 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1800714	1	01/11/22 23:39	01/12/22 01:56	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1806238	1	01/25/22 22:29	01/27/22 20:10	LDT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1806823	1	01/27/22 22:51	01/27/22 22:51	CAT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1809450	1	01/25/22 22:29	01/27/22 19:32	LDT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1799913	1	01/11/22 20:35	01/11/22 20:35	ARM	Mt. Juliet, TN

SME2 L1449692-07 WW

Collected by: NW/LB | Collected date/time: 01/10/22 11:10 | Received date/time: 01/11/22 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1800714	1	01/11/22 23:39	01/12/22 01:56	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1806242	1	01/26/22 18:44	01/29/22 16:26	LDT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1806823	1	01/27/22 22:54	01/27/22 22:54	CAT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1810149	1	01/26/22 18:44	01/29/22 13:18	LDT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1799913	1	01/11/22 20:36	01/11/22 20:36	ARM	Mt. Juliet, TN

GD 6 L1449692-08 WW

Collected by: NW/LB | Collected date/time: 01/10/22 11:00 | Received date/time: 01/11/22 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1800714	1	01/11/22 23:39	01/12/22 01:56	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1806242	1	01/26/22 18:44	01/29/22 16:27	LDT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1806823	1	01/27/22 22:57	01/27/22 22:57	CAT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1810149	1	01/26/22 18:44	01/29/22 13:20	LDT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1799913	1	01/11/22 20:37	01/11/22 20:37	ARM	Mt. Juliet, TN

CO 15 L1449692-09 WW

Collected by: NW/LB | Collected date/time: 01/10/22 10:20 | Received date/time: 01/11/22 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1800714	1	01/11/22 23:39	01/12/22 01:56	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1806242	10	01/26/22 18:44	01/29/22 16:33	LDT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1806823	1	01/27/22 23:03	01/27/22 23:03	CAT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1810149	1	01/26/22 18:44	01/29/22 13:25	LDT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1799913	1	01/11/22 20:37	01/11/22 20:37	ARM	Mt. Juliet, TN

SME 7 L1449692-10 WW

Collected by: NW/LB | Collected date/time: 01/10/22 10:40 | Received date/time: 01/11/22 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1800721	1	01/12/22 00:01	01/12/22 03:37	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1806242	1	01/26/22 18:44	01/29/22 16:37	LDT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1806823	1	01/27/22 23:04	01/27/22 23:04	CAT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1810149	1	01/26/22 18:44	01/29/22 13:26	LDT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1799913	1	01/11/22 20:38	01/11/22 20:38	ARM	Mt. Juliet, TN

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

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SME 8 L1449692-11 WW

Collected by: NW/LB | Collected date/time: 01/10/22 09:45 | Received date/time: 01/11/22 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1800721	1	01/12/22 00:01	01/12/22 03:37	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1806242	1	01/26/22 18:44	01/29/22 16:41	LDT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1806823	1	01/27/22 23:05	01/27/22 23:05	CAT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1810149	1	01/26/22 18:44	01/29/22 13:32	LDT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1799913	1	01/11/22 20:38	01/11/22 20:38	ARM	Mt. Juliet, TN

SME 9 L1449692-12 WW

Collected by: NW/LB | Collected date/time: 01/10/22 12:00 | Received date/time: 01/11/22 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1800721	1	01/12/22 00:01	01/12/22 03:37	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1806244	1	01/26/22 13:40	01/28/22 20:58	LDT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1806823	1	01/27/22 23:06	01/27/22 23:06	CAT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1809987	1	01/26/22 13:40	01/28/22 20:36	LDT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1799913	1	01/11/22 20:39	01/11/22 20:39	ARM	Mt. Juliet, TN

SME 10 L1449692-13 WW

Collected by: NW/LB | Collected date/time: 01/10/22 12:00 | Received date/time: 01/11/22 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1800721	1	01/12/22 00:01	01/12/22 03:37	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1806244	1	01/26/22 13:40	01/28/22 20:59	LDT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1806823	1	01/27/22 23:08	01/27/22 23:08	CAT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1809987	1	01/26/22 13:40	01/28/22 20:37	LDT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1799913	1	01/11/22 20:40	01/11/22 20:40	ARM	Mt. Juliet, TN

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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

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Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	29.7		3.33	1	01/12/2022 01:56	WG1800714

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.279		0.250	1	01/26/2022 12:42	WG1806235

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.769		0.100	1	01/24/2022 00:43	WG1806230

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	0.184	B J4 J6	0.100	1	01/28/2022 17:51	WG1807971

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	0.126		0.0300	1	01/11/2022 20:30	WG1799913

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Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	20.8		3.33	1	01/12/2022 01:56	WG1800714

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.277	P1	0.250	1	01/27/2022 19:55	WG1806238

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.222		0.100	1	01/24/2022 00:45	WG1806230

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	0.122	B	0.100	1	01/27/2022 19:18	WG1809450

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	01/11/2022 20:31	WG1799913

ADEM Watermark

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Suspended Solids	9.00		2.50	1	01/12/2022 01:56	WG1800714

Wet Chemistry by Method 351.2

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	0.501	J5	0.250	1	01/27/2022 20:01	WG1806238

Wet Chemistry by Method 353.2

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	0.185		0.100	1	01/24/2022 00:46	WG1806230

Wet Chemistry by Method 365.4

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Phosphorus,Total	ND	J6 P1	0.100	1	01/27/2022 19:26	WG1809450

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	01/11/2022 20:34	WG1799913

ADEM Watermark

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	7.00		2.50	1	01/12/2022 01:56	WG1800714

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.725		0.250	1	01/27/2022 20:05	WG1806238

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.295		0.100	1	01/24/2022 00:47	WG1806230

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	01/27/2022 19:29	WG1809450

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	01/11/2022 20:34	WG1799913

ADEM Watermark

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	4.40		2.50	1	01/12/2022 01:56	WG1800714

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.674		0.250	1	01/27/2022 20:09	WG1806238

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.385		0.100	1	01/24/2022 00:48	WG1806230

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	0.136	B	0.100	1	01/27/2022 19:31	WG1809450

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	0.0680		0.0300	1	01/11/2022 20:35	WG1799913

ADEM Watermark

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	3.70		2.50	1	01/12/2022 01:56	WG1800714

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.325		0.250	1	01/27/2022 20:10	WG1806238

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.230		0.100	1	01/27/2022 22:51	WG1806823

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	01/27/2022 19:32	WG1809450

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	01/11/2022 20:35	WG1799913

ADEM Watermark

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	16.1		2.50	1	01/12/2022 01:56	WG1800714

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.672		0.250	1	01/29/2022 16:26	WG1806242

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.338		0.100	1	01/27/2022 22:54	WG1806823

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	0.117	B	0.100	1	01/29/2022 13:18	WG1810149

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	01/11/2022 20:36	WG1799913

ADEM Watermark

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Suspended Solids	10.2		2.50	1	01/12/2022 01:56	WG1800714

Wet Chemistry by Method 351.2

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	0.850	J5	0.250	1	01/29/2022 16:27	WG1806242

Wet Chemistry by Method 353.2

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	0.238		0.100	1	01/27/2022 22:57	WG1806823

Wet Chemistry by Method 365.4

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Phosphorus,Total	0.147	B	0.100	1	01/29/2022 13:20	WG1810149

Wet Chemistry by Method 4500P E-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Phosphate,Ortho	0.0370		0.0300	1	01/11/2022 20:37	WG1799913

ADEM Watermark

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Suspended Solids	9.60		2.50	1	01/12/2022 01:56	WG1800714

Wet Chemistry by Method 351.2

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	ND		2.50	10	01/29/2022 16:33	WG1806242

Wet Chemistry by Method 353.2

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	0.196		0.100	1	01/27/2022 23:03	WG1806823

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	01/29/2022 13:25	WG1810149

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	01/11/2022 20:37	WG1799913

ADEM Watermark

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	33.5		2.50	1	01/12/2022 03:37	WG1800721

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.832	P1	0.250	1	01/29/2022 16:37	WG1806242

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.328		0.100	1	01/27/2022 23:04	WG1806823

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	01/29/2022 13:26	WG1810149

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	01/11/2022 20:38	WG1799913

ADEM Watermark

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	34.7		2.50	1	01/12/2022 03:37	WG1800721

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.805		0.250	1	01/29/2022 16:41	WG1806242

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.823		0.100	1	01/27/2022 23:05	WG1806823

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	0.211	B	0.100	1	01/29/2022 13:32	WG1810149

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	0.140		0.0300	1	01/11/2022 20:38	WG1799913

ADEM Watermark

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	35.4		2.50	1	01/12/2022 03:37	WG1800721

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.291		0.250	1	01/28/2022 20:58	WG1806244

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.779		0.100	1	01/27/2022 23:06	WG1806823

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	0.192	B	0.100	1	01/28/2022 20:36	WG1809987

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	0.125		0.0300	1	01/11/2022 20:39	WG1799913

ADEM Watermark

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Suspended Solids	39.2		5.00	1	01/12/2022 03:37	WG1800721

Wet Chemistry by Method 351.2

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	0.988		0.250	1	01/28/2022 20:59	WG1806244

Wet Chemistry by Method 353.2

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	0.812		0.100	1	01/27/2022 23:08	WG1806823

Wet Chemistry by Method 365.4

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Phosphorus,Total	0.188	B	0.100	1	01/28/2022 20:37	WG1809987

Wet Chemistry by Method 4500P E-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Phosphate,Ortho	0.148		0.0300	1	01/11/2022 20:40	WG1799913

ADEM Watermark

QUALITY CONTROL SUMMARY

L1449692-01,02,03,04,05,06,07,08,09

Method Blank (MB)

(MB) R3749335-1 01/12/22 01:56

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Suspended Solids	U		2.50	2.50

L1449339-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1449339-01 01/12/22 01:56 • (DUP) R3749335-3 01/12/22 01:56

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Suspended Solids	38.0	37.6	1	1.06		5

L1449362-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1449362-01 01/12/22 01:56 • (DUP) R3749335-4 01/12/22 01:56

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Suspended Solids	104	99.0	1	4.93		5

Laboratory Control Sample (LCS)

(LCS) R3749335-2 01/12/22 01:56

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Suspended Solids	773	785	102	85.7-114	

ADEM Watermark

Method Blank (MB)

(MB) R3749341-1 01/12/22 03:37

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Suspended Solids	U		2.50	2.50

L1449538-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1449538-01 01/12/22 03:37 • (DUP) R3749341-3 01/12/22 03:37

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Suspended Solids	25.6	23.6	1	8.13	P1	5

L1449705-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1449705-01 01/12/22 03:37 • (DUP) R3749341-4 01/12/22 03:37

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Suspended Solids	12.9	13.1	1	2.15		5

Laboratory Control Sample (LCS)

(LCS) R3749341-2 01/12/22 03:37

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Suspended Solids	773	755	97.7	85.7-114	

ADEM Watermark

Method Blank (MB)

(MB) R3753734-1 01/26/22 12:20

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Kjeldahl Nitrogen, TKN	U		0.140	0.250

L1449539-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1449539-02 01/26/22 12:36 • (DUP) R3753734-3 01/26/22 12:38

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

L1449692-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1449692-01 01/26/22 12:42 • (DUP) R3753734-6 01/26/22 12:43

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Kjeldahl Nitrogen, TKN	0.279	0.308	1	9.88		20

Laboratory Control Sample (LCS)

(LCS) R3753734-2 01/26/22 12:21

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Kjeldahl Nitrogen, TKN	10.2	11.0	108	75.2-121	

L1449539-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1449539-02 01/26/22 12:36 • (MS) R3753734-4 01/26/22 12:39 • (MSD) R3753734-5 01/26/22 12:40

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	5.62	5.49	112	110	1	90.0-110	J5		2.34	20

L1449692-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1449692-01 01/26/22 12:42 • (MS) R3753734-7 01/26/22 12:45

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	0.279	5.43	103	1	90.0-110	

ADEM Watermark

Method Blank (MB)

(MB) R3754360-1 01/27/22 19:36

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Kjeldahl Nitrogen, TKN	U		0.140	0.250

L1449692-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1449692-02 01/27/22 19:55 • (DUP) R3754360-3 01/27/22 19:57

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Kjeldahl Nitrogen, TKN	0.277	ND	1	38.8	P1	20

L1449692-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1449692-03 01/27/22 20:01 • (DUP) R3754360-6 01/27/22 20:02

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Kjeldahl Nitrogen, TKN	0.501	0.487	1	2.83		20

Laboratory Control Sample (LCS)

(LCS) R3754360-2 01/27/22 19:38

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Kjeldahl Nitrogen, TKN	10.2	11.0	108	75.2-121	

L1449692-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1449692-02 01/27/22 19:55 • (MS) R3754360-4 01/27/22 19:58 • (MSD) R3754360-5 01/27/22 19:59

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 %
Kjeldahl Nitrogen, TKN	5.00	0.277	5.72	5.77	109	110	1	90.0-110			0.870	20

L1449692-03 Original Sample (OS) • Matrix Spike (MS)

(OS) L1449692-03 01/27/22 20:01 • (MS) R3754360-7 01/27/22 20:04

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	0.501	6.19	114	1	90.0-110	J5

ADEM Watermark

Method Blank (MB)

(MB) R3754930-1 01/29/22 16:20

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Kjeldahl Nitrogen, TKN	U		0.140	0.250

L1449692-08 Original Sample (OS) • Duplicate (DUP)

(OS) L1449692-08 01/29/22 16:27 • (DUP) R3754930-3 01/29/22 16:28

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Kjeldahl Nitrogen, TKN	0.850	0.764	1	10.7		20

L1449692-10 Original Sample (OS) • Duplicate (DUP)

(OS) L1449692-10 01/29/22 16:37 • (DUP) R3754930-6 01/29/22 16:38

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Kjeldahl Nitrogen, TKN	0.832	0.554	1	40.1	P1	20

Laboratory Control Sample (LCS)

(LCS) R3754930-2 01/29/22 16:22

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Kjeldahl Nitrogen, TKN	10.2	11.4	112	75.2-121	

L1449692-08 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1449692-08 01/29/22 16:27 • (MS) R3754930-4 01/29/22 16:30 • (MSD) R3754930-5 01/29/22 16:31

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 %
Kjeldahl Nitrogen, TKN	5.00	0.850	6.60	6.47	115	112	1	90.0-110	J5	J5	1.99	20

L1449692-10 Original Sample (OS) • Matrix Spike (MS)

(OS) L1449692-10 01/29/22 16:37 • (MS) R3754930-7 01/29/22 16:39

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	0.832	6.25	108	1	90.0-110	

ADEM Watermark

QUALITY CONTROL SUMMARY

L1449692-12,13

Method Blank (MB)

(MB) R3754823-1 01/28/22 20:49

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Kjeldahl Nitrogen, TKN	U		0.140	0.250

L1449244-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1449244-01 01/28/22 20:52 • (DUP) R3754823-3 01/28/22 20:53

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Kjeldahl Nitrogen, TKN	39.2	39.2	1	0.000	E	20

L1449924-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1449924-01 01/28/22 21:02 • (DUP) R3754823-6 01/28/22 21:06

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Kjeldahl Nitrogen, TKN	0.460	0.396	1	15.0		20

L1449244-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1449244-01 01/28/22 21:17 • (DUP) R3754823-8 01/28/22 21:18

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Kjeldahl Nitrogen, TKN	108	105	20	2.82		20

Laboratory Control Sample (LCS)

(LCS) R3754823-2 01/28/22 20:51

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Kjeldahl Nitrogen, TKN	10.2	11.4	112	75.2-121	

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L1449244-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1449244-01 01/28/22 20:52 • (MS) R3754823-4 01/28/22 20:55 • (MSD) R3754823-5 01/28/22 20:56

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	39.2	38.8	38.6	0.000	0.000	1	90.0-110	E V	E V	0.517	20

L1449924-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1449924-01 01/28/22 21:02 • (MS) R3754823-7 01/28/22 21:07

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	0.460	5.95	110	1	90.0-110	

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Method Blank (MB)

(MB) R3752722-1 01/24/22 00:07

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Nitrate-Nitrite	U		0.0500	0.100

L1449367-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1449367-03 01/24/22 00:10 • (DUP) R3752722-3 01/24/22 00:11

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Nitrate-Nitrite	0.180	0.179	1	0.557		20

L1449489-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1449489-01 01/24/22 00:24 • (DUP) R3752722-6 01/24/22 00:26

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) R3752722-2 01/24/22 00:09

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Nitrate-Nitrite	2.50	2.49	99.6	90.0-110	

L1449367-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1449367-04 01/24/22 00:13 • (MS) R3752722-4 01/24/22 00:14 • (MSD) R3752722-5 01/24/22 00:15

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 %
Nitrate-Nitrite	2.50	0.249	2.90	2.90	106	106	1	90.0-110			0.000	20

L1449489-02 Original Sample (OS) • Matrix Spike (MS)

(OS) L1449489-02 01/24/22 00:27 • (MS) R3752722-7 01/24/22 00:28

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	2.52	101	1	90.0-110	

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QUALITY CONTROL SUMMARY

L1449692-06,07,08,09,10,11,12,13

Method Blank (MB)

(MB) R3754376-1 01/27/22 22:47

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Nitrate-Nitrite	U		0.0500	0.100

L1449692-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1449692-06 01/27/22 22:51 • (DUP) R3754376-3 01/27/22 22:52

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Nitrate-Nitrite	0.230	0.235	1	2.15		20

L1450148-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1450148-02 01/27/22 23:13 • (DUP) R3754376-6 01/27/22 23:14

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Nitrate-Nitrite	0.278	0.274	1	1.45		20

Laboratory Control Sample (LCS)

(LCS) R3754376-2 01/27/22 22:49

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	

L1449692-07 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1449692-07 01/27/22 22:54 • (MS) R3754376-4 01/27/22 22:55 • (MSD) R3754376-5 01/27/22 22:56

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	0.338	2.71	2.97	94.9	105	1	90.0-110			9.15	20

L1450148-03 Original Sample (OS) • Matrix Spike (MS)

(OS) L1450148-03 01/27/22 23:45 • (MS) R3754376-8 01/27/22 23:46

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Nitrate-Nitrite	2.50	0.385	3.08	108	1	90.0-110	

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Method Blank (MB)

(MB) R3754792-1 01/28/22 17:21

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Phosphorus,Total	0.0636	J	0.0350	0.100

L1449539-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1449539-02 01/28/22 17:44 • (DUP) R3754792-2 01/28/22 17:45

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Phosphorus,Total	ND	ND	1	28.0	P1	20

L1449692-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1449692-01 01/28/22 17:51 • (DUP) R3754792-5 01/28/22 17:52

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Phosphorus,Total	0.184	0.197	1	6.82		20

Laboratory Control Sample (LCS)

(LCS) R3754792-8 01/28/22 18:16

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Phosphorus,Total	1.33	1.61	121	81.2-118	J4

L1449539-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1449539-02 01/28/22 17:44 • (MS) R3754792-3 01/28/22 17:46 • (MSD) R3754792-4 01/28/22 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 %
Phosphorus,Total	2.50	ND	2.49	2.40	96.2	92.6	1	90.0-110			3.68	20

L1449692-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1449692-01 01/28/22 17:51 • (MS) R3754792-6 01/28/22 17:54

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Phosphorus,Total	2.50	0.184	0.187	0.120	1	90.0-110	J6

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Method Blank (MB)

(MB) R3754351-1 01/27/22 19:10

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Phosphorus,Total	0.0496	J	0.0350	0.100

L1449692-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1449692-02 01/27/22 19:18 • (DUP) R3754351-3 01/27/22 19:19

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Phosphorus,Total	0.122	0.109	1	11.3		20

L1449692-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1449692-03 01/27/22 19:26 • (DUP) R3754351-6 01/27/22 19:27

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Phosphorus,Total	ND	0.109	1	25.8	P1	20

Laboratory Control Sample (LCS)

(LCS) R3754351-2 01/27/22 19:12

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Phosphorus,Total	1.33	1.42	107	81.2-118	

L1449692-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1449692-02 01/27/22 19:18 • (MS) R3754351-4 01/27/22 19:20 • (MSD) R3754351-5 01/27/22 19:22

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 %
Phosphorus,Total	2.50	0.122	2.61	2.58	99.5	98.3	1	90.0-110			1.16	20

L1449692-03 Original Sample (OS) • Matrix Spike (MS)

(OS) L1449692-03 01/27/22 19:26 • (MS) R3754351-7 01/27/22 19:28

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	ND	0.356	1	90.0-110	J6

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QUALITY CONTROL SUMMARY

L1449692-12,13

Method Blank (MB)

(MB) R3754818-1 01/28/22 20:28

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Phosphorus,Total	0.0431	J	0.0350	0.100

L1449244-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1449244-01 01/28/22 20:31 • (DUP) R3754818-3 01/28/22 20:32

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Phosphorus,Total	2.76	2.77	1	0.362		20

L1449924-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1449924-01 01/28/22 20:40 • (DUP) R3754818-6 01/28/22 20:43

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Phosphorus,Total	0.645	0.602	1	6.90		20

Laboratory Control Sample (LCS)

(LCS) R3754818-2 01/28/22 20:29

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Phosphorus,Total	1.33	1.42	107	81.2-118	

L1449244-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1449244-01 01/28/22 20:31 • (MS) R3754818-4 01/28/22 20:33 • (MSD) R3754818-5 01/28/22 20:35

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	2.76	4.97	4.91	88.4	86.0	1	90.0-110	J6	J6	1.21	20

L1449924-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1449924-01 01/28/22 20:40 • (MS) R3754818-7 01/28/22 20:45

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Phosphorus,Total	2.50	0.645	0.698	2.12	1	90.0-110	J6

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Method Blank (MB)

(MB) R3754902-1 01/29/22 13:16

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Phosphorus,Total	0.0457	J	0.0350	0.100

L1449692-08 Original Sample (OS) • Duplicate (DUP)

(OS) L1449692-08 01/29/22 13:20 • (DUP) R3754902-3 01/29/22 13:21

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Phosphorus,Total	0.147	0.155	1	5.30		20

L1449692-10 Original Sample (OS) • Duplicate (DUP)

(OS) L1449692-10 01/29/22 13:26 • (DUP) R3754902-6 01/29/22 13:27

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) R3754902-2 01/29/22 13:17

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Phosphorus,Total	1.33	1.44	108	81.2-118	

L1449692-08 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1449692-08 01/29/22 13:20 • (MS) R3754902-4 01/29/22 13:22 • (MSD) R3754902-5 01/29/22 13:24

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 %
Phosphorus,Total	2.50	0.147	2.62	2.57	98.9	96.9	1	90.0-110			1.93	20

L1449692-10 Original Sample (OS) • Matrix Spike (MS)

(OS) L1449692-10 01/29/22 13:26 • (MS) R3754902-7 01/29/22 13:31

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	ND	0.620	1	90.0-110	J6

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QUALITY CONTROL SUMMARY

L1449692-01,02,03,04,05,06,07,08,09,10,11,12,13

Method Blank (MB)

(MB) R3749013-1 01/11/22 20:11

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Phosphate,Ortho	U		0.0140	0.0300

L1449692-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1449692-01 01/11/22 20:30 • (DUP) R3749013-3 01/11/22 20:31

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Phosphate,Ortho	0.126	0.125	1	0.797		20

L1449692-11 Original Sample (OS) • Duplicate (DUP)

(OS) L1449692-11 01/11/22 20:38 • (DUP) R3749013-6 01/11/22 20:39

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Phosphate,Ortho	0.140	0.139	1	0.717		20

Laboratory Control Sample (LCS)

(LCS) R3749013-2 01/11/22 20:12

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Phosphate,Ortho	0.245	0.254	104	85.0-115	

L1449692-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1449692-02 01/11/22 20:31 • (MS) R3749013-4 01/11/22 20:32 • (MSD) R3749013-5 01/11/22 20:33

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 %
Phosphate,Ortho	0.500	ND	0.557	0.574	111	115	1	80.0-120			3.01	20

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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
B	The same analyte is found in the associated blank.
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.
J4	The associated batch QC was outside the established quality control range for accuracy.
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.
V	The sample concentration is too high to evaluate accurate spike recoveries.

