



**Gannett Fleming**

**Excellence Delivered *As Promised***

July 30, 2019  
File # 55929.005

Ms. Mae Willkom & Mr. William Myers  
Bureau of Remediation and Redevelopment  
Wisconsin Department of Natural Resources, WCR  
1300 West Clairemont Avenue  
P.O. Box 4001  
Eau Claire, WI 54702-4001

Re: **2018 Injection Report & Work Plan for Additional Injections**  
WRR Environmental Services, Eau Claire  
WDNR BRRTS No. 02-18-000274  
WDNR FID No. 618 026 530  
EPA ID No. WID 990 829 475

Dear Ms. Willkom & Mr. Myers:

On behalf of WRR Environmental Services (WRR), Gannett Fleming, Inc. (GF) is submitting this report that summarizes the injection of reducing reagents into the groundwater at the WRR facility in Eau Claire in 2018. A pilot test was conducted in June 2018 in accordance with GF's February 15, 2018, *Injection Work Plan & Permit Request* approved by the Wisconsin Department of Natural Resources (WDNR) on April 25, 2018. The results of the pilot test were summarized in GF's October 3, 2019, *Pilot Test Injection Report & Work Plan for Full-Scale Injections*. The first phase of full-scale injections was conducted in October 2018 and is discussed in this report. Figure 1 is a site location map, and Figure 2 is a site map that shows the locations where the injections were conducted in 2018. A completed certification page for the report is also attached.

In June and October 2018, a total of 20,020 gallons of water mixed with the following reagents were injected into the groundwater:

- 10,382 lbs of emulsified vegetable oil (EVO) - RNAS' Newman Zone 55 or HRO
- 4,800 lbs of a pH buffer containing calcium carbonate – RNAS' Neutral Zone
- 17.5 gallons (approximately 160 lbs) of an oxygen scavenger – RNAS' Newman Zone OS
- 1,800 lbs of micro-scale zero valent iron ( $\mu$ ZVI) – Regenesi's MicroZVI
- 18-liters of a Dehalococcoides culture (DHC – The microbes that facilitate the breakdown of chlorinated volatile organic compounds or CVOCs) – APTIM's SDC-9

Product information and safety data sheets for the reagents listed above were included in GF's February 15 and October 3, 2018, work plans.

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**Gannett Fleming, Inc.**

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The 20,020 gallons of reagent mixture were injected into 47 borings and one multipurpose soil vapor extraction and injection well (SVE-4) in the northern portion of the WRR facility. The pilot test and first phase of the full-scale injections were approved by the WDNR in its letter to WRR on April 25, 2018, and its notice to proceed email to GF on October 12, 2018, respectively. A summary of the injection activities conducted in June and October 2018 follows, along with a section discussing the results of groundwater samples collected from wells in and downgradient of the areas where the injections occurred. Also included with this report is a work plan for the injection of additional reducing reagents into other areas on the WRR site. We request that the WDNR review and approve the proposed work plan for additional injections that are tentatively scheduled during the weeks of August 19 and 26, 2019.

### **June 2018 - Pilot Test Injection Activities**

A pilot-test was conducted in June 2018 that consisted of injecting a total of 1,382 lbs of EVO, 600 lbs of  $\mu$ ZVI, 3 liters of DHC culture, and 5 gallons of OS as a 5,020-gallon (total) mixture into 17 borings (IB-1 through IB-15, IB-A, and IB-B) and well SVE-4. The OS was pre-mixed with the water to reduce the dissolved oxygen (DO) concentration below 2.0 milligrams per liter (mg/L) and to reduce the oxidation-reduction potential (ORP) below zero before the other reagents and microbes were added. Figure 3 shows the locations of the pilot test injection borings and SVE-4.

Table 1 lists the total volume and mixture of reducing reagents injected into each boring during the June pilot test injection activities and the interval injected in each boring. See GF's October 3, 2019, *Pilot Test Injection Report & Work Plan for Full-Scale Injections* for more detail on the June 2018 pilot test.

### **October 2018 – First Phase of Full-Scale Injections**

The first phase of full-scale injections was conducted during the weeks of October 15 and 22, 2018, and consisted of injecting a total of 9,000 lbs of EVO, 4,800 lbs of a pH buffer containing calcium carbonate, 1,200 lbs of  $\mu$ ZVI, 15 liters of DHC culture, and 12.5 gallons of OS as a 15,000-gallon (total) mixture into 30 borings (IB-16 through IB-45). Approximately 500 gallons of mixture were injected into each of the borings in October 2018. See Table 1 for the interval injected in each boring and Figure 3 for the borings injected in October 2018. After the borings were injected, they were abandoned with bentonite, and the surface patched with asphalt.

### **Pre- & Post-Injection Groundwater Sample Collection & Results**

To characterize the aquifer and measure its conduciveness for reductive biodegradation of CVOCs, GF collected groundwater samples from W-32, W-33, and W-34 in August and October

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2017 and May 2018 and from SVE-4 in June 2018 prior to the injection of reducing reagents. To assess the effectiveness of the pilot test, post-injection samples were collected on a quarterly basis from wells W-32 and W-34 in September and December 2018 and March and May 2019. Additional samples were collected from W-32 and W-34 on other occasions and from W-33 and SVE-4 to assess the effect of the injections in those areas. Table 2 provides a summary of the sample parameters for which each well's samples were analyzed on each date.

**Groundwater Sample Results**

For reductive dechlorination to occur at any significant level, the groundwater and aquifer should be anaerobic (i.e., have a DO concentration below 2.0 mg/L and negative ORP value); have a neutral pH (between 6.0 and 8.0); have a relatively elevated concentration of DHC microbes ( $\geq 10^4$  cells per milliliter); and have a sufficient carbon source (total organic carbon [TOC] concentration  $> 20$  mg/L) to serve as an energy source for the microbes. To monitor the effect of the injections in and downgradient of the areas injected in 2018, GF collected pre- and post-injection groundwater samples for VOCs analyses and the laboratory and/or field measurement of the following parameters:

- Methane, ethane, and ethene (MEE) – to measure methanogenesis and the intermediate breakdown products of vinyl chloride.
- Inorganic compounds – sulfate, alkalinity, dissolved iron and manganese, and nitrogen.
- TOC – to measure the amount of carbon available as electron donor/food source for microbes that facilitate reductive dechlorination.
- Remediation by natural attenuation (RNA) parameters – DO, ORP, pH, temperature, and conductivity.
- DHC – the microbes that facilitate reductive dechlorination of CVOCs.

Below is a summary of how each parameter can be used to assess the relative capacity of the aquifer to degrade CVOCs:

Parameter	Optimal Value Concentration	Comments
DO	<0.5 mg/L	DO below 2.0 mg/L is indicative of anaerobic conditions; however, VC can oxidize at higher DO concentrations.
ORP	< - 100 mV	A negative ORP value is indicative of an anaerobic environment; reductive pathway is possible at <50 mV.
TOC	>20 mg/L	Carbon is an electron donor/energy source for microbes; however, TOC > 500 mg/L can inhibit microbial growth.

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Temperature	>20°C	Moderately high temps increase biochemical reactions.
pH	6 < pH <8	Microbial activity can be inhibited but still occur above 5 and below 9.
MEE	> 0.5 mg/L	Methane is the ultimate degradation product but also can be generated from natural sources; presence of ethane and ethene are indicative of biotic degradation of VC under anaerobic conditions.
Sulfate	<20 mg/L	Sulfate can compete for electrons at higher concentrations.
Alkalinity	>2X Background	Increased alkalinity moderates changes to the groundwater's pH.
Dissolved Fe	>1 mg/L	Indicative of anaerobic conditions; iron can also facilitate abiotic degradation of CVOCs.
Dissolved Mn	>Background	Mn on soil can serve as electron source, and an increase in its concentration is indicative of reducing conditions.
DHC	>10 <sup>6</sup> cells/mL	Reductive dechlorinate still occurs at lower concentrations but at a slower rate.

Sources: WDNR's *Understanding Chlorinated Hydrocarbon Behavior in Groundwater* – RR-669, October 2014; and USEPA's *Technical Protocol for Evaluating Natural Attenuation of Chlorinated Solvents in Ground Water* – September 1998.

Table 3 summarizes the concentrations of VOCs, inorganic compounds, TOC, and RNA parameters measured in the groundwater samples collected from W-32 through W-34 and SVE-4. See Figure 2 for well locations. Figure 4 lists the concentrations of CVOCs measured in the pre- and post-injection groundwater samples collected from the borings and wells in the northern portion of the facility. Note that both VOC and CVOc concentrations are in micrograms per liter (µg/L). Table 4 presents the results of groundwater samples analyzed for microbes (DHC and DHBt). The laboratory reports for all groundwater samples collected from May through September 2018 were included in GF's October 2018 report. The laboratory reports for all groundwater samples collected from October 2018 through July 2019 are included with this report as Appendix A.

Based on the slug tests conducted in 2011, Short, Elliot and Hendrickson calculated that the hydraulic conductivity of the shallow aquifer ranges from 0.75 to 5.6 ft/day. The regional groundwater flow direction in the area of WRR is to the west toward Lowes Creek approximately 2,000 feet from the site. However, the groundwater flow on site is influenced in part by the pumping of up to 45 gallons per minute (gpm) by several recovery wells and the WRR production well and by the discharge of approximately 14,400 to 21,600 gallons per day of treated water into

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the adsorption pond southwest of the WRR facility. Figure 5 shows the groundwater flow direction in the shallow aquifer on site measured in May 2019 with the WRR production and recovery wells in operation. As shown on Figure 5, there is a depression in the water table in the north-central portion of the WRR parcel with the groundwater flowing toward the center of the site from the eastern and southwestern portions of the facility. This flow direction aligns with the general distribution of VOCs in the groundwater, which are highest in the center of the site and have lower concentrations along the eastern and western property lines.

The analytical results of pre- and post-injection groundwater samples collected from wells W-32, W-33, W-34, and SVE-4 are provided in Tables 3 and 4. Comments & observations regarding the analytical results for each well follow.

#### **Well W-32 Results**

W-32 is located downgradient of the area where the pilot test was conducted in June and within the area where the first phase of the full-scale injections was conducted in October 2018. The results of the post-injection groundwater samples collected from W-32 were not indicative of reducing conditions that facilitate the degradation of CVOCs. The total VOC concentrations measured in the post-injection samples collected in March and May 2019 (23,437 and 21,484 ug/L, respectively) were roughly equivalent to the VOC concentration measured in the pre-injection sample collected in May 2018 (23,248 µg/L). Additionally, with very minor exceptions measured in the December 2018 and March and May 2019 samples, no DHC microbes were detected in the four post-injection groundwater samples. Additionally, the positive ORP and elevated DO and sulfate concentrations measured in the post-remediation samples are indicative of aerobic conditions that are not conducive to reductive dechlorination. Based on these results, the reagents that were injected into the borings near W-32 did not extend more than 25 feet from where they were injected and had not reached that well after 11 months in the groundwater. See Tables 3 and 4 for specific concentrations of each parameter measured in the pre- and post-injection samples.

#### **Well W-33 Results**

W-33 is side- and downgradient of SVE-4, which was injected in June 2018, and other areas that were injected in October 2018. Interestingly, there was evidence that reducing conditions were present in the area near W-33 prior to the pilot test injections in June 2018, including elevated concentrations of dissolved iron and manganese and a negative ORP. Additionally, relatively elevated concentrations of DHC microbes were measured in the groundwater sample collected from W-33 in September 2018. With minor exceptions, the DHC concentrations measured in September 2018 were about two orders of magnitude greater than DHC concentrations measured

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in W-34, which is located in the area where the pilot test injections were conducted. W-33 is located over 100 feet from the areas that were injected, and we believe it is unlikely that the reagents injected in June and October 2018 migrated to that area of the site. However, the total VOC concentration measured in the most recent sample collected from W-33 in March 2019 was about half the concentration measured in samples collected before June 2018 when the pilot test injections occurred. See Table 3 for specific concentrations of each compound measured in W-33 between May 2017 and March 2019.

### **Well W-34 Results**

Well W-34 is located in the area where the pilot test injections were conducted in June 2018. The relatively low sulfate, nitrogen, and DO concentrations; the elevated dissolved iron and manganese and TOC concentrations; and the negative ORP are indicative of an anaerobic environment conducive to the growth of DHC microbes and reductive dechlorination as measured by the relatively elevated DHC concentrations measured in May 2019 ( $> 10^{-6}$  cells/mL). As shown in Table 3, total VOC concentrations measured in post-injection samples were about half of pre-injection samples, with tetrachloroethylene (PCE), trichloroethylene (TCE), and 1,1,1-trichloroethane (TCA) concentrations decreasing the most. As expected, the decrease in PCE and TCE led to an increase in the concentrations of their breakdown products cis-1,2-dichloroethylene (DCE) and vinyl chloride (VC).

While the general decrease in VOC concentrations was a good sign that microbe-facilitated reductive dechlorination was occurring, there were significant increases in PCE, TCE, and 1,1,1-TCA concentrations measured in March and May 2019. The rebound in PCE, TCE, and 1,1,1-TCA concentrations may be due to the downward vertical migration of the compounds from the unsaturated soil in the area and/or fluctuating water levels contacting a source of those compounds in the capillary fringe. GF plans to collect soil vapor samples from W-34 and evaluate whether installation of an SVE well in that area is appropriate.

### **Well SVE-4 Results**

WRR uses SVE-4 as both a vent well for soil vapor extraction and as an injection well. Approximately 220 gallons of mixture containing about 30 lbs of reducing reagents and microbes were injected into SVE-4 during the pilot test in June 2018. A blower was connected to SVE-4 and began venting it on October 1, 2018. The gate valve to SVE-4 was shut on October 15 during the injection activities in its vicinity and then reopened on October 18, 2018. SVE-4 continued venting until November 1 when it was turned off due to elevated PCE concentrations in the blower exhaust gas. During the winter of 2018-19, the blower's exhaust gas stack was extended above 25 feet, and the vacuum blower resumed operation on March 19, 2019.

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As expected, the concentrations of DHC and other indicator compounds and parameters measured in post-injection samples indicated that the groundwater was anaerobic and supportive of reductive dechlorination. As shown in Table 3, total and specific VOC concentrations decreased significantly in post-injection groundwater samples. However, like W-34, there was a noticeable rebound in the concentrations of PCE, TCE, and 1,1,1- and 1,1,2-TCA measured in the sample collected in March 2019. This is likely due to fluctuating water levels contacting soil containing a source of those compounds. The vacuum measured at SVE-4 when it is venting is 6 inches of mercury (i.e., 78 inches of water column), which causes mounding of the groundwater in the well. This would account for the rebound in the PCE, TCE, and 1,1,1- and 1,1,2-TCA concentrations measured in the sample collected on March 27, 2019, eight days after the blower was restarted. Whatever the case, we expect CVOC concentrations in SVE-4 will decrease over time due to reductive dechlorination in the groundwater and removal of CVOCs from the soil above it by the operation of SVE-4.

### **Methane, Ethene, Ethane Concentrations**

Table 3 includes the concentrations of MEE measured in the pre- and post-injection samples in W-32 through W-34 and SVE-4. These compounds are one step above the end byproducts of carbon dioxide, water, and chloride ions resulting from reductive degradation of chlorinated ethenes and ethanes, although methane is also generated by several anaerobic reactions, including the breakdown of naturally-occurring and man-made carbon compounds such as vegetable oil.

Methane concentrations in the groundwater were relatively low, with the highest concentration (380 ug/L) measured in SVE-4 in March 2019. To evaluate whether methane gas was being generated at concentrations that could pose a potential risk of explosion, GF used a flame-ionization detector (FID) equipped with a filter to measure methane gas concentrations in a vapor pin (VP-1) installed next to underground utility lines that pass through the pilot test area and enter the office building. Methane readings were taken with the FID in October and December 2018 and March and May 2019. All readings were below the meter's detection limits (<0.1 parts per million by volume or ppmv). See Figure 3 for the location of VP-1.

The lower explosive limit (LEL) is 5 percent gas by volume or 50,000 ppmv. Based on the FID readings and the relatively low dissolved methane concentrations measured in the groundwater (380 ug/L), we do not believe that methane gas does or will pose a risk of accumulating in the sub-surface soil gas at concentrations approaching 10 percent of its LEL (5,000 ppmv). Therefore, **GF does not plan to continue monitoring methane concentrations in VP-1.**

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### **Summary of Effectiveness of 2018 Injections**

Generally speaking, the analytical results of groundwater samples collected from SVE-4 and W-34 were indicative of improved groundwater quality in the portion of the aquifer where the reducing reagents were injected and showed that CVOC concentrations were significantly reduced due to microbe-facilitated reductive dechlorination. However, PCE, TCE, and 1,1,1-TCA concentrations in both wells rebounded significantly in March and May 2019, likely due residual sources of the compounds in the capillary fringe and/or unsaturated soil. SVE-4 resumed operating in March 2019 to remove VOCs from the unsaturated soil, and it may be appropriate to install another vent well near W-34 to remove VOCs from the unsaturated soil in that area as well.

In contrast to W-34 and SVE-4, the analytical results of groundwater samples collected from W-32 did not display any of the characteristics of anaerobic conditions even though that well was in the area where the first phase of full-scale injections occurred in October 2018. As discussed below, supplemental injections of reducing reagents are planned for August 2019 to provide more complete coverage in that area of the site.

Taken collectively, the decrease in DO and sulfate concentrations, the negative ORP values, and the increase in dissolved iron and manganese concentrations measured in the post-injection samples collected from W-34 and SVE-4 are indicative of an anaerobic environment conducive to the growth of DHC and DHBt microbes that facilitate reductive dechlorination of CVOCs.

### **Work Plan for Additional Injections**

Overall, GF believes that the injections of reducing reagents in 2018 were successful in reducing CVOC concentrations and creating an anaerobic environment conducive to microbe-facilitated reductive dechlorination. Additionally, the average flow rate of the injections was generally above 4.0 gpm, which should allow the additional injections to be completed in a relatively time-efficient and economical manner.

GF proposes to conduct additional injections in the northern portion of the WRR site during the weeks of August 19 and 26, 2019. Figure 3 is a site plan showing the area where the next phase of injections in the northern portion of the site would occur. Additionally, GF proposes to inject reducing reagents into the groundwater in the southeastern portion of the site. Figure 6 presents the VOC concentrations measured in groundwater samples collected from W-35 and Geoprobe borings in that area, and Figure 7 shows the proposed locations of the injection borings. Tables 4 and 5 present the concentrations of DHC and VOC/RNA parameters measured in W-35 in October 2018 when it was installed and in March and May 2019. As shown in Table 4, traces of



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DHC were detected in the groundwater sample collected in March 2019 and analyzed for microbes. As shown in Table 5, the current groundwater conditions (i.e., the elevated ORP readings and sulfate and DO concentrations and low pH and TOC concentrations) are aerobic and not favorable for the growth of DHC microbes. However, those conditions were similar to the conditions measured in the pre-injection samples collected from W-34 and SVE-4, and GF believes that the injection of reducing reagents will successfully increase microbial activity and decrease CVOC concentrations in the southeastern area to levels below concern.

Additionally, GF believes it may be beneficial to inject reducing reagents into the groundwater in the area west of Building E-1 extending south to Warehouse A, as shown on Figure 2. Elevated concentrations of CVOCs were detected in groundwater samples collected from the Geoprobe borings in that area in 2013 and 2016 and in W-33. However, as discussed above, there is some evidence that microbially-facilitated degradation of CVOC is occurring in that area, as indicated by the decreasing CVOC concentrations and moderately elevated microbe concentrations measured in W-33, as shown in Tables 3 and 4, respectively. GF will continue to monitor CVOC and DHC concentrations and RNA parameters in W-33 to determine if reagents injected in the northern portion of the site in 2018 have migrated to that area.

As was done in October 2018, injection borings would receive between 250 and 500 gallons of a mixture of the reagents listed below. All borings will be injected with a mixture of Newman Zone OS, EVO, and Neutral Zone, and DHC microbes. Borings located in areas where elevated CVOC concentrations are present in the groundwater (i.e., one or more compounds are present at concentrations three or more orders of magnitude above their NR 140 enforcement standard) will receive injections that include  $\mu$ ZVI. Each boring will be injected to a depth of at least 5 feet below the surface of the water table. See Table 1 for the amount of each reagent that was used in October 2018 to prepare a 500-gallon mixture.