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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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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 1 of 2

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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

SDG # U449492

A208

Collected by (print): Nathaniel Wade & Liz Davis

Site/Facility ID # LAND

P.O. #

Acctnum: QOREHAL
Template: T181690
Prelogin: P896750
PM: 034 - Craig Cothron
PB: BW 12/27
Shipped Via: FedEX Ground

Collected by (signature): [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

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	Grab	WW	SWF	1/10/22	12:25	4	X	X	X	X		-01
GD 8		WW			12:15	4	X	X	X	X		-02
RC 2		WW			12:05	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			11:50	4	X	X	X	X		-06
SME2		WW			11:10	4	X	X	X	X		-07
GD 6		WW			11:00	4	X	X	X	X		-08
CO 15		WW			10:20	4	X	X	X	X		-09
SME 7		WW			10:40	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 #

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 Wade	1-10-22	14:00		
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: °C Bottles Received: 52
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature) [signature]	Date: 1/11/22 Time: 0930

If preservation required by Login: Date/Time

Hold:

Condition: NCF / OK

ADEM Watermark

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

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 8	Grab	WW	Surf	1/10/22	9:45	4	X	X	X	X			-01
SME 9	"	WW	"	"	12:00	4	X	X	X	X			-02
SME 10	"	WW	"	"	12:00	4	X	X	X	X			-03
		WW				4	X	X	X	X			
		WW				4	X	X	X	X			

Analysis / Container / Preservative

Chain of Custody Page 2 of 2

Pace Analytical®

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 # L1449492

Table #

Acctnum: **QOREHAL**
Template: **T181690**
Prelogin: **P896750**
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)
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: °C Bottles Received: 52

Date: 1/11/22 Time: 0930

If preservation required by Login: Date/Time

Hold:

Condition: NCF / OK

ADEM Watermark

U1449692

Tracking Numbers		Temperature
5489 4014 9467		1.8 ±0=1.8 BA AT
5489 4014 9401		0.7 ±0=0.7 BA AT

ADEM Watermark

ANALYTICAL REPORT

February 04, 2022

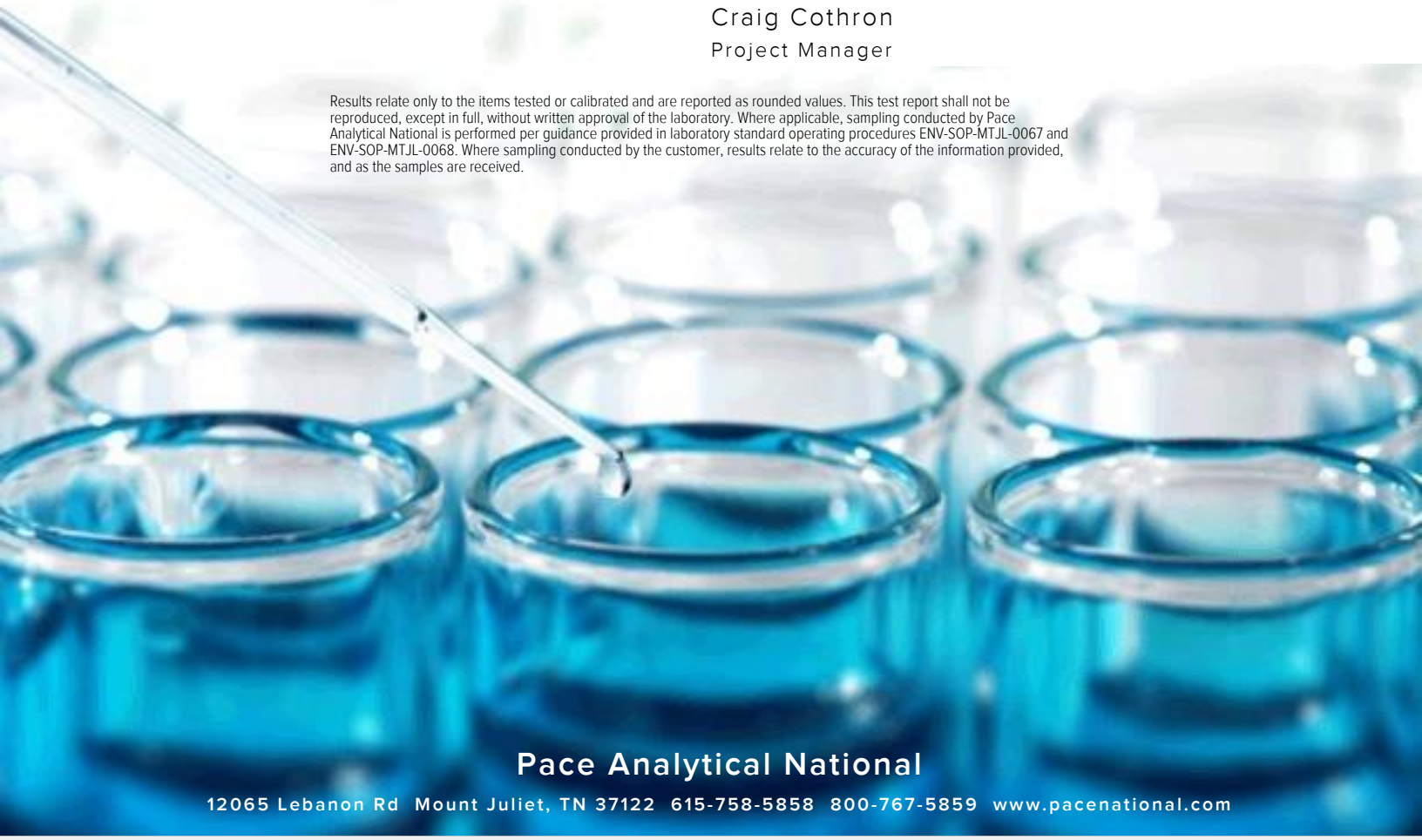
S&ME - Huntsville

Sample Delivery Group:	L1450663
Samples Received:	01/13/2022
Project Number:	4482-20-044
Description:	Gadsden Water MS4 Boat Samples
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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SAMPLE SUMMARY

HB3 L1450663-01 WW

Collected by: Pat Curwen | Collected date/time: 01/11/22 10:50 | Received date/time: 01/13/22 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1802606	1	01/14/22 19:36	01/14/22 23:30	BRG	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1801704	1	01/13/22 13:02	01/13/22 13:02	AW	Mt. Juliet, TN
Subcontracted Analyses	WG1808227	1	02/04/22 00:00	02/04/22 00:00	-	Lenexa, KS 66219

SME11 L1450663-02 WW

Collected by: Pat Curwen | Collected date/time: 01/11/22 10:50 | Received date/time: 01/13/22 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1802606	1	01/14/22 19:36	01/14/22 23:30	BRG	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1801704	1	01/13/22 13:07	01/13/22 13:07	AW	Mt. Juliet, TN
Subcontracted Analyses	WG1808227	1	02/04/22 00:00	02/04/22 00:00	-	Lenexa, KS 66219

SME4 L1450663-03 WW

Collected by: Pat Curwen | Collected date/time: 01/11/22 11:10 | Received date/time: 01/13/22 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1802606	1	01/14/22 19:36	01/14/22 23:30	BRG	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1801704	1	01/13/22 13:07	01/13/22 13:07	AW	Mt. Juliet, TN
Subcontracted Analyses	WG1808227	1	02/04/22 00:00	02/04/22 00:00	-	Lenexa, KS 66219

GD5 L1450663-04 WW

Collected by: Pat Curwen | Collected date/time: 01/11/22 11:25 | Received date/time: 01/13/22 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1802606	1	01/14/22 19:36	01/14/22 23:30	BRG	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1801704	1	01/13/22 13:07	01/13/22 13:07	AW	Mt. Juliet, TN
Subcontracted Analyses	WG1808227	1	02/04/22 00:00	02/04/22 00:00	-	Lenexa, KS 66219

SME3 L1450663-05 WW

Collected by: Pat Curwen | Collected date/time: 01/11/22 11:40 | Received date/time: 01/13/22 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1802606	1	01/14/22 19:36	01/14/22 23:30	BRG	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1801704	1	01/13/22 13:08	01/13/22 13:08	AW	Mt. Juliet, TN
Subcontracted Analyses	WG1808227	1	02/04/22 00:00	02/04/22 00:00	-	Lenexa, KS 66219

GD7 L1450663-06 WW

Collected by: Pat Curwen | Collected date/time: 01/11/22 12:00 | Received date/time: 01/13/22 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1802606	1	01/14/22 19:36	01/14/22 23:30	BRG	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1801704	1	01/13/22 13:08	01/13/22 13:08	AW	Mt. Juliet, TN
Subcontracted Analyses	WG1808227	1	02/04/22 00:00	02/04/22 00:00	-	Lenexa, KS 66219

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GD9 L1450663-07 WW

Collected by: Pat Curwen | Collected date/time: 01/11/22 12:10 | Received date/time: 01/13/22 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1802606	1	01/14/22 19:36	01/14/22 23:30	BRG	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1801704	1	01/13/22 13:09	01/13/22 13:09	AW	Mt. Juliet, TN
Subcontracted Analyses	WG1808227	1	02/04/22 00:00	02/04/22 00:00	-	Lenexa, KS 66219

SME1 L1450663-08 WW

Collected by: Pat Curwen | Collected date/time: 01/11/22 12:25 | Received date/time: 01/13/22 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1802606	1	01/14/22 19:36	01/14/22 23:30	BRG	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1801704	1	01/13/22 13:09	01/13/22 13:09	AW	Mt. Juliet, TN
Subcontracted Analyses	WG1808227	1	02/04/22 00:00	02/04/22 00:00	-	Lenexa, KS 66219

SS5 L1450663-09 WW

Collected by: Pat Curwen | Collected date/time: 01/11/22 13:30 | Received date/time: 01/13/22 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1802606	1	01/14/22 19:36	01/14/22 23:30	BRG	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1801704	1	01/13/22 13:10	01/13/22 13:10	AW	Mt. Juliet, TN
Subcontracted Analyses	WG1808227	1	02/04/22 00:00	02/04/22 00:00	-	Lenexa, KS 66219

SME5 L1450663-10 WW

Collected by: Pat Curwen | Collected date/time: 01/11/22 13:20 | Received date/time: 01/13/22 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1802606	1	01/14/22 19:36	01/14/22 23:30	BRG	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1801704	1	01/13/22 13:27	01/13/22 13:27	AW	Mt. Juliet, TN
Subcontracted Analyses	WG1808227	1	02/04/22 00:00	02/04/22 00:00	-	Lenexa, KS 66219

SME6 L1450663-11 WW

Collected by: Pat Curwen | Collected date/time: 01/11/22 13:55 | Received date/time: 01/13/22 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1802606	1	01/14/22 19:36	01/14/22 23:30	BRG	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1801704	1	01/13/22 13:28	01/13/22 13:28	AW	Mt. Juliet, TN
Subcontracted Analyses	WG1808227	1	02/04/22 00:00	02/04/22 00:00	-	Lenexa, KS 66219

RC14 L1450663-12 WW

Collected by: Pat Curwen | Collected date/time: 01/11/22 14:15 | Received date/time: 01/13/22 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1802606	1	01/14/22 19:36	01/14/22 23:30	BRG	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1801704	1	01/13/22 13:28	01/13/22 13:28	AW	Mt. Juliet, TN
Subcontracted Analyses	WG1808227	1	02/04/22 00:00	02/04/22 00:00	-	Lenexa, KS 66219

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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

Project Narrative

L1450663 -01, -02, -03, -04, -05, -06, -07, -08, -09, -10, -11, -12 contains subout data that is included after the chain of custody.

ADEM Watermark

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	23.6		5.00	1	01/14/2022 23:30	WG1802606

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	ND	T8	0.0300	1	01/13/2022 13:02	WG1801704

ADEM Watermark

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	78.4		10.0	1	01/14/2022 23:30	WG1802606

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	ND	T8	0.0300	1	01/13/2022 13:07	WG1801704

ADEM Watermark

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	01/14/2022 23:30	WG1802606

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	ND	T8	0.0300	1	01/13/2022 13:07	WG1801704

ADEM Watermark

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Suspended Solids	12.1		3.33	1	01/14/2022 23:30	WG1802606

Wet Chemistry by Method 4500P E-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Phosphate,Ortho	ND	T8	0.0300	1	01/13/2022 13:07	WG1801704

ADEM Watermark

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	15.4		5.00	1	01/14/2022 23:30	WG1802606

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	ND	T8	0.0300	1	01/13/2022 13:08	WG1801704

ADEM Watermark

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	15.2		5.00	1	01/14/2022 23:30	WG1802606

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	ND	T8	0.0300	1	01/13/2022 13:08	WG1801704

ADEM Watermark

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	13.3		3.33	1	01/14/2022 23:30	WG1802606

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	ND	T8	0.0300	1	01/13/2022 13:09	WG1801704

ADEM Watermark

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	17.0		2.50	1	01/14/2022 23:30	WG1802606

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	0.0540	T8	0.0300	1	01/13/2022 13:09	WG1801704

ADEM Watermark

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	10.4		3.33	1	01/14/2022 23:30	WG1802606

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	01/13/2022 13:10	WG1801704

ADEM Watermark

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	16.6		5.00	1	01/14/2022 23:30	WG1802606

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	0.0350		0.0300	1	01/13/2022 13:27	WG1801704

ADEM Watermark

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	16.9		3.33	1	01/14/2022 23:30	WG1802606

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	01/13/2022 13:28	WG1801704

ADEM Watermark

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	20.6		5.00	1	01/14/2022 23:30	WG1802606

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	01/13/2022 13:28	WG1801704

ADEM Watermark

Method Blank (MB)

(MB) R3750318-1 01/14/22 23:30

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Suspended Solids	U		2.50	2.50

L1450645-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1450645-01 01/14/22 23:30 • (DUP) R3750318-3 01/14/22 23:30

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Suspended Solids	111	131	1	16.9	J3	5

L1450663-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1450663-02 01/14/22 23:30 • (DUP) R3750318-4 01/14/22 23:30

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Suspended Solids	78.4	80.4	1	2.52		5

Laboratory Control Sample (LCS)

(LCS) R3750318-2 01/14/22 23:30

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Suspended Solids	773	792	102	85.7-114	

ADEM Watermark

QUALITY CONTROL SUMMARY

L1450663-01,02,03,04,05,06,07,08,09,10,11,12

Method Blank (MB)

(MB) R3749699-1 01/13/22 12:54

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Phosphate,Ortho	U		0.0140	0.0300

L1450663-09 Original Sample (OS) • Duplicate (DUP)

(OS) L1450663-09 01/13/22 13:10 • (DUP) R3749699-5 01/13/22 13:26

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

L1450663-10 Original Sample (OS) • Duplicate (DUP)

(OS) L1450663-10 01/13/22 13:27 • (DUP) R3749699-6 01/13/22 13:27

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Phosphate,Ortho	0.0350	0.0300	1	15.4		20

Laboratory Control Sample (LCS)

(LCS) R3749699-2 01/13/22 12:54

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Phosphate,Ortho	0.245	0.250	102	85.0-115	

L1450663-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1450663-01 01/13/22 13:02 • (MS) R3749699-3 01/13/22 13:04 • (MSD) R3749699-4 01/13/22 13:04

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	0.560	0.561	112	112	1	80.0-120			0.178	20

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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.
T8	Sample(s) received past/too close to holding time expiration.

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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.

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S&ME - Huntsville
3600 Quality Circle NW
Suite 450
Huntsville, AL 358[illegible]

Billing Information:
Accounts Payable
3600 Quality Circle NW
Suite 450
Huntsville, AL 35806

Report to: Ms. Sarah Yeldell

Email To: syeldell@smeinc.com

Project Description: Gadsden Water MS4 Boat Samples

City/State Collected: Gadsden, AL

Please Circle: PT MT (CT) ET

Phone: 256-837-8882

Client Project # 4482-20-044

Lab Project # QORLHAL-448220044

Collected by (print): Pat Curwen

Site/Facility ID # Boat

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

Date Results Needed

Quote #

Analysis / Container / Preservative

Chain of Custody Page ___ of ___

Pace Analytical®
National Center for Testing & Innovation

12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

SDG # U450663
1179

Acctnum: QORLHAL
Template: T181690
Prelogin:
PM: 034-Craig Cathron
PB:
Shipped Via:

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs	Pres Chk	Ortho 100ml Amb NoPres	TP 250ml HDPE-H2SO4	TKN/NO2NO3 250ml HDPE-H2SO4	TSS 1L-HDPE NoPres	Remarks	Sample # (lab only)
HB3	Grab	WW	5'	1-11-22	10:50	4		X	X	X	X		-01
SME11	"	WW	5'	"	10:50	4		X	X	X	X		-02
SME4	"	WW	5'	"	11:10	4		X	X	X	X		-03
GD5	"	WW	5'	"	11:35	4		X	X	X	X		-04
SME3	"	WW	5'	"	11:40	4		X	X	X	X		-05
GD7	"	WW	5'	"	12:00	4		X	X	X	X		-06
GD9	"	WW	5'	"	12:10	4		X	X	X	X		-07
SME1	"	WW	5'	"	12:25	4		X	X	X	X		-08
SS5	"	WW	5'	"	13:30	4		X	X	X	X		-09
SME5	"	WW	5'	"	13:20	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 X/__N
COC Signed/Accurate: X/__N
Bottles arrive intact: X/__N
Correct bottles used: X/__N
Sufficient volume sent: X/__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
	1-12-22	08:00		
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: 4.7 +0 = 4.7 °C Bottles Received: 48
				If preservation required by Login: Date/Time
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 1/13/22 Time: 0800
				Hold: Condition: NCF / OK

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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 Yelldell

Email To:
syelldell@smeinc.com

Project Description:
Gadsden Water MS4 Boat Samples

City/State Collected: Gadsden, AL

Please Circle: PT MT CT ET

Phone:
256-837-8882

Client Project #
4482-20-044

Lab Project #
QOREHAL-4482-20044

Collected by (print):
Pat Curren

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	Pace NTD 100ml Amb NoPres	PT 250ml HDPE-HNO3	TKN/NO2 NO3 250ml HDPE-H2SO4	TSS 1L-HDPE NoPres							Remarks	Sample # (lab only)
SME6	Grab	WW	5'	1-11-22	13:55	4	✓	✓	✓	✓								-11
RC14	"	WW	5'	1-11-22	14:15	4	✓	✓	✓	✓								-12

Chain of Custody Page ___ of ___

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National Center for Testing & Innovation

12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

SDG # L1450663

Table #

Acctnum: QOREHAL

Template: T181690

Prelogin:

PM: 034 - Craig Coltharp

PB:

Shipped Via:

* 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	If preservation required by Login: Date/Time
	1-12-22	08:00			
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: 4.7-0=4.7 °C Bottles Received: 48	
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 1/13/22 Time: 0802	Hold: Condition: NCF / OK

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Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

February 03, 2022

Jimmy Huckaba
Pace Analytical National
12065 Lebanon Road
Mount Juliet, TN 37122

RE: Project: L1450663 GADSDEN WATER MS4
Pace Project No.: 60391617

Dear Jimmy Huckaba:

Enclosed are the analytical results for sample(s) received by the laboratory on January 28, 2022. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Kansas City

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Jamie Church
jamie.church@pacelabs.com
314-838-7223
Project Manager

Enclosures

cc: Pace Analytical National Subout, Pace Analytical National

REPORT OF LABORATORY ANALYSIS

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Lenexa, KS 66219
(913)599-5665

CERTIFICATIONS

Project: L1450663 GADSDEN WATER MS4
Pace Project No.: 60391617

Pace Analytical Services Kansas
9608 Loiret Boulevard, Lenexa, KS 66219
Missouri Inorganic Drinking Water Certification #: 10090
Arkansas Drinking Water
Arkansas Certification #: 20-020-0
Arkansas Drinking Water
Illinois Certification #: 2000302021-3
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212020-2
Oklahoma Certification #: 9205/9935
Florida: Cert E871149 SEKS WET
Texas Certification #: T104704407-19-12
Utah Certification #: KS000212019-9
Illinois Certification #: 004592
Kansas Field Laboratory Accreditation: # E-92587
Missouri SEKS Micro Certification: 10070

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SAMPLE SUMMARY

Project: L1450663 GADSDEN WATER MS4
Pace Project No.: 60391617

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60391617001	**HB3**	Water	01/11/22 10:50	01/28/22 09:25
60391617002	**SME11**	Water	01/11/22 10:50	01/28/22 09:25
60391617003	**SME4**	Water	01/11/22 11:10	01/28/22 09:25
60391617004	**GD5**	Water	01/11/22 11:25	01/28/22 09:25
60391617005	**SME3**	Water	01/11/22 11:40	01/28/22 09:25
60391617006	**GD7**	Water	01/11/22 12:00	01/28/22 09:25
60391617007	**GD9**	Water	01/11/22 12:10	01/28/22 09:25
60391617008	**SME1**	Water	01/11/22 12:25	01/28/22 09:25
60391617009	**SS5**	Water	01/11/22 13:30	01/28/22 09:25
60391617010	**SME5**	Water	01/11/22 13:20	01/28/22 09:25
60391617011	**SME6**	Water	01/11/22 13:55	01/28/22 09:25
60391617012	**RC14**	Water	01/11/22 14:15	01/28/22 09:25

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SAMPLE ANALYTE COUNT

Project: L1450663 GADSDEN WATER MS4
Pace Project No.: 60391617

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60391617001	HB3	EPA 351.2	CRN2	1	PASI-K
		EPA 353.2	CRN2	1	PASI-K
		EPA 365.4	ECF	1	PASI-K
60391617002	SME11	EPA 351.2	CRN2	1	PASI-K
		EPA 353.2	CRN2	1	PASI-K
		EPA 365.4	ECF	1	PASI-K
60391617003	SME4	EPA 351.2	CRN2	1	PASI-K
		EPA 353.2	CRN2	1	PASI-K
		EPA 365.4	ECF	1	PASI-K
60391617004	GD5	EPA 351.2	CRN2	1	PASI-K
		EPA 353.2	CRN2	1	PASI-K
		EPA 365.4	ECF	1	PASI-K
60391617005	SME3	EPA 351.2	CRN2	1	PASI-K
		EPA 353.2	CRN2	1	PASI-K
		EPA 365.4	ECF	1	PASI-K
60391617006	GD7	EPA 351.2	CRN2	1	PASI-K
		EPA 353.2	CRN2	1	PASI-K
		EPA 365.4	ECF	1	PASI-K
60391617007	GD9	EPA 351.2	CRN2	1	PASI-K
		EPA 353.2	CRN2	1	PASI-K
		EPA 365.4	ECF	1	PASI-K
60391617008	SME1	EPA 351.2	CRN2	1	PASI-K
		EPA 353.2	CRN2	1	PASI-K
		EPA 365.4	ECF	1	PASI-K
60391617009	SS5	EPA 351.2	CRN2	1	PASI-K
		EPA 353.2	CRN2	1	PASI-K
		EPA 365.4	ECF	1	PASI-K
60391617010	SME5	EPA 351.2	CRN2	1	PASI-K
		EPA 353.2	CRN2	1	PASI-K
		EPA 365.4	ECF	1	PASI-K
60391617011	SME6	EPA 351.2	CRN2	1	PASI-K
		EPA 353.2	CRN2	1	PASI-K
		EPA 365.4	ECF	1	PASI-K
60391617012	RC14	EPA 351.2	CRN2	1	PASI-K
		EPA 353.2	CRN2	1	PASI-K
		EPA 365.4	ECF	1	PASI-K

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Lenexa, KS 66219
(913)599-5665

SAMPLE ANALYTE COUNT

Project: L1450663 GADSDEN WATER MS4
Pace Project No.: 60391617

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory

PASI-K = Pace Analytical Services - Kansas City

REPORT OF LABORATORY ANALYSIS

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(913)599-5665

ANALYTICAL RESULTS

Project: L1450663 GADSDEN WATER MS4
Pace Project No.: 60391617

Sample: HB3 **Lab ID: 60391617001** Collected: 01/11/22 10:50 Received: 01/28/22 09:25 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
351.2 Total Kjeldahl Nitrogen	Analytical Method: EPA 351.2 Preparation Method: EPA 351.2 Pace Analytical Services - Kansas City							
Nitrogen, Kjeldahl, Total	**0.55**	mg/L	0.50	1	02/01/22 08:04	02/01/22 11:47	7727-37-9	
353.2 Nitrogen, NO2/NO3 pres.	Analytical Method: EPA 353.2 Pace Analytical Services - Kansas City							
Nitrogen, NO2 plus NO3	**0.20**	mg/L	0.10	1		02/02/22 14:08		
365.4 Total Phosphorus	Analytical Method: EPA 365.4 Preparation Method: EPA 365.4 Pace Analytical Services - Kansas City							
Phosphorus	ND	mg/L	0.10	1	02/02/22 14:26	02/03/22 11:21	7723-14-0	

Sample: SME11 **Lab ID: 60391617002** Collected: 01/11/22 10:50 Received: 01/28/22 09:25 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
351.2 Total Kjeldahl Nitrogen	Analytical Method: EPA 351.2 Preparation Method: EPA 351.2 Pace Analytical Services - Kansas City							
Nitrogen, Kjeldahl, Total	**0.77**	mg/L	0.50	1	02/01/22 08:04	02/01/22 11:48	7727-37-9	
353.2 Nitrogen, NO2/NO3 pres.	Analytical Method: EPA 353.2 Pace Analytical Services - Kansas City							
Nitrogen, NO2 plus NO3	**0.47**	mg/L	0.10	1		02/02/22 14:09		
365.4 Total Phosphorus	Analytical Method: EPA 365.4 Preparation Method: EPA 365.4 Pace Analytical Services - Kansas City							
Phosphorus	ND	mg/L	0.10	1	02/02/22 14:26	02/03/22 11:22	7723-14-0	