Though GF is planning to conduct the supplemental injections in the northern portion of the site and the southeastern portions of the site in August 2019, we are requesting approval to inject additional reagents in the groundwater in any of those areas and the western area at a later date, should groundwater sample results indicate that they are needed to maintain anaerobic condition, adjust the pH, and/or supplement the microbial population in the groundwater. Therefore, we are requesting approval to inject the following quantities of the following reagents:

- Micro-scale Zero Valent Iron ( $\mu$ ZVI) – 10,000 lbs
- Newman Zone 55 or HRO EVO - 50,000 lbs
- Neutral Zone – 25,000 lbs
- Newman Zone OS – 1,500 lbs
- SDC-9 DHC microbes – 90 liters

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- Sodium bicarbonate – 1,000 lbs

The borings that will receive the reagents during the next phase of injections in the northern portion of the site are highlighted in green on Figure 3. Note that two of the proposed injection boring locations to the southeast of SVE-4 are not shown on Figure 3. See Figure 2 for the area southeast of SVE-4 where the additional injections would occur that are not shown on Figure 3. Figure 7 shows the proposed injection boring locations in the southeastern area of the site.

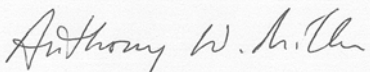
Groundwater samples will be collected on a semi-annual basis from W-32 through W-35 and analyzed for VOCs and RNA parameters in the field. Additional samples may also be collected from those wells and SVE-4 for analyses of microbes and other parameters, as necessary, to evaluate groundwater conditions within and downgradient of the injected areas. The analytical results of those samples will be included with the annual Operation and Maintenance report.

The proposed injection activities in the northern and southeastern portions of the WRR facility are scheduled for the weeks of August 19<sup>th</sup> and 26<sup>th</sup>. As you requested, a Notice of Intent - Contaminated Groundwater from Remedial Action Operations form for Wisconsin Pollutant Discharge Elimination System (WPDES) Wastewater Discharge Permit WI-0046566-07 is being submitted to the WDNR separately from this work plan.

A check for \$700 for the WDNR's technical review is included with this request, as per NR 749. Please review the attached data, and let us know if you have any questions or need additional information to approve our request to inject the additional reducing reagents listed above into the groundwater at the WRR facility.

Sincerely,

GANNETT FLEMING, INC.



Anthony W. Miller, P.S.S.  
Senior Environmental Scientist

AWM/jec/Enc.

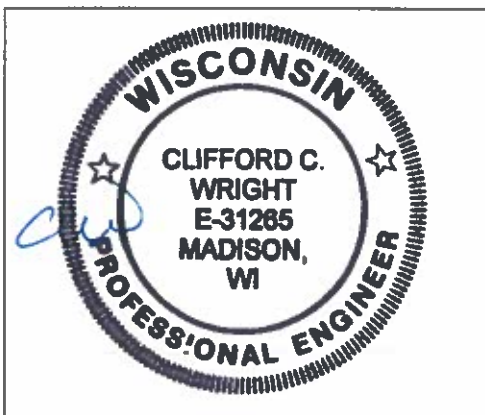
ecc: Jim Hager, Bob Fuller, Becky Anderson (WRR)  
Matthew Vitale (WDNR – Eau Claire)  
Douglas Coenen (WDNR – Madison)

**ENGINEERING AND HYDROGEOLOGIST CERTIFICATIONS**

I hereby certify that I am a registered professional engineer in the State of Wisconsin, registered in accordance with the requirements of ch. A-E 4, Wis. Adm. Code; that this document has been prepared in accordance with the rules of Professional Conduct in ch. A-E 8, Wis. Adm. Code; and that, to the best of my knowledge, all information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. NR 700 to 726, Wis. Adm. Code.

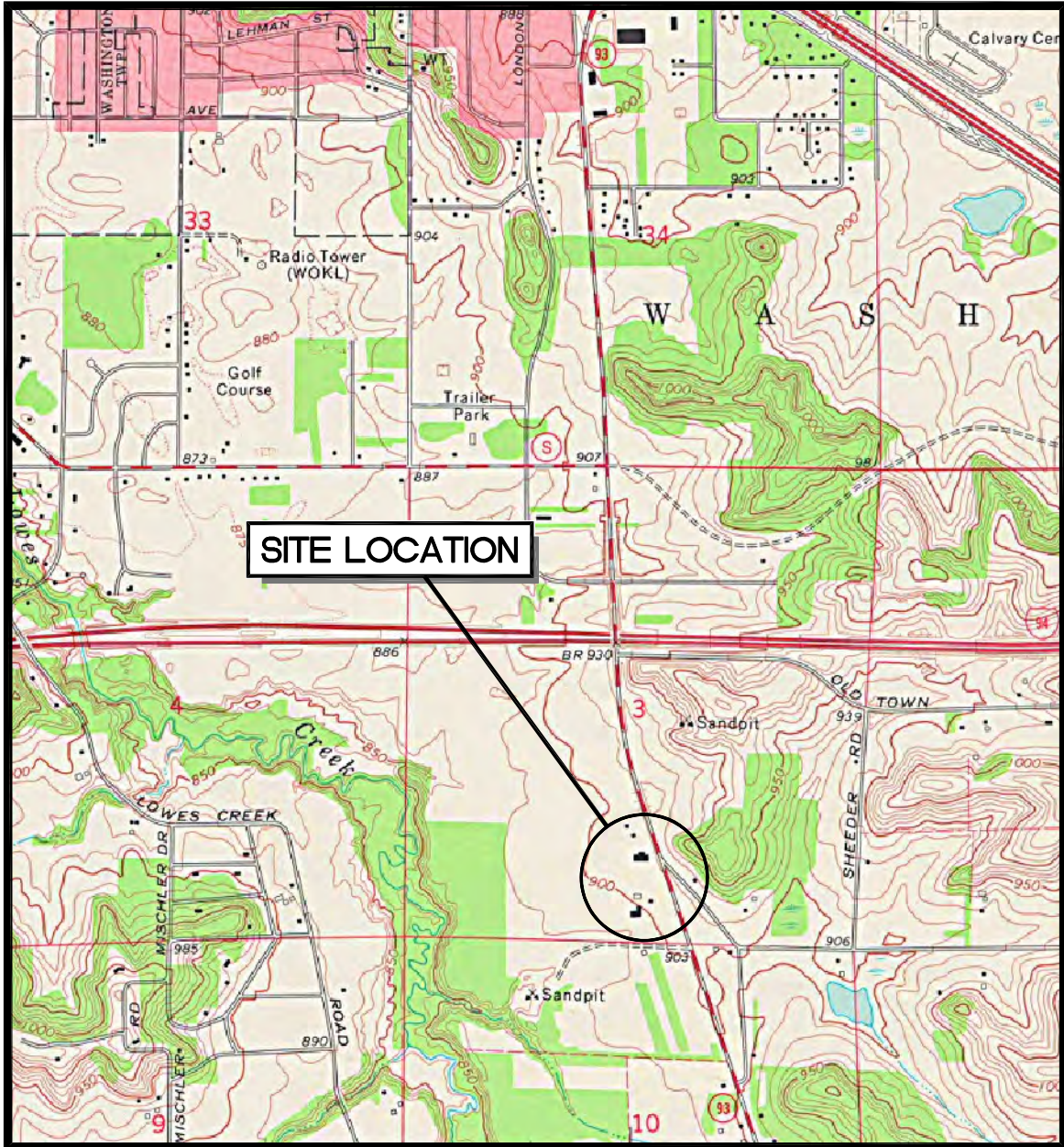
Print Name Clifford C. Wright	Title Project Engineer
Signature <i>Clifford C. Wright</i>	Date 7/29/2019

P.E. Seal for E-31265:



I hereby certify that I am a hydrogeologist as that term is defined in s. NR 712.03(1), Wis. Adm. Code, am registered in accordance with the requirements of ch. GHSS 2, Wis. Adm. Code, or licensed in accordance with the requirements of ch. GHSS 3, Wis. Adm. Code, and that, to the best of my knowledge, all information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. NR 700 to 726, Wis. Adm. Code.

Print Name Clifford C. Wright	Title Project Geologist
Signature <i>Clifford C. Wright</i>	Date 7/29/2019



APPROX. SCALE: 1 INCH = 2,150 FEET



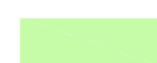















7.5 MIN TOPOGRAPHIC MAP  
EAU CLAIRE EAST, WISCONSIN  
1972

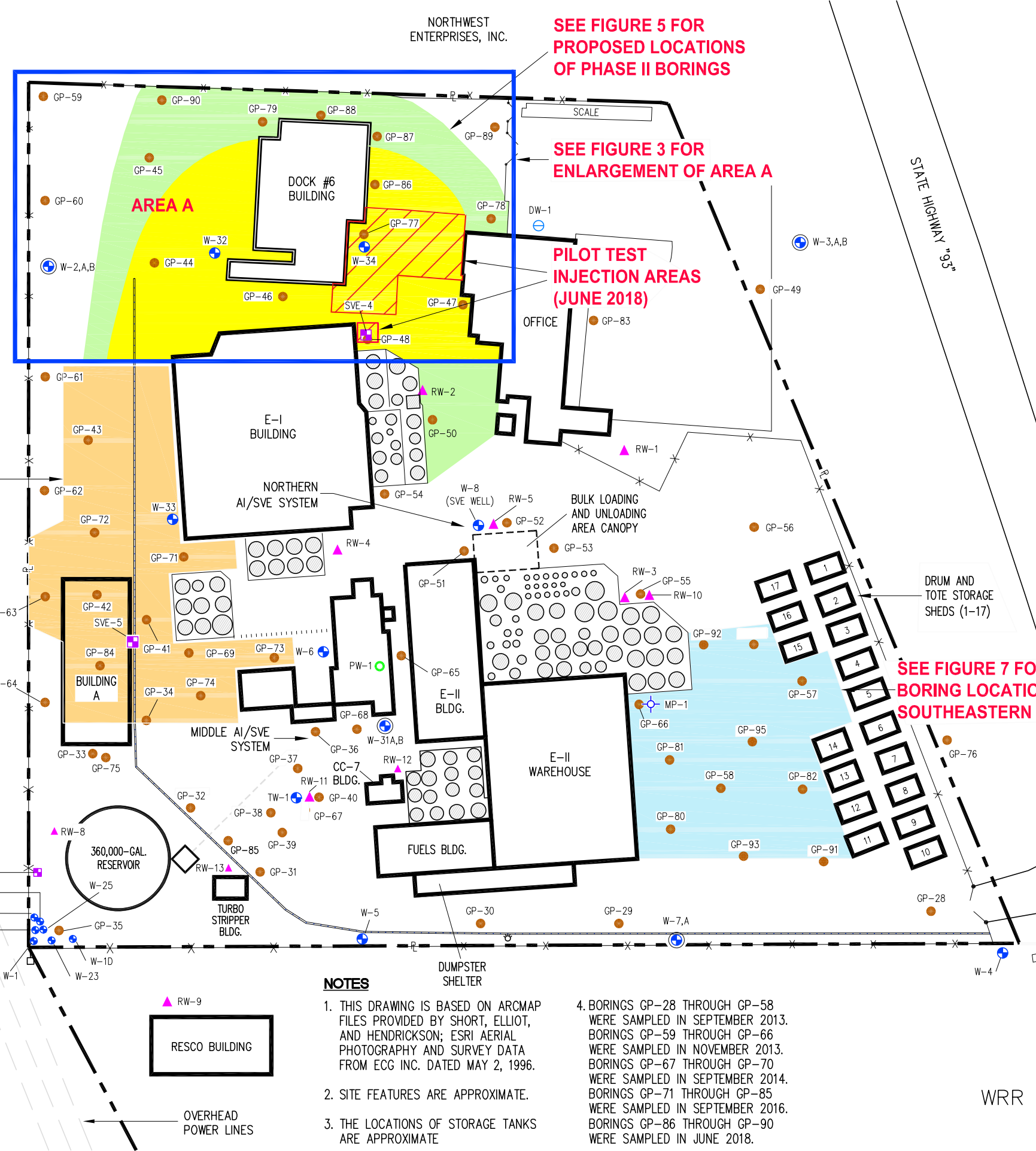
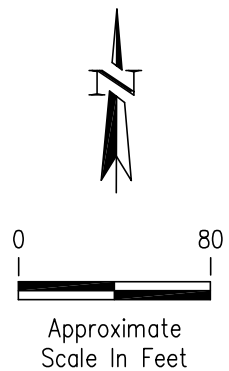


## LOCATION MAP

WRR ENVIRONMENTAL SERVICES, INC.  
5200 RYDER ROAD  
EAU CLAIRE, WISCONSIN

LEGEND

-  PILOT TEST AREA (6/18)
-  PHASE I FULL-SCALE AREA A INJECTIONS (10/18)
-  PROPOSED PHASE II OF FULL-SCALE AREA A INJECTIONS
-  PROPOSED SOUTHEASTERN INJECTION AREA
-  PROPOSED WESTERN INJECTION AREA
-  GEOPROBE BORING SAMPLE LOCATION
-  MONITORING WELL
-  MONITORING WELL NEST
-  SVE WELL
-  RECOVERY WELL
-  PRODUCTION WELL
-  DRINKING WATER WELL
-  1-INCH-DIAMETER MONITORING POINT
-  ABOVEGROUND STORAGE TANK (APPROXIMATE LOCATION)
-  POWER POLE
-  LIGHT POLE
-  FENCE
-  SURFACE WATER DRAINAGE DITCH



NOTES

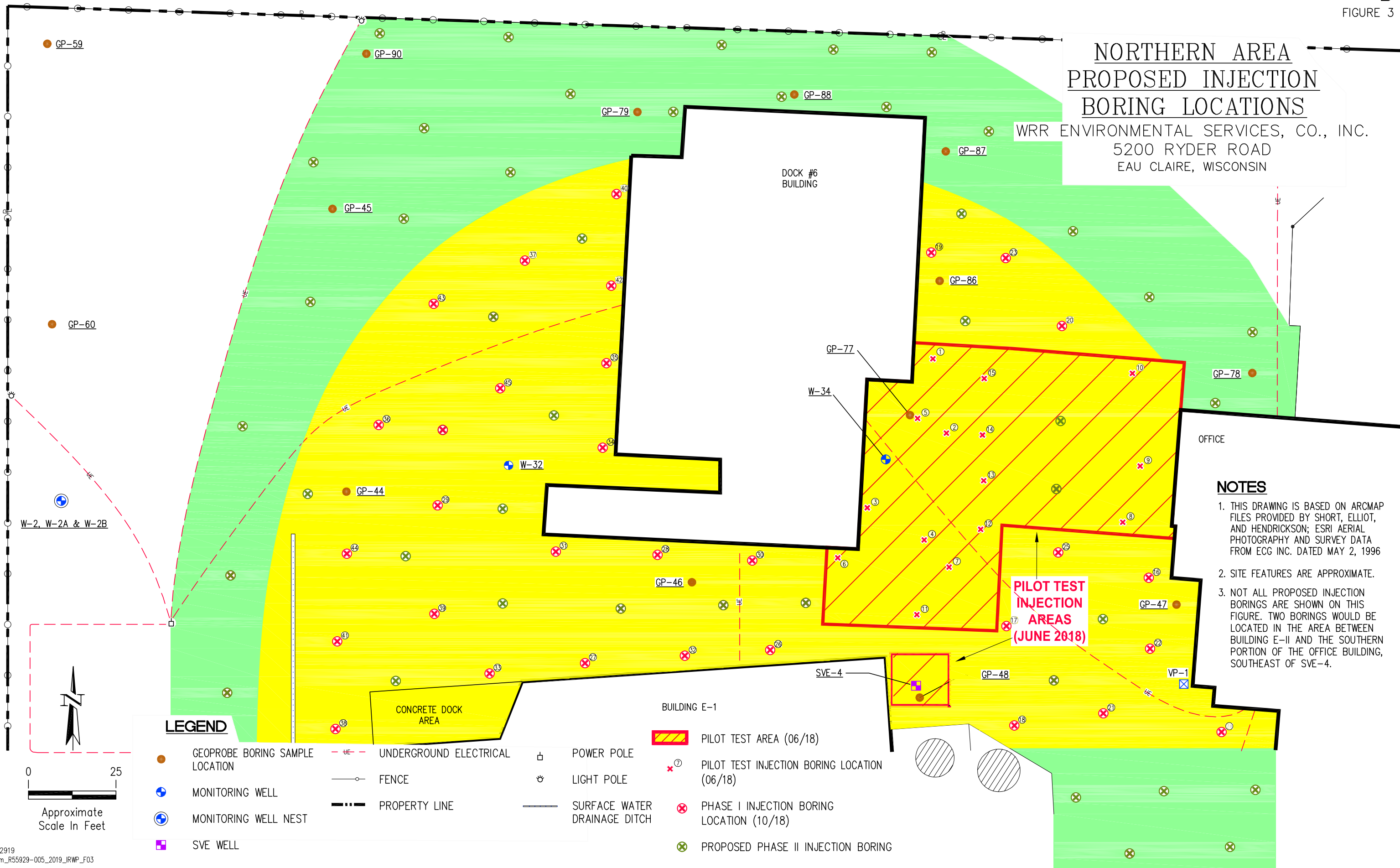
1. THIS DRAWING IS BASED ON ARCMAP FILES PROVIDED BY SHORT, ELLIOT, AND HENDRICKSON; ESRI AERIAL PHOTOGRAPHY AND SURVEY DATA FROM ECG INC. DATED MAY 2, 1996.
2. SITE FEATURES ARE APPROXIMATE.
3. THE LOCATIONS OF STORAGE TANKS ARE APPROXIMATE
4. BORINGS GP-28 THROUGH GP-58 WERE SAMPLED IN SEPTEMBER 2013. BORINGS GP-59 THROUGH GP-66 WERE SAMPLED IN NOVEMBER 2013. BORINGS GP-67 THROUGH GP-70 WERE SAMPLED IN SEPTEMBER 2014. BORINGS GP-71 THROUGH GP-85 WERE SAMPLED IN SEPTEMBER 2016. BORINGS GP-86 THROUGH GP-90 WERE SAMPLED IN JUNE 2018.

SITE PLAN SHOWING  
 PILOT TEST,  
 FULL-SCALE, AND  
 PROPOSED  
 INJECTION AREAS

WRR ENVIRONMENTAL SERVICES, CO., INC.  
 5200 RYDER ROAD  
 EAU CLAIRE, WISCONSIN

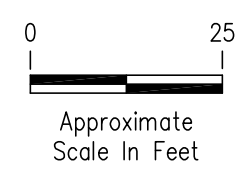
# NORTHERN AREA PROPOSED INJECTION BORING LOCATIONS

WRR ENVIRONMENTAL SERVICES, CO., INC.  
5200 RYDER ROAD  
EAU CLAIRE, WISCONSIN



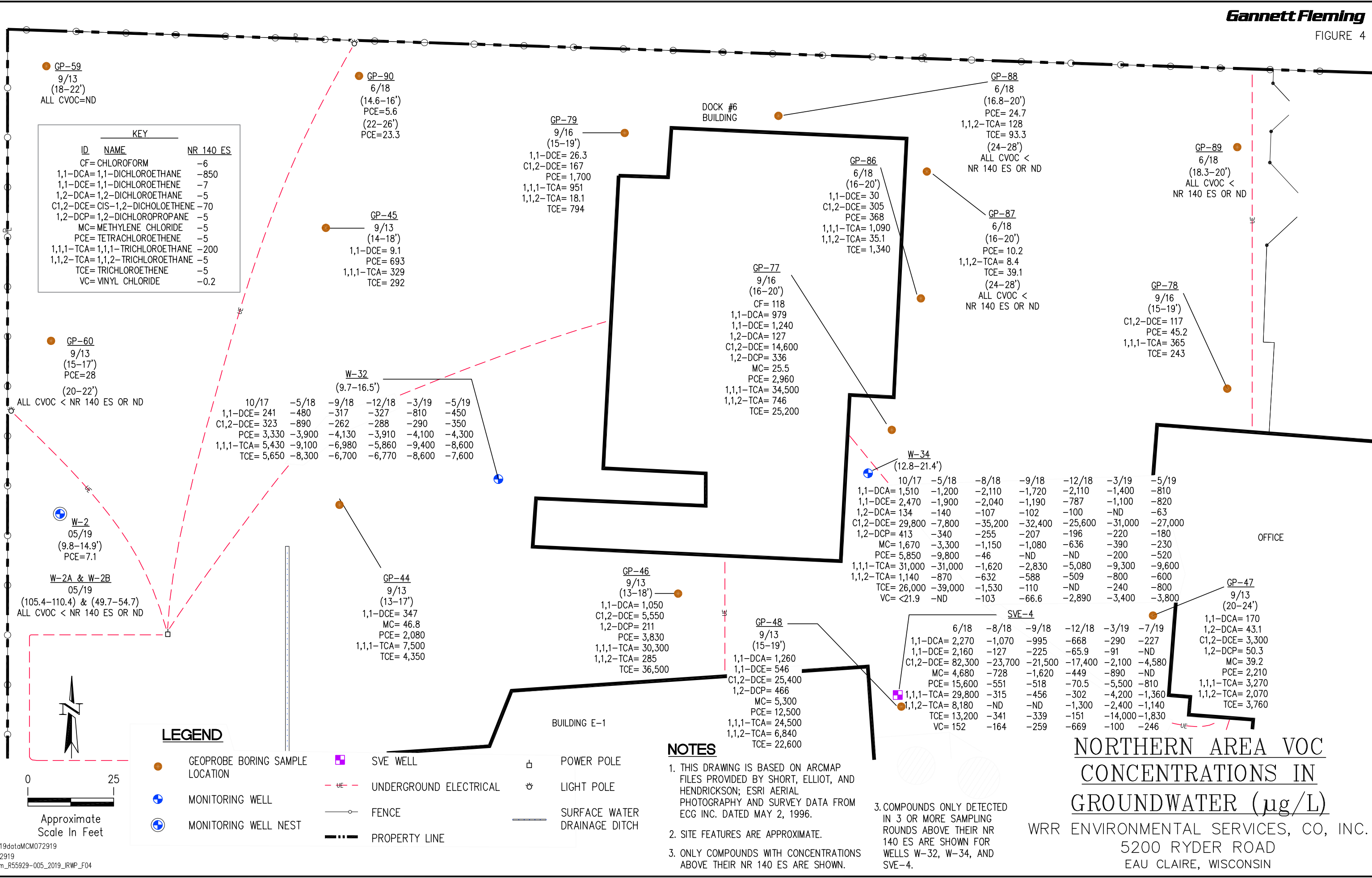
- NOTES**
1. THIS DRAWING IS BASED ON ARCMAP FILES PROVIDED BY SHORT, ELLIOT, AND HENDRICKSON; ESRI AERIAL PHOTOGRAPHY AND SURVEY DATA FROM ECG INC. DATED MAY 2, 1996
  2. SITE FEATURES ARE APPROXIMATE.
  3. NOT ALL PROPOSED INJECTION BORINGS ARE SHOWN ON THIS FIGURE. TWO BORINGS WOULD BE LOCATED IN THE AREA BETWEEN BUILDING E-II AND THE SOUTHERN PORTION OF THE OFFICE BUILDING, SOUTHEAST OF SVE-4.

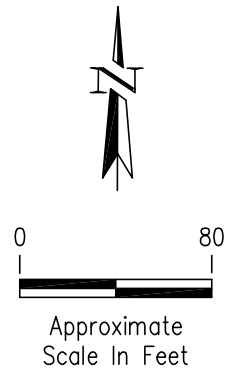
LEGEND	
	GEOPROBE BORING SAMPLE LOCATION
	MONITORING WELL
	MONITORING WELL NEST
	SVE WELL
	UNDERGROUND ELECTRICAL
	FENCE
	PROPERTY LINE
	POWER POLE
	LIGHT POLE
	SURFACE WATER DRAINAGE DITCH
	PILOT TEST AREA (06/18)
	PILOT TEST INJECTION BORING LOCATION (06/18)
	PHASE I INJECTION BORING LOCATION (10/18)
	PROPOSED PHASE II INJECTION BORING



**KEY**

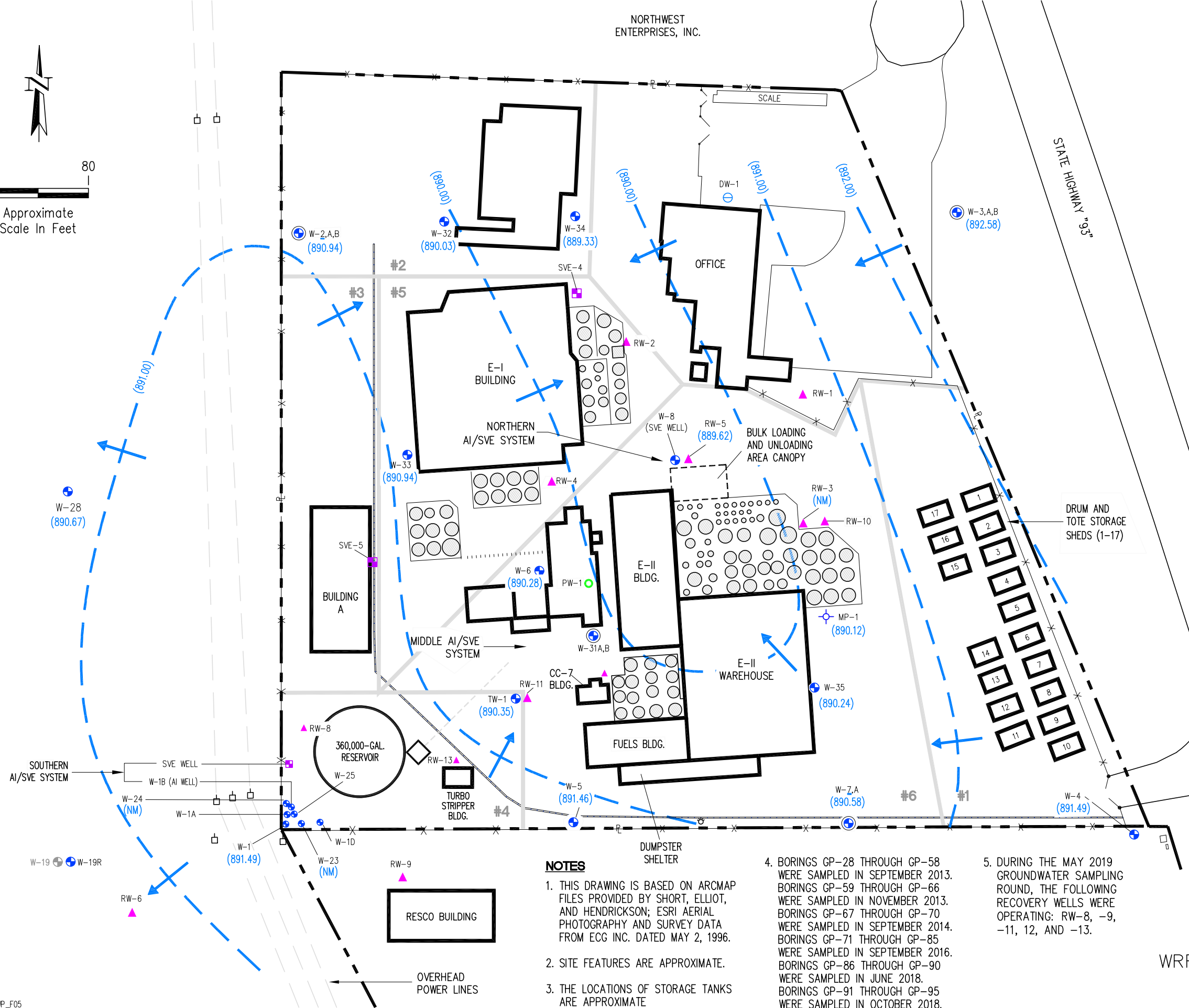
ID	NAME	NR 140 ES
CF	CHLOROFORM	-6
1,1-DCA	1,1-DICHLOROETHANE	-850
1,1-DCE	1,1-DICHLOROETHENE	-7
1,2-DCA	1,2-DICHLOROETHANE	-5
C1,2-DCE	CIS-1,2-DICHOLOETHENE	-70
1,2-DCP	1,2-DICHLOROPROPANE	-5
MC	METHYLENE CHLORIDE	-5
PCE	TETRACHLOROETHENE	-5
1,1,1-TCA	1,1,1-TRICHLOROETHANE	-200
1,1,2-TCA	1,1,2-TRICHLOROETHANE	-5
TCE	TRICHLOROETHENE	-5
VC	VINYL CHLORIDE	-0.2





**LEGEND**

- GROUNDWATER CONTOUR
- GROUNDWATER ELEVATION
- GROUNDWATER FLOW DIRECTION
- MONITORING WELL
- MONITORING WELL NEST
- RECOVERY WELL
- PRODUCTION WELL
- DRINKING WATER WELL
- 1-INCH-DIAMETER MONITORING POINT
- ABOVEGROUND STORAGE TANK (APPROXIMATE LOCATION)
- POWER POLE
- LIGHT POLE
- FENCE
- SURFACE WATER DRAINAGE DITCH
- SOLID WASTE MANAGEMENT UNITS



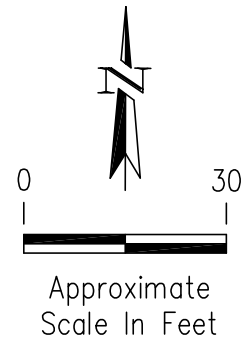
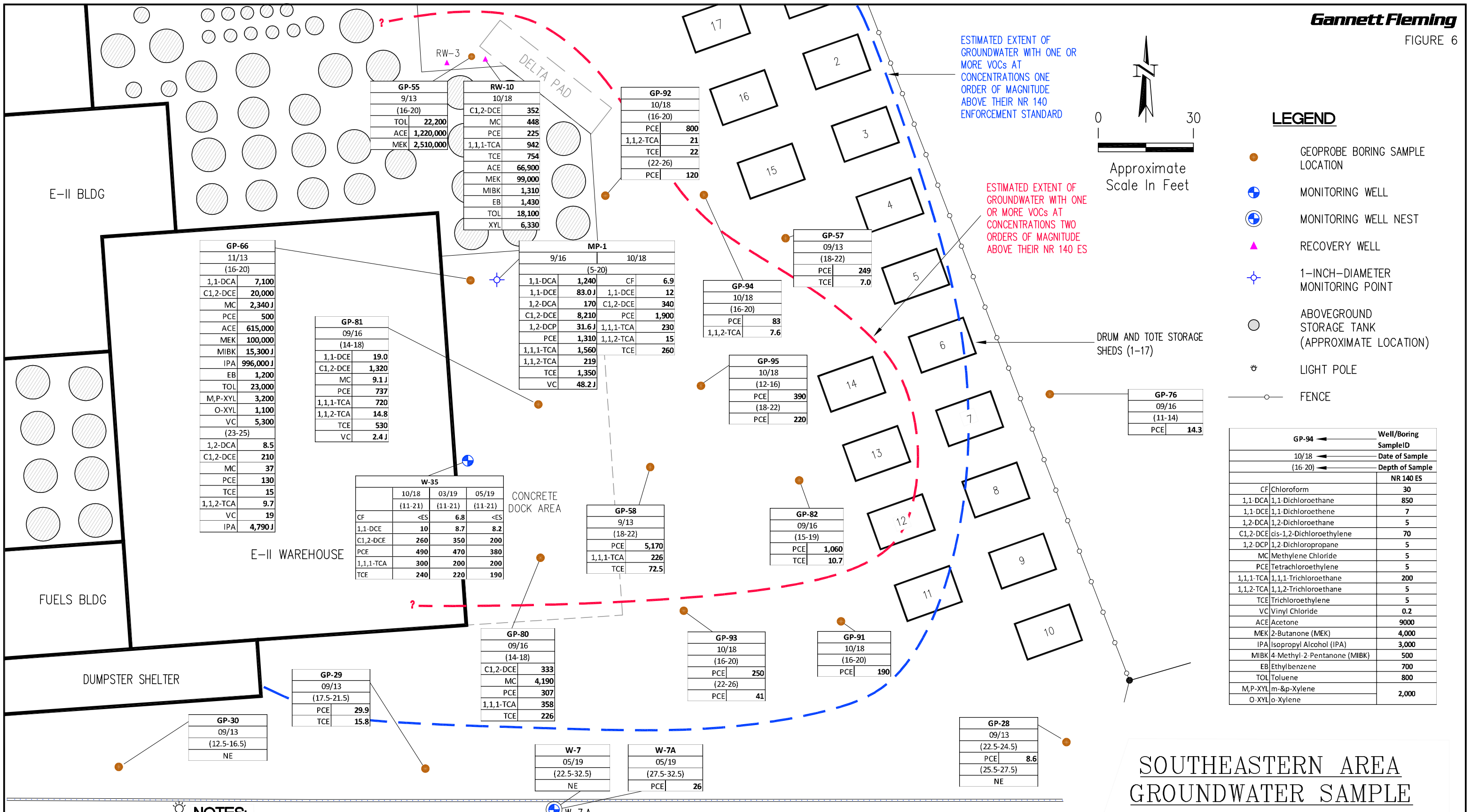
**SURFACE AQUIFER  
GROUNDWATER  
COUNTOUR MAP WITH  
RECOVERY WELLS  
OPERATING  
(MAY 2019)**

WRR ENVIRONMENTAL SERVICES, INC.  
5200 RYDER ROAD  
EAU CLAIRE, WISCONSIN

**NOTES**

1. THIS DRAWING IS BASED ON ARCMAP FILES PROVIDED BY SHORT, ELLIOT, AND HENDRICKSON; ESRI AERIAL PHOTOGRAPHY AND SURVEY DATA FROM ECG INC. DATED MAY 2, 1996.
2. SITE FEATURES ARE APPROXIMATE.
3. THE LOCATIONS OF STORAGE TANKS ARE APPROXIMATE.
4. BORINGS GP-28 THROUGH GP-58 WERE SAMPLED IN SEPTEMBER 2013. BORINGS GP-59 THROUGH GP-66 WERE SAMPLED IN NOVEMBER 2013. BORINGS GP-67 THROUGH GP-70 WERE SAMPLED IN SEPTEMBER 2014. BORINGS GP-71 THROUGH GP-85 WERE SAMPLED IN SEPTEMBER 2016. BORINGS GP-86 THROUGH GP-90 WERE SAMPLED IN JUNE 2018. BORINGS GP-91 THROUGH GP-95 WERE SAMPLED IN OCTOBER 2018.
5. DURING THE MAY 2019 GROUNDWATER SAMPLING ROUND, THE FOLLOWING RECOVERY WELLS WERE OPERATING: RW-8, -9, -11, 12, AND -13.





- LEGEND**
- GEOPROBE BORING SAMPLE LOCATION
  - ⊕ MONITORING WELL
  - ⊕ MONITORING WELL NEST
  - ▲ RECOVERY WELL
  - ⊕ 1-INCH-DIAMETER MONITORING POINT
  - ABOVEGROUND STORAGE TANK (APPROXIMATE LOCATION)
  - ⊙ LIGHT POLE
  - FENCE

Well/Boring SampleID	Date of Sample	Depth of Sample	NR 140 ES
CF	Chloroform		30
1,1-DCA	1,1-Dichloroethane		850
1,1-DCE	1,1-Dichloroethene		7
1,2-DCA	1,2-Dichloroethane		5
C1,2-DCE	cis-1,2-Dichloroethylene		70
1,2-DCP	1,2-Dichloropropane		5
MC	Methylene Chloride		5
PCE	Tetrachloroethylene		5
1,1,1-TCA	1,1,1-Trichloroethane		200
1,1,2-TCA	1,1,2-Trichloroethane		5
TCE	Trichloroethylene		5
VC	Vinyl Chloride		0.2
ACE	Acetone		9000
MEK	2-Butanone (MEK)		4,000
IPA	Isopropyl Alcohol (IPA)		3,000
MIBK	4-Methyl-2-Pentanone (MIBK)		500
EB	Ethylbenzene		700
TOL	Toluene		800
M,P-XYL	m-&p-Xylene		2,000
O-XYL	o-Xylene		

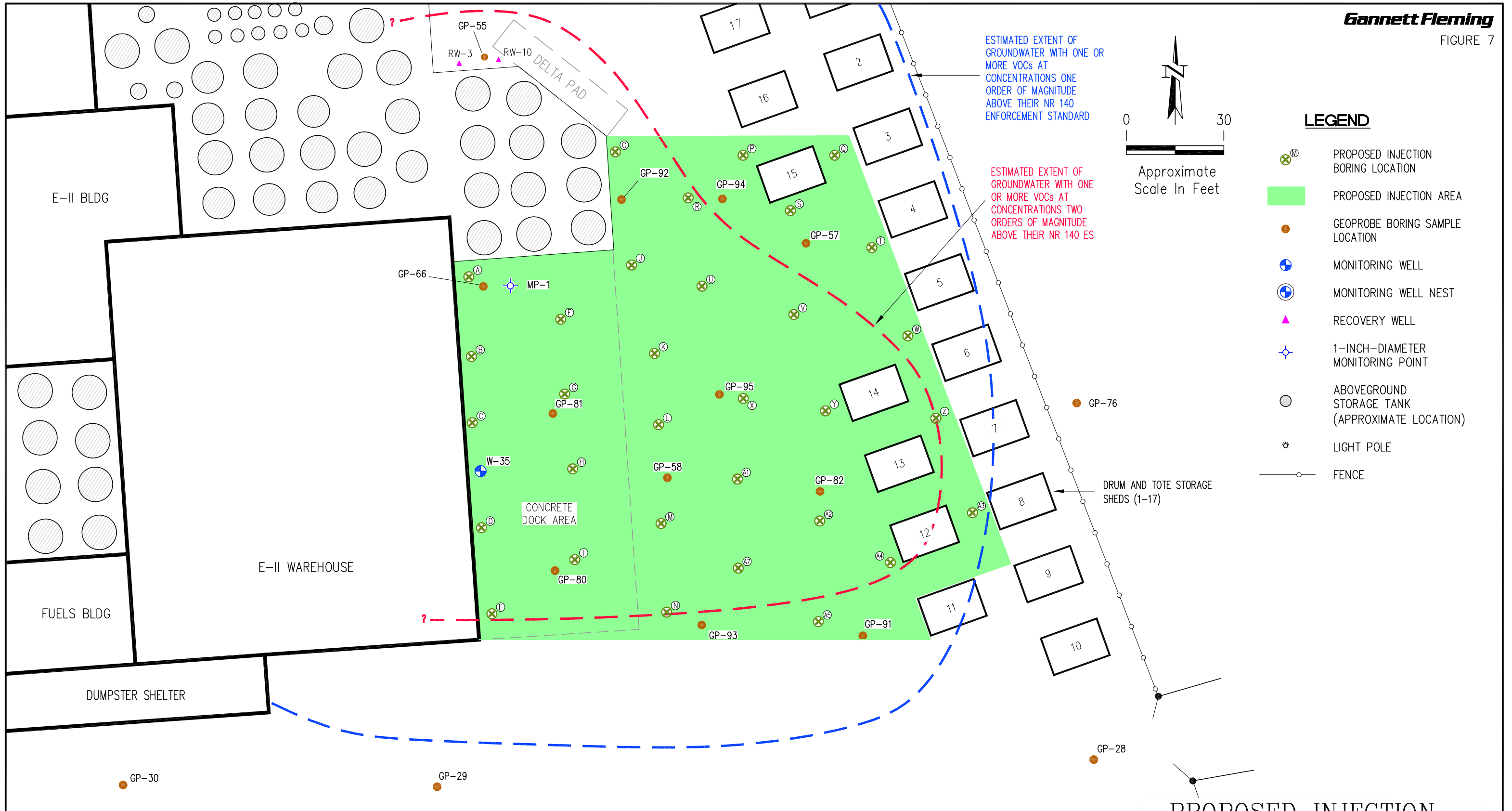
## SOUTHEASTERN AREA GROUNDWATER SAMPLE LOCATIONS AND VOC CONCENTRATIONS

WRR ENVIRONMENTAL SERVICES, CO., INC.  
5200 RYDER ROAD  
EAU CLAIRE, WISCONSIN











**NOTES:**

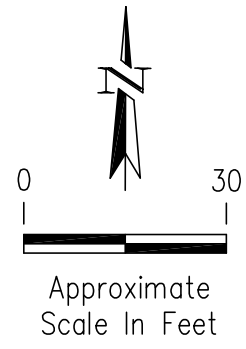
1. THIS DRAWING IS BASED ON ARCMAP FILES PROVIDED BY SHORT, ELLIOT, AND HENDRICKSON; ESRI AERIAL PHOTOGRAPHY AND SURVEY DATA FROM ECG INC. DATED MAY 2, 1996.
2. THE LOCATIONS OF SITE FEATURES AND STORAGE TANKS ARE APPROXIMATE.
3. ONLY COMPOUNDS ABOVE THE NR 140 ES ARE SHOWN ON THIS FIGURE.
4. ALL CONCENTRATIONS ARE IN µg/L.
5. NE=NO NR 140 ES EXCEEDANCES.
6. BORINGS GP-28 THROUGH GP-58 WERE SAMPLED IN SEPTEMBER 2013. BORINGS GP-59 THROUGH GP-66 WERE SAMPLED IN NOVEMBER 2013. BORINGS GP-71 THROUGH GP-85 WERE SAMPLED IN SEPTEMBER 2016. BORINGS GP-91 THROUGH GP-95 WERE SAMPLED IN OCTOBER 2018.