Sample: SME4 **Lab ID: 60391617003** Collected: 01/11/22 11:10 Received: 01/28/22 09:25 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
351.2 Total Kjeldahl Nitrogen	Analytical Method: EPA 351.2 Preparation Method: EPA 351.2 Pace Analytical Services - Kansas City							
Nitrogen, Kjeldahl, Total	**0.97**	mg/L	0.50	1	02/02/22 12:35	02/03/22 13:40	7727-37-9	M1
353.2 Nitrogen, NO2/NO3 pres.	Analytical Method: EPA 353.2 Pace Analytical Services - Kansas City							
Nitrogen, NO2 plus NO3	**0.44**	mg/L	0.10	1		02/02/22 14:10		
365.4 Total Phosphorus	Analytical Method: EPA 365.4 Preparation Method: EPA 365.4 Pace Analytical Services - Kansas City							
Phosphorus	ND	mg/L	0.10	1	02/02/22 14:26	02/03/22 11:26	7723-14-0	

REPORT OF LABORATORY ANALYSIS

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Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: L1450663 GADSDEN WATER MS4
Pace Project No.: 60391617

Sample: GD5 **Lab ID: 60391617004** Collected: 01/11/22 11:25 Received: 01/28/22 09:25 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
351.2 Total Kjeldahl Nitrogen	Analytical Method: EPA 351.2 Preparation Method: EPA 351.2 Pace Analytical Services - Kansas City							
Nitrogen, Kjeldahl, Total	**0.51**	mg/L	0.50	1	02/02/22 12:35	02/03/22 13:42	7727-37-9	
353.2 Nitrogen, NO2/NO3 pres.	Analytical Method: EPA 353.2 Pace Analytical Services - Kansas City							
Nitrogen, NO2 plus NO3	**0.30**	mg/L	0.10	1		02/02/22 14:11		
365.4 Total Phosphorus	Analytical Method: EPA 365.4 Preparation Method: EPA 365.4 Pace Analytical Services - Kansas City							
Phosphorus	ND	mg/L	0.10	1	02/02/22 14:26	02/03/22 11:27	7723-14-0	

Sample: SME3 **Lab ID: 60391617005** Collected: 01/11/22 11:40 Received: 01/28/22 09:25 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
351.2 Total Kjeldahl Nitrogen	Analytical Method: EPA 351.2 Preparation Method: EPA 351.2 Pace Analytical Services - Kansas City							
Nitrogen, Kjeldahl, Total	**0.52**	mg/L	0.50	1	02/02/22 12:35	02/03/22 13:43	7727-37-9	
353.2 Nitrogen, NO2/NO3 pres.	Analytical Method: EPA 353.2 Pace Analytical Services - Kansas City							
Nitrogen, NO2 plus NO3	**0.39**	mg/L	0.10	1		02/02/22 14:11		
365.4 Total Phosphorus	Analytical Method: EPA 365.4 Preparation Method: EPA 365.4 Pace Analytical Services - Kansas City							
Phosphorus	ND	mg/L	0.10	1	02/02/22 14:26	02/03/22 11:28	7723-14-0	

Sample: GD7 **Lab ID: 60391617006** Collected: 01/11/22 12:00 Received: 01/28/22 09:25 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
351.2 Total Kjeldahl Nitrogen	Analytical Method: EPA 351.2 Preparation Method: EPA 351.2 Pace Analytical Services - Kansas City							
Nitrogen, Kjeldahl, Total	ND	mg/L	0.50	1	02/02/22 12:35	02/03/22 13:44	7727-37-9	
353.2 Nitrogen, NO2/NO3 pres.	Analytical Method: EPA 353.2 Pace Analytical Services - Kansas City							
Nitrogen, NO2 plus NO3	**0.41**	mg/L	0.10	1		02/02/22 14:12		
365.4 Total Phosphorus	Analytical Method: EPA 365.4 Preparation Method: EPA 365.4 Pace Analytical Services - Kansas City							
Phosphorus	ND	mg/L	0.10	1	02/02/22 14:26	02/03/22 11:29	7723-14-0	

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ANALYTICAL RESULTS

Project: L1450663 GADSDEN WATER MS4
Pace Project No.: 60391617

Sample: GD9 **Lab ID: 60391617007** Collected: 01/11/22 12:10 Received: 01/28/22 09:25 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
351.2 Total Kjeldahl Nitrogen	Analytical Method: EPA 351.2 Preparation Method: EPA 351.2 Pace Analytical Services - Kansas City							
Nitrogen, Kjeldahl, Total	**0.76**	mg/L	0.50	1	02/02/22 12:35	02/03/22 13:45	7727-37-9	
353.2 Nitrogen, NO2/NO3 pres.	Analytical Method: EPA 353.2 Pace Analytical Services - Kansas City							
Nitrogen, NO2 plus NO3	**0.36**	mg/L	0.10	1		02/02/22 14:13		
365.4 Total Phosphorus	Analytical Method: EPA 365.4 Preparation Method: EPA 365.4 Pace Analytical Services - Kansas City							
Phosphorus	ND	mg/L	0.10	1	02/02/22 14:26	02/03/22 11:30	7723-14-0	

Sample: SME1 **Lab ID: 60391617008** Collected: 01/11/22 12:25 Received: 01/28/22 09:25 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
351.2 Total Kjeldahl Nitrogen	Analytical Method: EPA 351.2 Preparation Method: EPA 351.2 Pace Analytical Services - Kansas City							
Nitrogen, Kjeldahl, Total	**1.8**	mg/L	0.50	1	02/02/22 12:35	02/03/22 13:48	7727-37-9	
353.2 Nitrogen, NO2/NO3 pres.	Analytical Method: EPA 353.2 Pace Analytical Services - Kansas City							
Nitrogen, NO2 plus NO3	**8.2**	mg/L	0.50	5		02/02/22 14:50		
365.4 Total Phosphorus	Analytical Method: EPA 365.4 Preparation Method: EPA 365.4 Pace Analytical Services - Kansas City							
Phosphorus	ND	mg/L	0.10	1	02/02/22 14:26	02/03/22 10:27	7723-14-0	

Sample: SS5 **Lab ID: 60391617009** Collected: 01/11/22 13:30 Received: 01/28/22 09:25 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
351.2 Total Kjeldahl Nitrogen	Analytical Method: EPA 351.2 Preparation Method: EPA 351.2 Pace Analytical Services - Kansas City							
Nitrogen, Kjeldahl, Total	**1.3**	mg/L	0.50	1	02/02/22 12:35	02/03/22 13:49	7727-37-9	
353.2 Nitrogen, NO2/NO3 pres.	Analytical Method: EPA 353.2 Pace Analytical Services - Kansas City							
Nitrogen, NO2 plus NO3	**0.32**	mg/L	0.10	1		02/02/22 14:17		
365.4 Total Phosphorus	Analytical Method: EPA 365.4 Preparation Method: EPA 365.4 Pace Analytical Services - Kansas City							
Phosphorus	ND	mg/L	0.10	1	02/02/22 14:26	02/03/22 10:28	7723-14-0	

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ANALYTICAL RESULTS

Project: L1450663 GADSDEN WATER MS4
Pace Project No.: 60391617

Sample: SME5 **Lab ID: 60391617010** Collected: 01/11/22 13:20 Received: 01/28/22 09:25 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
351.2 Total Kjeldahl Nitrogen	Analytical Method: EPA 351.2 Preparation Method: EPA 351.2 Pace Analytical Services - Kansas City							
Nitrogen, Kjeldahl, Total	**1.5**	mg/L	0.50	1	02/02/22 12:35	02/03/22 13:50	7727-37-9	
353.2 Nitrogen, NO2/NO3 pres.	Analytical Method: EPA 353.2 Pace Analytical Services - Kansas City							
Nitrogen, NO2 plus NO3	**0.45**	mg/L	0.10	1		02/02/22 12:37		M1
365.4 Total Phosphorus	Analytical Method: EPA 365.4 Preparation Method: EPA 365.4 Pace Analytical Services - Kansas City							
Phosphorus	ND	mg/L	0.10	1	02/02/22 14:26	02/03/22 10:29	7723-14-0	

Sample: SME6 **Lab ID: 60391617011** Collected: 01/11/22 13:55 Received: 01/28/22 09:25 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
351.2 Total Kjeldahl Nitrogen	Analytical Method: EPA 351.2 Preparation Method: EPA 351.2 Pace Analytical Services - Kansas City							
Nitrogen, Kjeldahl, Total	**2.4**	mg/L	0.50	1	02/02/22 12:35	02/03/22 13:59	7727-37-9	
353.2 Nitrogen, NO2/NO3 pres.	Analytical Method: EPA 353.2 Pace Analytical Services - Kansas City							
Nitrogen, NO2 plus NO3	**0.45**	mg/L	0.10	1		02/02/22 12:38		
365.4 Total Phosphorus	Analytical Method: EPA 365.4 Preparation Method: EPA 365.4 Pace Analytical Services - Kansas City							
Phosphorus	ND	mg/L	0.10	1	02/02/22 14:26	02/03/22 10:33	7723-14-0	

Sample: RC14 **Lab ID: 60391617012** Collected: 01/11/22 14:15 Received: 01/28/22 09:25 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
351.2 Total Kjeldahl Nitrogen	Analytical Method: EPA 351.2 Preparation Method: EPA 351.2 Pace Analytical Services - Kansas City							
Nitrogen, Kjeldahl, Total	**1.5**	mg/L	0.50	1	02/02/22 12:35	02/03/22 14:00	7727-37-9	
353.2 Nitrogen, NO2/NO3 pres.	Analytical Method: EPA 353.2 Pace Analytical Services - Kansas City							
Nitrogen, NO2 plus NO3	**0.17**	mg/L	0.10	1		02/02/22 12:39		
365.4 Total Phosphorus	Analytical Method: EPA 365.4 Preparation Method: EPA 365.4 Pace Analytical Services - Kansas City							
Phosphorus	ND	mg/L	0.10	1	02/02/22 14:26	02/03/22 10:34	7723-14-0	

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QUALITY CONTROL DATA

Project: L1450663 GADSDEN WATER MS4
Pace Project No.: 60391617

QC Batch: 768969
QC Batch Method: EPA 351.2
Analysis Method: EPA 351.2
Analysis Description: 351.2 TKN
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60391617001, 60391617002

METHOD BLANK: 3071949 Matrix: Water
Associated Lab Samples: 60391617001, 60391617002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, Kjeldahl, Total	mg/L	ND	0.50	02/01/22 11:17	

LABORATORY CONTROL SAMPLE: 3071950

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, Kjeldahl, Total	mg/L	5	5.3	106	90-110	

MATRIX SPIKE SAMPLE: 3071951

Parameter	Units	60391515001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Nitrogen, Kjeldahl, Total	mg/L	25.2	5	30.6	107	90-110	

MATRIX SPIKE SAMPLE: 3071953

Parameter	Units	60391613002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Nitrogen, Kjeldahl, Total	mg/L	1.3	5	6.5	105	90-110	

SAMPLE DUPLICATE: 3071952

Parameter	Units	60391602001 Result	Dup Result	RPD	Max RPD	Qualifiers
Nitrogen, Kjeldahl, Total	mg/L	1.3	1.4	7	10	

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QUALITY CONTROL DATA

Project: L1450663 GADSDEN WATER MS4
Pace Project No.: 60391617

QC Batch: 769138
QC Batch Method: EPA 351.2
Analysis Method: EPA 351.2
Analysis Description: 351.2 TKN
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60391617003, 60391617004, 60391617005, 60391617006, 60391617007, 60391617008, 60391617009, 60391617010, 60391617011, 60391617012

METHOD BLANK: 3072273 Matrix: Water
Associated Lab Samples: 60391617003, 60391617004, 60391617005, 60391617006, 60391617007, 60391617008, 60391617009, 60391617010, 60391617011, 60391617012

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, Kjeldahl, Total	mg/L	ND	0.50	02/03/22 13:22	

LABORATORY CONTROL SAMPLE: 3072274

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, Kjeldahl, Total	mg/L	5	4.6	92	90-110	

MATRIX SPIKE SAMPLE: 3072275

Parameter	Units	60391692001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Nitrogen, Kjeldahl, Total	mg/L	59.9	5	64.7	96	90-110	

MATRIX SPIKE SAMPLE: 3072277

Parameter	Units	60391617003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Nitrogen, Kjeldahl, Total	mg/L	0.97	5	6.7	114	90-110	M1

SAMPLE DUPLICATE: 3072276

Parameter	Units	60391694001 Result	Dup Result	RPD	Max RPD	Qualifiers
Nitrogen, Kjeldahl, Total	mg/L	2.0	1.4	33	10	D6

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QUALITY CONTROL DATA

Project: L1450663 GADSDEN WATER MS4
Pace Project No.: 60391617

QC Batch: 769243 | Analysis Method: EPA 353.2
QC Batch Method: EPA 353.2 | Analysis Description: 353.2 Nitrate + Nitrite, preserved
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60391617001, 60391617002, 60391617003, 60391617004, 60391617005, 60391617006, 60391617007, 60391617008, 60391617009

METHOD BLANK: 3072588 Matrix: Water
Associated Lab Samples: 60391617001, 60391617002, 60391617003, 60391617004, 60391617005, 60391617006, 60391617007, 60391617008, 60391617009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	ND	0.10	02/02/22 13:50	

LABORATORY CONTROL SAMPLE: 3072589

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	2	2.0	101	90-110	

MATRIX SPIKE SAMPLE: 3072590

Parameter	Units	60391607001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	5.7	4	7.2	39	90-110	M1

MATRIX SPIKE SAMPLE: 3072592

Parameter	Units	60391616002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	4.9	2	6.7	87	90-110	M1

SAMPLE DUPLICATE: 3072591

Parameter	Units	60391608002 Result	Dup Result	RPD	Max RPD	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	0.56	0.56	0	20	

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QUALITY CONTROL DATA

Project: L1450663 GADSDEN WATER MS4
Pace Project No.: 60391617

QC Batch: 769359
QC Batch Method: EPA 353.2
Analysis Method: EPA 353.2
Analysis Description: 353.2 Nitrate + Nitrite, preserved
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60391617010, 60391617011, 60391617012

METHOD BLANK: 3072899 Matrix: Water
Associated Lab Samples: 60391617010, 60391617011, 60391617012

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	ND	0.10	02/02/22 12:33	

LABORATORY CONTROL SAMPLE: 3072900

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	2	2.0	100	90-110	

MATRIX SPIKE SAMPLE: 3072901

Parameter	Units	60391617010 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	0.45	2	2.2	89	90-110	M1

SAMPLE DUPLICATE: 3072902

Parameter	Units	60391617012 Result	Dup Result	RPD	Max RPD	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	0.17	0.17	2	20	

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QUALITY CONTROL DATA

Project: L1450663 GADSDEN WATER MS4
Pace Project No.: 60391617

QC Batch: 768924 — Analysis Method: EPA 365.4
QC Batch Method: EPA 365.4 — Analysis Description: 365.4 Phosphorus
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60391617001, 60391617002, 60391617003, 60391617004, 60391617005, 60391617006, 60391617007

METHOD BLANK: 3071778 — Matrix: Water
Associated Lab Samples: 60391617001, 60391617002, 60391617003, 60391617004, 60391617005, 60391617006, 60391617007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Phosphorus	mg/L	ND	0.10	02/03/22 10:59	

LABORATORY CONTROL SAMPLE: 3071779

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Phosphorus	mg/L	2	1.8	91	90-110	

MATRIX SPIKE SAMPLE: 3071780

Parameter	Units	60391663001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Phosphorus	mg/L	45.8	2	49.3	173	90-110	M1

MATRIX SPIKE SAMPLE: 3071782

Parameter	Units	60391614002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Phosphorus	mg/L	ND	2	1.9	95	90-110	

SAMPLE DUPLICATE: 3071781

Parameter	Units	60391602001 Result	Dup Result	RPD	Max RPD	Qualifiers
Phosphorus	mg/L	0.91	0.85	7	10	

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QUALITY CONTROL DATA

Project: L1450663 GADSDEN WATER MS4
Pace Project No.: 60391617

QC Batch: 769306 | Analysis Method: EPA 365.4
QC Batch Method: EPA 365.4 | Analysis Description: 365.4 Phosphorus
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60391617008, 60391617009, 60391617010, 60391617011, 60391617012

METHOD BLANK: 3072656 Matrix: Water
Associated Lab Samples: 60391617008, 60391617009, 60391617010, 60391617011, 60391617012

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Phosphorus	mg/L	ND	0.10	02/03/22 10:06	

LABORATORY CONTROL SAMPLE: 3072657

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Phosphorus	mg/L	1	0.92	92	90-110	

MATRIX SPIKE SAMPLE: 3072658

Parameter	Units	60391693001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Phosphorus	mg/L	2.4	1	3.7	124	90-110	M1

MATRIX SPIKE SAMPLE: 3072660

Parameter	Units	60391601001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Phosphorus	mg/L	0.68	1	1.6	93	90-110	

SAMPLE DUPLICATE: 3072659

Parameter	Units	60391694001 Result	Dup Result	RPD	Max RPD	Qualifiers
Phosphorus	mg/L	1.1	1.2	6	10	

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QUALIFIERS

Project: L1450663 GADSDEN WATER MS4
Pace Project No.: 60391617

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Reported results are not rounded until the final step prior to reporting. Therefore, calculated parameters that are typically reported as "Total" may vary slightly from the sum of the reported component parameters.

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ANALYTE QUALIFIERS

D6	The precision between the sample and sample duplicate exceeded laboratory control limits.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: L1450663 GADSDEN WATER MS4
Pace Project No.: 60391617

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60391617001	**HB3**	EPA 351.2	768969	EPA 351.2	769078
60391617002	**SME11**	EPA 351.2	768969	EPA 351.2	769078
60391617003	**SME4**	EPA 351.2	769138	EPA 351.2	769433
60391617004	**GD5**	EPA 351.2	769138	EPA 351.2	769433
60391617005	**SME3**	EPA 351.2	769138	EPA 351.2	769433
60391617006	**GD7**	EPA 351.2	769138	EPA 351.2	769433
60391617007	**GD9**	EPA 351.2	769138	EPA 351.2	769433
60391617008	**SME1**	EPA 351.2	769138	EPA 351.2	769433
60391617009	**SS5**	EPA 351.2	769138	EPA 351.2	769433
60391617010	**SME5**	EPA 351.2	769138	EPA 351.2	769433
60391617011	**SME6**	EPA 351.2	769138	EPA 351.2	769433
60391617012	**RC14**	EPA 351.2	769138	EPA 351.2	769433
60391617001	**HB3**	EPA 353.2	769243		
60391617002	**SME11**	EPA 353.2	769243		
60391617003	**SME4**	EPA 353.2	769243		
60391617004	**GD5**	EPA 353.2	769243		
60391617005	**SME3**	EPA 353.2	769243		
60391617006	**GD7**	EPA 353.2	769243		
60391617007	**GD9**	EPA 353.2	769243		
60391617008	**SME1**	EPA 353.2	769243		
60391617009	**SS5**	EPA 353.2	769243		
60391617010	**SME5**	EPA 353.2	769359		
60391617011	**SME6**	EPA 353.2	769359		
60391617012	**RC14**	EPA 353.2	769359		
60391617001	**HB3**	EPA 365.4	768924	EPA 365.4	769622
60391617002	**SME11**	EPA 365.4	768924	EPA 365.4	769622
60391617003	**SME4**	EPA 365.4	768924	EPA 365.4	769622
60391617004	**GD5**	EPA 365.4	768924	EPA 365.4	769622
60391617005	**SME3**	EPA 365.4	768924	EPA 365.4	769622
60391617006	**GD7**	EPA 365.4	768924	EPA 365.4	769622
60391617007	**GD9**	EPA 365.4	768924	EPA 365.4	769622
60391617008	**SME1**	EPA 365.4	769306	EPA 365.4	769619
60391617009	**SS5**	EPA 365.4	769306	EPA 365.4	769619
60391617010	**SME5**	EPA 365.4	769306	EPA 365.4	769619
60391617011	**SME6**	EPA 365.4	769306	EPA 365.4	769619
60391617012	**RC14**	EPA 365.4	769306	EPA 365.4	769619

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WO#: 60391617

60391617

Pace ANALYTICAL SERVICES	DC#_Title: ENV-FRM-LENE-0009_San	
	Revision: 2	Effective Date: 01/12/

Client Name: Pace National

Courier: FedEx ☑ UPS ☐ VIA ☐ Clay ☐ PEX ☐ ECI ☐ Pace ☐ Xroads ☐ Client ☐ Other ☐

Tracking #: 548940208985 Pace Shipping Label Used? Yes ☑ No ☐

Custody Seal on Cooler/Box Present: Yes ☑ No ☐ Seals intact: Yes ☑ No ☐

Packing Material: Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None ☐ Other ☑ 2 p'C

Thermometer Used: T299 **Type of Ice:** Wet Blue None

Cooler Temperature (°C): As-read 2.2 Corr. Factor 0.2 Corrected 2.0

Date and initials of person examining contents: 01.28.2022

Temperature should be above freezing to 6°C

Chain of Custody present:	☑Yes ☐No ☐N/A	
Chain of Custody relinquished:	☑Yes ☐No ☐N/A	
Samples arrived within holding time:	☑Yes ☐No ☐N/A	
Short Hold Time analyses (<72hr):	☐Yes ☑No ☐N/A	
Rush Turn Around Time requested:	☐Yes ☑No ☐N/A	
Sufficient volume:	☑Yes ☐No ☐N/A	
Correct containers used:	☑Yes ☐No ☐N/A	
Pace containers used:	☑Yes ☐No ☐N/A	
Containers intact:	☑Yes ☐No ☐N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	☐Yes ☐No ☑N/A	
Filtered volume received for dissolved tests?	☐Yes ☐No ☑N/A	
Sample labels match COC: Date / time / ID / analyses	☑Yes ☐No ☐N/A	
Samples contain multiple phases? Matrix: WT	☐Yes ☑No ☐N/A	
Containers requiring pH preservation in compliance? (HNO_3, H_2SO_4, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO) LOT#: 55192	☑Yes ☐No ☐N/A	List sample IDs, volumes, lot #'s of preservative and the date/time added.
Cyanide water sample checks:		
Lead acetate strip turns dark? (Record only)	☐Yes ☐No	
Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☐No	
Trip Blank present:	☐Yes ☐No ☑N/A	
Headspace in VOA vials (>6mm):	☐Yes ☐No ☑N/A	
Samples from USDA Regulated Area: State:	☐Yes ☐No ☑N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☐No ☑N/A	

Client Notification/ Resolution: Copy COC to Client? Y / N Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____ Date: _____

Qualtrax Document ID: 30468

Page 1 of 1

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Pace Analytical	Report To:	Pace Analytical Subout Team	Attention:	Ms. Sarah Yeldell
Address:	12065 Lebanon Rd.	Copy To:		Company Name:	
Mt. Juliet, TN 37122				Address:	
Email:	MTJLSuboutTeam@pacelabs.com	Purchase Order #:	L1450663	Pace Quote:	
Phone:	(615) 773-9756 Fax (615) 758-5859	Project Name:	Gadsden Water MS4 Boat Samples	Pace Project Manager:	Bryan Witz
Requested Due Date:	3-Feb	Project #:	4482-20-044	Pace Profile #:	38076

Regulatory Agency

State / Location: AL

ITEM #	SAMPLE ID One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test Y/N	Requested Analysis Filtered (Y/N): ~~Elemental~~ Phosphorus Total	Nitrate-Nitrite	Total Kjeldahl Nitrogen	Residual Chlorine (Y/N)	60391617
1	HB3	WT				11-Jan	10:50		1								1		X	X	X		
2	SME11	WT				11-Jan	10:50		1								1		X	X	X		
3	SME4	WT				11-Jan	11:10		1								1		X	X	X		
4	GD5	WT				11-Jan	11:25		1								1		X	X	X		
5	SME3	WT				11-Jan	11:40		1								1		X	X	X		
6	GD7	WT				11-Jan	12:00		1								1		X	X	X		
7	GD9	WT				11-Jan	12:10		1								1		X	X	X		
8	SME1	WT				11-Jan	12:25		1								1		X	X	X		
9	SS5	WT				11-Jan	13:30		1								1		X	X	X		
10	SME5	WT				11-Jan	13:20		1								1		X	X	X		
11	SME6	WT				11-Jan	13:55		1								1		X	X	X		
12	RC14	WT				11-Jan	14:15		1								1		X	X	X		

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
	James C Huckaba	26-Jan	10:37	Wright Lee	1.28.22	0925	2.0	Y	Y	Y
Pace Analytical Batch: WG1808227										
Pace Analytical SDGs: L1450663										
Location: Lenexa, KS 66219										