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071719  
awm\_R55929-005\_2019\_IRWP\_F06



**LEGEND**

-  PROPOSED INJECTION BORING LOCATION
-  PROPOSED INJECTION AREA
-  GEOPROBE BORING SAMPLE LOCATION
-  MONITORING WELL
-  MONITORING WELL NEST
-  RECOVERY WELL
-  1-INCH-DIAMETER MONITORING POINT
-  ABOVEGROUND STORAGE TANK (APPROXIMATE LOCATION)
-  LIGHT POLE
-  FENCE



ESTIMATED EXTENT OF GROUNDWATER WITH ONE OR MORE VOCs AT CONCENTRATIONS ONE ORDER OF MAGNITUDE ABOVE THEIR NR 140 ENFORCEMENT STANDARD

ESTIMATED EXTENT OF GROUNDWATER WITH ONE OR MORE VOCs AT CONCENTRATIONS TWO ORDERS OF MAGNITUDE ABOVE THEIR NR 140 ES

DRUM AND TOTE STORAGE SHEDS (1-17)

**PROPOSED INJECTION LOCATIONS IN SOUTHEASTERN AREA**

WRR ENVIRONMENTAL SERVICES, CO., INC.  
5200 RYDER ROAD  
EAU CLAIRE, WISCONSIN

**NOTES:**

1. THIS DRAWING IS BASED ON ARCMAP FILES PROVIDED BY SHORT, ELLIOT, AND HENDRICKSON; ESRI AERIAL PHOTOGRAPHY AND SURVEY DATA FROM ECG INC. DATED MAY 2, 1996.
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4. ALL CONCENTRATIONS ARE IN  $\mu\text{g/L}$ .
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WRR ENVIRONMENTAL SERVICES, INC. CO.  
EAU CLAIRE, WISCONSIN

TABLE 1

PILOT-TEST AND FULL-SCALE INJECTIONS DATA SUMMARY (JUNE & OCTOBER 2018)

<b>June 2018 Pilot-Test Injections</b>						
<b>Boring/ Well ID</b>	<b>Interval Injected (ft bgs)</b>	<b>Total Time (min)</b>	<b>Volume Injected (gal)</b>	<b>Avg Flow Rate (gpm)</b>	<b>Comments</b>	<b>Injected Reagents (per 250-gal batch)</b>
<b>June 2018 Pilot-Test</b>						
IB-A	19 - 25	25	10	0.4	Daylighting at all depths	0.25-gal NZ OS; 100 lbs of NZ 55; 40 lbs of MicroZVI; 0.15-liters of SDC-9
IB-B	18 - 25	10	20	0.5	Angled well, daylighting at all depths	
IB-1	16 - 25	117	500	4.3	Daylighting when injecting between 21-25 ft	
IB-2	18 - 25	150	460	3.1	Daylighting when injecting between 23-25 ft	
IB-3	17 - 25	95	515	5.4	Daylighting when injecting between 24-25 ft	
IB-4	16 - 25	225	425	1.9	Minor daylighting at 21-25 & 16-25 ft	
IB-5	17 - 25	110	540	4.9	Daylighting when injecting between 24-25 ft	0.25-gal NZ OS; 40 lbs of NZ HRO; 30 lbs of MicroZVI; 0.15-liters of SDC-9
IB-6	19 - 22	60	250	4.2	Daylighting when injecting between 18-22 ft	
IB-7	15 - 22	45	250	5.6	Low backpressure, high flow	
IB-8	12.5 - 22	45	250	5.6	Low backpressure, high flow	
IB-9	16 - 22	50	250	5.0	Low backpressure, high flow	
IB-10	16 - 22	55	250	4.5	Low backpressure, high flow	
IB-11	16 - 22	52	265	5.1	Low backpressure, high flow	0.25-gal NZ OS; 30 lbs of NZ HRO; 0.10-liters of SDC-9
IB-12	15.5 - 20	40	200	5.0	Low backpressure, high flow	
IB-13	15.5 - 20	40	200	5.0	Low backpressure, high flow	
IB-14	15.5 - 20	60	210	3.5	High backpressure, good flow	
IB-15	15.5 - 20	47	205	4.4	Low backpressure, good flow	0.25-gal NZ OS; 20 lbs of NZ 55; 10 lbs of MicroZVI; 0.15-liters of SDC-9
SVE-4	13.4 - 19.2	40	220	5.5	Gravity feed used to inject into well	

TABLE 1

PILOT-TEST AND FULL-SCALE INJECTIONS DATA SUMMARY (JUNE & OCTOBER 2018)

October 2018 First Phase of Full-Scale Injections						
Boring/ Well ID	Interval Injected (ft bgs)	Total Time (min)	Volume Injected (gal)	Avg Flow Rate (gpm)	Comments	Injected Reagents (per 500-gal batch)
IB-16	14 - 19	140	500	3.6		Average Quantity Per Injection Location: 300 lbs of NZ 55; 160 lbs of Neutral Zone; 40 lbs of MicroZVI; 0.5-liters of SDC-9; 0.5-gal of NZ OS
IB-17	13 - 18	NM	500	NM	Low backpressure, high flow	
IB-18	13 - 18	NM	500	NM	Low backpressure, high flow	
IB-19	13 - 18	NM	500	NM	Low backpressure, high flow	
IB-20	13 - 18	NM	500	NM	High backpressure	
IB-21	13 - 18	NM	500	NM		
IB-22	13 - 18	NM	500	NM		
IB-23	13 - 18	NM	500	NM		
IB-24	13 - 18	NM	500	NM		
IB-25	13 - 18	NM	500	NM	High backpressure	
IB-26	12 - 17	90	500	5.6	High backpressure	
IB-27	12 - 17	NM	500	NM		
IB-28	11 - 16	NM	500	NM	Low backpressure, high flow	
IB-29	10 - 15	65	500	7.7	Low backpressure, high flow	
IB-30	11 - 16	NM	500	NM		
IB-31	11 - 16	NM	500	NM		
IB-32	11 - 16	NM	500	NM		
IB-33	10 - 15	NM	500	NM		
IB-34	11 - 16	76	500	6.6	Pump didn't prime after tote switch	
IB-35	11 - 16	NM	500	NM		
IB-36	11 - 16	NM	500	NM		
IB-37	11 - 16	NM	500	NM		
IB-38	11 - 16	NM	500	NM		
IB-39	11 - 16	NM	500	NM		
IB-40	12 - 17	NM	500	NM		
IB-41	10 - 15	NM	500	NM		
IB-42	11 - 16	NM	500	NM		
IB-43	11 - 16	NM	500	NM		
IB-44	11 - 16	NM	500	NM		
IB-45	11 - 16	NM	500	NM		

TABLE 1

PILOT-TEST AND FULL-SCALE INJECTIONS DATA SUMMARY (JUNE & OCTOBER 2018)

NOTES:

6/4-6/7/18: A total of 1,382 lbs of emulsified vegetable oil (EVO), 3-liters of DHC microbes, 40 lbs of an oxygen scavenger (OS), and 600 lbs of micro-scale zero valent iron ( $\mu$ ZVI) were injected into IB-1 through IB-15, IB-A, IB-B, and SVE-4.

10/15-10/25/18: A total of 9,000 lbs of EVO, 4,800 lbs of pH buffer, 15-liters of DHC microbes, 15 gallons of OS, and 1,200 lbs of  $\mu$ ZVI were injected into IP-16 through IP-45.

Each boring was flushed with 5 to 10 gallons of water treated with NZ OS following the injection of reducing reagents. Well SVE-4 was flushed with 50 gallons of OS water.

Boring diameter = 1.5 inch.

Borehole diameter of SVE-4 = 8.25 inch, and the well is constructed of 4-inch diameter PVC.

NM = Not measured.

NZ OS = Newman Zone Oxygen Scavenger.

NZ 55 = Newman Zone Emulsified Vegetable Oil (EVO) with lactate.

NZ HRO = Newman Zone EVO without lactate.

Neutral Zone = Colloidal calcium carbonate pH buffer.

MicroZVI = Regeneration micro-scale Zero Valent Iron.

SDC-9 = A mixture of Dehalococcoides (DHC) and Dehalobacter (DHBt) microbes.

WRR ENVIRONMENTAL SERVICES CO., INC.  
EAU CLAIRE, WISCONSIN

TABLE 2

GROUNDWATER SAMPLING SUMMARY

Parameter	Well ID & Sample Date													
	W-32							W-33						
	5/17	10/17	5/18	9/18	12/18	3/19	5/19	5/17	10/17	5/18	9/18	12/18	3/19	5/19
VOCs	X	X	X	X	X	X	X	X	X	X	X	X	X	
MEE			X	X	X	X				X	X	X	X	
Sulfate	X			X	X	X		X			X			
Alkalinity (as CaCO <sub>3</sub> )	X			X	X	X		X			X			
Dissolved Fe & Mn	X		X	X	X	X		X		X	X			
Nitrogen (NO <sub>2</sub> +NO <sub>3</sub> )	X				X	X		X						
TOC	X			X	X	X		X			X			
DHC			X	X	X	X					X			
RNA Field	X			X	X		X	X			X	X		X

Parameter	Well ID & Sample Date													
	W-34							SVE-4						
	8/17	10/17	5/18	8/18	9/18	12/18	3/19	5/19	6/18	8/18	9/18	12/18	3/19	6/19
VOCs	X	X	X	X	X	X	X		X	X	X	X	X	X
MEE	X		X		X	X	X				X	X	X	X
Sulfate	X				X	X	X				X			X
Alkalinity (as CaCO <sub>3</sub> )	X				X	X	X				X			X
Dissolved Fe & Mn	X		X		X	X	X				X			X
Nitrogen (NO <sub>2</sub> +NO <sub>3</sub> )			X			X	X							X
TOC			X		X	X	X				X			X
DHC			X		X	X	X				X			X
RNA Field		X			X	X		X	X	X	X	X		X

WRR ENVIRONMENTAL SERVICES CO., INC.  
EAU CLAIRE, WISCONSIN

TABLE 3  
SUMMARY OF DETECTED COMPOUNDS IN W-32  
MAY 2017 - MAY 2019

Compound	NR 140 ES	NR 140 PAL	05/18/17	10/11/17	05/09/18	09/06/18	12/11/18	03/27/19	05/22/19	
Date										
<b>VOCs (µg/l)</b>										
Acetone	<b>9,000</b>	<u>1,800</u>	<295	<295	610	<274	<274	<46	<54	
2-Butanone	<b>4,000</b>	<u>800</u>	<298	<298	150	<294	<294	<29	<26	
Chloroform	<b>6</b>	<u>0.6</u>	<250	<250	<13	<127	<127	<b>26</b> J	<b>24</b> J	
1,1-Dichloroethane	<b>850</b>	<u>85</u>	<u>127</u>	<u>92.6</u> J	<u>140</u>	<u>98.0</u> J	<u>124</u>	<u>170</u>	<u>160</u>	
1,1-Dichloroethene	<b>7</b>	<u>0.7</u>	<b>359</b>	<b>241</b>	<b>480</b>	<b>317</b>	<b>327</b>	<b>810</b>	<b>450</b>	
cis-1,2-Dichloroethene	<b>70</b>	<u>7</u>	<b>366</b>	<b>323</b>	<b>230</b>	<b>262</b>	<b>288</b>	<b>290</b>	<b>350</b>	
1,2-Dichloropropane	<b>5</b>	<u>0.5</u>	<23.3	<23.3	<12	<28.3	<28.3	<b>37</b> J	<24	
Ethylbenzene	<b>700</b>	<u>140</u>	<50.0	<50.0	32 J	<21.8	<21.8	<20	<17	
Methylene Chloride	<b>5</b>	<u>0.5</u>	<28	<23.3	<28	<b>61.2</b> J	<58.1	<28	<43	
Tetrachloroethene	<b>5</b>	<u>0.5</u>	<b>4,380</b>	<b>3,330</b>	<b>3,900</b>	<b>4,130</b>	<b>3,910</b>	<b>4,100</b>	<b>4,300</b>	
Toluene	<b>800</b>	<u>160</u>	<50.0	<50.0	140	<17.2	<17.2	<18	<22	
Trichloroethene	<b>5</b>	<u>0.5</u>	<b>6,480</b>	<b>5,650</b>	<b>8,300</b>	<b>6,700</b>	<b>6,770</b>	<b>8,600</b>	<b>7,600</b>	
1,1,1-Trichloroethane	<b>200</b>	<u>40</u>	<b>7,780</b>	<b>5,430</b>	<b>9,100</b>	<b>6,980</b>	<b>5,860</b>	<b>9,400</b>	<b>8,600</b>	
1,1,2-Trichloroethane	<b>5</b>	<u>0.5</u>	<b>21.1</b> J	<19.7	<20	<55.2	<55.2	<20	<23	
m,p-Xylene	<b>2,000</b>	<u>400</u>	<100	<100	100 J	<46.5	<46.5	<49	<40	
o-Xylene			<50.0	<50.0	37 J	<26.2	<26.2	<18	<16	
Ethane	NSV		NA	NA	12	<0.58	<0.58	<0.21	<0.21	
Ethene			NA	NA	<0.41	<0.52	<0.52	<0.41	<0.41	
Methane			NA	NA	17	<1.4	<1.4	4.0 J	<0.64	
<b>Total VOCs</b>			<b>19,513</b>	<b>15,067</b>	<b>23,248</b>	<b>18,548</b>	<b>17,279</b>	<b>23,437</b>	<b>21,484</b>	
<b>Other Constituents (mg/l)</b>										
Sulfate	<b>250</b>	<u>125</u>	66.2	NA	NA	57.8	43.3	87	65	
Alkalinity, Total as CaCO <sub>3</sub>	Not Applicable		92.1	NA	NA	104	132	110	120	
Iron, Dissolved	<b>0.3</b>	<u>0.15</u>	0.0548 J	NA	<0.015	0.0596	0.0471 J	<0.015	NA	
Manganese, Dissolved	<b>0.05</b>	<u>0.0025</u>	<b>0.363</b>	NA	<0.16	<b>0.114</b>	<b>0.244</b>	<b>0.77</b>	NA	
Nitrogen (NO <sub>2</sub> +NO <sub>3</sub> )	Not Applicable		1.6	NA	NA	NA	1.4	1.6	NA	
Total Organic Carbon	Not Applicable		9.1	NA	NA	10.9	9.4	14	15	
<b>RNA Parameters</b>										
Temp (°C)	NSV		10.97	NA	NA	17.45	11.30	NA	9.49	
Cond. (mS/cm)			0.889	NA	NA	0.985	1.045	NA	1.243	
DO (mg/L)			8.15	NA	NA	4.53	EE	NA	8.16	
pH			6.00	NA	NA	5.84	6.07	NA	6.03	
ORP (mV)			150.3	NA	NA	92.0	54.1	NA	108.9	

**NOTES:**

NR 140 enforcement standards (ES) and Preventative Action Limits (PALs) - Register February 2017 No. 734 - downloaded from Wisconsin State Legislature website: [http://docs.legis.wisconsin.gov/code/admin\\_code/nr/100/140](http://docs.legis.wisconsin.gov/code/admin_code/nr/100/140) on 5/2/2018.

NR 140 ES and PALs for VOCs taken from Table 1 of NR 140.

NR 140 ES and PALs for sulfate, iron, and manganese are Public Welfare Groundwater Quality Standards taken from Table 2 of NR 140.

There are methods for establishing groundwater standards for indicator parameters of alkalinity, conductivity, total organic carbon, and nitrogen; however, those relate to determining increases in their concentrations over background concentrations and do not apply to this situation.

VOCs = Volatile Organic Compounds

CVOCs = Chlorinated Volatile Organic Compounds

NA = Constituent Not Analyzed

NSV = No NR 140 Standard Value

J = Reported values fall below the Limit of Quantitation set by the lab.

Values above an NR 140 PAL but less than the ES are underlined.

Values above an NR 140 ES are in bold.

Temp (°C) = Temperature measured in degrees Celsius

Cond. (mS/cm) = Conductivity measured in milliSiemens per centimeter

DO (mg/L) = Dissolved oxygen measured in milligrams per liter

EE = Equipment Error: The DO probe was malfunctioning on December 11, 2018

ORP (mV) = Oxidation Reduction Potential measured in millivolts

WRR ENVIRONMENTAL SERVICES CO., INC.  
EAU CLAIRE, WISCONSIN

TABLE 3

SUMMARY OF DETECTED COMPOUNDS IN W-33  
MAY 2017 - MARCH 2019

Compound	NR 140 ES	NR 140 PAL	05/18/17	DUP 5/18/17	10/11/17	05/10/18	09/06/18	12/11/18	03/27/19
Date									
<b>VOCs (µg/l)</b>									
Acetone	9000	1,800	<369	<369	<369	40	<343	<137	1,700
Benzene	5	0.5	<62.5	<62.5	<62.5	3.7	<30.8	<12.3	<3.0
2-Butanone (MEK)	4000	800	<372	<372	<372	<0.58	<367	<147	180
sec-Butylbenzene	NSE	NSE	<273	<273	<273	0.86 J	<106	<42.4	<2.9
Chlorobenzene	NSE	NSE	<62.5	<62.5	<62.5	1.1	<88.9	<35.5	6.0 J
Chloroform	6	0.6	<312	<312	<312	16	<159	<63.7	13
Chloroethane	400	80	180	212	<46.8	<0.29	198 J	<67.1	60
Chloromethane	30	3	<62.5	<62.5	<62.5	0.40 J	<274	<109	<1.7
1,1-Dichloroethane	850	85	3,110	3,310	2,280	2,000	2,270	1,220	550
1,2-Dichloroethane	5	0.5	21.3 J	<21.0	<21.0	16	<35.0	14.5 J	<1.7
1,1-Dichloroethene	7	0.7	78.2 J	95.9 J	100 J	61	87.1 J	37.2 J	12
cis-1,2-Dichloroethene	70	7	8,800	9,650	8,640	8,900	9,810	3,240	2,400
1,2-Dichlorobenzene	600	60	<62.5	<62.5	<62.5	12	<88.2	<35.3	<2.2
1,3-Dichlorobenzene	600	120	<62.5	<62.5	<62.5	0.85 J	<78.5	<31.4	<2.9
1,4-Dichlorobenzene	75	15	<62.5	<62.5	<62.5	2.2	<118	<47.2	<2.1
Dichlorodifluoromethane	1000	200	<28.0	<28.0	<28.0	1.9	<62.5	<25.0	<1.3
trans-1,2-Dichloroethene	100	20	39.6 J	43.2 J	39.2 J	99	<136	<54.5	11
1,2-Dichloropropane	5	0.5	<29.1	<29.1	<29.1	15	<35.3	<14.1	4.7 J
Ethylbenzene	700	140	<62.5	<62.5	<62.5	98	100 J	225	10 J
Isopropylbenzene	NSE	NSE	<17.9	<17.9	<17.9	6.5	<49.1	<19.6	<3.1
p-Isopropyltoluene	NSE	NSE	<62.5	<62.5	<62.5	1.7	<100	<40.0	<1.4
4-Methyl-2-pentanone	500	50	<268	<268	<268	51	<191	<76.6	<1.1
Methylene Chloride	5	0.5	52.9 J	60.7 J	<29.1	220	297 J	92.2 J	85
Methyl tert-butyl ether	60	12	<21.8	<21.8	<21.8	2.6	<156	<62.3	3.1 J
Naphthalene	100	10	<312	<312	<312	10	<147	<58.8	<1.8
n-Propylbenzene	NSE	NSE	<62.5	<62.5	<62.5	8.4	<101	<40.5	<2.4
Tetrachloroethene	5	0.5	214	210	<62.5	280	293	19.5 J	1,200
Toluene	800	160	<62.5	<62.5	<62.5	160	120 J	284	15
Trichloroethene	5	0.5	215	199	62.1 J	260	212	<12.8	790
1,1,1-Trichloroethane	200	40	4,330	4,910	2,230	2,000	2,590	686	1,100
1,1,2-Trichloroethane	5	0.5	34.8 J	29.1 J	<24.7	18	<69.0	<27.6	<4.0
1,2,4-Trimethylbenzene	480	96	<62.5	<62.5	<62.5	81	<105	95.7 J	5.1 J
1,3,5-Trimethylbenzene			<62.5	<62.5	<62.5	21	<109	<43.7	<2.9
Vinyl chloride	0.2	0.02	88.9 J	96.2 J	221	160	212	218	23
m,p-Xylenes	2,000	400	<125	<125	<125	280	231 J	477	23 J
o-Xylene			<62.5	<62.5	98.2 J	210	209	246	18
Ethane	NSV		NA	NA	NA	8.7	1.5 J	5.1 J	<0.21
Ethene			NA	NA	NA	39	6.4	15.6	<0.41
Methane			NA	NA	NA	73	11.6	20.2	5.5
<b>Total VOCs</b>			<b>17,165</b>	<b>18,816</b>	<b>13,671</b>	<b>15,159</b>	<b>16,649</b>	<b>6,896</b>	<b>8,214</b>
<b>Other Constituents (mg/l)</b>									
Sulfate	250	125	25.8	NA	NA	NA	39.4	NA	NA
Alkalinity, Total as CaCO <sub>3</sub>	Not Applicable		266	NA	NA	NA	256	NA	NA
Iron, Dissolved	0.3	0.15	24.5	NA	NA	120	54.5	NA	NA
Manganese, Dissolved	0.05	0.0025	1.18	NA	NA	7.5	4.12	NA	NA
Nitrogen (NO <sub>2</sub> +NO <sub>3</sub> )	Not Applicable		<0.095	NA	NA	NA	NA	NA	NA
Total Organic Carbon	Not Applicable		15.1	NA	NA	NA	10.8	NA	NA



TABLE 3

SUMMARY OF DETECTED COMPOUNDS IN W-33  
MAY 2017 - MARCH 2019

Compound	NR 140 ES	NR 140 PAL	05/18/17	DUP 5/18/17	10/11/17	05/10/18	09/06/18	12/11/18	03/27/19
Date									
<b>RNA Parameters</b>									
Temp (°C)	<b>NSV</b>		10.88	NA	NA	NA	17.16	11.56	NA
Cond. (mS/cm)			1.250	NA	NA	NA	6.039	1.349	NA
DO (mg/L)			8.27	NA	NA	NA	1.63	EE	NA
pH			6.45	NA	NA	NA	6.31	6.40	NA
ORP (mV)			-45.4	NA	NA	NA	23.8	-90.0	NA

**NOTES:**

NR 140 enforcement standards (ES) and Preventative Action Limits (PALs) - Register February 2017 No. 734 - downloaded from Wisconsin State Legislature website: [http://docs.legis.wisconsin.gov/code/admin\\_code/nr/100/140](http://docs.legis.wisconsin.gov/code/admin_code/nr/100/140) on 5/2/2018.

NR 140 ES and PALs for VOCs taken from Table 1 of NR 140.

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VOCs = Volatile Organic Compounds

CVOCs = Chlorinated Volatile Organic Compounds

NA = Constituent Not Analyzed

NSV = No NR 140 Standard Value

J = Reported values fall below the Limit of Quantitation set by the lab.

Values above an NR 140 PAL but less than the ES are underlined.

Values above an NR 140 ES are in bold.

Temp (°C) = Temperature measured in degrees Celsius

Cond. (mS/cm) = Conductivity measured in milliSiemens per centimeter

DO (mg/L) = Dissolved oxygen measured in milligrams per liter

EE = Equipment Error: The DO probe was malfunctioning on December 11, 2018

ORP (mV) = Oxidation Reduction Potential measured in millivolts

WRR ENVIRONMENTAL SERVICES CO., INC.  
EAU CLAIRE, WISCONSIN

TABLE 3

SUMMARY OF DETECTED COMPOUNDS IN W-34  
AUGUST 2017 - MAY 2019

Compound	NR 140 ES	NR 140 PAL	08/01/17	10/11/17	DUP 10/11/17	05/09/18	08/15/18	09/06/18	12/11/18	03/27/19	05/23/19	
Date												
<b>VOCs (µg/t)</b>												
Acetone	<b>9000</b>	<u>1,800</u>	<738	<369	<369	<46	<343	<343	<343	110	<11	
Benzene	<b>5</b>	<u>0.5</u>	<125	<62.5	<62.5	<15	<30.8	<30.8	<30.8	<30	<b>5.7 J</b>	
Chloroethane	<b>400</b>	<u>80</u>	<93.6	<46.8	<46.8	<15	<168	<168	<168	<29	<b>6.9 J</b>	
Chloroform	<b>6</b>	<u>0.6</u>	<625	<312	<312	<b>96</b>	<159	<159	<159	<b>44 J</b>	<b>43</b>	
1,1-Dichloroethane	<b>850</b>	<u>85</u>	<b>994</b>	<b>1,420</b>	<b>1,510</b>	<b>1,200</b>	<b>2,110</b>	<b>1,720</b>	<b>2,110</b>	<b>1,400</b>	<u>810</u>	
1,2-Dichloroethane	<b>5</b>	<u>0.5</u>	<b>135 J</b>	<b>134</b>	<b>128</b>	<b>140</b>	<b>107 J</b>	<b>102 J</b>	<b>100 J</b>	<17	<b>63</b>	
1,1-Dichloroethene	<b>7</b>	<u>0.7</u>	<b>2,440</b>	<b>2,150</b>	<b>2,470</b>	<b>1,900</b>	<b>2,040</b>	<b>1,190</b>	<b>787</b>	<b>1,100</b>	<b>820</b>	
cis-1,2-Dichloroethene	<b>70</b>	<u>7</u>	<b>23,800</b>	<b>28,900</b>	<b>29,800</b>	<b>7,800</b>	<b>35,200</b>	<b>32,400</b>	<b>25,600</b>	<b>31,000</b>	<b>27,000</b>	
trans-1,2-Dichloroethene	<b>100</b>	<u>20</u>	<64.1	<32.1	<32.1	<14	<136	<136	<136	<28	<b>310</b>	
1,2-Dichlorobenzene	<b>600</b>	<u>60</u>	<125	<u>83.8 J</u>	<u>86.7 J</u>	48	<88.2	<88.2	<88.2	<22	<b>4.4 J</b>	
1,2-Dichloropropane	<b>5</b>	<u>0.5</u>	<b>367</b>	<b>413</b>	<b>403</b>	<b>340</b>	<b>255</b>	<b>207</b>	<b>196</b>	<b>220</b>	<b>180</b>	
Ethylbenzene	<b>700</b>	<u>140</u>	<125	<62.5	<62.5	110	<27.3	<27.3	36.3 J	61	68	
4-Methyl-2-pentanone	<b>500</b>	<u>50</u>	<535	<268	<268	68	<191	<191	<191	<11	<b>59</b>	
Methylene Chloride	<b>5</b>	<u>0.5</u>	<b>704</b>	<b>1,640</b>	<b>1,670</b>	<b>3,300</b>	<b>1,150</b>	<b>1,080</b>	<b>636</b>	<b>390</b>	<b>230</b>	
Tetrachloroethene	<b>5</b>	<u>0.5</u>	<b>3,190</b>	<b>5,440</b>	<b>5,850</b>	<b>9,800</b>	<b>46.0 J</b>	<40.8	<40.8	<b>200</b>	<b>520</b>	
Toluene	<b>800</b>	<u>160</u>	<125	<u>213</u>	<u>195</u>	<b>800</b>	<u>302 J</u>	82.3 J	53.5 J	56	32	
Trichloroethene	<b>5</b>	<u>0.5</u>	<b>17,900</b>	<b>24,900</b>	<b>26,000</b>	<b>39,000</b>	<b>1,530</b>	<b>110 J</b>	<31.9	<b>240</b>	<b>800</b>	
1,1,1-Trichloroethane	<b>200</b>	<u>40</u>	<b>30,900</b>	<b>28,300</b>	<b>31,000</b>	<b>31,000</b>	<b>1,620</b>	<b>2,830</b>	<b>5,080</b>	<b>9,300</b>	<b>9,600</b>	
1,1,2-Trichloroethane	<b>5</b>	<u>0.5</u>	<b>937</b>	<b>1,140</b>	<b>1,010</b>	<b>870</b>	<b>632</b>	<b>588 J</b>	<b>509 J</b>	<b>800</b>	<b>600</b>	
Vinyl chloride	<b>0.2</b>	<u>0.02</u>	<43.9	<21.9	<21.9	<10	<b>103 J</b>	<b>66.6 J</b>	<b>2,890</b>	<b>3,400</b>	<b>3,800</b>	
m,p-Xylenes	<b>2,000</b>	<b>400</b>	<250	<125	<125	390	<58.2	<58.2	66.6 J	170	190	
o-Xylene			<125	105 J	120 J	<u>250</u>	<32.7	<32.7	37.6 J	72	93	
Ethane	NSV		0.76 J	NA	NA	<0.21	NA	32.1	17.6	16	52	
Ethene			0.57 J	NA	NA	3.8 J	NA	30.2	3,080	600	270	
Methane			<1.4	NA	NA	9.8	NA	18.0	<1.4	<0.64	6.4	
<b>Total VOCs</b>			<b>81,368</b>	<b>94,839</b>	<b>100,243</b>	<b>97,126</b>	<b>45,095</b>	<b>40,456</b>	<b>41,200</b>	<b>49,179</b>	<b>45,563</b>	
<b>Other Constituents (mg/t)</b>												
Sulfate	<b>250</b>	<u>125</u>	53.4	NA	NA	NA	NA	10.1 J	13.8 J	12	23	
Alkalinity, Total as CaCO <sub>3</sub>	Not Applicable		76.8	NA	NA	NA	NA	194	87.2	120	91	
Iron, Dissolved	<b>0.3</b>	<u>0.15</u>	<b>19.4</b>	NA	NA	<b>1.1</b>	NA	<b>131</b>	<b>156</b>	<b>99</b>	NA	
Manganese, Dissolved	<b>0.05</b>	<u>0.0025</u>	NA	NA	NA	<b>4.4</b>	NA	<b>7.97</b>	<b>7.28</b>	<b>6.0</b>	NA	
Nitrogen (NO <sub>2</sub> +NO <sub>3</sub> )	Not Applicable		NA	NA	NA	0.30	NA	NA	ND	0.15	NA	
Total Organic Carbon	Not Applicable		NA	NA	NA	28	NA	75.0	50.4	35	37	
<b>RNA Parameters</b>												
Temp (°C)	NSV		NA	14.78	NA	13.80	13.68	15.40	12.15	NA	9.94	
Cond. (µS/cm)			NA	4.924	NA	6.067	6.001	5.668	6.076	NA	6.658	
DO (mg/L)			NA	3.68	NA	8.23	0.46	0.47	EE	NA	1.78	
pH			NA	5.64	NA	5.23	5.84	6.48	6.66	NA	6.27	
ORP (mV)			NA	183.5	NA	142.7	-92.2	-44.3	-158.6	NA	-161.1	

## NOTES:

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WRR ENVIRONMENTAL SERVICES CO., INC.  
EAU CLAIRE, WISCONSIN

TABLE 3

SUMMARY OF DETECTED COMPOUNDS IN SVE-4  
MAY 2017 - JULY 2019

Compound	NR 140 ES	NR 140 PAL	06/05/18	08/15/18	09/06/18	12/11/18	03/27/19	07/02/19
Date								
<b>VOCs (µg/l)</b>								
Acetone	9000	1,800	6,880 J	<1,100	<1,100	<274	<46	<274
1,2-Dichlorobenzene	600	60	<312	<282	<282	<70.5	26	<70.5
1,1-Dichloroethane	850	85	2,270	1,070	995	668	290	227
1,2-Dichloroethane	5	0.5	338 J	<112	<112	120	<8.3	<28.0
1,1-Dichloroethene	7	0.7	2,160	127 J	255 J	65.9 J	91	<24.5
cis-1,2-Dichloroethene	70	7	82,300	23,700	21,500	17,400	2,100	4,580
1,2-Dichloropropane	5	0.5	445 J	<113	<113	59.9 J	72	<28.3
4-Methyl-2-pentanone	500	50	4,170	<613	<613	<153	<5.7	<153
Methylene Chloride	5	0.5	4,680	728 J	1,620 J	449 J	890	<58.1
Methyl tert-butyl ether	60	12	<109	<498	<498	<125	30	<125
Tetrachloroethene	5	0.5	15,600	551	518	70.5 J	5,500	810
Toluene	800	160	515 J	<68.8	69.2 J	62.5 J	33	<17.2
Trichloroethene	5	0.5	13,200	341 J	339 J	151	14,000	1,830
1,1,1-Trichloroethane	200	40	29,800	315 J	456	302	4,200	1,360
1,1,2-Trichloroethane	5	0.5	8,180	<221	<221	1,300	2,400	1,140
Vinyl chloride	0.2	0.02	152 J	164 J	259 J	669	100	246
o-Xylene	2000	400	<312	<105	<105	71.8 J	38	<26.2
Ethane	NSV		NA	NA	306	4.3 J	<0.21	10.2
Ethene			NA	NA	409	10.3	260	75.8
Methane			NA	NA	160	177	380	47.6
<b>Total VOCs</b>			<b>170,690</b>	<b>26,996</b>	<b>26,886</b>	<b>21,581</b>	<b>30,410</b>	<b>10,327</b>
<b>Other Constituents (mg/l)</b>								
Sulfate	250	125	NA	NA	<5.0	NA	NA	7.3 J
Alkalinity, Total as CaCO <sub>3</sub>	Not Applicable		NA	NA	355	NA	NA	140
Iron, Dissolved	0.3	0.15	NA	NA	689	NA	NA	14.3
Manganese, Dissolved	0.05	0.0025	NA	NA	9.81	NA	NA	1.51
Nitrogen (NO <sub>2</sub> +NO <sub>3</sub> )	Not Applicable		NA	NA	NA	NA	NA	NA
Total Organic Carbon	Not Applicable		NA	NA	2,570	NA	NA	64.8
<b>RNA Parameters</b>								
Temp (°C)	NSV		20.5	14.93	14.81	11.78	NA	NA
Cond. (mS/cm)			1.462	3.867	3.544	3.026	NA	2.280
DO (mg/L)			1.65	0.30	1.68	EE	NA	0.82
pH			6.8	5.9	6.28	6.59	NA	6.8
ORP (mV)			-155.7	-112.9	-54.1	-129.4	NA	-93

TABLE 3

SUMMARY OF DETECTED COMPOUNDS IN SVE-4  
MAY 2017 - JULY 2019

NOTES:

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WRR ENVIRONMENTAL SERVICES CO., INC.  
EAU CLAIRE, WISCONSIN

TABLE 4

GROUNDWATER DNA ANALYSIS SUMMARY

Sample ID & Date	Dehalococcoides DHC	tceA R-Dase TCE	BAV1 VC R-Dase BVC	VC R-Dase VCR	Dehalobacter spp. DHBt
<b>SVE-4</b>					
09/06/18	<b>1.09E+02</b>	<b>6.74E+01</b>	<b>9.80E+00</b>	<b>1.27E+01</b>	<b>2.36E+04</b>
07/02/19	<b>7.62E+05</b>	<b>2.95E+02</b>	<b>7.12E+03</b>	<b>7.32E+04</b>	<b>3.09E+04</b>
<b>W-32</b>					
05/09/18	<2.60E+00	<2.60E+00	<2.60E+00	<2.60E+00	<2.63E+01
09/06/18	<5.00E-01	<5.00E-01	<5.00E-01	<5.00E-01	<4.80E+00
12/11/18	<b>2.00E-01(J)</b>	<5.00E-01	<5.00E-01	<5.00E-01	<4.60E+00
03/27/19	<5.00E-01	<5.00E-01	<5.00E-01	<5.00E-01	<b>3.30+00 (J)</b>
05/23/19	<b>3.00E-01 (J)</b>	<b>1.00E-01 (J)</b>	<5.00E-01	<b>1.00E-01 (J)</b>	<5.00E+00
<b>W-33</b>					
09/06/18	<b>6.75E+03</b>	<b>3.80E+00</b>	<b>8.49E+02</b>	<b>7.42E+02</b>	<b>1.93E+03</b>
<b>W-34</b>					
05/09/18	<5.30E+00	<5.30E+00	<5.30E+00	<5.30E+00	<b>8.15E+02</b>
09/06/18	<b>4.16E+01</b>	<b>2.56E+01</b>	<b>2.00E+00</b>	<b>3.70E+00</b>	<b>6.59E+05</b>
12/11/18	<b>2.46E+06</b>	<b>1.70E+06</b>	<b>7.05E+05</b>	<b>2.32E+06</b>	<b>8.87E+05</b>
03/27/19	<b>3.17E+05</b>	<b>4.49E+05</b>	<b>3.66E+03</b>	<b>3.12E+05</b>	<b>7.00E+04</b>
05/23/19	<b>2.69E+06</b>	<b>3.17E+05</b>	<b>1.06E+05</b>	<b>3.13E+05</b>	<b>8.96E+04</b>
<b>W-35</b>					
03/27/19	<b>2.00E+00</b>	<b>5.00E-01 (J)</b>	<1.50E+00	<b>4.40E+00</b>	<1.52E+01

NOTES:

Results are in cells per milliliter (cells/mL).  
 Concentrations in bold signify detection by laboratory.  
 NA = Not analyzed.  
 VC = Vinyl Chloride  
 R-Dase = Reductase  
 J = Estimated gene copies below PQL but above LQL

WRR ENVIRONMENTAL SERVICES CO., INC.  
EAU CLAIRE, WISCONSIN

TABLE 5

SUMMARY OF COMPOUNDS DETECTED IN W-35  
OCTOBER 2018 - MAY 2019

Compound	NR 140 ES	NR 140 PAL	10/25/18	03/27/19	05/22/19	
Date						
<b>VOCs (µg/l)</b>						
Acetone	<b>9000</b>	<u>1,800</u>	19 J	<1.8	4.6	
Chloroform	<b>6</b>	<u>0.6</u>	<2.6	<b>6.8</b>	<u>3.9</u>	
Chloromethane	<b>30</b>	<u>3</u>	<u>11</u>	<0.34	<0.83	
1,1-Dichloroethane	<b>850</b>	<u>85</u>	43	54	32	
1,1-Dichloroethene	<b>7</b>	<u>0.7</u>	<b>10</b>	<b>8.7</b>	<b>8.2</b>	
1,2-Dichloroethane	<b>5</b>	<u>0.5</u>	<0.17	<0.33	<u>0.53</u> J	
cis-1,2-Dichloroethene	<b>70</b>	<u>7</u>	<b>260</b>	<b>350</b>	<b>200</b>	
trans-1,2-Dichloroethene	<b>100</b>	<u>20</u>	<2.8	2.8	3.7	
1,2-Dichloropropane	<b>5</b>	<u>0.5</u>	<2.5	<u>2.0</u>	<u>0.81</u> J	
Ethylbenzene	<b>700</b>	<u>140</u>	<0.4	<0.81	0.38 J	
Methylene Chloride	<b>5</b>	<u>0.5</u>	<5.6	<b>8.5</b>	<u>2.5</u> J	
Methyl Ethyl Ketone	<b>4000</b>	<u>800</u>	<0.58	<1.2	6.2	
Methyl tert-butyl ether	<b>60</b>	<u>12</u>	<1.2	2.1	11	
Tetrachloroethene	<b>5</b>	<u>0.5</u>	<b>490</b>	<b>470</b>	<b>380</b>	
Toluene	<b>800</b>	<u>160</u>	<0.37	<0.73	5.3	
Trichloroethene	<b>5</b>	<u>0.5</u>	<b>240</b>	<b>220</b>	<b>190</b>	
1,1,1-Trichloroethane	<b>200</b>	<u>40</u>	<b>300</b>	<b>200</b>	<b>200</b>	
m- & p-Xylene	<b>2,000</b>	<u>400</u>	<0.98	<2.0	0.95 J	
o-Xylene			<0.35	<0.71	0.32 J	
Ethane	NSV		NA	<0.21	NA	
Ethene			NA	<0.41	NA	
Methane			NA	6.1	NA	
<b>Total VOCs</b>			<b>1,373</b>	<b>1,331</b>	<b>1,050</b>	
<b>Other Constituents (mg/l)</b>						
Sulfate	<b>250</b>	<u>125</u>	NA	41	NA	
Alkalinity, Total as CaCO <sub>3</sub>	<b>Not Applicable</b>		NA	57	NA	
Iron, Dissolved	<b>0.3</b>	<u>0.15</u>	NA	<b>0.41</b>	NA	
Manganese, Dissolved	<b>0.05</b>	<u>0.0025</u>	NA	<b>3.7</b>	NA	
Nitrogen (NO <sub>2</sub> +NO <sub>3</sub> )	<b>Not Applicable</b>		NA	8.3	NA	
Total Organic Carbon	<b>Not Applicable</b>		NA	4.0	NA	

TABLE 5

SUMMARY OF COMPOUNDS DETECTED IN W-35  
OCTOBER 2018 - MAY 2019

Compound	NR 140 ES	NR 140 PAL	10/25/18	03/27/19	05/22/19
Date					
<b>RNA Parameters</b>					
Temp (°C)	NSV		NA	NA	10.88
Cond. (mS/cm)			NA	NA	6.023
DO (mg/L)			NA	NA	8.28
pH			NA	NA	5.42
ORP (mV)			NA	NA	188.6

NOTES:

NR 140 enforcement standards (ES) and Preventative Action Limits (PALs) - Register February 2017 No. 734 - downloaded from Wisconsin State Legislature website:

[http://docs.legis.wisconsin.gov/code/admin\\_code/nr/100/140](http://docs.legis.wisconsin.gov/code/admin_code/nr/100/140) on 5/2/2018.