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER:

SIGNATURE of SAMPLER: **DATE Signed:**

TEMP in C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

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Client: WI 1.28.22 ~~Pace~~ Pace - National

Profile # 14893 Line2

Site:

Notes

COC Line Item	Matrix	VG9H	DG9H	DG9Q	VG9U	DG9U	DG9M	DG9B	BG1U	AG1H	AG1U	AG2U	AG3S	AG4U	AG5U	JGFU	WGKU	WGDU	BP1U	BP2U	BP3U	BP1N	BP3N	BP3F	BP3S	BP3C	BP3Z	WPDU	ZPLC	Other		
1	WT																								1							
2																									1							
3																									1							
4																									1							
5																									1							
6																									1							
7																									1							
8																									1							
9																									1							
10																									1							
11																									1							
12																									1							

Container Codes

Glass			
DG9B	40mL bisulfate clear vial	WGKU	8oz clear soil jar
DG9H	40mL HCl amber voa vial	WGFU	4oz clear soil jar
DG9M	40mL MeOH clear vial	WG2U	2oz clear soil jar
DG9Q	40mL TSP amber vial	JGFU	4oz unpreserved amber wide
DG9S	40mL H2SO4 amber vial	AG0U	100mL unores amber glass
DG9T	40mL Na Thio amber vial	AG1H	1L HCl amber glass
DG9U	40mL amber unpreserved	AG1S	1L H2SO4 amber glass
VG9H	40mL HCl clear vial	AG1T	1L Na Thiosulfate clear/amber glass
VG9T	40mL Na Thio. clear vial	AG1U	1liter unpres amber glass
VG9U	40mL unpreserved clear vial	AG2N	500mL HNO3 amber glass
BG1S	1liter H2SO4 clear glass	AG2S	500mL H2SO4 amber glass
BG1U	1liter unpres glass	AG3S	250mL H2SO4 amber glass
BG3H	250mL HCL Clear glass	AG2U	500mL unpres amber glass
BG3U	250mL Unpres Clear glass	AG3U	250mL unpres amber glass
WGDU	16oz clear soil jar	AG4U	125mL unpres amber glass
		AG5U	100mL unpres amber glass

Plastic	
BP1C	1L NAOH plastic
BP1N	1L HNO3 plastic
BP1S	1L H2SO4 plastic
BP1U	1L unpreserved plastic
BP1Z	1L NaOH, Zn Acetate
BP2C	500mL NAOH plastic
BP2N	500mL HNO3 plastic
BP2S	500mL H2SO4 plastic
BP2U	500mL unpreserved plastic
BP2Z	500mL NaOH, Zn Acetate
BP3C	250mL NaOH plastic
BP3F	250mL HNO3 plastic - field filtered
BP3N	250mL HNO3 plastic
BP3U	250mL unpreserved plastic
BP3S	250mL H2SO4 plastic
BP3Z	250mL NaOH, Zn Acetate
BP4U	125mL unpreserved plastic
BP4N	125mL HNO3 plastic
BP4S	125mL H2SO4 plastic
WPDU	16oz unpresserved plstic

Misc.	
I	Wipe/Swab
SP5T	120mL Coliform Na Thiosulfate
ZPLC	Ziploc Bag
AF	Air Filter
C	Air Cassettes
R	Terracore Kit
U	Summa Can

Matrix	
WT	Water
SL	Solid
NAL	Non-aqueous Liquid
OL	OIL
WP	Wipe
DW	Drinking Water

Work Order Number: 60391617

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Appendix D – Public Education and Involvement

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THE CITY OF HOKES BLUFF
CONTROL MEASURE 1 - PUBLIC EDUCATION AND OUTREACH
See Section 6.1 of the Annual Report and Section 7.1 of the 2017 SWMP

ACTIVITY NO.	STRATEGIES	2021-2022 IMPLEMENTATION STATUS	2022-2023 PROPOSED EFFORTS	SUPPORTING DOCUMENTATION	COMMENTS	PROPOSED CHANGES
1	**Storm Water Educational Material:** Develop and distribute educational materials to households and businesses through inclusion with garbage bills	The City storm water webpage was promoted on garbage collection bills in March 2022. 1,643 households received the material	The City will include storm water educational information on sanitation bills.	A sanitation collection bill with the storm water message is attached. (See Document 1-1)		NO
2	**Storm Water Web Page:** Update the Storm Water web page on the City of Hokes Bluff website	The City maintained information on Storm Water Management on the web page. The 2020-2021 Annual Report was added. 122 views were recorded for the Stormwater webpage	The City will maintain the webpage by adding additional information such as articles, pictures, and links to the web page.	The Storm Water web page and the web site recorded hit information are attached. (See Documents 1-2 and 1-3)	http://cityofhokesbluff.com/city-government/stormwater-access/	NO
3	**Annual Report and SWMPP Availability:** Provide the SWMPP and current Annual Report for public viewing on the City's website	The 2020-2021 Annual Report and the 2017 SWMPP are available for viewing on the City's website on the Storm water Management web page. 122 views were recorded for the Stormwater webpage	The City will provide the 2022 SWMPP and the 2021-2022 Annual Report for public viewing on the City's website. An announcement seeking input on the SWMPP and/or Annual Report will be publicized using the electronic sign at City Hall.	The Storm Water web page and the web site recorded hit information are attached. (See Documents 1-2 and 1-3)	http://cityofhokesbluff.com/city-government/stormwater-access/	YES
4	**Partnerships in Educational and Public Involvement Events:** Partner with Keep Etowah Beautiful, Clean Water Partnership of Alabama, and Alabama Power to distribute educational material and promote events	The City participated and/or contributed monetarily in the following events that were held: *Annual "G" Round Up* *Renew Our Rivers* was canceled due to Covid.	The City will support, sponsor, and/or promote anti-litter/cleanup events such as *Renew Our Rivers* or *Message in a Bottle.* City personnel will participate in at least one such event.	See Activities 4a, 4b, and 6		NO
4a	**Partnerships in Educational and Public Involvement Events:** 12th Annual "G" Round Up Tractor Show at Hokes Bluff Park	Event was held October 8-9, 2021. 100 participants received educational materials 2 City employees/ representatives participated in the event	The City will continue to distribute education materials at local events.	A copy of the event advertisement is attached. (See Document 1-4)		NO
4b	**Partnerships in Educational and Public Involvement Events:** Renew Our Rivers	The KEB event was canceled due to Covid.	The City will support, sponsor, and/or promote anti-litter/cleanup events such as *Renew Our Rivers* or *Message in a Bottle.* City personnel will participate in at least one such event.			NO
5	**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 City will designate and promote *Water Quality Awareness Week.*	The Mayor's proclamation is attached. (See Document 1-5)		NO

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THE CITY OF HOKES BLUFF

CONTROL MEASURE 1 - PUBLIC EDUCATION AND OUTREACH

See Section 6.1 of the Annual Report and Section 7.1 of the 2017 SWMP

ACTIVITY NO.	STRATEGIES	2021-2022 IMPLEMENTATION STATUS	2022-2023 PROPOSED EFFORTS	SUPPORTING DOCUMENTATION	COMMENTS	PROPOSED CHANGES
6	**Etowah County Water Festival:** Annually promote and participate in an annual *Etowah County Water Festival*	The Etowah County Water Festival was held virtually in 2022 due to Covid. The City of Hokes Bluff did not participate in the virtual event.	The City will participate in and promote the 2023 *Etowah County Water Festival.*			NO
7	**Annual Community Cleanup Day:** Coordinate a cleanup at Hokes Bluff City Block, Mill Pond, and/or Hokes Bluff Ferry Park annually.	The cleanup event normally scheduled in Oct was cancelled due to a surge in Covid cases. The City has a cleanup day scheduled for May 21,2022	The City will coordinate a cleanup day at Hokes Bluff City Block, Mill Pond, and/or Hokes Bluff Ferry Park.	To do list and advertisement are attached (See Document 1-6)	The City also uses part time labor to keep these areas clean to limit the garbage.	NO
8	**Gadsden-Etowah MS4 Steering Committee Meetings:** Coordinate and/or participate in meetings as a committee member for entity updates, networking and coordination of activities and BMP strategies	Meeting was held on April 15, 2021. Lisa Johnson (City Clerk) attended the meeting.	The committee will meet at least once during the 2022-2023 reporting period.	Agenda and attendance records for the meeting are attached. (See Document 1-7)		NO
9	**Educational Materials on Construction Site Storm Water Impacts:** Provide the educational pamphlet to individuals requesting building/development permits	0 permits were issued during reporting period Educational materials were provided to 8 potential permittees	The City will provide educational materials to individuals requesting building/development permits.	Construction storm water educational materials are attached. (See Document 1-8)		NO
10	**Public Reporting and Tracking System:** Provide a contact number on the City's Storm Water Management webpage for the public to provide input on the development, revision, and implementation of the SWMPP	0 inquiries received 0 complaints addressed 0 reports contained required information to find and address the suspected problem	The City will publicize the reporting number on the City's website 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 web page which includes a phone number for reporting an issue is attached. No complaints were received. (See Document 1-2)	The City Clerk is responsible for documenting received complaints. The City Clerk currently tracks storm water concerns and responses in a notebook in the City Hall.	NO
11	**No Littering Signs:** Maintain signs and place additional signs in problem areas as necessary	1 ton of debris was collected in the problem areas	The City continue to maintain the "No Littering" signs.	A photo of a "No Littering" sign. (See Document 1-9)	The City maintains 12 "No Littering" Signs within the City	NO
12	**Additional Strategy:** Educated the public on storm water issues and concerns (Football Program Ad)	The City purchased an advertisement in the Hokes Bluff High School Football Program that Included a storm water education slogan.	The City will continue to promote storm water awareness by disseminating brief reminders and/or storm water logos at public events, in high-traffic areas, or on municipal vehicles.	Advertisement is attached. (See Document 1-10)		

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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

TYPE OF SERVICE				CHARGES
Trash	0	0	0	90.00

Hokes Bluff Sanitation

CUSTOMER ROUTE	CUSTOMER ACCOUNT	DUE DATE PAST DUE AFTER THIS DATE
1	757	4/30/22
TOTAL DUE UPON RECEIPT		PAST DUE AMOUNT
90.00		94.50

MAIL THIS STUB WITH YOUR PAYMENT

5006 Colvin Gap Road

ACCOUNT # 757 3/15/22

		CLASS	TOTAL DUE UPON RECEIPT	LATE CHARGE AFTER DUE DATE	PAST DUE AMOUNT
3	15	6	90.00	4.50	94.50

Mike Howington
5006 Colvin Gap Road
Hokes Bluff AL 35903

WHEN YOU CONSERVE WATER, YOU SAVE THE FUTURE.
VISIT THE CITY'S STORMWATER WEBSITE AT
WWW.CITYOFHOKESBLUFF.COM

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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.

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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

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

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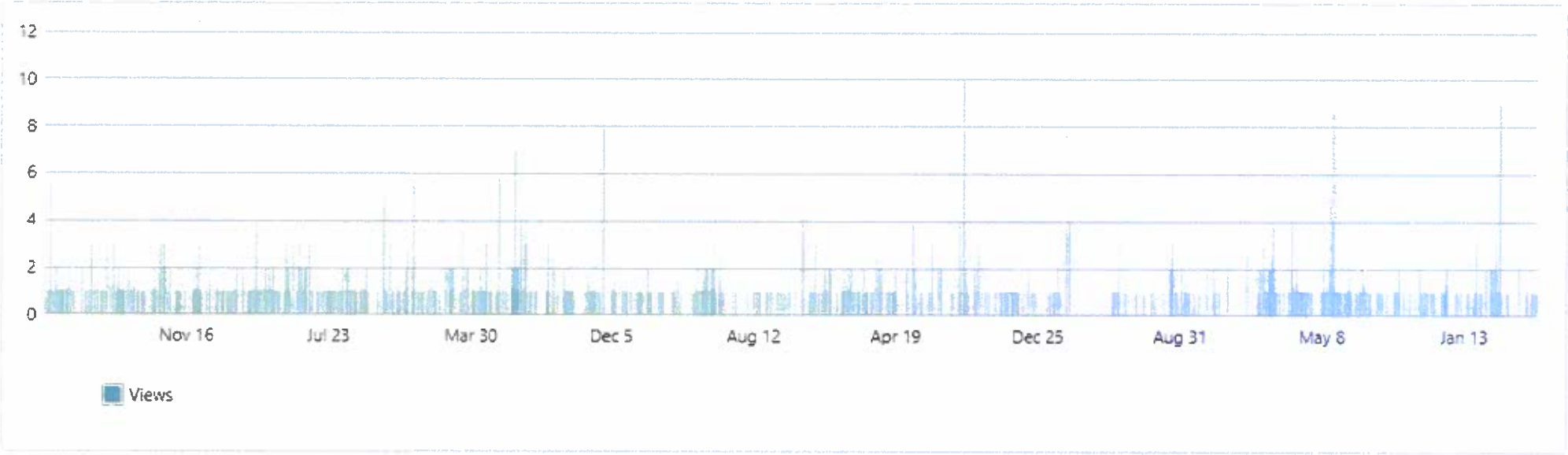
May 19, 2022, 7:45 pm

« Return to Stats

Stats for: Stormwater Access



Months and Years

	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	6								44

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WEISS LAKE ANTIQUE POWER ASSOCIATION & THE CITY of HOKES BLUFF

THE 13TH ANNUAL "G" ROUNDUP

OCTOBER 8TH & 9TH, 2021 — HOKES BLUFF CITY PARK

5891 GILLILAND STREET, HOKES BLUFF

PROOF PROOF

FEATURING

ALLIS-CHALMERS "G"





& JOHN DEERE 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

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CITY OF HOKES BLUFF
GENERAL REVENUE ACCOUNT
P.O. BOX 2338
E. GADSDEN, AL 35903

PEOPLES INDEPENDENT BANK
HOKES BLUFF, ALABAMA 35903

015536
61-394/622

DATE 2/22/2022

PAY TO THE ORDER OF Santos Printing $ **227.34

Two Hundred Twenty-Seven and 34/100********** DOLLA

Santos Printing
508 Broad Street
Gadsden, AL 35901

TWO SIGNATURES REQUIRED

Memo Inv #31958

AUTHORIZED SIGNATURE

⑈015536⑈ ⑆062203942⑆ 20 006 009⑈

CITY OF HOKES BLUFF GENERAL REVENUE ACCOUNT

Santos Printing 2/22/2022 **015536**

524 · MAYOR/COUNCIL EXPENSE	G-Round up flyers	227.34
514 · BUILDING INSPECTOR		
508 · ADVERTISING		

CASH-PEOPLES GE Inv #31958 227.34

CITY OF HOKES BLUFF GENERAL REVENUE ACCOUNT

Santos Printing 2/22/2022 **015536**

524 · MAYOR/COUNCIL EXPENSE	G-Round up flyers	227.34
514 · BUILDING INSPECTOR		
508 · ADVERTISING		

CASH-PEOPLES GE Inv #31958 227.34

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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

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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

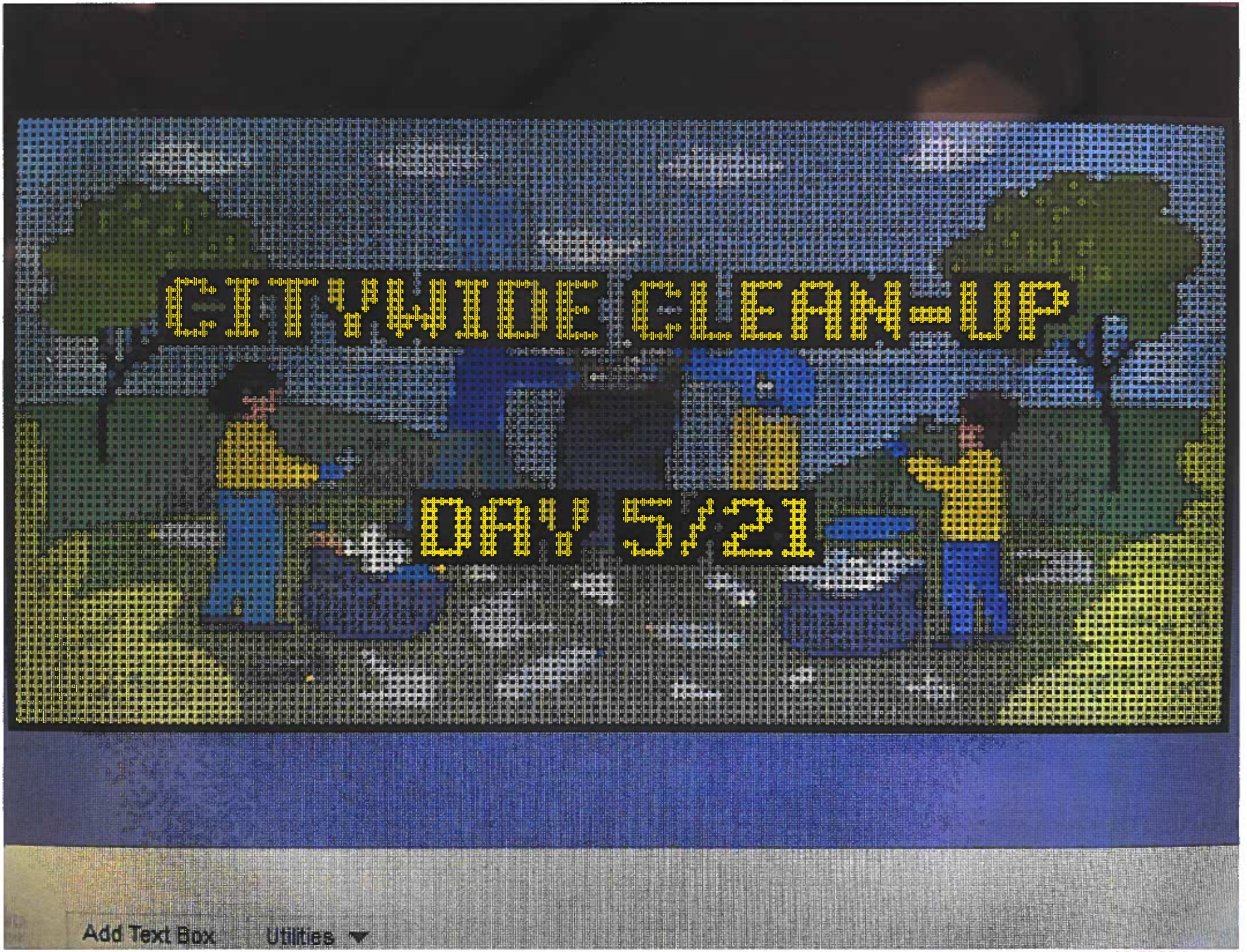
ADEM Watermark

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.

ADEM Watermark



ADEM Watermark

ATTENDANCE RECORD FOR
STORM WATER STEERING COMMITTEE
THURSDAY, APRIL 15, 2021, 1:00 P.M.
ROOM 305, GADSDEN CITY HALL

NAME	REPRESENTING	TELEPHONE/EMAIL
Jeramy Ward	City of Gadsden	256-549-4527, Jward@cityofgadsden.com
Todd Means	City of Glencoe	256-492-1424 Todd means@City of Glencoe, net
Lisa Johnsm	City of Hokes Bluff	256-492-3414 lisa.johnsm@cityofhokesbluff.com
ROBERT NAIL	ETOWAH CO.	256-549-5358 RNAILG ETOWAHCOUNTY.ORG
Mel Smith	Etowah Co.	256-549-5358 msmith@etowahcounty.org
Joel Garmon	City of Rainbow City	256-413-1230 jgarmon@rbcalabama.com
Judd Rich	City OF Southside	256-613-9161 juddrich@CityofSouthside.com
Jason Nicholson	City of Attalla	256-441-9200 jnicholson@attallacity.org

ADEM Watermark

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

ADEM Watermark

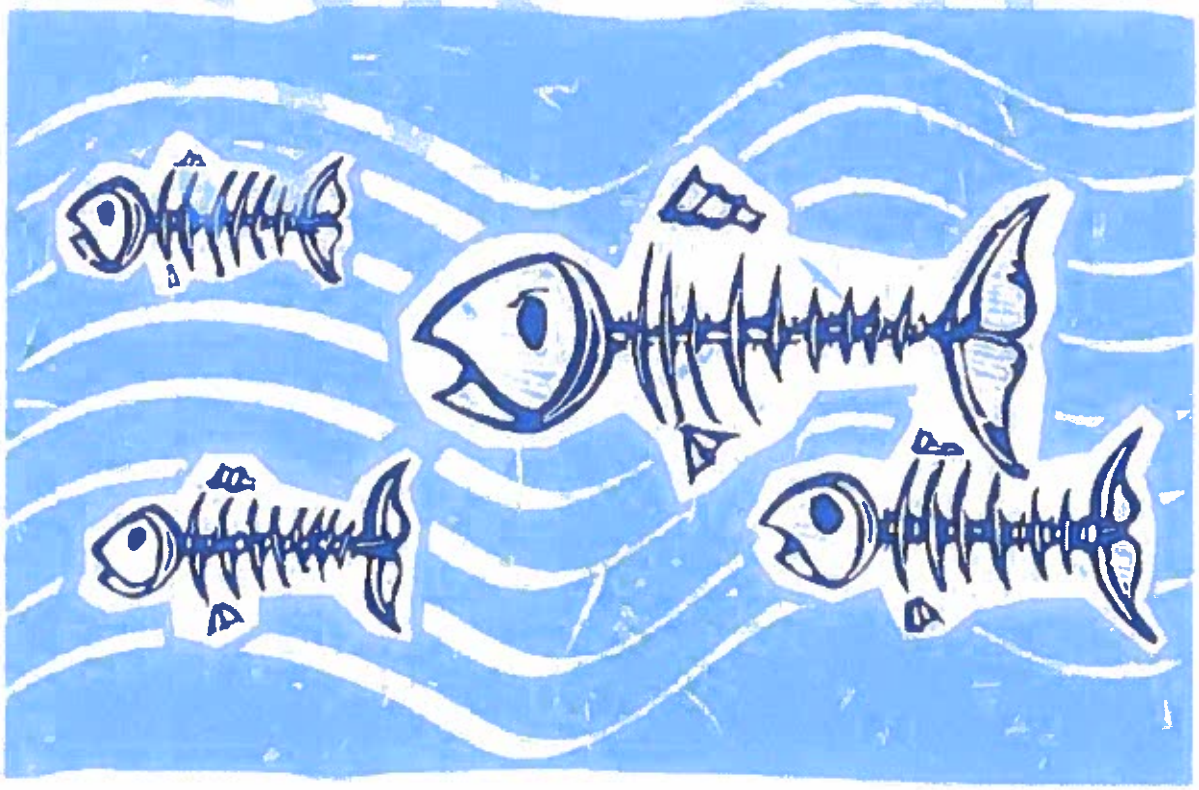


ADEM Watermark

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

ADEM Watermark

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







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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!!!!

ADEM Watermark



ADEM Watermark



ADEM Watermark

CITY OF HOKES BLUFF
GENERAL REVENUE ACCOUNT
P.O. BOX 2338
E. GADSDEN, AL 35903

PEOPLES INDEPENDENT BANK
HOKES BLUFF, ALABAMA 35903

015322
61-394/622

DATE 12/14/2021

PAY TO THE ORDER OF Lang's Graphic & Signage $ **200.00

Two Hundred and 00/100********** DOLLAR

Lang's Graphic & Signage
508 Main Street W
Glencoe, AL 35905

TWO SIGNATURES REQUIRED

AUTHORIZED SIGNATURE

Memo inv# 112521

⑈015322⑈ ⑆062203942⑆ 20 006 009⑈

CITY OF HOKES BLUFF GENERAL REVENUE ACCOUNT

Lang's Graphic & Signage 12/14/2021 **015322**
1346 · MS4 STORMWATER EXPENSES Banner for School 200.00

CASH-PEOPLES GE inv# 112521 200.00

CITY OF HOKES BLUFF GENERAL REVENUE ACCOUNT

Lang's Graphic & Signage 12/14/2021 **015322**
1346 · MS4 STORMWATER EXPENSES Banner for School 200.00

CASH-PEOPLES GE inv# 112521 200.00

ADEM Watermark



ADEM Watermark



8/25/2021

Hokes Bluff High School **150.00

One Hundred Fifty and 00/100**********

Hokes Bluff High School
1865 Appalachian Hwy.
Hokes Bluff, AL 35903

HBHS 2021-2022 yearbook Ad

Hokes Bluff High School		8/25/2021	
1346 · MS4 STORMWATER EXPENSES	HBHS 2021-2022 yearbook Ad		150.00

CASH-PEOPLES GE	HBHS 2021-2022 yearbook Ad	150.00

Hokes Bluff High School		8/25/2021	
1346 · MS4 STORMWATER EXPENSES	HBHS 2021-2022 yearbook Ad		150.00

CASH-PEOPLES GE	HBHS 2021-2022 yearbook Ad	150.00

ADEM Watermark

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!