NR 140 ES and PALs for VOCs taken from Table 1 of NR 140.

NR 140 ES and PALs for sulfate, iron, and manganese are Public Welfare Groundwater Quality Standards taken from Table 2 of NR 140.

There are methods for establishing groundwater standards for indicator parameters of alkalinity, conductivity, total organic carbon, and nitrogen; however, those relate to determining increases in their concentrations over background concentrations and do not apply to this situation.

VOCs = Volatile Organic Compounds

CVOCs = Chlorinated Volatile Organic Compounds

NA = Constituent Not Analyzed

NSV = No NR 140 Standard Value

J = Reported values fall below the Limit of Quantitation set by the lab.

Values above an NR 140 PAL but less than the ES are underlined.

Values above an NR 140 ES are in bold.

Temp (°C) = Temperature measured in degrees Celsius

Cond. (mS/cm) = Conductivity measured in milliSiemens per centimeter

DO (mg/L) = Dissolved oxygen measured in milligrams per liter

ORP (mV) = Oxidation Reduction Potential measured in millivolts

**APPENDIX A**

**\LABORATORY REPORTS FOR GROUNDWATER SAMPLES**  
**OCTOBER 2018 THROUGH JULY 2019**





The analytical results and QA/QC data included with this report were reviewed by AWM on 11/07/18.

07-Nov-2018

Anthony Miller  
Gannett Fleming, Inc.  
8025 Excelsior Dr.  
Madison, WI 53717-1900

Re: **WRR (55929.005)**

Work Order: **18101771**

Dear Anthony,

ALS Environmental received 25 samples on 26-Oct-2018 for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental - Holland and for only the analyses requested.

Sample results are compliant with industry accepted practices and Quality Control results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 83.

If you have any questions regarding this report, please feel free to contact me:

ADDRESS: 3352 128th Avenue, Holland, MI, USA  
PHONE: +1 (616) 399-6070 FAX: +1 (616) 399-6185

Sincerely,

A handwritten signature in cursive script that reads "Ehrland Bosworth".

Electronically approved by: Ehrland Bosworth

Ehrland Bosworth  
Project Manager

### Report of Laboratory Analysis

Certificate No: WI: 399084510

ALS GROUP USA, CORP Part of the ALS Laboratory Group A Campbell Brothers Limited Company

Client: Gannett Fleming, Inc.  
 Project: WRR (55929.005)  
 Work Order: 18101771

**Work Order Sample Summary**

<u>Lab Samp ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Tag Number</u>	<u>Collection Date</u>	<u>Date Received</u>	<u>Hold</u>
18101771-01	W-5	Groundwater		10/23/2018 14:45	10/26/2018 10:30	<input type="checkbox"/>
18101771-02	W-6	Groundwater		10/22/2018 18:00	10/26/2018 10:30	<input type="checkbox"/>
18101771-03	W-6 DUP	Groundwater		10/22/2018 18:00	10/26/2018 10:30	<input type="checkbox"/>
18101771-04	W-17 A	Groundwater		10/23/2018 10:30	10/26/2018 10:30	<input type="checkbox"/>
18101771-05	W-17 B	Groundwater		10/23/2018 10:20	10/26/2018 10:30	<input type="checkbox"/>
18101771-06	W-26	Groundwater		10/23/2018 11:30	10/26/2018 10:30	<input type="checkbox"/>
18101771-07	W-27	Groundwater		10/23/2018 09:40	10/26/2018 10:30	<input type="checkbox"/>
18101771-08	W-28	Groundwater		10/23/2018 10:45	10/26/2018 10:30	<input type="checkbox"/>
18101771-09	W-30 A	Groundwater		10/23/2018 11:15	10/26/2018 10:30	<input type="checkbox"/>
18101771-10	W-30 B	Groundwater		10/23/2018 11:05	10/26/2018 10:30	<input type="checkbox"/>
18101771-11	W-31A	Groundwater		10/23/2018 13:10	10/26/2018 10:30	<input type="checkbox"/>
18101771-12	W-31A DUP	Groundwater		10/23/2018 13:10	10/26/2018 10:30	<input type="checkbox"/>
18101771-13	W-31B	Groundwater		10/23/2018 13:30	10/26/2018 10:30	<input type="checkbox"/>
18101771-14	MW-111	Groundwater		10/23/2018 09:15	10/26/2018 10:30	<input type="checkbox"/>
18101771-15	MW-111A	Groundwater		10/23/2018 09:10	10/26/2018 10:30	<input type="checkbox"/>
18101771-16	MW-111B	Groundwater		10/23/2018 09:08	10/26/2018 10:30	<input type="checkbox"/>
18101771-17	MW-115	Groundwater		10/23/2018 09:30	10/26/2018 10:30	<input type="checkbox"/>
18101771-18	MW-115A	Groundwater		10/23/2018 09:45	10/26/2018 10:30	<input type="checkbox"/>
18101771-19	MW-115B	Groundwater		10/23/2018 10:00	10/26/2018 10:30	<input type="checkbox"/>
18101771-20	TW-1	Groundwater		10/22/2018 19:00	10/26/2018 10:30	<input type="checkbox"/>
18101771-21	RW-12	Groundwater		10/23/2018 13:40	10/26/2018 10:30	<input type="checkbox"/>
18101771-22	FB	Groundwater		10/23/2018 08:10	10/26/2018 10:30	<input type="checkbox"/>
18101771-23	MB	Groundwater		10/23/2018 10:50	10/26/2018 10:30	<input type="checkbox"/>
18101771-24	Trip Blank	Groundwater		10/22/2018	10/26/2018 10:30	<input type="checkbox"/>
18101771-25	W-35	Groundwater		10/25/2018 08:50	10/26/2018 10:30	<input type="checkbox"/>

**Client:** Gannett Fleming, Inc.  
**Project:** WRR (55929.005)  
**WorkOrder:** 18101771

**QUALIFIERS,  
ACRONYMS, UNITS**

<u>Qualifier</u>	<u>Description</u>
*	Value exceeds Regulatory Limit
**	Estimated Value
a	Analyte is non-accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
Hr	BOD/CBOD - Sample was reset outside Hold Time, value should be considered estimated.
J	Analyte is present at an estimated concentration between the MDL and Report Limit
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and Reporting Limit, sample results may exhibit background or reagent contamination at the observed level.

<u>Acronym</u>	<u>Description</u>
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCS D	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

<u>Units Reported</u>	<u>Description</u>
µg/L	Micrograms per Liter

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**Client:** Gannett Fleming, Inc.  
**Project:** WRR (55929.005)  
**Work Order:** 18101771

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**Case Narrative**

Samples for the above noted Work Order were received on 10/26/18. The attached "Sample Receipt Checklist" documents the status of custody seals, container integrity, sample condition, preservation, and temperature compliance.

In order to ensure compliance with NR 149 criteria, please note the following report format:

- (1) The Limit of Detection (LOD) is reported as the MDL (Method Detection Limit)
- (2) The Limit of Quantitation (LOQ) is reported as the PQL (Practical Quantitation Limit)
- (3) All reported concentrations, including those for the LOD and LOQ, are adjusted for any required dilutions
- (4) All reported concentrations, including those for the LOD and LOQ, are adjusted for moisture content when samples are reported on a dry weight basis.

Samples were analyzed according to the analytical methodology previously documented in the "Work Order Acknowledgement". Methodologies are also documented in the "Analytical Result" section for each sample. Quality control results are listed in the "QC Report" section. Detail as to the associated samples can be found at the end of each batch summary. If applicable, results are appropriately qualified in the Analytical Result and QC Report sections. The "Qualifiers" section documents the various qualifiers, acronyms, and units utilized in reporting.

With the following exceptions, all sample analyses achieved analytical criteria.

**Volatile Organics:**

Batch R247947a, Method WI\_VOC\_8260\_W, Sample 18101771-25A MS: The VOC MS recovery was outside of the control limit. However, the MSD recovery and the RPD between the MS and MSD were in control. No qualification is required for multiple analytes, please reference QC report for full compound list.

Batch R247966b, Method WI\_VOC\_8260\_W, Sample 18101771-21A MS and -21A MSD: The VOC MS and/or MSD recoveries were below the lower control limit. The corresponding result in the parent sample may be biased low for multiple analytes. Please reference QC report for full compound list.

Batch R247987, Method WI\_VOC\_8260\_W, Sample 18101771-04A MS: The MS recovery was below the lower control limit. The corresponding result in the parent sample may be biased low for Bromobenzene.

Batch R247987, Method WI\_VOC\_8260\_W, Sample 18101771-04A MSD: The VOC RPD between the MS and MSD was outside the control limit. The corresponding result in the

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**Client:** Gannett Fleming, Inc.  
**Project:** WRR (55929.005)  
**Work Order:** 18101771

**Case Narrative**

---

parent sample should be considered estimated for Bromobenzene.

Batch R247987, Method WI\_VOC\_8260\_W, Sample 18101771-11A: The reporting limit is elevated due to dilution needed to eliminate matrix-related interference.

Batch R247987, Method WI\_VOC\_8260\_W, Sample 18101771-12A: The reporting limit is elevated due to dilution needed to eliminate matrix-related interference.

Batch R247987, Method WI\_VOC\_8260\_W, Sample 18101771-17A: The reporting limit is elevated due to dilution needed to eliminate matrix-related interference.

Batch R247987, Method WI\_VOC\_8260\_W, Sample 18101771-18A: The reporting limit is elevated due to dilution needed to eliminate matrix-related interference.

Batch R247947a, Method WI\_VOC\_8260\_W, Sample 18101771-21A: The reporting limit is elevated due to dilution needed to eliminate matrix-related interference.

Batch R247947a, Method WI\_VOC\_8260\_W, Sample 18101771-25A: The reporting limit is elevated due to dilution needed to eliminate matrix-related interference.

# ALS Group, USA

Date: 07-Nov-18

Client: Gannett Fleming, Inc.  
 Project: WRR (55929.005)  
 Sample ID: Trip Blank  
 Collection Date: 10/22/2018

Work Order: 18101771  
 Lab ID: 18101771-24  
 Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>VOLATILE ORGANIC COMPOUNDS</b>			Method: SW8260C			Analyst: WH	
1,1,1,2-Tetrachloroethane	U		0.22	0.74	µg/L	1	10/27/2018 12:53
1,1,1-Trichloroethane	U		0.36	1.2	µg/L	1	10/27/2018 12:53
1,1,2,2-Tetrachloroethane	U		0.19	0.62	µg/L	1	10/27/2018 12:53
1,1,2-Trichloroethane	U		0.40	1.3	µg/L	1	10/27/2018 12:53
1,1-Dichloroethane	U		0.31	1.0	µg/L	1	10/27/2018 12:53
1,1-Dichloroethene	U		0.28	0.92	µg/L	1	10/27/2018 12:53
1,1-Dichloropropene	U		0.35	1.2	µg/L	1	10/27/2018 12:53
1,2,3-Trichlorobenzene	U		0.17	0.55	µg/L	1	10/27/2018 12:53
1,2,3-Trichloropropane	U		0.11	0.40	µg/L	1	10/27/2018 12:53
1,2,4-Trichlorobenzene	U		0.21	0.71	µg/L	1	10/27/2018 12:53
1,2,4-Trimethylbenzene	U		0.37	1.2	µg/L	1	10/27/2018 12:53
1,2-Dibromo-3-chloropropane	U		0.97	3.2	µg/L	1	10/27/2018 12:53
1,2-Dibromoethane	U		0.98	3.3	µg/L	1	10/27/2018 12:53
1,2-Dichlorobenzene	U		0.22	0.73	µg/L	1	10/27/2018 12:53
1,2-Dichloroethane	U		0.17	0.55	µg/L	1	10/27/2018 12:53
1,2-Dichloropropane	U		0.25	0.83	µg/L	1	10/27/2018 12:53
1,3,5-Trimethylbenzene	U		0.29	0.95	µg/L	1	10/27/2018 12:53
1,3-Dichlorobenzene	U		0.29	0.96	µg/L	1	10/27/2018 12:53
1,3-Dichloropropane	U		0.18	0.61	µg/L	1	10/27/2018 12:53
1,4-Dichlorobenzene	U		0.21	0.71	µg/L	1	10/27/2018 12:53
2,2-Dichloropropane	U		0.44	1.5	µg/L	1	10/27/2018 12:53
2-Butanone	U		0.58	2.0	µg/L	1	10/27/2018 12:53
2-Chlorotoluene	U		0.32	1.1	µg/L	1	10/27/2018 12:53
2-Propanol	U		33	110	µg/L	1	10/27/2018 12:53
4-Chlorotoluene	U		0.28	0.95	µg/L	1	10/27/2018 12:53
4-Methyl-2-pentanone	U		0.11	0.40	µg/L	1	10/27/2018 12:53
Acetone	U		0.92	3.1	µg/L	1	10/27/2018 12:53
Benzene	U		0.30	1.0	µg/L	1	10/27/2018 12:53
Bromobenzene	U		0.24	0.80	µg/L	1	10/27/2018 12:53
Bromochloromethane	U		0.20	0.66	µg/L	1	10/27/2018 12:53
Bromodichloromethane	U		0.23	0.78	µg/L	1	10/27/2018 12:53
Bromoform	U		0.77	2.6	µg/L	1	10/27/2018 12:53
Bromomethane	U		0.38	1.3	µg/L	1	10/27/2018 12:53
Carbon tetrachloride	U		0.31	1.0	µg/L	1	10/27/2018 12:53
Chlorobenzene	U		0.27	0.90	µg/L	1	10/27/2018 12:53
Chloroethane	U		0.29	0.97	µg/L	1	10/27/2018 12:53
<b>Chloroform</b>	<b>1.1</b>		<b>0.26</b>	<b>0.86</b>	<b>µg/L</b>	1	10/27/2018 12:53
Chloromethane	U		0.17	0.57	µg/L	1	10/27/2018 12:53

Note: See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group, USA

Date: 07-Nov-18

**Client:** Gannett Fleming, Inc.  
**Project:** WRR (55929.005)  
**Sample ID:** Trip Blank  
**Collection Date:** 10/22/2018

**Work Order:** 18101771  
**Lab ID:** 18101771-24  
**Matrix:** GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
cis-1,2-Dichloroethene	U		0.25	0.85	µg/L	1	10/27/2018 12:53
cis-1,3-Dichloropropene	U		0.39	1.3	µg/L	1	10/27/2018 12:53
Dibromochloromethane	U		0.38	1.2	µg/L	1	10/27/2018 12:53
Dibromomethane	U		0.25	0.83	µg/L	1	10/27/2018 12:53
Dichlorodifluoromethane	U		0.13	0.44	µg/L	1	10/27/2018 12:53
Diisopropyl ether	U		0.13	0.43	µg/L	1	10/27/2018 12:53
Ethylbenzene	U		0.40	1.3	µg/L	1	10/27/2018 12:53
Hexachlorobutadiene	U		0.24	0.80	µg/L	1	10/27/2018 12:53
Isopropylbenzene	U		0.31	1.0	µg/L	1	10/27/2018 12:53
m,p-Xylene	U		0.98	3.3	µg/L	1	10/27/2018 12:53
Methyl tert-butyl ether	U		0.12	0.40	µg/L	1	10/27/2018 12:53
Methylene chloride	U		0.56	1.8	µg/L	1	10/27/2018 12:53
Naphthalene	U		0.18	0.59	µg/L	1	10/27/2018 12:53
n-Butylbenzene	U		0.22	0.73	µg/L	1	10/27/2018 12:53
n-Propylbenzene	U		0.24	0.81	µg/L	1	10/27/2018 12:53
o-Xylene	U		0.35	1.2	µg/L	1	10/27/2018 12:53
p-Isopropyltoluene	U		0.14	0.48	µg/L	1	10/27/2018 12:53
sec-Butylbenzene	U		0.29	0.98	µg/L	1	10/27/2018 12:53
Styrene	U		0.24	0.79	µg/L	1	10/27/2018 12:53
tert-Butylbenzene	U		0.34	1.2	µg/L	1	10/27/2018 12:53
Tetrachloroethene	U		0.27	0.91	µg/L	1	10/27/2018 12:53
Toluene	U		0.37	1.2	µg/L	1	10/27/2018 12:53
trans-1,2-Dichloroethene	U		0.28	0.93	µg/L	1	10/27/2018 12:53
trans-1,3-Dichloropropene	U		0.82	2.7	µg/L	1	10/27/2018 12:53
Trichloroethene	U		0.30	0.99	µg/L	1	10/27/2018 12:53
Trichlorofluoromethane	U		0.20	0.66	µg/L	1	10/27/2018 12:53
Vinyl chloride	U		0.20	0.68	µg/L	1	10/27/2018 12:53
Xylenes, Total	U		1.3	4.4	µg/L	1	10/27/2018 12:53
<i>Surr: 1,2-Dichloroethane-d4</i>	99.6			75-120	%REC	1	10/27/2018 12:53
<i>Surr: 4-Bromofluorobenzene</i>	96.4			80-110	%REC	1	10/27/2018 12:53
<i>Surr: Dibromofluoromethane</i>	100			85-115	%REC	1	10/27/2018 12:53
<i>Surr: Toluene-d8</i>	93.2			85-110	%REC	1	10/27/2018 12:53

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

**ALS Group, USA**

Date: 07-Nov-18

**Client:** Gannett Fleming, Inc.  
**Project:** WRR (55929.005)  
**Sample ID:** W-35  
**Collection Date:** 10/25/2018 08:50 AM