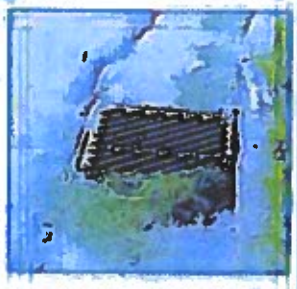
This is not a citation.

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

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THE CITY OF HOKES BLUFF - GENERAL FUND
Payroll Summary
April 1 through October 30, 2021

Summer Cleanup @ Ferry Park Mill Pond City Block

	Clemons, Will P			James, Larry S		
	Ho...	Rate	Apr 1 - Oct 30, 21	Hours	Rate	Apr 1 - Oct 30, 21
Employee Wages, Taxes and Adjustments						
Gross Pay						
Hourly Rate	587	10.00	5,870.00	732.5	11.00	8,057.50
Total Gross Pay	587		5,870.00	732.5		8,057.50
Adjusted Gross Pay	587		5,870.00	732.5		8,057.50
Net Pay	587		5,870.00	732.5		8,057.50
Employer Taxes and Contributions						
Medicare Company			85.12			116.83
Social Security Company			363.94			499.57
Total Employer Taxes and Contributions			449.06			616.40

ADEM Watermark

THE CITY OF HOKES BLUFF - GENERAL FUND
Payroll Summary
April 1 through October 30, 2021

	Murphy, Corey A			Smith, Phillip B		
	Ho...	Rate	Apr 1 - Oct 30, 21	Hours	Rate	Apr 1 - Oct 30, 21
Employee Wages, Taxes and Adjustments						
Gross Pay						
Hourly Rate	563	10.00	5,630.00	636.5	11.00	7,001.50
Total Gross Pay	563		5,630.00	636.5		7,001.50
Adjusted Gross Pay	563		5,630.00	636.5		7,001.50
Net Pay	563		5,630.00	636.5		7,001.50
Employer Taxes and Contributions						
Medicare Company			81.64			101.52
Social Security Company			349.06			434.10
Total Employer Taxes and Contributions			430.70			535.62

ADEM Watermark

THE CITY OF HOKES BLUFF - GENERAL FUND
Payroll Summary
April 1 through October 30, 2021

	TIDMORE, DANIEL B			TOTAL		
	Ho...	Rate	Apr 1 - Oct 30, 21	Hours	Rate	Apr 1 - Oct 30, 21
Employee Wages, Taxes and Adjustments						
Gross Pay						
Hourly Rate	742	10.00	7,420.00	3,261.00		33,979.00
Total Gross Pay	742		7,420.00	3,261.00		33,979.00
Adjusted Gross Pay	742		7,420.00	3,261.00		33,979.00
Net Pay	742		7,420.00	3,261.00		33,979.00
Employer Taxes and Contributions						
Medicare Company			107.59			492.70
Social Security Company			460.04			2,106.71
Total Employer Taxes and Contributions			567.63			2,599.41

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CITY OF HOKES BLUFF
GENERAL REVENUE ACCOUNT
P.O. BOX 2338
E. GADSDEN, AL 35903

PEOPLES INDEPENDENT BANK
HOKES BLUFF, ALABAMA 35903

015669
61-394/622

DATE 4/7/2022

PAY TO THE ORDER OF Etowah Sheriff's Charities $ **1,000.00

One Thousand and 00/100********** DOLLA

Etowah Sheriff's Charities
827 Forrest Avenue
Gadsden, AL 35901

TWO SIGNATURES REQUIRED

Memo Sponsorship for golf tournaments and Mocs on the R

AUTHORIZED SIGNATURE

⑈015669⑈ ⑆062203942⑆ 20 006 009⑈

CITY OF HOKES BLUFF GENERAL REVENUE ACCOUNT

015669

Etowah Sheriff's Charities		4/7/2022	
1346 · MS4 STORMWATER EXPENSES	Sponsorship for golf tournaments and Mocs on the R		1,000.00

CASH-PEOPLES GE	Sponsorship for golf tournaments and Mocs on t	1,000.00

CITY OF HOKES BLUFF GENERAL REVENUE ACCOUNT

015669

Etowah Sheriff's Charities		4/7/2022	
1346 · MS4 STORMWATER EXPENSES	Sponsorship for golf tournaments and Mocs on the R		1,000.00

CASH-PEOPLES GE	Sponsorship for golf tournaments and Mocs on t	1,000.00

ADEM Watermark

$1,000

Sponsorship Form

Etowah Sheriff's Charities

Donor Information (please print or type)

Company	City of Hokes Bluff Stormwater Awareness
Contact Name	Lisa Johnson
Billing address	3301 Alford Blvd Rd
City	Hokes Bluff State AL ZIP Code 35903
Telephone	(256) 492-2414
Fax	(256) 492-2416
E-Mail	lisa.johnson@cityofhokesbluff.com

Package Purchased:

1,000 Charity Sponsorship
($500 for Event)

Additional Information:

Payment and Additional Information

Payment Type: ☐ cash ☑ check #_____

NOTE: Please make all check payable to "Etowah Sheriff's Charities"

Business Name as to appear in advertising: City of Hokes Bluff Stormwater Awareness

Business Signature(s) _____ Date: 3/30/2022

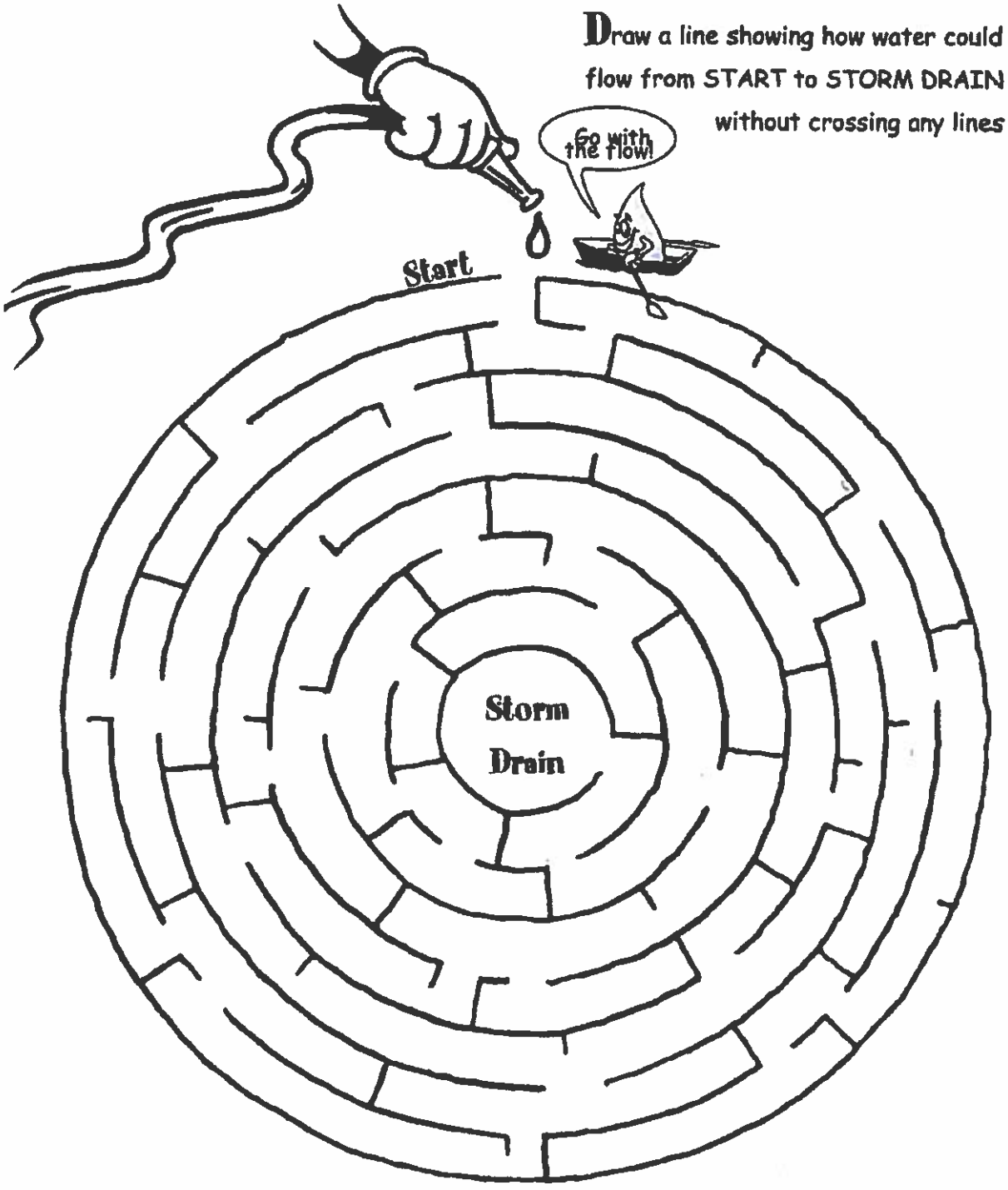
Charity Rep Signature _____ Date: _____

Etowah Sheriff's Charities ❖ 827 Forrest Avenue ❖ P: 256.546.2825 ❖ F: 256.549.8137
Email: nbarton@etowahcounty.org

ADEM Watermark

Stormwater Maze

Draw a line showing how water could flow from START to STORM DRAIN without crossing any lines



ADEM Watermark

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

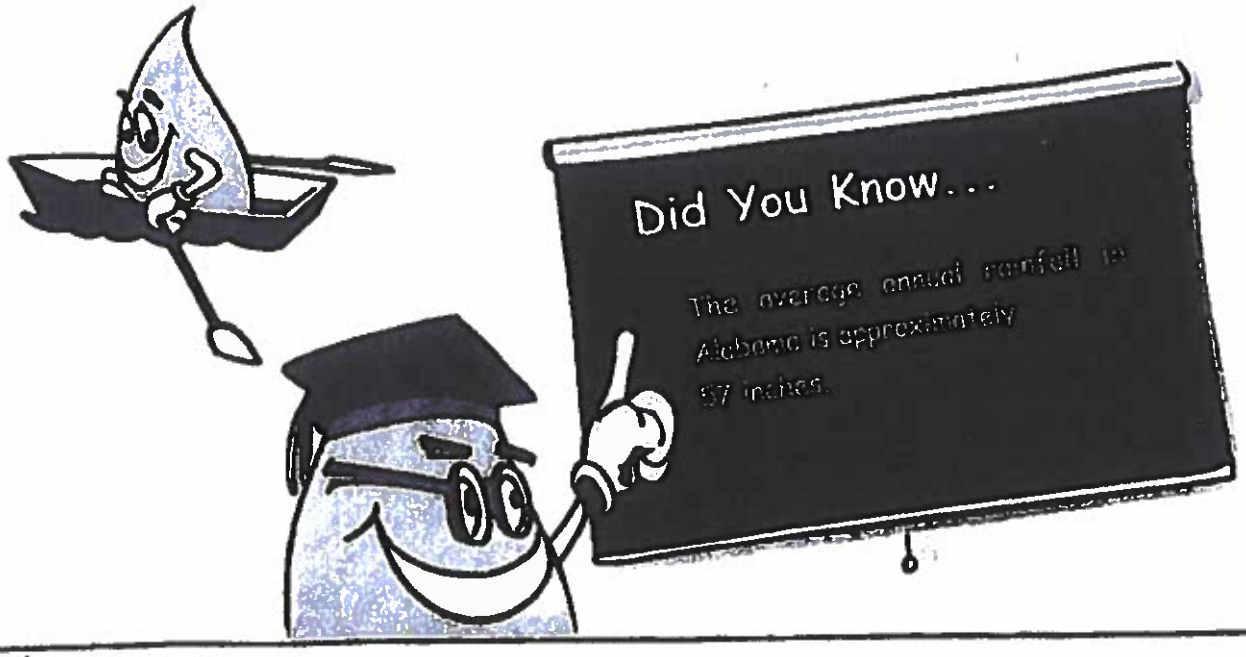
1. Paint
2. Oil
3. Antifreeze
4. Dirt
5. Leaves
6. Grass clippings
7. Pet waste
8. Pesticide
9. Herbicide
10. Fertilizer
11. Trash
12. Car wash water



Sludge



Toxic



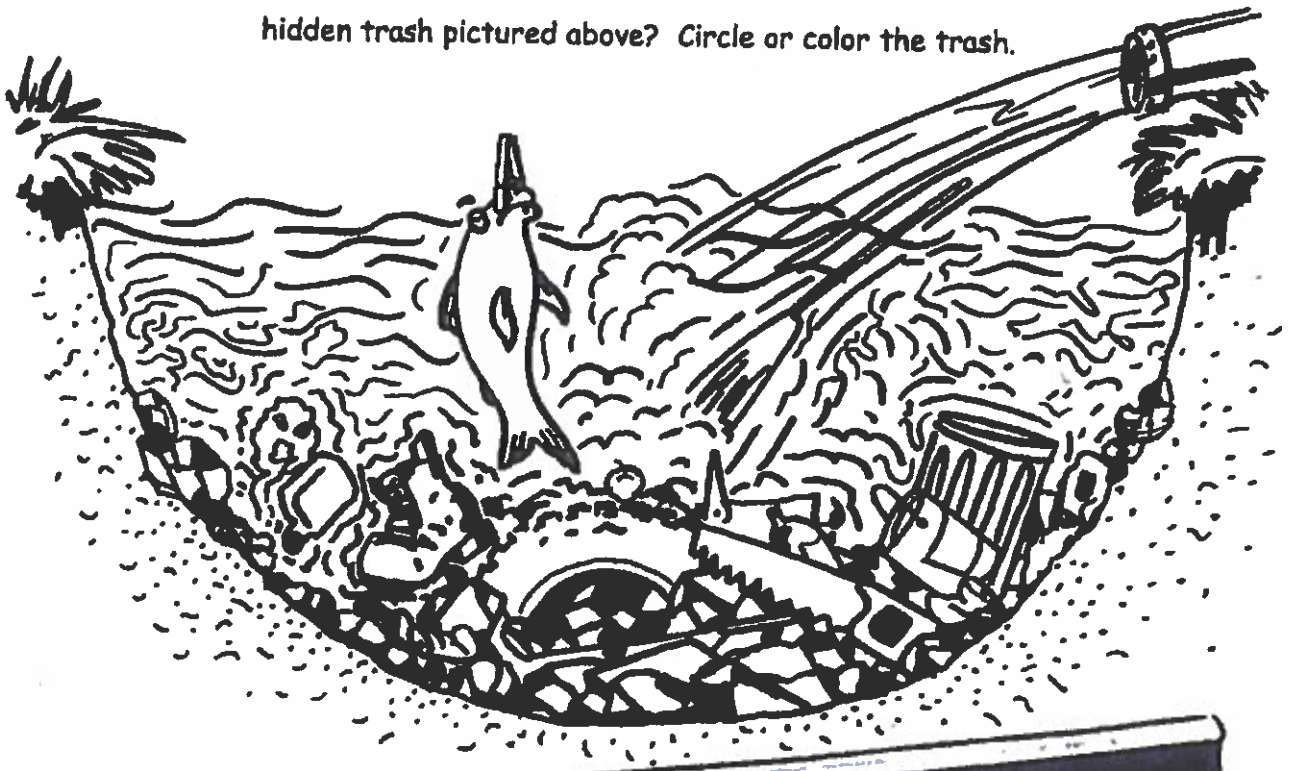
ADEM Watermark

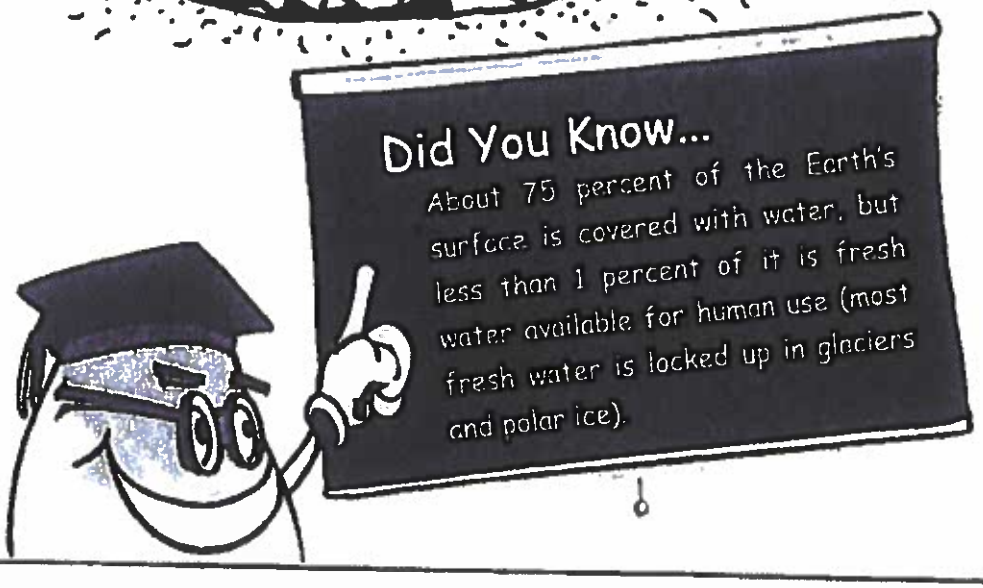
Summer Reading Program

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.





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Appendix E - Illicit Discharge Detection and Elimination

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THE CITY OF HOKES BLUFF
CONTROL MEASURE 2 - ILLICIT DISCHARGE DETECTION AND ELIMINATION
See Section 6.2 of the Annual Report and Section 7.2 of the 2017 SWMP

ACTIVITY NO.	STRATEGIES	2021-2022 IMPLEMENTATION STATUS	2022-2023 PROPOSED EFFORTS	SUPPORTING DOCUMENTATION	COMMENTS	PROPOSED CHANGES
1	**Identify Priority Areas:** Re-evaluate the drainage basins and determine the Priority Areas for the reporting period	31 drainage basins were previously delineated within the MS4. No changes were made to the drainage basins during the 2021-2022 reporting period. The IDP Assessment was performed on each basin. Basin I had the highest IDP scores within the MS4 Urbanized Area and was designated as a Priority Area.	The City will re-evaluate the drainage basins and determine the Priority Areas for the reporting period.	A table providing the IDP Score for each drainage basin and a map showing the identified drainage basins/ Priority Areas are attached. (See Document 2-1 and 2-2)		NO
2	**Outfall Identification:** Implement a stream-walking program to identify outfalls and map a portion of water bodies that receive discharge from the MS4 20% of 9.16 miles of stream inventory is 1.8 miles per reporting period	0 new outfalls were identified The City previously completed stream walking activities for the full 9.16 miles of stream within the MS4. No additional stream length was walked during the 2021-2022 reporting period.	The City will conduct dry weather screening for known outfalls and implement a program to identify previously-unknown outfalls.	A map showing the locations of known outfalls from the Hokes Bluff MS4 is attached. A table with the updated outfall inventory is also attached. (See Documents 2-3 and 2-4)	Field observations are maintained in the Code Officials Office in City Hall.	NO
3	**Probable Outfall Verification:** Add probable outfalls to the GIS database and label as unverified. Verify outfalls within 18 months	0 probable outfalls identified 0 outfalls verified	Outfalls identified during plan review will be added to the storm water system map and inspected during scheduled ORI activities.		Field observations are maintained at the City Hall.	NO
4	**Outfall Reconnaissance Inventory:** Conduct dry weather monitoring of 20% of major outfalls in Priority Areas	2 major outfalls have been identified within the MS4, 1 in Basin I and 1 in Basin G. 2 major outfalls were inspected during the reporting period. This is 100% of the total known major outfalls.	Outfalls in Priority Areas will be inspected once every three years, regardless of major or minor classification.	A table of outfalls inspected during the reporting period is attached. (See Document 2-5)	Field observations are maintained at the City Hall.	YES
4a	**Outfall Reconnaissance Inventory:** Conduct dry weather monitoring of 15% of all known outfalls	The City inspected 19 of the 97 known outfalls. This is 20% of the total known outfalls. 1 minor outfall (T-001) was no longer present and was removed from the inventory. At the end of this reporting period the City has identified 96 outfalls, 2 of which are considered major outfalls.	The City will conduct dry weather inspection and screening of at least 15% of all known outfalls. All known outfalls will be inspected at least once during the 5-year permit cycle.	A table of outfalls inspected during the reporting period is attached. (See Document 2-5)	Field observations are maintained at the City Hall.	NO
5	**Suspect Discharge Sampling:** Field crews will collect samples of suspected illicit discharges for laboratory analysis	11 identified dry weather flows 0 suspect discharges 0 samples collected 0 confirmed illicit discharges	Field crews will collect samples of suspected illicit discharges for laboratory analysis	A completed ORI form for a dry weather flow and no flow are attached. (See Documents 2-6 and 2-7)	Field observations are maintained at the City Hall.	NO

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THE CITY OF HOKES BLUFF
CONTROL MEASURE 2 - ILLICIT DISCHARGE DETECTION AND ELIMINATION
See Section 6.2 of the Annual Report and Section 7.2 of the 2017 SWMP

ACTIVITY NO.	STRATEGIES	2021-2022 IMPLEMENTATION STATUS	2022-2023 PROPOSED EFFORTS	SUPPORTING DOCUMENTATION	COMMENTS	PROPOSED CHANGES
6	**Outfall Ranking:** Designate the inspected outfalls as having obvious, suspect, possible, or unlikely discharge potential based on data from each ORI Field Sheet	19 outfall locations inspected 1 outfall removed 0 outfalls required further investigation	Designate the inspected outfalls as having obvious, suspect, possible, or unlikely discharge potential based on data from each ORI Field Sheet.	A table with each inspected outfall ranking is attached. (See Document 2-5)		NO
7	**Discharge Investigation:** Illicit discharge investigations will be performed to determine the source of a discharge problem	0 illicit discharges investigations 0 confirmed illicit discharges 0 sources determined 0 discharges eliminated	Where illicit discharges are identified, the City will conduct an illicit discharge investigation to determine the source.	The Storm Water web page which includes a phone number for reporting an issue is attached. Since there were no complaints, a summary of a complaint can not be provided. (See Document 1-2)		NO
8	**Corrective Action Record Keeping:** Create a case log detailing pertinent information for each identified suspect illicit discharge or illicit connection	0 confirmed illicit discharges 0 corrected illicit discharges 0 eliminated illicit discharges 0 confirmed illicit discharges where corrective action is pending	When a suspect illicit discharge or illicit connection is identified, a case log will be created to track information related to the incident or report.	The Storm Water web page which includes a phone number for reporting an issue is attached. Since there were no complaints, a summary of a complaint can not be provided. (See Document 1-2)		NO
9	**Update Storm Water System Map - Existing Features:** Update the existing map as storm drain features are identified	No new storm features were identified.	The existing storm water system map will be updated as features are identified.	A photo of the hardcopy Storm Water System Map is attached. (See Document 2-8)		NO
10	**Update Storm Water System Map - Future Additions:** Proposed additions to the City MS4, including new storm sewer and drainage ditches, will be mapped based on the civil plans provided to the City.	0 civil plans provided to the City 0 verified new features or outfalls No planned structures were added to the map from site plans.	Proposed and new additions will be mapped based on civil plans provided to the City.	A photo of the hardcopy Storm Water System Map is attached. (See Document 2-8)		NO
11	**Evaluate IDDE Ordinance:** Ordinance No. HB-2012-002 regulates Illicit Discharge enforcement Evaluate the effectiveness of the Ordinance each reporting period	The City evaluated the Ordinance on its effectiveness in addressing identified illicit discharges and preventing repeat offenders and no changes were deemed necessary	The City will evaluate the Ordinance annually.	The City's ordinance was provided in the 2022 SWMPP.	0 complaints received 0 illicit discharges identified 0 resolved violations 0 repeat offenders 0 enforcement actions taken	NO
12	**Distribute Storm Water Educational Material:** Distribute educational materials to public highlighting identification and reporting of potential illicit discharges at the Library, Community Center, and City Hall.	The City placed educational materials at City owned buildings. 50 at the Library 30 at the Community Center 30 at the City Hall	The City will provide educational materials to the public via the webpage and/or materials in City buildings.	Educational Materials are attached. (See Document 1-8)		NO
12a	**Distribute Storm Water Educational Material:** The City will provide educational materials highlighting identification and reporting of potential illicit discharges on the City's storm water webpage	122 views were recorded for the Storm Water web page	The City will provide educational materials to the public via the webpage and/or materials in City buildings.	The Storm Water web page and the web site recorded hit information are attached. (See Documents 1-2 and 1-3)	http://cityofhokesbluff.com/city-government/stormwater-access/	NO

ADEM Watermark

THE CITY OF HOKES BLUFF

CONTROL MEASURE 2 - ILLICIT DISCHARGE DETECTION AND ELIMINATION

See Section 6.2 of the Annual Report and Section 7.2 of the 2017 SWMP

ACTIVITY NO.	STRATEGIES	2021-2022 IMPLEMENTATION STATUS	2022-2023 PROPOSED EFFORTS	SUPPORTING DOCUMENTATION	COMMENTS	PROPOSED CHANGES
13	**Public Reporting and Tracking:** Evaluate the storm water complaint form on the Storm Water web page for illicit discharges (including spills or illegal dumping), impaired waterways, and violations of ordinances relating to storm water pollution.	0 reports received 0 complaints addressed 0 complaints resolved 0 reports contained required information to find and address the suspected problem	The City will publicize the reporting number on the City's website and track received complaints and the City's responses to the received complaints. The City will evaluate the current public reporting and tracking methods.	The Storm Water web page which includes a phone number for reporting an issue is attached. Since there were no complaints, a summary of a complaint can not be provided. (See Document 1-2)	The City Clerk is responsible for documenting received complaints. The City Clerk currently tracks storm water concerns and responses in a notebook in the City Hall.	NO
14	**Municipal Training:** Train City personnel on the identification of illicit discharges and procedures for reporting illicit discharges within the City organization	S&ME addressed illicit discharge identification in the Annual Training handout. This handout was provided to city employees on October 26, 2021. 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 record is attached. (See Document 2-9)	The City plans to resume in-person training during the 2022-2023 reporting period, covid permitting.	NO
15	**Storm Water Monitoring Locations:** Update existing Storm Water System Map with storm water monitoring locations	SME 2 and SME 8 were removed from the monitoring program. SME 9 and SME 10 were added.	Where necessary, the monitoring locations will be updated in the GIS map with revised coordinates.	A map showing the 2022 revised monitoring points is attached. (See Document 2-10)		NO
16	**Evaluation of Monitoring Data:** Evaluate the collected monitoring data and make recommendations to add and/or modify monitoring points	An evaluation of the monitoring data has been provided in the 2021-2022 Annual Report	Monitoring data will be evaluated following the 2022-2023 reporting period.	A evaluation of the collected monitoring data is included in Section 5 of the 2021-2022 Annual Report.		NO
17	**NPDES Industrial Permitting:** Evaluate permitted and unpermitted facilities in the City MS4	0 unpermitted facilities were reported to the ADEM during the reporting period	Unpermitted facilities will be reported to the Industrial Permits Section of ADEM.		City of Hokes Bluff continues to rely on ADEM for NPDES permitting enforcement	NO
18	**Additional Strategy:** Educated the public on storm water issues and concerns	The City placed door hangers on residents if they are not home to make them aware of a storm water problem/issue at their property.		A copy of the door hangers is attached. (See Document 1-17)		

ADEM Watermark

HOKES BLUFF MS4 IDDE

TABLE 1 - ILLICIT DISCHARGE POTENTIAL (IDP) SCORES
2021-2022 REPORTING PERIOD

BASIN ID	IDP CALCULATION	PRIORITY AREA
A	6	NO
B	6	NO
C	5	NO
D	5	NO
E	6	NO
F	6	NO
G	5	NO
H	5	NO
I	8	YES*
J	5	NO
K	7	NO
L	6	NO
M	5	NO
N	5	NO
O	5	NO
P	5	NO
Q	5	NO
R	5	NO
S	5	NO
T	6	NO
U	5	NO
V	5	NO
W	5	NO
X	5	NO
Y	5	NO
Z	6	NO
AA	5	NO
BB	5	NO
CC	5	NO
DD	5	NO
EE	5	NO

*Considered a priority area due to highest IDP score.