**Work Order:** 18101771  
**Lab ID:** 18101771-25  
**Matrix:** GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>VOLATILE ORGANIC COMPOUNDS</b>			Method: SW8260C			Analyst: PM	
1,1,1,2-Tetrachloroethane	U		2.2	7.4	µg/L	10	10/29/2018 19:34
<b>1,1,1-Trichloroethane</b>	<b>300</b>		<b>3.6</b>	<b>12</b>	<b>µg/L</b>	10	10/29/2018 19:34
1,1,2,2-Tetrachloroethane	U		1.9	6.2	µg/L	10	10/29/2018 19:34
1,1,2-Trichloroethane	U		4.0	13	µg/L	10	10/29/2018 19:34
<b>1,1-Dichloroethane</b>	<b>43</b>		<b>3.1</b>	<b>10</b>	<b>µg/L</b>	10	10/29/2018 19:34
<b>1,1-Dichloroethene</b>	<b>10</b>		<b>2.8</b>	<b>9.2</b>	<b>µg/L</b>	10	10/29/2018 19:34
1,1-Dichloropropene	U		3.5	12	µg/L	10	10/29/2018 19:34
1,2,3-Trichlorobenzene	U		1.7	5.5	µg/L	10	10/29/2018 19:34
1,2,3-Trichloropropane	U		1.1	4.0	µg/L	10	10/29/2018 19:34
1,2,4-Trichlorobenzene	U		2.1	7.1	µg/L	10	10/29/2018 19:34
1,2,4-Trimethylbenzene	U		3.7	12	µg/L	10	10/29/2018 19:34
1,2-Dibromo-3-chloropropane	U		9.7	32	µg/L	10	10/29/2018 19:34
1,2-Dibromoethane	U		9.8	33	µg/L	10	10/29/2018 19:34
1,2-Dichlorobenzene	U		2.2	7.3	µg/L	10	10/29/2018 19:34
1,2-Dichloroethane	U		1.7	5.5	µg/L	10	10/29/2018 19:34
1,2-Dichloropropane	U		2.5	8.3	µg/L	10	10/29/2018 19:34
1,3,5-Trimethylbenzene	U		2.9	9.5	µg/L	10	10/29/2018 19:34
1,3-Dichlorobenzene	U		2.9	9.6	µg/L	10	10/29/2018 19:34
1,3-Dichloropropane	U		1.8	6.1	µg/L	10	10/29/2018 19:34
1,4-Dichlorobenzene	U		2.1	7.1	µg/L	10	10/29/2018 19:34
2,2-Dichloropropane	U		4.4	15	µg/L	10	10/29/2018 19:34
2-Butanone	U		5.8	20	µg/L	10	10/29/2018 19:34
2-Chlorotoluene	U		3.2	11	µg/L	10	10/29/2018 19:34
2-Propanol	U		330	1,100	µg/L	10	10/29/2018 19:34
4-Chlorotoluene	U		2.8	9.5	µg/L	10	10/29/2018 19:34
4-Methyl-2-pentanone	U		1.1	4.0	µg/L	10	10/29/2018 19:34
<b>Acetone</b>	<b>19</b>	<b>J</b>	<b>9.2</b>	<b>31</b>	<b>µg/L</b>	10	10/29/2018 19:34
Benzene	U		3.0	10	µg/L	10	10/29/2018 19:34
Bromobenzene	U		2.4	8.0	µg/L	10	10/29/2018 19:34
Bromochloromethane	U		2.0	6.6	µg/L	10	10/29/2018 19:34
Bromodichloromethane	U		2.3	7.8	µg/L	10	10/29/2018 19:34
Bromoform	U		7.7	26	µg/L	10	10/29/2018 19:34
Bromomethane	U		3.8	13	µg/L	10	10/29/2018 19:34
Carbon tetrachloride	U		3.1	10	µg/L	10	10/29/2018 19:34
Chlorobenzene	U		2.7	9.0	µg/L	10	10/29/2018 19:34
Chloroethane	U		2.9	9.7	µg/L	10	10/29/2018 19:34
Chloroform	U		2.6	8.6	µg/L	10	10/29/2018 19:34
<b>Chloromethane</b>	<b>11</b>		<b>1.7</b>	<b>5.7</b>	<b>µg/L</b>	10	10/29/2018 19:34

**Note:** See Qualifiers page for a list of qualifiers and their definitions.



# ALS Group, USA

Date: 07-Nov-18

**Client:** Gannett Fleming, Inc.  
**Project:** WRR (55929.005)  
**Sample ID:** W-35  
**Collection Date:** 10/25/2018 08:50 AM

**Work Order:** 18101771  
**Lab ID:** 18101771-25  
**Matrix:** GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>cis-1,2-Dichloroethene</b>	<b>260</b>		<b>2.5</b>	<b>8.5</b>	<b>µg/L</b>	10	10/29/2018 19:34
cis-1,3-Dichloropropene	U		3.9	13	µg/L	10	10/29/2018 19:34
Dibromochloromethane	U		3.8	12	µg/L	10	10/29/2018 19:34
Dibromomethane	U		2.5	8.3	µg/L	10	10/29/2018 19:34
Dichlorodifluoromethane	U		1.3	4.4	µg/L	10	10/29/2018 19:34
Diisopropyl ether	U		1.3	4.3	µg/L	10	10/29/2018 19:34
Ethylbenzene	U		4.0	13	µg/L	10	10/29/2018 19:34
Hexachlorobutadiene	U		2.4	8.0	µg/L	10	10/29/2018 19:34
Isopropylbenzene	U		3.1	10	µg/L	10	10/29/2018 19:34
m,p-Xylene	U		9.8	33	µg/L	10	10/29/2018 19:34
Methyl tert-butyl ether	U		1.2	4.0	µg/L	10	10/29/2018 19:34
Methylene chloride	U		5.6	18	µg/L	10	10/29/2018 19:34
Naphthalene	U		1.8	5.9	µg/L	10	10/29/2018 19:34
n-Butylbenzene	U		2.2	7.3	µg/L	10	10/29/2018 19:34
n-Propylbenzene	U		2.4	8.1	µg/L	10	10/29/2018 19:34
o-Xylene	U		3.5	12	µg/L	10	10/29/2018 19:34
p-Isopropyltoluene	U		1.4	4.8	µg/L	10	10/29/2018 19:34
sec-Butylbenzene	U		2.9	9.8	µg/L	10	10/29/2018 19:34
Styrene	U		2.4	7.9	µg/L	10	10/29/2018 19:34
tert-Butylbenzene	U		3.4	12	µg/L	10	10/29/2018 19:34
<b>Tetrachloroethene</b>	<b>490</b>		<b>2.7</b>	<b>9.1</b>	<b>µg/L</b>	10	10/29/2018 19:34
Toluene	U		3.7	12	µg/L	10	10/29/2018 19:34
trans-1,2-Dichloroethene	U		2.8	9.3	µg/L	10	10/29/2018 19:34
trans-1,3-Dichloropropene	U		8.2	27	µg/L	10	10/29/2018 19:34
<b>Trichloroethene</b>	<b>240</b>		<b>3.0</b>	<b>9.9</b>	<b>µg/L</b>	10	10/29/2018 19:34
Trichlorofluoromethane	U		2.0	6.6	µg/L	10	10/29/2018 19:34
Vinyl chloride	U		2.0	6.8	µg/L	10	10/29/2018 19:34
Xylenes, Total	U		13	44	µg/L	10	10/29/2018 19:34
Surr: 1,2-Dichloroethane-d4	113			75-120	%REC	10	10/29/2018 19:34
Surr: 4-Bromofluorobenzene	91.2			80-110	%REC	10	10/29/2018 19:34
Surr: Dibromofluoromethane	107			85-115	%REC	10	10/29/2018 19:34
Surr: Toluene-d8	92.3			85-110	%REC	10	10/29/2018 19:34

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

Client: Gannett Fleming, Inc.  
 Work Order: 18101771  
 Project: WRR (55929.005)

**QC BATCH REPORT**

Batch ID: **R247947a** Instrument ID **VMS10** Method: **SW8260C**

MBLK		Sample ID: <b>VBK1-181026-R247947a</b>			Units: <b>µg/L</b>		Analysis Date: <b>10/29/2018 11:28 A</b>				
Client ID:		Run ID: <b>VMS10_181029A</b>			SeqNo: <b>5351736</b>		Prep Date:		DF: <b>1</b>		
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	U	0.22	0.74								
1,1,1-Trichloroethane	U	0.36	1.2								
1,1,2,2-Tetrachloroethane	U	0.19	0.62								
1,1,2-Trichloroethane	U	0.4	1.3								
1,1-Dichloroethane	U	0.31	1.0								
1,1-Dichloroethene	U	0.28	0.92								
1,1-Dichloropropene	U	0.35	1.2								
1,2,3-Trichlorobenzene	U	0.17	0.55								
1,2,3-Trichloropropane	U	0.11	0.40								
1,2,4-Trichlorobenzene	U	0.21	0.71								
1,2,4-Trimethylbenzene	U	0.37	1.2								
1,2-Dibromo-3-chloropropane	U	0.97	3.2								
1,2-Dibromoethane	U	0.98	3.3								
1,2-Dichlorobenzene	U	0.22	0.73								
1,2-Dichloroethane	U	0.17	0.55								
1,2-Dichloropropane	U	0.25	0.83								
1,3,5-Trimethylbenzene	U	0.29	0.95								
1,3-Dichlorobenzene	U	0.29	0.96								
1,3-Dichloropropane	U	0.18	0.61								
1,4-Dichlorobenzene	U	0.21	0.71								
2,2-Dichloropropane	U	0.44	1.5								
2-Butanone	U	0.58	2.0								
2-Chlorotoluene	U	0.32	1.1								
2-Propanol	U	33	110								
4-Chlorotoluene	U	0.28	0.95								
4-Methyl-2-pentanone	U	0.11	0.40								
Acetone	U	0.92	3.1								
Benzene	U	0.3	1.0								
Bromobenzene	U	0.24	0.80								
Bromochloromethane	U	0.2	0.66								
Bromodichloromethane	U	0.23	0.78								
Bromoform	U	0.77	2.6								
Bromomethane	U	0.38	1.3								
Carbon tetrachloride	U	0.31	1.0								
Chlorobenzene	U	0.27	0.90								
Chloroethane	U	0.29	0.97								
Chloroform	U	0.26	0.86								
Chloromethane	U	0.17	0.57								
cis-1,2-Dichloroethene	U	0.25	0.85								
cis-1,3-Dichloropropene	U	0.39	1.3								
Dibromochloromethane	U	0.38	1.2								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 18101771  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: <b>R247947a</b>	Instrument ID <b>VMS10</b>	Method: <b>SW8260C</b>						
Dibromomethane	U	0.25	0.83					
Dichlorodifluoromethane	U	0.13	0.44					
Diisopropyl ether	U	0.13	0.43					
Ethylbenzene	U	0.4	1.3					
Hexachlorobutadiene	U	0.24	0.80					
Isopropylbenzene	U	0.31	1.0					
m,p-Xylene	U	0.98	3.3					
Methyl tert-butyl ether	U	0.12	0.40					
Methylene chloride	U	0.56	1.8					
Naphthalene	U	0.18	0.59					
n-Butylbenzene	U	0.22	0.73					
n-Propylbenzene	U	0.24	0.81					
o-Xylene	U	0.35	1.2					
p-Isopropyltoluene	U	0.14	0.48					
sec-Butylbenzene	U	0.29	0.98					
Styrene	U	0.24	0.79					
tert-Butylbenzene	U	0.34	1.2					
Tetrachloroethene	U	0.27	0.91					
Toluene	U	0.37	1.2					
trans-1,2-Dichloroethene	U	0.28	0.93					
trans-1,3-Dichloropropene	U	0.82	2.7					
Trichloroethene	U	0.3	0.99					
Trichlorofluoromethane	U	0.2	0.66					
Vinyl chloride	U	0.2	0.68					
Xylenes, Total	U	1.3	4.4					
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>21.64</i>	<i>0</i>	<i>0</i>	<i>20</i>	<i>0</i>	<i>108</i>	<i>75-120</i>	<i>0</i>
<i>Surr: 4-Bromofluorobenzene</i>	<i>18.08</i>	<i>0</i>	<i>0</i>	<i>20</i>	<i>0</i>	<i>90.4</i>	<i>80-110</i>	<i>0</i>
<i>Surr: Dibromofluoromethane</i>	<i>20.31</i>	<i>0</i>	<i>0</i>	<i>20</i>	<i>0</i>	<i>102</i>	<i>85-115</i>	<i>0</i>
<i>Surr: Toluene-d8</i>	<i>18.34</i>	<i>0</i>	<i>0</i>	<i>20</i>	<i>0</i>	<i>91.7</i>	<i>85-110</i>	<i>0</i>

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 18101771  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: **R247947a** Instrument ID **VMS10** Method: **SW8260C**

LCS		Sample ID: <b>VLCSW1-181026-R247947a</b>				Units: <b>µg/L</b>		Analysis Date: <b>10/29/2018 10:41 A</b>			
Client ID:		Run ID: <b>VMS10_181029A</b>				SeqNo: <b>5351734</b>		Prep Date:		DF: <b>1</b>	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	21.2	0.22	0.74	20	0	106	73-114	0			
1,1,1-Trichloroethane	22.64	0.36	1.2	20	0	113	75-130	0			
1,1,2,2-Tetrachloroethane	20.3	0.19	0.62	20	0	102	75-130	0			
1,1,2-Trichloroethane	20.07	0.4	1.3	20	0	100	75-125	0			
1,1-Dichloroethane	20.16	0.31	1.0	20	0	101	75-133	0			
1,1-Dichloroethene	20.95	0.28	0.92	20	0	105	70-145	0			
1,1-Dichloropropene	20.41	0.35	1.2	20	0	102	75-135	0			
1,2,3-Trichlorobenzene	20.06	0.17	0.55	20	0	100	70-140	0			
1,2,3-Trichloropropane	20.48	0.11	0.40	20	0	102	75-125	0			
1,2,4-Trichlorobenzene	19.76	0.21	0.71	20	0	98.8	70-135	0			
1,2,4-Trimethylbenzene	20.36	0.37	1.2	20	0	102	75-130	0			
1,2-Dibromo-3-chloropropane	20.24	0.97	3.2	20	0	101	60-130	0			
1,2-Dibromoethane	22.02	0.98	3.3	20	0	110	90-195	0			
1,2-Dichlorobenzene	20.02	0.22	0.73	20	0	100	70-130	0			
1,2-Dichloroethane	21.84	0.17	0.55	20	0	109	78-125	0			
1,2-Dichloropropane	19.17	0.25	0.83	20	0	95.8	75-125	0			
1,3,5-Trimethylbenzene	20.72	0.29	0.95	20	0	104	75-130	0			
1,3-Dichlorobenzene	19.04	0.29	0.96	20	0	95.2	75-130	0			
1,3-Dichloropropane	19.19	0.18	0.61	20	0	96	75-125	0			
1,4-Dichlorobenzene	20.64	0.21	0.71	20	0	103	75-130	0			
2,2-Dichloropropane	21.73	0.44	1.5	20	0	109	43-150	0			
2-Butanone	17.66	0.58	2.0	20	0	88.3	55-150	0			
2-Chlorotoluene	20.22	0.32	1.1	20	0	101	76-117	0			
4-Chlorotoluene	21.63	0.28	0.95	20	0	108	80-125	0			
4-Methyl-2-pentanone	26.38	0.11	0.40	20	0	132	77-178	0			
Acetone	18.21	0.92	3.1	20	0	91	60-160	0			
Benzene	21.05	0.3	1.0	20	0	105	85-125	0			
Bromobenzene	21.09	0.24	0.80	20	0	105	80-125	0			
Bromochloromethane	22.82	0.2	0.66	20	0	114	72-141	0			
Bromodichloromethane	19.72	0.23	0.78	20	0	98.6	75-125	0			
Bromoform	18.63	0.77	2.6	20	0	93.2	60-125	0			
Bromomethane	22.32	0.38	1.3	20	0	112	30-185	0			
Carbon tetrachloride	20.94	0.31	1.0	20	0	105	65-140	0			
Chlorobenzene	18.97	0.27	0.90	20	0	94.8	80-120	0			
Chloroethane	24.02	0.29	0.97	20	0	120	31-172	0			
Chloroform	20.52	0.26	0.86	20	0	103	80-130	0			
Chloromethane	19.96	0.17	0.57	20	0	99.8	46-148	0			
cis-1,2-Dichloroethene	23.87	0.25	0.85	20	0	119	75-134	0			
cis-1,3-Dichloropropene	21.4	0.39	1.3	20	0	107	70-130	0			
Dibromochloromethane	18.84	0.38	1.2	20	0	94.2	60-115	0			
Dibromomethane	20.55	0.25	0.83	20	0	103	79-126	0			
Dichlorodifluoromethane	14.28	0.13	0.44	20	0	71.4	20-120	0			
Ethylbenzene	21.75	0.4	1.3	20	0	109	76-123	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 18101771  
 Project: WRR (55929.005)

## QC BATCH REPORT

Batch ID: <b>R247947a</b>	Instrument ID <b>VMS10</b>			Method: <b>SW8260C</b>					
Hexachlorobutadiene	21.77	0.24	0.80	20	0	109	70-155	0	
Isopropylbenzene	22.51	0.31	1.0	20	0	113	80-127	0	
m,p-Xylene	45.39	0.98	3.3	40	0	113	75-130	0	
Methyl tert-butyl ether	21.43	0.12	0.40	20	0	107	80-130	0	
Methylene chloride	20.3	0.56	1.8	20	0	102	75-140	0	
Naphthalene	20.91	0.18	0.59	20	0	105	55-160	0	
n-Butylbenzene	20.24	0.22	0.73	20	0	101	75-145	0	
n-Propylbenzene	19.91	0.24	0.81	20	0	99.6	83-135	0	
o-Xylene	22.68	0.35	1.2	20	0	113	80-125	0	
p-Isopropyltoluene	23.02	0.14	0.48	20	0	115	61-164	0	
sec-Butylbenzene	20.28	0.29	0.98	20	0	101	80-134	0	
Styrene	20.67	0.24	0.79	20	0	103	83-137	0	
tert-Butylbenzene	22.5	0.34	1.2	20	0	112	70-130	0	
Tetrachloroethene	21.41	0.27	0.91	20	0	107	68-166	0	
Toluene	20.27	0.37	1.2	20	0	101	76-125	0	
trans-1,2-Dichloroethene	21.11	0.28	0.93	20	0	106	80-140	0	
trans-1,3-Dichloropropene	20.35	0.82	2.7	20	0	102	56-132	0	
Trichloroethene	21.18	0.3	0.99	20	0	106	84-130	0	
Trichlorofluoromethane	17.67	0.2	0.66	20	0	88.4	60-140	0	
Vinyl chloride	19.32	0.2	0.68	20	0	96.6	50-136	0	
Xylenes, Total	68.07	1.3	4.4	60	0	113	80-126	0	
<i>Surr: 1,2-Dichloroethane-d4</i>	20.39	0	0	20	0	102	75-120	0	
<i>Surr: 4-Bromofluorobenzene</i>	20.77	0	0	20	0	104	80-110	0	
<i>Surr: Dibromofluoromethane</i>	19.55	0	0	20	0	97.8	85-115	0	
<i>Surr: Toluene-d8</i>	19.94	0	0	20	0	99.7	85-110	0	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 18101771  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: **R247947a** Instrument ID **VMS10** Method: **SW8260C**

MS		Sample ID: 18101771-25A MS				Units: µg/L		Analysis Date: 10/29/2018 09:57 P			
Client ID: W-35		Run ID: VMS10_181029A				SeqNo: 5351750		Prep Date:		DF: 10	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	185.6	2.2	7.4	200	0	92.8	73-114	0			
1,1,1-Trichloroethane	418.4	3.6	12	200	296.5	61	75-130	0			S
1,1,2,2-Tetrachloroethane	185.8	1.9	6.2	200	0	92.9	75-130	0			
1,1,2-Trichloroethane	186	4	13	200	0	93	75-125	0			
1,1-Dichloroethane	209.4	3.1	10	200	42.6	83.4	75-133	0			
1,1-Dichloroethene	193.7	2.8	9.2	200	10.3	91.7	70-145	0			
1,1-Dichloropropene	185.1	3.5	12	200	0	92.6	75-135	0			
1,2,3-Trichlorobenzene	182.8	1.7	5.5	200	0	91.4	70-140	0			
1,2,3-Trichloropropane	185.5	1.1	4.0	200	0	92.8	75-125	0			
1,2,4-Trichlorobenzene	181.6	2.1	7.1	200	0	90.8	70-135	0			
1,2,4-Trimethylbenzene	184.3	3.7	12	200	0	92.2	75-130	0			
1,2-Dibromo-3-chloropropane	194.3	9.7	32	200	0	97.2	60-130	0			
1,2-Dibromoethane	200.1	9.8	33	200	0	100	90-195	0			
1,2-Dichlorobenzene	183.5	2.2	7.3	200	0	91.8	70-130	0			
1,2-Dichloroethane	193.4	1.7	5.5	200	0	96.7	78-125	0			
1,2-Dichloropropane	178.4	2.5	8.3	200	0	89.2	75-125	0			
1,3,5-Trimethylbenzene	185	2.9	9.5	200	0	92.5	75-130	0			
1,3-Dichlorobenzene	169.4	2.9	9.6	200	0	84.7	75-130	0			
1,3-Dichloropropane	173.7	1.8	6.1	200	0	86.8	75-125	0			
1,4-Dichlorobenzene	183.5	2.1	7.1	200	0	91.8	75-130	0			
2,2-Dichloropropane	185.5	4.4	15	200	0	92.8	43-150	0			
2-Butanone	150.4	5.8	20	200	0	75.2	55-150	0			
2-Chlorotoluene	178.5	3.2	11	200	0	89.2	76-117	0			
4-Chlorotoluene	182.2	2.8	9.5	200	0	91.1	80-125	0			
4-Methyl-2-pentanone	256.9	1.1	4.0	200	0	128	77-178	0			
Acetone	170.5	9.2	31	200	18.6	76	60-160	0			
Benzene	231.1	3	10	200	0	116	85-125	0			
Bromobenzene	190.9	2.4	8.0	200	0	95.4	80-125	0			
Bromochloromethane	195	2	6.6	200	0	97.5	72-141	0			
Bromodichloromethane	169.3	2.3	7.8	200	0	84.6	75-125	0			
Bromoform	170.2	7.7	26	200	0	85.1	60-125	0			
Bromomethane	183.8	3.8	13	200	0	91.9	30-185	0			
Carbon tetrachloride	194.5	3.1	10	200	0	97.2	65-140	0			
Chlorobenzene	166	2.7	9.0	200	0	83	80-120	0			
Chloroethane	227	2.9	9.7	200	0	114	31-172	0			
Chloroform	177.1	2.6	8.6	200	0	88.6	80-130	0			
Chloromethane	173.5	1.7	5.7	200	10.7	81.4	46-148	0			
cis-1,2-Dichloroethene	424.4	2.5	8.5	200	262.5	81	75-134	0			
cis-1,3-Dichloropropene	190.3	3.9	13	200	0	95.2	70-130	0			
Dibromochloromethane	159.9	3.8	12	200	0	80	60-115	0			
Dibromomethane	181	2.5	8.3	200	0	90.5	79-126	0			
Dichlorodifluoromethane	139.4	1.3	4.4	200	0	69.7	20-120	0			
Ethylbenzene	200.7	4	13	200	0	100	76-123	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 18101771  
 Project: WRR (55929.005)