ADEM Watermark

ILLICIT DISCHARGE POTENTIAL WORKSHEET

SUBWATERSHED: A DATE OF EVALUATION: 5/20/2022

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	< 5 reports	5 - 25 reports	> 25 reports	1
3	# OF POTENTIAL GENERATING SITES	0	< 3 sites	3-10 sites	> 10 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

ADEM Watermark

ILLICIT DISCHARGE POTENTIAL WORKSHEET

SUBWATERSHED: B

DATE OF EVALUATION: 5/20/2022

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	< 5 reports	5 - 25 reports	> 25 reports	1
3	# OF POTENTIAL GENERATING SITES	0	< 3 sites	3-10 sites	> 10 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

ADEM Watermark

ILLICIT DISCHARGE POTENTIAL WORKSHEET

SUBWATERSHED: C

DATE OF EVALUATION: 5/20/2022

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	< 5 reports	5 - 25 reports	> 25 reports	1
3	# OF POTENTIAL GENERATING SITES	1	< 3 sites	3-10 sites	> 10 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

ADEM Watermark

ILLICIT DISCHARGE POTENTIAL WORKSHEET

SUBWATERSHED: D

DATE OF EVALUATION: 5/20/2022

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	< 5 reports	5 - 25 reports	> 25 reports	1
3	# OF POTENTIAL GENERATING SITES	0	< 3 sites	3-10 sites	> 10 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

ADEM Watermark

ILLICIT DISCHARGE POTENTIAL WORKSHEET

SUBWATERSHED: E

DATE OF EVALUATION: 5/20/2022

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	< 5 reports	5 - 25 reports	> 25 reports	1
3	# OF POTENTIAL GENERATING SITES	0	< 3 sites	3-10 sites	> 10 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

ADEM Watermark

ILLICIT DISCHARGE POTENTIAL WORKSHEET

SUBWATERSHED: F

DATE OF EVALUATION: 5/20/2022

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	< 5 reports	5 - 25 reports	> 25 reports	1
3	# OF POTENTIAL GENERATING SITES	0	< 3 sites	3-10 sites	> 10 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

ADEM Watermark

ILLICIT DISCHARGE POTENTIAL WORKSHEET

SUBWATERSHED: G

DATE OF EVALUATION: 5/20/2022

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	< 5 reports	5 - 25 reports	> 25 reports	1
3	# OF POTENTIAL GENERATING SITES	0	< 3 sites	3-10 sites	> 10 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

ADEM Watermark

ILLICIT DISCHARGE POTENTIAL WORKSHEET

SUBWATERSHED: H

DATE OF EVALUATION: 5/20/2022

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	< 5 reports	5 - 25 reports	> 25 reports	1
3	# OF POTENTIAL GENERATING SITES	0	< 3 sites	3-10 sites	> 10 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

ADEM Watermark

ILLICIT DISCHARGE POTENTIAL WORKSHEET

SUBWATERSHED: I

DATE OF EVALUATION: 5/20/2022

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	< 5 reports	5 - 25 reports	> 25 reports	1
3	# OF POTENTIAL GENERATING SITES	3	< 3 sites	3-10 sites	> 10 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

ADEM Watermark

ILLICIT DISCHARGE POTENTIAL WORKSHEET

SUBWATERSHED: J

DATE OF EVALUATION: 5/20/2022

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	< 5 reports	5 - 25 reports	> 25 reports	1
3	# OF POTENTIAL GENERATING SITES	0	< 3 sites	3-10 sites	> 10 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

ADEM Watermark

ILLICIT DISCHARGE POTENTIAL WORKSHEET

SUBWATERSHED: L

DATE OF EVALUATION: 5/20/2022

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	< 5 reports	5 - 25 reports	> 25 reports	1
3	# OF POTENTIAL GENERATING SITES	0	< 3 sites	3-10 sites	> 10 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

ADEM Watermark

ILLICIT DISCHARGE POTENTIAL WORKSHEET

SUBWATERSHED: K

DATE OF EVALUATION: 5/20/2022

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	< 5 reports	5 - 25 reports	> 25 reports	1
3	# OF POTENTIAL GENERATING SITES	1	< 3 sites	3-10 sites	> 10 sites	1
4	AVERAGE AGE OF DEVELOPMENT	> 50 years	< 10 years	10-50 years	> 50 years	3
					TOTAL IDP	7

TOTAL IDP > 9 = PRIORITY AREA

ADEM Watermark

ILLICIT DISCHARGE POTENTIAL WORKSHEET

SUBWATERSHED: M

DATE OF EVALUATION: 5/20/2022

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	< 5 reports	5 - 25 reports	> 25 reports	1
3	# OF POTENTIAL GENERATING SITES	0	< 3 sites	3-10 sites	> 10 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

ADEM Watermark

ILLICIT DISCHARGE POTENTIAL WORKSHEET

SUBWATERSHED: N

DATE OF EVALUATION: 5/20/2022

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	< 5 reports	5 - 25 reports	> 25 reports	1
3	# OF POTENTIAL GENERATING SITES	0	< 3 sites	3-10 sites	> 10 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

ADEM Watermark

ILLICIT DISCHARGE POTENTIAL WORKSHEET

SUBWATERSHED: O

DATE OF EVALUATION: 5/20/2022

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	< 5 reports	5 - 25 reports	> 25 reports	1
3	# OF POTENTIAL GENERATING SITES	0	< 3 sites	3-10 sites	> 10 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

ADEM Watermark

ILLICIT DISCHARGE POTENTIAL WORKSHEET

SUBWATERSHED: P

DATE OF EVALUATION: 5/20/2022

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	< 5 reports	5 - 25 reports	> 25 reports	1
3	# OF POTENTIAL GENERATING SITES	0	< 3 sites	3-10 sites	> 10 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

ADEM Watermark

ILLICIT DISCHARGE POTENTIAL WORKSHEET

SUBWATERSHED: Q

DATE OF EVALUATION: 5/20/2022

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	< 5 reports	5 - 25 reports	> 25 reports	1
3	# OF POTENTIAL GENERATING SITES	0	< 3 sites	3-10 sites	> 10 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

ADEM Watermark

ILLICIT DISCHARGE POTENTIAL WORKSHEET

SUBWATERSHED: R DATE OF EVALUATION: 5/20/2022

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	< 5 reports	5 - 25 reports	> 25 reports	1
3	# OF POTENTIAL GENERATING SITES	1	< 3 sites	3-10 sites	> 10 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

ADEM Watermark

ILLICIT DISCHARGE POTENTIAL WORKSHEET

SUBWATERSHED: S DATE OF EVALUATION: 5/20/2022

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	< 5 reports	5 - 25 reports	> 25 reports	1
3	# OF POTENTIAL GENERATING SITES	0	< 3 sites	3-10 sites	> 10 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

ADEM Watermark

ILLICIT DISCHARGE POTENTIAL WORKSHEET

SUBWATERSHED: T

DATE OF EVALUATION: 5/20/2022

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	< 5 reports	5 - 25 reports	> 25 reports	1
3	# OF POTENTIAL GENERATING SITES	0	< 3 sites	3-10 sites	> 10 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

ADEM Watermark

ILLICIT DISCHARGE POTENTIAL WORKSHEET

SUBWATERSHED: U DATE OF EVALUATION: 5/20/2022

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	< 5 reports	5 - 25 reports	> 25 reports	1
3	# OF POTENTIAL GENERATING SITES	1	< 3 sites	3-10 sites	> 10 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

ADEM Watermark

ILLICIT DISCHARGE POTENTIAL WORKSHEET

SUBWATERSHED: V DATE OF EVALUATION: 5/20/2022

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	< 5 reports	5 - 25 reports	> 25 reports	1
3	# OF POTENTIAL GENERATING SITES	0	< 3 sites	3-10 sites	> 10 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

ADEM Watermark

ILLICIT DISCHARGE POTENTIAL WORKSHEET

SUBWATERSHED: W

DATE OF EVALUATION: 5/20/2022

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	< 5 reports	5 - 25 reports	> 25 reports	1
3	# OF POTENTIAL GENERATING SITES	0	< 3 sites	3-10 sites	> 10 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

ADEM Watermark

ILLICIT DISCHARGE POTENTIAL WORKSHEET

SUBWATERSHED: X DATE OF EVALUATION: 5/20/2022

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	< 5 reports	5 - 25 reports	> 25 reports	1
3	# OF POTENTIAL GENERATING SITES	0	< 3 sites	3-10 sites	> 10 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

ADEM Watermark

ILLICIT DISCHARGE POTENTIAL WORKSHEET

SUBWATERSHED: Y DATE OF EVALUATION: 5/20/2022

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	< 5 reports	5 - 25 reports	> 25 reports	1
3	# OF POTENTIAL GENERATING SITES	0	< 3 sites	3-10 sites	> 10 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

ADEM Watermark

ILLICIT DISCHARGE POTENTIAL WORKSHEET

SUBWATERSHED: Z DATE OF EVALUATION: 5/20/2022

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	< 5 reports	5 - 25 reports	> 25 reports	1
3	# OF POTENTIAL GENERATING SITES	0	< 3 sites	3-10 sites	> 10 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

ADEM Watermark

ILLICIT DISCHARGE POTENTIAL WORKSHEET

SUBWATERSHED: AA

DATE OF EVALUATION: 5/20/2022

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	< 5 reports	5 - 25 reports	> 25 reports	1
3	# OF POTENTIAL GENERATING SITES	0	< 3 sites	3-10 sites	> 10 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

ADEM Watermark

ILLICIT DISCHARGE POTENTIAL WORKSHEET

SUBWATERSHED: BB

DATE OF EVALUATION: 5/20/2022

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	< 5 reports	5 - 25 reports	> 25 reports	1
3	# OF POTENTIAL GENERATING SITES	1	< 3 sites	3-10 sites	> 10 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

ADEM Watermark

ILLICIT DISCHARGE POTENTIAL WORKSHEET

SUBWATERSHED: CC

DATE OF EVALUATION: 5/20/2022

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	< 5 reports	5 - 25 reports	> 25 reports	1
3	# OF POTENTIAL GENERATING SITES	0	< 3 sites	3-10 sites	> 10 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

ADEM Watermark

ILLICIT DISCHARGE POTENTIAL WORKSHEET

SUBWATERSHED: DD

DATE OF EVALUATION: 5/20/2022

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	< 5 reports	5 - 25 reports	> 25 reports	1
3	# OF POTENTIAL GENERATING SITES	1	< 3 sites	3-10 sites	> 10 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

ADEM Watermark

ILLICIT DISCHARGE POTENTIAL WORKSHEET

SUBWATERSHED: EE

DATE OF EVALUATION: 5/20/2022

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	< 5 reports	5 - 25 reports	> 25 reports	1
3	# OF POTENTIAL GENERATING SITES	0	< 3 sites	3-10 sites	> 10 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

ADEM Watermark

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

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

Legend
Hokes Bluff MS4

ADEM Watermark

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

ADEM Watermark

HOKES BLUFF MS4 OUTFALL INVENTORY

	OUTFALL ID #	LOCATION (LAT/LONG)		OUTFALL DESCRIPTION			RECEIVING WATER BODY
				CLOSED/OPEN	MATERIAL	MAJOR/MINOR	
	BASIN I						
1	**I2-001**	33.995578	-85.856153	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER
2	**I2-002**	33.995687	-85.856534	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER
3	**I2-003**	33.995498	-85.856854	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER
4	**I2-004**	33.995443	-85.856906	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER
5	**I3-005**	33.994839	-85.859930	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER
6	**I3-006**	33.994734	-85.860064	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER
7	**I3-007**	33.995794	-85.860672	CLOSED PIPE	RCP	MINOR	UT OF COOSA RIVER
8	**I3-008**	33.995788	-85.861185	CLOSED PIPE	RCP	MINOR	UT OF COOSA RIVER
9	**I3-009**	33.995782	-85.861570	CLOSED PIPE	CMP	MINOR	UT OF COOSA RIVER
10	**I3-010**	33.995777	-85.861783	CLOSED PIPE	RCP	MAJOR	UT OF COOSA RIVER
11	**I3-011**	33.997226	-85.864420	OPEN DRAINAGE	EARTHEN/RIPRAP	MINOR	UT OF COOSA RIVER
12	**I3-012**	33.997328	-85.864453	CLOSED PIPE	RCP	MINOR	UT OF COOSA RIVER
13	**I3-013**	33.997333	-85.864340	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER
14	**I3-014**	33.997411	-85.864354	CLOSED PIPE	PLASTIC	MINOR	UT OF COOSA RIVER
15	**I3-015**	33.998695	-85.865191	CLOSED PIPE	STEEL	MINOR	UT OF COOSA RIVER
16	**I3-016**	33.998706	-85.865198	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER
17	**I3-017**	33.998682	-85.865221	CLOSED PIPE	STEEL	MINOR	UT OF COOSA RIVER
18	**I3-018**	33.998683	-85.865236	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER
19	**I3-019**	33.998788	-85.865317	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER
20	**I3-020**	33.999176	-85.865340	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER
21	**I4-021**	33.993654	-85.858457	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER
	BASIN K						
22	**K1-001**	33.985706	-85.878395	CLOSED PIPE	HDPE	MINOR	UT OF BIG COVE CREEK
23	**K1-002**	33.985706	-85.878682	OPEN DRAINAGE	EARTHEN	MINOR	UT OF BIG COVE CREEK
24	**K1-003**	33.987537	-85.877073	OPEN DRAINAGE	EARTHEN	MINOR	UT OF BIG COVE CREEK
	K1-004	*33.988478*	*-85.876113*	*OPEN DRAINAGE*	*EARTHEN*	*MINOR*	*UT OF BIG COVE CREEK*
25	**K1-005**	33.989230	-85.874180	OPEN DRAINAGE	EARTHEN	MINOR	UT OF BIG COVE CREEK
26	**K1-006**	33.989273	-85.874199	OPEN DRAINAGE	EARTHEN	MINOR	UT OF BIG COVE CREEK

ADEM Watermark

HOKES BLUFF MS4 OUTFALL INVENTORY

	OUTFALL ID #	LOCATION (LAT/LONG)		OUTFALL DESCRIPTION			RECEIVING WATER BODY
				CLOSED/OPEN	MATERIAL	MAJOR/MINOR	
	K2-007*	*33.989503*	*-85.872214*	*CLOSED PIPE*	*PVC*	*MINOR*	*UT OF BIG COVE CREEK*
	K2-008*	*33.989495*	*-85.872211*	*OPEN DRAINAGE*	*EARTHEN*	*MINOR*	*UT OF BIG COVE CREEK*
27	**K2-009**	33.989485	-85.872042	CLOSED PIPE	STEEL	MINOR	UT OF BIG COVE CREEK
28	**K2-010**	33.989480	-85.872022	CLOSED PIPE	HDPE	MINOR	UT OF BIG COVE CREEK
29	**K2-011**	33.989479	-85.871896	CLOSED PIPE	PVC	MINOR	UT OF BIG COVE CREEK
30	**K2-012**	33.989479	-85.871894	CLOSED PIPE	PLASTIC	MINOR	UT OF BIG COVE CREEK
31	**K2-013**	33.989477	-85.871775	CLOSED PIPE	PLASTIC	MINOR	UT OF BIG COVE CREEK
32	**K2-014**	33.989474	-85.871745	CLOSED PIPE	PLASTIC	MINOR	UT OF BIG COVE CREEK
33	**K2-015**	33.989492	-85.871562	OPEN DRAINAGE	EARTHEN	MINOR	UT OF BIG COVE CREEK
34	**K2-016**	33.989456	-85.871567	OPEN DRAINAGE	EARTHEN	MINOR	UT OF BIG COVE CREEK
35	**K2-017**	33.989488	-85.871448	OPEN DRAINAGE	EARTHEN	MINOR	UT OF BIG COVE CREEK
36	**K2-018**	33.989212	-85.870978	CLOSED PIPE	PVC	MINOR	UT OF BIG COVE CREEK
	BASIN K						
37	**K2-019**	33.989202	-85.870978	CLOSED PIPE	PVC	MINOR	UT OF BIG COVE CREEK
38	**K3-020**	33.991202	-85.872557	OPEN DRAINAGE	EARTHEN/RIP-RAP	MINOR	UT OF BIG COVE CREEK
39	**K3-021**	33.991344	-85.872530	OPEN DRAINAGE	EARTHEN	MINOR	UT OF BIG COVE CREEK
	BASIN G						
	G1-001*	*34.003584*	*-85.874384*	*OPEN DRAINAGE*	*EARTHEN*	*MINOR*	*UT OF COOSA RIVER*
40	**G1-002**	34.003196	-85.873381	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER
41	**G1-003**	34.001900	-85.871940	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER
42	**G1-004**	34.001765	-85.871668	CLOSED PIPE	HDPE	MINOR	UT OF COOSA RIVER
43	**G1-005**	34.000799	-85.871521	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER
44	**G1-006**	34.000543	-85.871583	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER
45	**G1-007**	34.999887	-85.871693	CLOSED PIPE	STEEL	MAJOR	UT OF COOSA RIVER
46	**G2-001**	34.000583	-85.868390	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER
47	**G2-002**	34.000581	-85.868434	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER
48	**G2-003**	34.000659	-85.868444	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER
49	**G2-004**	34.000687	-85.868421	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER
50	**G2-005**	34.001688	-85.869020	CLOSED PIPE	RCP	MINOR	UT OF COOSA RIVER

ADEM Watermark

HOKES BLUFF MS4 OUTFALL INVENTORY

	OUTFALL ID #	LOCATION (LAT/LONG)		OUTFALL DESCRIPTION			RECEIVING WATER BODY
				CLOSED/OPEN	MATERIAL	MAJOR/MINOR	
51	**G2-006**	34.001905	-85.869571	CLOSED PIPE	PLASTIC	MINOR	UT OF COOSA RIVER
52	**G2-007**	34.002422	-85.870231	CLOSED PIPE	RCP	MINOR	UT OF COOSA RIVER
53	**G2-008**	34.002968	-85.871641	CLOSED PIPE	STEEL	MINOR	UT OF COOSA RIVER
	G2-009	*34.002934*	*-85.871968*	*CLOSED PIPE*	*PVC*	*MINOR*	*UT OF COOSA RIVER*
54	**G2-010**	34.002964	-85.871972	CLOSED PIPE	STEEL	MINOR	UT OF COOSA RIVER
55	**G3-001**	34.999253	-85.875588	CLOSED PIPE	RCP	MINOR	UT OF COOSA RIVER
56	**G3-002**	34.999373	-85.876102	CLOSED PIPE	HDPE	MINOR	UT OF COOSA RIVER
57	**G3-003**	34.999048	-85.876373	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER
58	**G3-004**	34.999007	-85.877091	CLOSED PIPE	RCP	MINOR	UT OF COOSA RIVER
59	**G3-005**	34.998653	-85.877734	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER
	BASIN H						
60	**H1-001**	34.005898	-85.860080	CLOSED PIPE	HDPE	MINOR	UT OF COOSA RIVER
	H1-002	*34.005903*	*-85.859930*	*CLOSED PIPE*	*HDPE*	*MINOR*	*UT OF COOSA RIVER*
61	**H1-003**	34.005922	-85.859882	CLOSED PIPE	HDPE	MINOR	UT OF COOSA RIVER
62	**H1-004**	34.005961	-85.859907	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER
63	**H1-005**	34.005929	-85.859862	CLOSED PIPE	HDPE	MINOR	UT OF COOSA RIVER
64	**H1-006**	34.006972	-85.858724	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER
65	**H1-007**	34.007835	-85.858608	CLOSED PIPE	HDPE	MINOR	UT OF COOSA RIVER
66	**H1-008**	34.008132	-85.858610	CLOSED PIPE	PVC	MINOR	UT OF COOSA RIVER
67	**H1-009**	34.008188	-85.858597	CLOSED PIPE	PVC	MINOR	UT OF COOSA RIVER
68	**H2-001**	34.008001	-85.866575	CLOSED PIPE	RCP	MINOR	UT OF COOSA RIVER
69	**H2-002**	34.008566	-85.866480	CLOSED PIPE	RCP	MINOR	UT OF COOSA RIVER
70	**H2-003**	34.008947	-85.864152	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER
71	**H2-004**	34.008966	-85.864106	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER
72	**H2-005**	34.010109	-85.860293	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER
73	**H2-006**	34.010960	-85.859587	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER
74	**H3-001**	34.001894	-85.859543	CLOSED PIPE	RCP	MINOR	UT OF COOSA RIVER
75	**H3-002**	34.001797	-85.859711	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER
76	**H3-003**	34.001801	-85.859746	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER

ADEM Watermark

HOKES BLUFF MS4 OUTFALL INVENTORY

	OUTFALL ID #	LOCATION (LAT/LONG)		OUTFALL DESCRIPTION			RECEIVING WATER BODY
				CLOSED/OPEN	MATERIAL	MAJOR/MINOR	
	BASIN Z						
77	**Z-001**	34.007591	-85.839171	CLOSED PIPE	RCP	MINOR	UT OF COOSA RIVER
78	**Z-002**	34.007598	-85.839439	CLOSED PIPE	RCP	MINOR	UT OF COOSA RIVER
79	**Z-003**	34.009438	-85.838254	CLOSED PIPE	HDPE	MINOR	UT OF COOSA RIVER
80	**Z-004**	34.009485	-85.838164	OPEN DRAINAGE	EARTHEN/RIP-RAP	MINOR	UT OF COOSA RIVER
81	**Z-005**	34.009520	-85.838175	CLOSED PIPE	HDPE	MINOR	UT OF COOSA RIVER
82	**Z-006**	34.011217	-85.836898	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER
83	**Z-007**	34.011213	-85.836972	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER
84	**Z-008**	34.006770	-85.836801	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER
85	**Z-009**	34.006694	-85.836720	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER
86	**Z-010**	34.001340	-85.833271	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER
87	**Z-011**	34.001356	-85.833267	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER
	BASIN J						
88	**J-001**	33.989319	-85.850497	CLOSED PIPE	RCP	MINOR	UT OF COOSA RIVER
	BASIN T						
	T-001	*34.003107*	*-85.836332*	*CLOSED PIPE*	*HDPE*	*MINOR*	*UT OF COOSA RIVER*
89	**T-002**	34.000178	-85.835759	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER
90	**T-003**	34.000246	-85.835960	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER
	BASIN C						
91	**C-001**	34.005913	-85.919584	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER
92	**C-002**	34.005880	-85.919488	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER
93	**C-003**	34.005745	-85.915036	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER
94	**C-004**	34.005703	-85.915028	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER
95	**C-005**	34.005746	-85.915125	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER
96	**C-006**	34.008264	-85.922413	CLOSED PIPE	RCP	MINOR	BIG COVE CREEK

**Outfalls no longer present (shaded gray).

ADEM Watermark

HOKES BLUFF MS4 ILLICIT DISCHARGE DETECTION AND ELIMINATION (IDDE) PROGRAM

TABLE 2 - 2021-2022 OUTFALL INSPECTIONS

OUTFALL ID #	LOCATION (LAT/LONG)		OUTFALL DESCRIPTION			RECEIVING WATER BODY	DATE IDENTIFIED	DATE INSPECTED	FLOW (YES/NO)	OUTFALL CHARACTERIZATION
I2-001	33.995578	-85.856153	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER	2/12/2015	3/3/2022	YES	UNLIKELY
I3-005	33.994839	-85.859930	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER	2/13/2015	3/3/2022	NO	UNLIKELY
I3-006	33.994734	-85.860064	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER	2/13/2015	3/3/2022	YES	UNLIKELY
I3-010	33.995777	-85.861783	CLOSED PIPE	RCP	MAJOR	UT OF COOSA RIVER	2/13/2015	3/3/2022	YES	UNLIKELY
I3-011	33.997226	-85.864420	OPEN DRAINAGE	EARTHEN/RIPRAP	MINOR	UT OF COOSA RIVER	2/13/2015	3/3/2022	YES	UNLIKELY
I3-012	33.997328	-85.864453	CLOSED PIPE	RCP	MINOR	UT OF COOSA RIVER	2/13/2015	3/3/2022	NO	UNLIKELY
K1-001	33.985706	-85.878395	CLOSED PIPE	HDPE	MINOR	UT OF BIG COVE CREEK	2/12/2015	3/3/2022	YES	UNLIKELY
G1-002	34.003196	-85.873381	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER	11/12/2015	3/3/2022	NO	UNLIKELY
G1-003	34.001900	-85.871940	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER	11/12/2015	3/3/2022	YES	UNLIKELY
G1-007	33.999887	-85.871693	CLOSED PIPE	STEEL	MAJOR	UT OF COOSA RIVER	11/12/2015	3/3/2022	YES	UNLIKELY
G2-008	34.002968	-85.871641	CLOSED PIPE	STEEL	MINOR	UT OF COOSA RIVER	12/11/2015	3/3/2022	YES	UNLIKELY
H2-003	34.008947	-85.864152	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER	1/5/2016	3/3/2022	NO	UNLIKELY
H2-004	34.008966	-85.864106	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER	1/5/2016	3/3/2022	YES	UNLIKELY
H2-005	34.010109	-85.860293	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER	1/5/2016	3/3/2022	NO	UNLIKELY
H2-006	34.010960	-85.859587	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER	1/5/2016	3/3/2022	YES	UNLIKELY
H3-001	34.001894	-85.859543	CLOSED PIPE	RCP	MINOR	UT OF COOSA RIVER	1/5/2016	3/3/2022	NO	UNLIKELY
Z-001	34.007591	-85.839171	CLOSED PIPE	RCP	MINOR	UT OF COOSA RIVER	10/24/2016	3/3/2022	YES	UNLIKELY
J-001	33.989319	-85.850497	CLOSED PIPE	RCP	MINOR	UT OF COOSA RIVER	1/16/2017	3/3/2022	NO	UNLIKELY
T-001*	34.003107	-85.836332	CLOSED PIPE	HDPE	MINOR	UT OF COOSA RIVER	1/16/2017	3/3/2022	NA**	NA**

ADEM Watermark

OUTFALL RECONNAISSANCE INVENTORY/ SAMPLE COLLECTION FIELD SHEET

Section 1: Background Data

Drainage Basin: H		Outfall ID: **H2-004**	
Date: 03/03/2022		Time (Military): 1250	
Investigators: L. Bavis and N. Wade		Form completed by: L. Bavis	
Temperature (°F): 75	Rainfall Last 24 hours: 0 (in.)	Last 48 hours: 0 (in.)	
Latitude: 34.008966	Longitude: -85.864106	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 residential properties and Clinton 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: 32" 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	1	Liter	Bottle
	Time to fill	12	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		74	°F	Thermometer
pH		8.23	pH Standard Units	Probe
Ammonia		0	mg/L	Test strip
Chlorine (optional)		not tested	mg/L	Test strip / probe

ADEM Watermark

H2-004
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	
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.

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City of Hokes Bluff
IDDE MS4 Compliance
Hokes Bluff, Etowah County, Alabama
S&ME Project No. 22820043

Outfall Number: H2-004
GPS: 34.008966°, -85.864106°
Date of Photo: March 3, 2022
Receiving Water Body: Unnamed tributary of the Coosa River

Photo 1 View of minor outfall H2-004, facing south.



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OUTFALL RECONNAISSANCE INVENTORY/ SAMPLE COLLECTION FIELD SHEET

Section 1: Background Data

Drainage Basin: H		Outfall ID: **H2-003**	
Date: 03/03/2022		Time (Military): 1220	
Investigators: L. Bavis and N. Wade		Form completed by: L. Bavis	
Temperature (°F): 73	Rainfall Last 24 hours: 0 (in.)	Last 48 hours: 0 (in.)	
Latitude: 34.008947	Longitude: -85.864152	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): Outfall for pond. Standing water observed in outfall.

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: 10" Top Width: 18" 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

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H2-003
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.

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City of Hokes Bluff
IDDE MS4 Compliance
Hokes Bluff, Etowah County, Alabama
S&ME Project No. 22820043

Outfall Number: H2-003
GPS: 34.008947°, -85.864152°
Date of Photo: March 3, 2022
Receiving Water Body: Unnamed tributary of the Coosa River

Photo 1 View of minor outfall H2-003, facing south.



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MS4
Alabama Urbanized Area
Small Municipal Separate Storm Sewer
4-038

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CITY OF HOKES BLUFF

MS4 ANNUAL AWARENESS TRAINING

GADSDEN-ETOWAH MS4

Oct-26, 2021

PRINT NAME	SIGNATURE
Lisa Johnson	
Wade Reed	
Chance Ford	
Jimmy Hester	
Dane Driskill	

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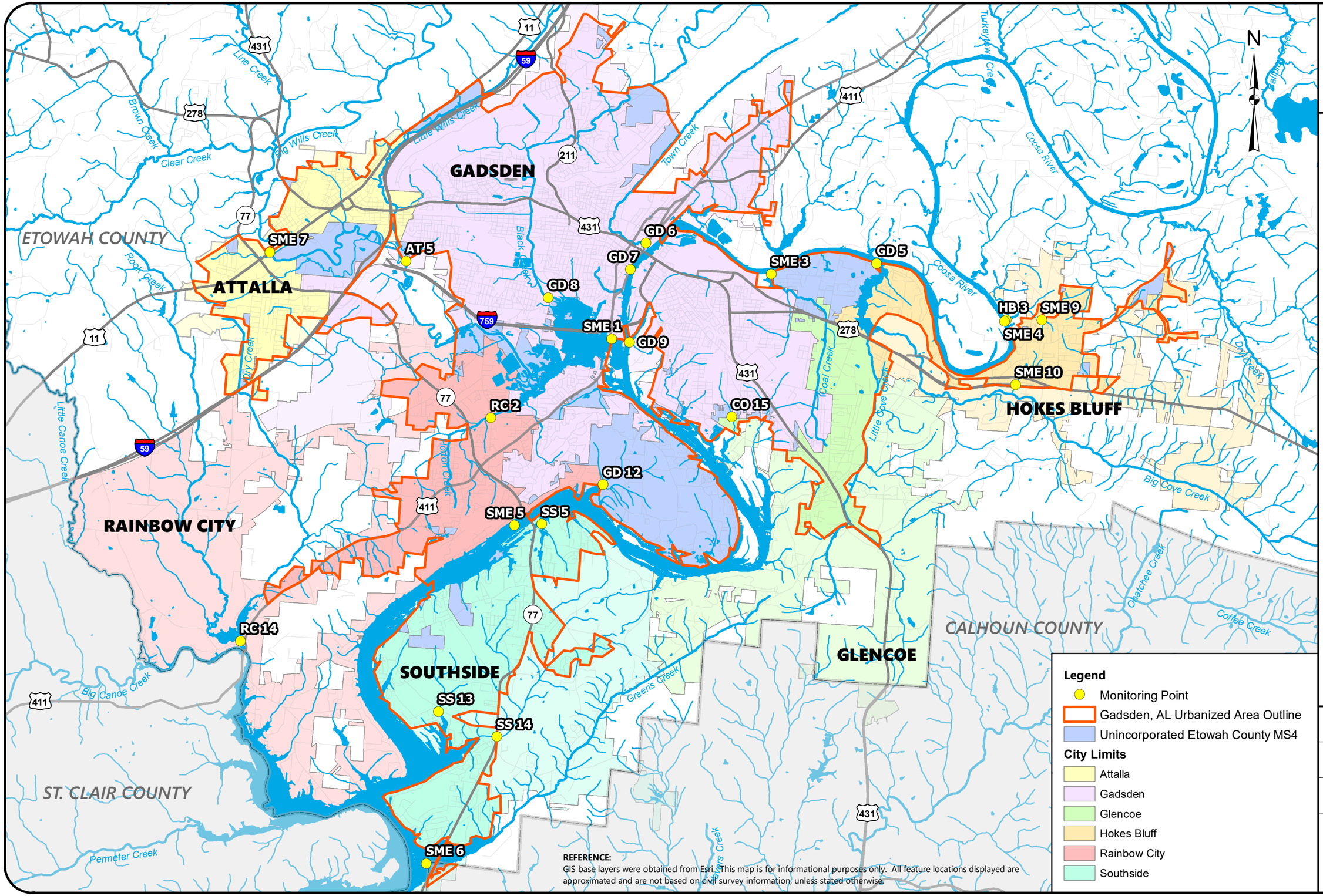
WET-WEATHER MONITORING LOCATIONS

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



Legend

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

City Limits

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

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

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Appendix F – Construction Site Storm Water Runoff

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THE CITY OF HOKES BLUFF
CONTROL MEASURE 3 - CONSTRUCTION SITE STORM WATER RUNOFF
See Section 6.3 of the Annual Report and Section 7.3 of the 2017 SWMP

ACTIVITY NO.	STRATEGIES	2021-2022 IMPLEMENTATION STATUS	2022-2023 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	The City evaluated the Ordinance on its effectiveness in addressing erosion and sediment control and no changes were deemed necessary	The City will evaluate the Ordinance annually.	The City's ordinance was provided in the 2022 SWMPP.	0 non-compliant construction site 0 enforcement action taken 0 non-compliant sites reported to ADEM 0 repeat offenders The City did not issue any construction permits during this reporting period.	NO
2	**Construction Site Inspection Program:** Conduct regular inspections of construction sites within the City Evaluate the effectiveness of the inspection program.	The City evaluated the effectiveness of the construction site inspection program and no changes were deemed necessary	The City will prepare and maintain an inventory of qualifying construction sites within the MS4. The City will inspect qualifying construction sites at least every three months.	There were no construction sites; therefore inspections were not necessary.	0 inspections completed 0 non-compliant construction site 0 enforcement action 0 non-compliant sites reported to ADEM 0 repeat offenders The City did not issue any construction permits during this reporting period.	YES
3	**Sediment and Erosion Control Plan Review:** Review Sediment and Erosion Control Plans and Storm Water Management Plans for all new construction Evaluate the effectiveness of the plan review program	The City evaluated the Program on its effectiveness and no changes were deemed necessary.	The City will require the submittal of a BMP Plan prior to approval or denial of a land disturbance permit application. Sediment and erosion control measures certified by a QCP will be deemed approved by the City and will not be reviewed by City personnel.	There were no construction sites; therefore inspections were not necessary.	0 plans reviewed 0 plans approved 0 plans rejected 0 plans met ADEM requirements The City did not issue any construction permits during this reporting period.	YES
4	**BMP Training Program:** Conduct annual CBMP training for City inspectors and reviewers	Scott Ryan (City Inspector) completed the QCI course on 10/25/2021 Scott Ryan (QCI No. T7121)	Refresher training will be completed.	QCI certificate is attached. (See Document 3-1)		NO
5	**Public Reporting and Tracking:** Evaluate the reporting and tracking methods for non-compliant construction sites, illicit discharges, impaired waterways, and violations of ordinances relating to storm water pollution, as well as, comments concerning the SWMPP.	0 reports received 0 complaints addressed 0 complaints resolved 0 reports contained required information to find and address the suspected problem	The City will publicize the reporting number on the City's website and track received complaints and the City's responses to the received complaints. The City will evaluate the current public reporting and tracking methods.	The Storm Water web page which includes a phone number for reporting an issue is attached. Since there were no complaints, a summary of a complaint can not be provided. (See Document 1-2)	The City Clerk is responsible for documenting received complaints. The City Clerk currently tracks storm water concerns and responses in a notebook in the City Hall.	NO
6	**Notify ADEM of Non-Compliant Sites:** The City will notify ADEM of any construction sites where a possible violation of the Clean Water Act has occurred	0 construction sites were reported to ADEM	The City will rely on ADEM for construction NPDES enforcement when a permit is required but has not been obtained or in situations where the City's enforcement actions have not resulted in compliance.		These non-compliant sites will be reported to the Construction Section of the Storm water Management Division of ADEM in Birmingham, Alabama by phone and/or email.	NO

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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 Initial Training

QCI No. T7121

Expires 10/25/2022

This certificate confers six (6.0) 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.

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Appendix G – Post-Construction Storm Water Management

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THE CITY OF HOKES BLUFF
CONTROL MEASURE 4 - POST-CONSTRUCTION STORM WATER MANAGEMENT
See Section 6.4 of the Annual Report and Section 7.4 of the 2017 SWMP

ACTIVITY NO.	STRATEGIES	2021-2022 IMPLEMENTATION STATUS	2022-2023 PROPOSED EFFORTS	SUPPORTING DOCUMENTATION	COMMENTS	PROPOSED CHANGES
1	**Reducing Post-Construction Runoff Volume:** Ordinance No. Ordinance 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	The City evaluated the Ordinance on its effectiveness in reducing runoff from new development or redevelopment and no changes were deemed necessary.	The City will evaluate the Ordinance annually.	The City's ordinance was provided in the 2022 SWMPP.	0 submitted plans included measures to reduce runoff volume. The City did not issue any construction permits during this reporting period.	NO
2	**Reducing Pollutants from Development:** Section 8.5 of Ordinance HB-2012-002 requires that requires that pollutants in runoff water be minimized using appropriate BMPs Evaluate the effectiveness of the Ordinance each reporting period	The City evaluated the Ordinance on its effectiveness in reducing pollutants from new development or redevelopment and no changes were deemed necessary.	The City will evaluate the Ordinance annually.	The City's ordinance was provided in the 2022 SWMPP.	0 developments required treatment of storm water runoff The City did not issue any construction permits during this reporting period.	NO
3	**Long-Term Maintenance for Storm Water Controls:** Ordinance HB-2012-002, Section 7.5 provides for inspections of implemented Post-Construction Strategies and allows the City to require documentation allocating responsibilities for long-term operation and maintenance, as it deems necessary Evaluate the effectiveness of the Ordinance each reporting period	The City evaluated the Ordinance on its effectiveness in addressing long-term maintenance of storm water controls and no changes were deemed necessary.	The City will evaluate the Ordinance annually.	The City's ordinance was provided in the 2022 SWMPP.	0 submitted plans included detailed maintenance procedures 0 maintenance agreements reviewed 0 maintenance provisions approved 0 maintenance provisions denied 0 enforcement actions taken. The City did not issue any construction permits during this reporting period.	NO
4	**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	There were no obstacles identified conflicts/obstacles are discussed when necessary	The City will review and evaluate policies and ordinances to identify regulatory and policy impediments to the installation of green infrastructure and low-impact development techniques.			NO
5	**Post-Construction BMP Plan Review:** Review Sediment and Erosion Control Plans for all new construction for review of post-construction controls Evaluate the effectiveness of the plan review program	The City evaluated the Program on its effectiveness and no changes were deemed necessary.	The City will continue to require submittal of a plan showing post-construction strategies with the application for a Land Disturbance Permit.	No plan reviews were conducted during the reporting period.	0 plans reviewed 0 plans approved 0 plans rejected 0 post-construction designs approved 0 post-construction designs rejected	NO

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THE CITY OF HOKES BLUFF
CONTROL MEASURE 4 - POST-CONSTRUCTION STORM WATER MANAGEMENT
See Section 6.4 of the Annual Report and Section 7.4 of the 2017 SWMP

ACTIVITY NO.	STRATEGIES	2021-2022 IMPLEMENTATION STATUS	2022-2023 PROPOSED EFFORTS	SUPPORTING DOCUMENTATION	COMMENTS	PROPOSED CHANGES
6	**Post-Construction Inspection Program:** Inspect post-construction controls after stabilization is complete to confirm post-construction storm water measures/structures have been installed according to the submitted plan Annually inspect each site to confirm post-construction BMPs are functioning as designed Evaluate the effectiveness of the inspection program	The City evaluated the Program on its effectiveness and no changes were deemed necessary.	The City will require that as-built drawings be provided to the City after final construction of the storm water control is completed. The City will perform inspections of new post-construction structures to verify they were completed according to the submitted plans. The City will inspect post-construction BMPs within the Hokes Bluff MS4 at a minimum of once per year.	No post-construction controls were installed during the reporting period; therefore inspections were not necessary.	0 inspections completed 0 projects completed per submitted plans 0 projects not constructed in accordance to submitted plans 0 projects were not constructed according to plans.	NO
7	**Post-Construction Structural Controls Inventory:** Update an inventory of post-construction structural controls including those owned by the City	0 post-construction structural controls are located within the UA	The City will update an inventory of post-construction structural controls, including those owned by the City.			NO

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Appendix H – Pollution Prevention for Municipal Operations

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THE CITY OF HOKES BLUFF

CONTROL MEASURE 5 - POLLUTION PREVENTION AND GOOD HOUSEKEEPING FOR MUNICIPAL OPERATIONS

See Section 6.5 of the Annual Report and Section 7.5 of the 2017 SWMP

ACTIVITY NO.	STRATEGIES	2021-2022 IMPLEMENTATION STATUS	2022-2023 PROPOSED EFFORTS	SUPPORTING DOCUMENTATION	COMMENTS	PROPOSED CHANGES
1	**Municipal Facilities:** Maintain a list of municipal facilities that have the potential to discharge pollutants through storm water runoff Update SOPs for facilities as needed and inspect facilities monthly	14 municipal facilities 9 municipal 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 current Municipal Facility Inventory was provided in the 2022 SWMPP and is attached. (See Document 5-1)		NO
1a	**Municipal Facilities:** Inspect each facility for good housekeeping practices on a quarterly basis. Establish a inspection checklist by May 31, 2017	Quarterly inspections were performed at each facility 0 deficiencies were identified	Municipal facilities that have been determined to have the potential to discharge pollutants via stormwater runoff will be inspected for good housekeeping practices once per quarter.	Example completed inspection forms are attached. (See Document 5-2)		NO
1b	**Municipal Facilities:** Establish SOPs for facilities by May 31, 2017	The SOPs were reviewed and no changes were made.	Update SOPs for facilities as needed.	Established SOPs are attached. (See Document 5-3)		NO
2	**Employee Training:** Implement a BMP training program for City personnel each reporting period	S&ME addressed municipal good housekeeping practices in the Annual Training handout. This handout was provided to city employees on October 26, 2021. 5 City employees attended training.	The City will train personnel on good housekeeping.	Attendance record is attached. (See Document 2-9)	The City plans to resume in-person training during the 2022-2023 reporting period, covid permitting.	NO
3	**Vehicle Maintenance Program:** Conduct routine inspections of municipal vehicles and equipment	Weekly inspections were performed There were no vehicle or equipment leaks identified during the reporting period	The City will conduct routine inspections under the established Vehicles SOP. The SOP will be reviewed annually and updated if needed.	A completed vehicle inspection form is attached. (See Document 5-4)		NO
4	**Vehicle Wash Area:** Specify areas for vehicle washing. Each Department location will be reviewed, inspected, and modified as needed throughout the year	2 designated municipal vehicle washing areas Weekly inspections performed 1 deficiencies noted	The City will conduct vehicle washing operations under the established Vehicles SOP. The SOP will be reviewed annually and updated if needed.	Photos of designated municipal vehicle wash areas are attached. (See Document 5-5)		NO
5	**Litter Ordinance:** Ordinance No. HB-2009-002 (dated November 12, 2009) Section XI defines littering as an unlawful act.	16 enforcements were made as a result of the Ordinance	The City will continue to enforce the litter ordinance.	A copy of the City's litter ordinance was provided in the 2022 SWMPP.		NO
6	**Litter, Floatables, and Debris - Brush Pickup:** Perform brush pickup on the first Monday of each month and pick up small limbs, shrubbery, trimmings, bagged grass clippings, and leaves on an as needed basis	Bi-monthly scheduled pickups Approximately 100 tons of debris collected	The City will continue to perform brush and leaf pickup.	Brush pickup guidelines and work orders are attached. (See Document 5-6)	On the first Monday of each month, the City will pick up small limbs, shrubbery trimmings, bagged grass clippings, and leaves.	NO

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THE CITY OF HOKES BLUFF

CONTROL MEASURE 5 - POLLUTION PREVENTION AND GOOD HOUSEKEEPING FOR MUNICIPAL OPERATIONS

See Section 6.5 of the Annual Report and Section 7.5 of the 2017 SWMP

ACTIVITY NO.	STRATEGIES	2021-2022 IMPLEMENTATION STATUS	2022-2023 PROPOSED EFFORTS	SUPPORTING DOCUMENTATION	COMMENTS	PROPOSED CHANGES
7	**Litter, Floatables, and Debris - Ferry Landing:** Maintain the Ferry Landing by performing cleanups during the months of May through October to clean up the area.	The City maintained the Ferry Landing and utilizes part time labor during the months of May through October to clean up the area.	The City will maintain the Ferry Landing during the months of May through October to clean up the area.	Part time labor records are attached. (See Document 1-20)		NO
8	**Litter, Floatables, and Debris - Oil and Metal Waste Recycling** Manage a drop-off facility at the City Shop for used oil and scrap metal.	The City managed a drop-off facility at the City Shop for used oil and scrap metal. The City has a 40 cubic yard roll off that was collected and disposed of 24 times this year. The total tons collected from the drop-off location is not known. The used motor oil was collected bi-weekly.	The City will manage a drop-off facility for used oil and scrap metal.	Photos of collection areas are attached. (See Document 5-7)		NO
9	**Additional Strategy:** Clean-up of Mill Pond Park	The City maintained the Mill Pond Park and utilizes part time labor during the months of May through October to clean up the area.		Part time labor records are attached. (See Document 1-20)		

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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

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CITY OF HOKES BLUFF

Building and Grounds Maintenance Checklist

Name: Wade Reed

Room or Area: City Shop Date Completed: 1/5/2022

Signature: Wade Reed

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	☐	☐	☑

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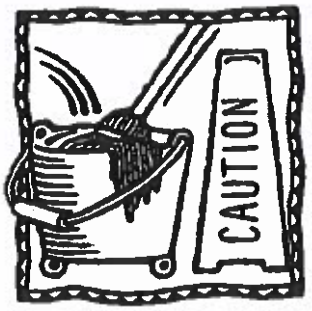
4. FLOOR CLEANING

	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

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STANDARD OPERATING PROCEDURES

City of Hokes Bluff

Municipal Facilities

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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

ADEM Watermark

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.

ADEM Watermark

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.

ADEM Watermark

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.

ADEM Watermark

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.

ADEM Watermark

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.

ADEM Watermark

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.

ADEM Watermark

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.

ADEM Watermark

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.

ADEM Watermark

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

ADEM Watermark

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.

ADEM Watermark

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.

ADEM Watermark

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.

ADEM Watermark

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.

ADEM Watermark

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

ADEM Watermark

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.

ADEM Watermark

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).

ADEM Watermark

4. Documentation

   a. Write-up/report of any discharges into storm drain system

ADEM Watermark

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.

ADEM Watermark

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.

ADEM Watermark

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.

ADEM Watermark

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

ADEM Watermark

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

ADEM Watermark

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

ADEM Watermark

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

ADEM Watermark

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

ADEM Watermark

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.

ADEM Watermark

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.

ADEM Watermark

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.

ADEM Watermark

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

ADEM Watermark

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.

ADEM Watermark

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.

ADEM Watermark

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.

ADEM Watermark

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.

ADEM Watermark

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.

ADEM Watermark

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

ADEM Watermark

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

ADEM Watermark

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

ADEM Watermark

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

ADEM Watermark

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.

ADEM Watermark

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

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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

ADEM Watermark

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

ADEM Watermark

CITY OF HOKES BLUFF

Date: 4/4/22 **Employee:** W Reed **Vehicle #:** 2017 Ford F250 service t

Odometer reading:

Exterior Inspection (360 Walk-around):

		Yes	No	Comments:
Daily	Is the vehicle exterior free of visible damage?		X	
Daily	Do all four tires look to be properly inflated?	✓		
Daily	Are there any signs of fluid leakage underneath vehicle?	✓		
Weekly	Is the vehicle clean in appearance?	✓		
Weekly	Are all four tires properly inflated by gauge? Psi_____	✓		
Weekly	Is tire tread depth and tread wearing acceptable?	✓		
Weekly	Are wiper blades adequate?	✓		

Interior Inspection:

		Yes	No	Comments:
Daily	Is the vehicle's interior clean of debris?		✓	
Daily	Is the interior of the vehicle free of visible damage?	✓		
Daily	Are safety belts working properly?	✓		
Daily	Is a first aid kit available?	✓		
Daily	Is an emergency kit available?	✓		
Daily	Is the vehicle registration easily accessible?	✓		
Daily	Is the vehicle insurance information accessible?	✓		
Weekly	Is a spare tire available and inflated?	✓		
Weekly	Is there a jack system available?	✓		
Weekly	Is the owner's manual available?	✓		
Weekly	Is an accident kit available?	✓		

Operating Inspection:

		Yes	No	Comments:
Daily	Are the headlights working?	✓		
Daily	Are the taillights working?	✓		
Daily	Are the brake lights working?	✓		
Daily	Are the back-up lights working?	✓		
Daily	Are the interior lights working?	✓		
Daily	Are the windshield wipers working properly?	✓		
Daily	Is the horn working?	✓		
Daily	Are the proper mirrors available? (Rearview, side, instructor)	✓		
Daily	Is the parking brake working?	✓		
Daily	Do the turn signals work?	✓		
Daily	Is the sun visor operable?	✓		
Daily	Does the heating/cooling system work properly?	✓		
Daily	Is the fuel tank at least 1/2 full?	✓		

Under-the-hood Inspection:

		Yes	No	Comments:
Daily	Is the engine oil within range?	✓		
Daily	Is the windshield wiper fluid within range?	✓		
Monthly	Is the power steering fluid within range?	✓		
Monthly	Is the transmission fluid within range and a reddish color?	✓		
Monthly	Is the brake fluid within proper levels?	✓		
Monthly	Is the coolant within proper levels?	✓		
Monthly	Do all belts appear in good condition?	✓		

Post-trip Inspection:

		Yes	No	Comments:
Daily	Did vehicle operate correctly?	✓		
Daily	Was the vehicle free of warning lights coming on during operation?	✓		
Daily	Did any warning lights display?			

Comments:

Walkland

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City Shop Wash Area



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Fire Hall Wash Area



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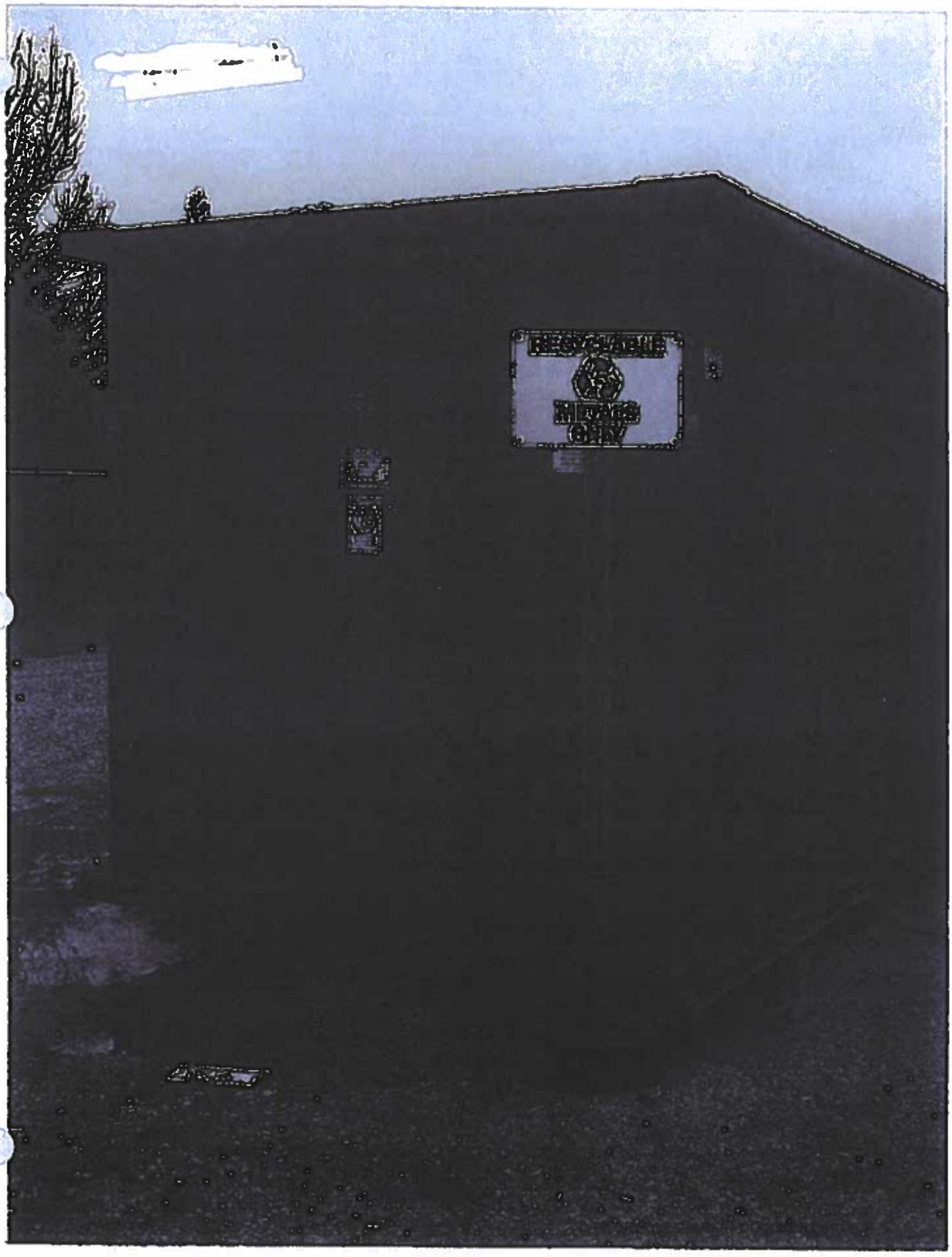

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LIMB & YARD DEBRIS PICKUP

On the first working Monday of each month, weather permitting, the City will pick up small limbs, shrubbery trimmings, bagged grass clippings and leaves. Occasionally, the pickup has to be rescheduled. Citizens must call City Hall to have their name and address added to the list maintained for each month's pickup. All items must be placed on the street right-of-way.

The City will pick up the equivalent of what would fill a pickup truck bed at no charge. All additional amounts picked up will be at a charge of $25/load. Payments for extra loads must be received in advance.

Limbs to be picked up cannot be longer than four (4) feet in length or larger than two (2) inches in diameter. Limbs must be of a size that one (1) man can handle them. The City does not pick up stumps, tree trunks, tree tops, mattresses, appliances, carpeting or padding, building materials, plumbing fixtures, sofas, chairs, grills, tires, brick or concrete. These items can be disposed of at the local landfill (Three Corners' Regional Landfill – (256) 447-1881) or the Gadsden Transfer Station).

Debris left by tree surgeons, pulpwood cutters, landscape companies, roofers, Construction workers, etc. will not be picked up. These items are the responsibility of the companies or homeowners. (The companies are also required to obtain a City business license and applicable permits.)

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Oct 4th Limb Pickup 504 4392

4325 Tawannah Circle
2053 Cove Place - Godfrey
2135 Cover Circle - Harper.
5711 Eastview Ave - Jimenez
4997 Louise St. - across Rd from driveway
5715 Godfrey Rd - will be on spragsins.
2641 Tanglewood TR. W -
3515 Williams St. - Marshall
2599 Alford Bend Rd
5278 Hackberry Lane
3497 Bernard Street
7490 Rocky Ford Rd.
3583 Alford Bend Road.
Vacant lot behind 4017 Old 278. Will be on oak st. behind old drugstore
6711 US Hwy 278 E
1316 Williams St.
6230 Carnes Street
2321 Verande Trace
5537 3rd st
5399 hackberry cir
5119 Pinewood DR. - Be on dogwood
7053 Nora Drive
2700 Alford Bend Rd
2223 Appalachian Hwy.
5119 Pinewood Dr. - Be on dogwood
3270 Marguerite

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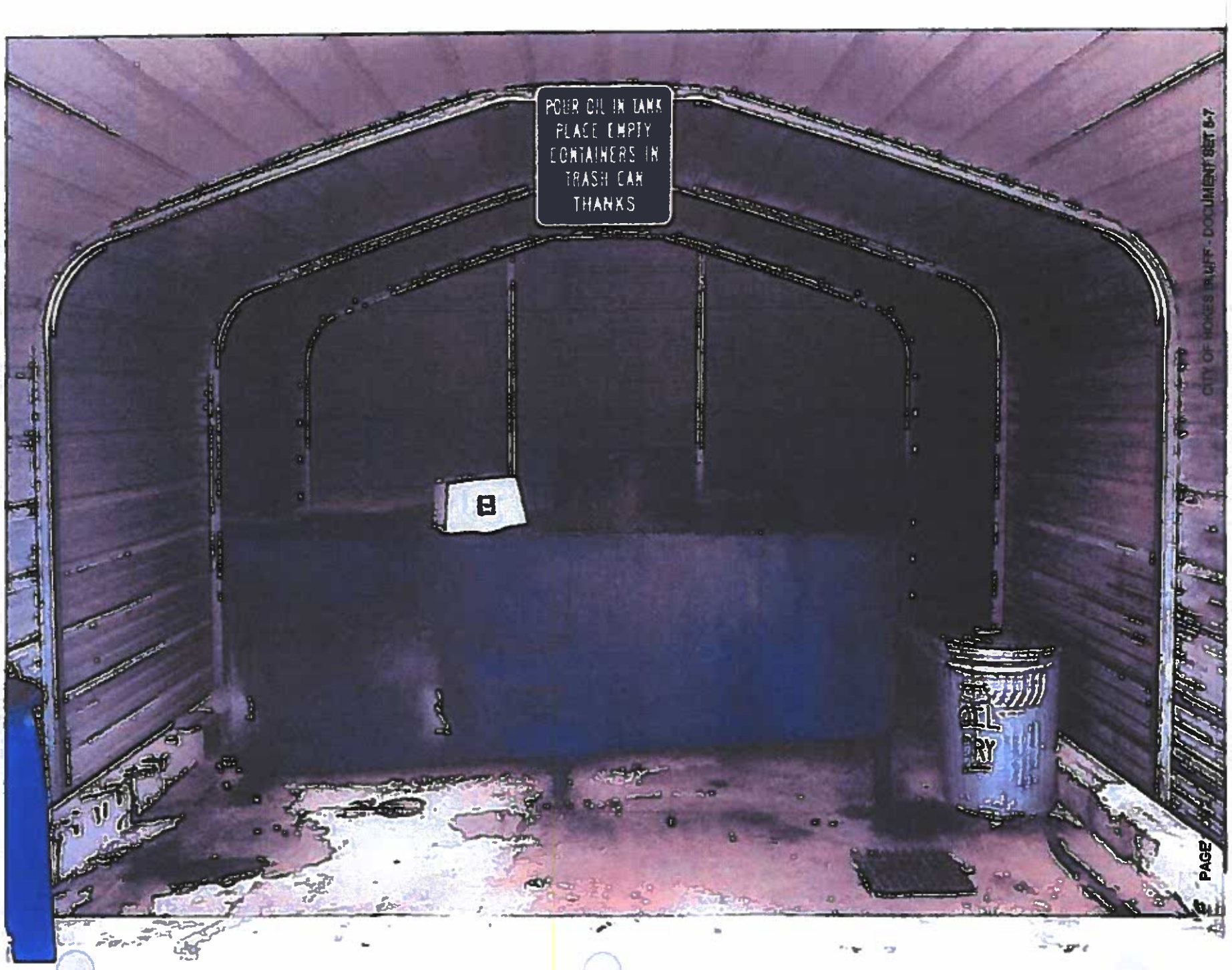

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CITY OF HOKES BLUFF
SANITATION ACCOUNT
P.O. BOX 2338
E. GADSDEN, AL 35903

PEOPLES INDEPENDENT BANK
HOKES BLUFF, ALABAMA 35903

001926
61-394/62

DATE 2/8/2022

PAY TO THE ORDER OF WM Corporate Services, Inc. $ **18,550.32

Eighteen Thousand Five Hundred Fifty and 32/100********** DOLL

WM Corporate Services, Inc.
As Payment Agent
PO Box 55558
Boston, MA 02205-5558

Memo Act# 14-32608-52379 Inv#0044810-4025-3

AUTHORIZED SIGNATURE

⑈001926⑈ ⑆062203942⑆ 20 006 04 2⑈

CITY OF HOKES BLUFF SANITATION ACCOUNT

WM Corporate Services, Inc.		2/8/2022	001926
1250 · GARBAGE AND LANDFILL	Act# 14-32608-52379 Inv# 0044810-4025-3		18,550.32

CASH-PEOPLES SA	Act# 14-32608-52379 Inv#0044810-4025-3	18,550.32

CITY OF HOKES BLUFF SANITATION ACCOUNT

WM Corporate Services, Inc.		2/8/2022	001926
1250 · GARBAGE AND LANDFILL	Act# 14-32608-52379 Inv# 0044810-4025-3		18,550.32

CASH-PEOPLES SA	Act# 14-32608-52379 Inv#0044810-4025-3	18,550.32

ADEM Watermark

INVOICE

WASTE MANAGEMENT

Customer ID:	**14-32608-52379**
Customer Name:	CITY OF HOKES BLUFF
Service Period:	01/01/22-01/31/22
Invoice Date:	01/19/2022
Invoice Number:	0044810-4025-3

How To Contact Us	Your Payment Is Due	Your Total Due
Visit **wm.com** To setup your online profile, sign up for paperless statements, manage your account, view holiday schedules, pay your invoice or schedule a pickup Customer Service: **(800) 607-9509**	**Due Upon Receipt** If full payment of the invoiced amount is not received within your contractual terms, you may be charged a monthly late charge of 2.5% of the unpaid amount, with a minimum monthly charge of $5, or such late charge allowed under applicable law, regulation or contract.	**$34,542.20**

Previous Balance	+	Payments	+	Adjustments	+	Current Invoice Charges	=	Total Account Balance Due
31,847.67		(15,855.79)		0.00		18,550.32		**34,542.20**

IMPORTANT MESSAGES

This invoice constitutes an offer by WM to provide service to you for a specified period. By paying this, you agree to continue service during the specified service period and to the terms of service at www.wm.com/OMR, with no refund(whole or partial) for early cancellation, unless such refund is required by law, regulation or contract. If services are cancelled, you will be assessed a Cart Removal charge of up to $75 plus applicable taxes and charges including fuel surcharge, environmental charge and regulatory cost recovery charge.

Invoice includes price increase. At WM our cost to service our residential customers continues to rise. Your enclosed invoice contains an increase to your service rate (next invoice for some customers billed in arrears). This price increase is in accordance with your applicable service terms, whether franchise, government regulated, subscription or individual service agreement. For residential subscription customers, our service rate may change from billing period to billing period. Contact us if you have any questions.

✂ ---------- *Please detach and send the lower portion with payment --- (no cash or staples)* ----------

WASTE MANAGEMENT

ADVANCED DISPL SVCS SOLID WASTE SE, INC

PO BOX 43410
PHOENIX, AZ 85080
(800) 607-9509
(479) 474-2806
(214) 626-8894 FAX

Invoice Date	Invoice Number	Customer ID (Include with your payment)
01/19/2022	0044810-4025-3	**14-32608-52379**
Payment Terms	**Total Due**	**Amount**
Due Upon Receipt	$34,542.20	

4025000143260852379000448100000185503200003454220 5

I1372R53

CITY OF HOKES BLUFF
3301 ALFORD BEND RD
HOKES BLUFF AL 35903

Remit To: **WM CORPORATE SERVICES, INC.**
AS PAYMENT AGENT
PO BOX 4647
CAROL STREAM, IL 60197-4647

THINK GREEN.®

Printed on recycled paper.

ADEM Watermark

DETAILS OF SERVICE

Details for Service Location:
Abel, Cj, 5537 6th St, Hokes Bluff AL 35903

Customer ID: 14-32603-52374

Description	Date	Ticket	Quantity	Amount
96 Gallon Toter	01/01/22		1.00	11.50
Total Charges for Service Location				11.50

Details for Service Location:
Abel, Fred, 3851 Oak St, Hokes Bluff AL 35903

Customer ID: 14-32603-62372

Description	Date	Ticket	Quantity	Amount
96 Gallon Toter	01/01/22		1.00	11.50

5 EASY WAYS TO PAY

Automatic Payment
Set up recurring payments with us at wm.com/myaccount.

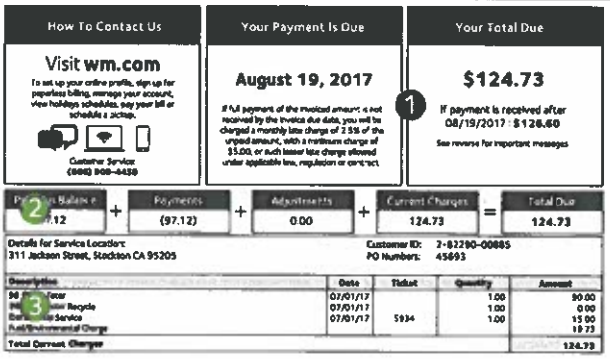
Pay Through Your Financial Institution
Make a payment from your financial institution using your Customer ID.

One-Time Payment
At your desk or on the go, use wm.com or our WM mobile app for a quick and easy payment.

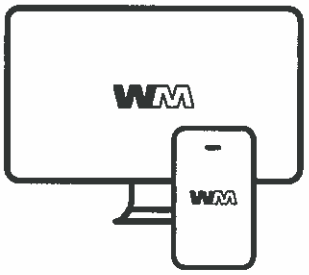
Pay by Phone
Payable 24/7 using our automated system at 866-964-2729.

Mail It
Write it, stuff it, stamp it, mail it. Envelope provided.

HOW TO READ YOUR INVOICE



1. States the date payment is due to Waste Management. Anything beyond that date may incur additional charges. Your **Total Due** is the total amount of current charges and any previous unpaid balances combined.
2. Previous balance is the total due from your previous invoice. We subtract any **Payments Received/Adjustments** and add your **Current Charges** from this billing cycle to get a **Total Due** on this invoice. If you have not paid **all** or a portion of your previous balance, please pay the entire **Total Due** to avoid a late charge or service interruption.
3. Service location details the total current charges of this invoice.



Get More with My WM

Create a My WM profile to enroll in AutoPay & Paperless Billing, manage your services, view your pickup schedule and see your pickup ETA, all in one place.

Scan the QR code to get started today!

If your service is suspended for non-payment, you may be charged a Resume charge to restart your service. For each returned check, a charge will be assessed on your next invoice equal to the maximum amount permitted by applicable state law.

☐ CHECK HERE TO CHANGE CONTACT INFO

List your new billing information below. For a change of service address, please contact Waste Management.

Address 1	
Address 2	
City	
State	
Zip	
Email	
Date Valid	

☐ CHECK HERE TO SIGN UP FOR AUTOMATIC PAYMENT ENROLLMENT

If I enroll in Automatic Payment services, I authorize Waste Management to pay my invoice by electronically deducting money from my bank account. I can cancel authorization by notifying Waste Management at wm.com or by calling the customer service number listed on my invoice. Your enrollment could take 1-2 billing cycles for Automatic Payments to take effect. Continue to submit payment until page one of your invoice reflects that your payment will be deducted.

Email Address	
Date	
Bank Account Holder Signature	

NOTICE: By sending your check, you are authorizing the Company to use information on your check to make a one-time electronic debit to your account at the financial institution indicated on your check. The electronic debit will be for the amount of your check and may occur as soon as the same day we receive your check.

In order for us to service your account or to collect any amounts you may owe (for non-marketing or solicitation purposes), we may contact you by telephone at any telephone number that you provided in connection with your account, including wireless telephone numbers, which could result in charges to you. Methods of contact may include text messages and using pre-recorded/artificial voice messages and/or use of an automatic dialing device, as applicable. We may also contact you by email or other methods as provided in our contract.

Please send all bankruptcy correspondence to RMCbankruptcy@wm.com or PO Box 43290 Phoenix, AZ 85080. Using the email option will expedite your request. (this language is in compliance with 11 USC 342(c)(2) of the Bankruptcy Code)

ADEM Watermark

WASTE MANAGEMENT

Customer ID: **14-32608-52379**
Customer Name: CITY OF HOKES BLUFF
Service Period: 01/01/22-01/31/22
Invoice Date: 01/19/2022
Invoice Number: 0044810-4025-3

DETAILS OF SERVICE - continued

Details for Service Location: **Customer ID:** **14-32603-62372**
Abel, Fred, 3851 Oak St, Hokes Bluff AL 35903

Description	Date	Ticket	Quantity	Amount
Total Charges for Service Location				11.50

Details for Service Location: **Customer ID:** **14-32603-82378**
Abel, Lisa, 3987 Old Us Highway 278 E, Hokes Bluff AL 35903

Description	Date	Ticket	Quantity	Amount
96 Gallon Toter	01/01/22		1.00	11.50
Total Charges for Service Location				11.50

Details for Service Location: **Customer ID:** **14-32604-72379**
Abernathy, Jeff, 3067 Caddell Cir, Hokes Bluff AL 35903

Description	Date	Ticket	Quantity	Amount
96 Gallon Toter	01/01/22		1.00	11.50
Total Charges for Service Location				11.50

Details for Service Location: **Customer ID:** **14-32605-22379**
Abernathy, Mike, 2411 Cove Cir S, Hokes Bluff AL 35903

Description	Date	Ticket	Quantity	Amount
96 Gallon Toter	01/01/22		1.00	11.50
Total Charges for Service Location				11.50

Details for Service Location: **Customer ID:** **14-32605-72378**
Abraham, Michael, 2151 Cove Cir, Hokes Bluff AL 35903

Description	Date	Ticket	Quantity	Amount
96 Gallon Toter	01/01/22		1.00	11.50
Total Charges for Service Location				11.50

Details for Service Location: **Customer ID:** **14-32605-82376**
Abraham, Michael, 2430 Cove Cir S, Hokes Bluff AL 35903

Description	Date	Ticket	Quantity	Amount
96 Gallon Toter	01/01/22		1.00	11.50
Total Charges for Service Location				11.50

Details for Service Location: **Customer ID:** **14-32606-32376**
Adair, Judy Or Aj, 8453 Us Highway 278 E, Hokes Bluff AL 35903

Description	Date	Ticket	Quantity	Amount
96 Gallon Toter	01/01/22		1.00	11.50
Total Charges for Service Location				11.50

Details for Service Location: **Customer ID:** **14-32607-32375**
Adcock, Jessica, 9204 Goodwin Ln, Hokes Bluff AL 35903

Description	Date	Ticket	Quantity	Amount
96 Gallon Toter	01/01/22		1.00	11.50
Total Charges for Service Location				11.50

Details for Service Location: **Customer ID:** **14-32607-92372**
Affeldt, John, 6843 Us Highway 278 E, Hokes Bluff AL 35903

Description	Date	Ticket	Quantity	Amount
96 Gallon Toter	01/01/22		1.00	11.50
Total Charges for Service Location				11.50

ADEM Watermark



ADEM Watermark