## QC BATCH REPORT

Batch ID: <b>R247947a</b>	Instrument ID <b>VMS10</b>		Method: <b>SW8260C</b>						
Hexachlorobutadiene	166.8	2.4	8.0	200	0	83.4	70-155	0	
Isopropylbenzene	202.5	3.1	10	200	0	101	80-127	0	
m,p-Xylene	428.4	9.8	33	400	0	107	75-130	0	
Methyl tert-butyl ether	206.2	1.2	4.0	200	0	103	80-130	0	
Methylene chloride	183	5.6	18	200	0	91.5	75-140	0	
Naphthalene	203	1.8	5.9	200	0	102	55-160	0	
n-Butylbenzene	176.4	2.2	7.3	200	0	88.2	75-145	0	
n-Propylbenzene	176.6	2.4	8.1	200	0	88.3	83-135	0	
o-Xylene	208.2	3.5	12	200	0	104	80-125	0	
p-Isopropyltoluene	209.3	1.4	4.8	200	0	105	61-164	0	
sec-Butylbenzene	180.2	2.9	9.8	200	0	90.1	80-134	0	
Styrene	180.5	2.4	7.9	200	0	90.2	83-137	0	
tert-Butylbenzene	202.4	3.4	12	200	0	101	70-130	0	
Tetrachloroethene	582.1	2.7	9.1	200	488.3	46.9	68-166	0	S
Toluene	251.8	3.7	12	200	0	126	76-125	0	S
trans-1,2-Dichloroethene	184.6	2.8	9.3	200	0	92.3	80-140	0	
trans-1,3-Dichloropropene	185.7	8.2	27	200	0	92.8	56-132	0	
Trichloroethene	374.7	3	9.9	200	244.2	65.2	84-130	0	S
Trichlorofluoromethane	176.3	2	6.6	200	0	88.2	60-140	0	
Vinyl chloride	168.6	2	6.8	200	0	84.3	50-136	0	
Xylenes, Total	636.6	13	44	600	0	106	80-126	0	
<i>Surr: 1,2-Dichloroethane-d4</i>	193.6	0	0	200	0	96.8	75-120	0	
<i>Surr: 4-Bromofluorobenzene</i>	204	0	0	200	0	102	80-110	0	
<i>Surr: Dibromofluoromethane</i>	189.7	0	0	200	0	94.8	85-115	0	
<i>Surr: Toluene-d8</i>	194.6	0	0	200	0	97.3	85-110	0	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 18101771  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: **R247947a** Instrument ID **VMS10** Method: **SW8260C**

MSD		Sample ID: 18101771-25A MSD				Units: µg/L			Analysis Date: 10/29/2018 10:13 P		
Client ID: W-35		Run ID: VMS10_181029A				SeqNo: 5351752		Prep Date:		DF: 10	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	186.6	2.2	7.4	200	0	93.3	73-114	185.6	0.537	30	
1,1,1-Trichloroethane	468.3	3.6	12	200	296.5	85.9	75-130	418.4	11.3	30	
1,1,2,2-Tetrachloroethane	189.7	1.9	6.2	200	0	94.8	75-130	185.8	2.08	30	
1,1,2-Trichloroethane	195	4	13	200	0	97.5	75-125	186	4.72	30	
1,1-Dichloroethane	218.1	3.1	10	200	42.6	87.8	75-133	209.4	4.07	30	
1,1-Dichloroethene	194.3	2.8	9.2	200	10.3	92	70-145	193.7	0.309	30	
1,1-Dichloropropene	180.2	3.5	12	200	0	90.1	75-135	185.1	2.68	30	
1,2,3-Trichlorobenzene	194.8	1.7	5.5	200	0	97.4	70-140	182.8	6.36	30	
1,2,3-Trichloropropane	199.8	1.1	4.0	200	0	99.9	75-125	185.5	7.42	30	
1,2,4-Trichlorobenzene	191.5	2.1	7.1	200	0	95.8	70-135	181.6	5.31	30	
1,2,4-Trimethylbenzene	185.8	3.7	12	200	0	92.9	75-130	184.3	0.811	30	
1,2-Dibromo-3-chloropropane	197.8	9.7	32	200	0	98.9	60-130	194.3	1.79	30	
1,2-Dibromoethane	204.8	9.8	33	200	0	102	90-195	200.1	2.32	30	
1,2-Dichlorobenzene	183.4	2.2	7.3	200	0	91.7	70-130	183.5	0.0545	30	
1,2-Dichloroethane	190.3	1.7	5.5	200	0	95.2	78-125	193.4	1.62	30	
1,2-Dichloropropane	173.2	2.5	8.3	200	0	86.6	75-125	178.4	2.96	30	
1,3,5-Trimethylbenzene	187.7	2.9	9.5	200	0	93.8	75-130	185	1.45	30	
1,3-Dichlorobenzene	170.2	2.9	9.6	200	0	85.1	75-130	169.4	0.471	30	
1,3-Dichloropropane	179.5	1.8	6.1	200	0	89.8	75-125	173.7	3.28	30	
1,4-Dichlorobenzene	185.2	2.1	7.1	200	0	92.6	75-130	183.5	0.922	30	
2,2-Dichloropropane	185.5	4.4	15	200	0	92.8	43-150	185.5	0	30	
2-Butanone	158.5	5.8	20	200	0	79.2	55-150	150.4	5.24	30	
2-Chlorotoluene	179.1	3.2	11	200	0	89.6	76-117	178.5	0.336	30	
4-Chlorotoluene	184.9	2.8	9.5	200	0	92.4	80-125	182.2	1.47	30	
4-Methyl-2-pentanone	268.5	1.1	4.0	200	0	134	77-178	256.9	4.42	30	
Acetone	181	9.2	31	200	18.6	81.2	60-160	170.5	5.97	30	
Benzene	211.3	3	10	200	0	106	85-125	231.1	8.95	30	
Bromobenzene	195.7	2.4	8.0	200	0	97.8	80-125	190.9	2.48	30	
Bromochloromethane	197.7	2	6.6	200	0	98.8	72-141	195	1.38	30	
Bromodichloromethane	169.6	2.3	7.8	200	0	84.8	75-125	169.3	0.177	30	
Bromoform	177.5	7.7	26	200	0	88.8	60-125	170.2	4.2	30	
Bromomethane	157.3	3.8	13	200	0	78.6	30-185	183.8	15.5	30	
Carbon tetrachloride	190.3	3.1	10	200	0	95.2	65-140	194.5	2.18	30	
Chlorobenzene	169.6	2.7	9.0	200	0	84.8	80-120	166	2.15	30	
Chloroethane	279.1	2.9	9.7	200	0	140	31-172	227	20.6	30	
Chloroform	181.8	2.6	8.6	200	0	90.9	80-130	177.1	2.62	30	
Chloromethane	187.4	1.7	5.7	200	10.7	88.4	46-148	173.5	7.7	30	
cis-1,2-Dichloroethene	484.5	2.5	8.5	200	262.5	111	75-134	424.4	13.2	30	
cis-1,3-Dichloropropene	198.1	3.9	13	200	0	99	70-130	190.3	4.02	30	
Dibromochloromethane	166.6	3.8	12	200	0	83.3	60-115	159.9	4.1	30	
Dibromomethane	179.9	2.5	8.3	200	0	90	79-126	181	0.61	30	
Dichlorodifluoromethane	143.2	1.3	4.4	200	0	71.6	20-120	139.4	2.69	30	
Ethylbenzene	201.8	4	13	200	0	101	76-123	200.7	0.547	30	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.



Client: Gannett Fleming, Inc.  
 Work Order: 18101771  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: <b>R247947a</b>	Instrument ID <b>VMS10</b>			Method: <b>SW8260C</b>							
Hexachlorobutadiene	175.6	2.4	8.0	200	0	87.8	70-155	166.8	5.14	30	
Isopropylbenzene	201.2	3.1	10	200	0	101	80-127	202.5	0.644	30	
m,p-Xylene	419.5	9.8	33	400	0	105	75-130	428.4	2.1	30	
Methyl tert-butyl ether	213.6	1.2	4.0	200	0	107	80-130	206.2	3.53	30	
Methylene chloride	192.1	5.6	18	200	0	96	75-140	183	4.85	30	
Naphthalene	213.9	1.8	5.9	200	0	107	55-160	203	5.23	30	
n-Butylbenzene	177.7	2.2	7.3	200	0	88.8	75-145	176.4	0.734	30	
n-Propylbenzene	178.3	2.4	8.1	200	0	89.2	83-135	176.6	0.958	30	
o-Xylene	211.3	3.5	12	200	0	106	80-125	208.2	1.48	30	
p-Isopropyltoluene	207	1.4	4.8	200	0	104	61-164	209.3	1.1	30	
sec-Butylbenzene	182	2.9	9.8	200	0	91	80-134	180.2	0.994	30	
Styrene	183.4	2.4	7.9	200	0	91.7	83-137	180.5	1.59	30	
tert-Butylbenzene	203.6	3.4	12	200	0	102	70-130	202.4	0.591	30	
Tetrachloroethene	689.2	2.7	9.1	200	488.3	100	68-166	582.1	16.8	30	
Toluene	233	3.7	12	200	0	116	76-125	251.8	7.76	30	
trans-1,2-Dichloroethene	184.4	2.8	9.3	200	0	92.2	80-140	184.6	0.108	30	
trans-1,3-Dichloropropene	189.4	8.2	27	200	0	94.7	56-132	185.7	1.97	30	
Trichloroethene	425.1	3	9.9	200	244.2	90.4	84-130	374.7	12.6	30	
Trichlorofluoromethane	173.7	2	6.6	200	0	86.8	60-140	176.3	1.49	30	
Vinyl chloride	166.6	2	6.8	200	0	83.3	50-136	168.6	1.19	30	
Xylenes, Total	630.8	13	44	600	0	105	80-126	636.6	0.915	30	
<i>Surr: 1,2-Dichloroethane-d4</i>	187	0	0	200	0	93.5	75-120	193.6	3.47	30	
<i>Surr: 4-Bromofluorobenzene</i>	209.8	0	0	200	0	105	80-110	204	2.8	30	
<i>Surr: Dibromofluoromethane</i>	187.6	0	0	200	0	93.8	85-115	189.7	1.11	30	
<i>Surr: Toluene-d8</i>	196.6	0	0	200	0	98.3	85-110	194.6	1.02	30	

The following samples were analyzed in this batch:

18101771-02A	18101771-03A	18101771-15A
18101771-16A	18101771-21A	18101771-25A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 18101771  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: **R247966b** Instrument ID **VMS7** Method: **SW8260C**

MBLK		Sample ID: <b>VLKW2-181026-R247966b</b>			Units: <b>µg/L</b>		Analysis Date: <b>10/27/2018 12:38 P</b>				
Client ID:		Run ID: <b>VMS7_181026B</b>			SeqNo: <b>5349988</b>		Prep Date:		DF: <b>1</b>		
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	U	0.22	0.74								
1,1,1-Trichloroethane	U	0.36	1.2								
1,1,2,2-Tetrachloroethane	U	0.19	0.62								
1,1,2-Trichloroethane	U	0.4	1.3								
1,1-Dichloroethane	U	0.31	1.0								
1,1-Dichloroethene	U	0.28	0.92								
1,1-Dichloropropene	U	0.35	1.2								
1,2,3-Trichlorobenzene	U	0.17	0.55								
1,2,3-Trichloropropane	U	0.11	0.40								
1,2,4-Trichlorobenzene	U	0.21	0.71								
1,2,4-Trimethylbenzene	U	0.37	1.2								
1,2-Dibromo-3-chloropropane	U	0.97	3.2								
1,2-Dibromoethane	U	0.98	3.3								
1,2-Dichlorobenzene	U	0.22	0.73								
1,2-Dichloroethane	U	0.17	0.55								
1,2-Dichloropropane	U	0.25	0.83								
1,3,5-Trimethylbenzene	U	0.29	0.95								
1,3-Dichlorobenzene	U	0.29	0.96								
1,3-Dichloropropane	U	0.18	0.61								
1,4-Dichlorobenzene	U	0.21	0.71								
2,2-Dichloropropane	U	0.44	1.5								
2-Butanone	U	0.58	2.0								
2-Chlorotoluene	U	0.32	1.1								
2-Propanol	U	33	110								
4-Chlorotoluene	U	0.28	0.95								
4-Methyl-2-pentanone	U	0.11	0.40								
Acetone	U	0.92	3.1								
Benzene	U	0.3	1.0								
Bromobenzene	U	0.24	0.80								
Bromochloromethane	U	0.2	0.66								
Bromodichloromethane	U	0.23	0.78								
Bromoform	U	0.77	2.6								
Bromomethane	U	0.38	1.3								
Carbon tetrachloride	U	0.31	1.0								
Chlorobenzene	U	0.27	0.90								
Chloroethane	U	0.29	0.97								
Chloroform	U	0.26	0.86								
Chloromethane	U	0.17	0.57								
cis-1,2-Dichloroethene	U	0.25	0.85								
cis-1,3-Dichloropropene	U	0.39	1.3								
Dibromochloromethane	U	0.38	1.2								
Dibromomethane	U	0.25	0.83								
Dichlorodifluoromethane	U	0.13	0.44								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 18101771  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: <b>R247966b</b>	Instrument ID <b>VMS7</b>	Method: <b>SW8260C</b>						
Diisopropyl ether	U	0.13	0.43					
Ethylbenzene	U	0.4	1.3					
Hexachlorobutadiene	U	0.24	0.80					
Isopropylbenzene	U	0.31	1.0					
m,p-Xylene	U	0.98	3.3					
Methyl tert-butyl ether	U	0.12	0.40					
Methylene chloride	0.84	0.56	1.8					
Naphthalene	U	0.18	0.59					
n-Butylbenzene	U	0.22	0.73					
n-Propylbenzene	U	0.24	0.81					
o-Xylene	U	0.35	1.2					
p-Isopropyltoluene	U	0.14	0.48					
sec-Butylbenzene	U	0.29	0.98					
Styrene	U	0.24	0.79					
tert-Butylbenzene	U	0.34	1.2					
Tetrachloroethene	U	0.27	0.91					
Toluene	U	0.37	1.2					
trans-1,2-Dichloroethene	U	0.28	0.93					
trans-1,3-Dichloropropene	U	0.82	2.7					
Trichloroethene	U	0.3	0.99					
Trichlorofluoromethane	U	0.2	0.66					
Vinyl chloride	U	0.2	0.68					
Xylenes, Total	U	1.3	4.4					
<i>Surr: 1,2-Dichloroethane-d4</i>	19.59	0	0	20	0	98	75-120	0
<i>Surr: 4-Bromofluorobenzene</i>	19.99	0	0	20	0	100	80-110	0
<i>Surr: Dibromofluoromethane</i>	20.06	0	0	20	0	100	85-115	0
<i>Surr: Toluene-d8</i>	19.05	0	0	20	0	95.2	85-110	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 18101771  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: **R247966b** Instrument ID **VMS7** Method: **SW8260C**

LCS		Sample ID: <b>VLCSW2-181026-R247966b</b>				Units: <b>µg/L</b>		Analysis Date: <b>10/26/2018 11:52 P</b>			
Client ID:		Run ID: <b>VMS7_181026B</b>				SeqNo: <b>5349978</b>		Prep Date:		DF: <b>1</b>	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	22.39	0.22	0.74	20	0	112	73-114	0			
1,1,1-Trichloroethane	24.19	0.36	1.2	20	0	121	75-130	0			
1,1,2,2-Tetrachloroethane	23.6	0.19	0.62	20	0	118	75-130	0			
1,1,2-Trichloroethane	23.01	0.4	1.3	20	0	115	75-125	0			
1,1-Dichloroethane	24.55	0.31	1.0	20	0	123	75-133	0			
1,1-Dichloroethene	25.99	0.28	0.92	20	0	130	70-145	0			
1,1-Dichloropropene	22.6	0.35	1.2	20	0	113	75-135	0			
1,2,3-Trichlorobenzene	21.24	0.17	0.55	20	0	106	70-140	0			
1,2,3-Trichloropropane	23.65	0.11	0.40	20	0	118	75-125	0			
1,2,4-Trichlorobenzene	20.31	0.21	0.71	20	0	102	70-135	0			
1,2,4-Trimethylbenzene	21.6	0.37	1.2	20	0	108	75-130	0			
1,2-Dibromo-3-chloropropane	21.32	0.97	3.2	20	0	107	60-130	0			
1,2-Dibromoethane	24.57	0.98	3.3	20	0	123	90-195	0			
1,2-Dichlorobenzene	20.77	0.22	0.73	20	0	104	70-130	0			
1,2-Dichloroethane	23.33	0.17	0.55	20	0	117	78-125	0			
1,2-Dichloropropane	23.16	0.25	0.83	20	0	116	75-125	0			
1,3,5-Trimethylbenzene	21.86	0.29	0.95	20	0	109	75-130	0			
1,3-Dichlorobenzene	21.08	0.29	0.96	20	0	105	75-130	0			
1,3-Dichloropropane	22.52	0.18	0.61	20	0	113	75-125	0			
1,4-Dichlorobenzene	20.79	0.21	0.71	20	0	104	75-130	0			
2,2-Dichloropropane	23.04	0.44	1.5	20	0	115	43-150	0			
2-Butanone	26.18	0.58	2.0	20	0	131	55-150	0			
2-Chlorotoluene	21.88	0.32	1.1	20	0	109	76-117	0			
4-Chlorotoluene	21.66	0.28	0.95	20	0	108	80-125	0			
4-Methyl-2-pentanone	35.05	0.11	0.40	20	0	175	77-178	0			
Acetone	25.39	0.92	3.1	20	0	127	60-160	0			
Benzene	23.12	0.3	1.0	20	0	116	85-125	0			
Bromobenzene	21.23	0.24	0.80	20	0	106	80-125	0			
Bromochloromethane	25.48	0.2	0.66	20	0	127	72-141	0			
Bromodichloromethane	22.95	0.23	0.78	20	0	115	75-125	0			
Bromoform	20.43	0.77	2.6	20	0	102	60-125	0			
Bromomethane	27.75	0.38	1.3	20	0	139	30-185	0			
Carbon tetrachloride	22.83	0.31	1.0	20	0	114	65-140	0			
Chlorobenzene	21.02	0.27	0.90	20	0	105	80-120	0			
Chloroethane	24.78	0.29	0.97	20	0	124	31-172	0			
Chloroform	24.06	0.26	0.86	20	0	120	80-130	0			
Chloromethane	17.12	0.17	0.57	20	0	85.6	46-148	0			
cis-1,2-Dichloroethene	24.8	0.25	0.85	20	0	124	75-134	0			
cis-1,3-Dichloropropene	22.93	0.39	1.3	20	0	115	70-130	0			
Dibromochloromethane	20.29	0.38	1.2	20	0	101	60-115	0			
Dibromomethane	22.85	0.25	0.83	20	0	114	79-126	0			
Dichlorodifluoromethane	18.76	0.13	0.44	20	0	93.8	20-120	0			
Ethylbenzene	22.05	0.4	1.3	20	0	110	76-123	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 18101771  
 Project: WRR (55929.005)

## QC BATCH REPORT

Batch ID: <b>R247966b</b>	Instrument ID <b>VMS7</b>		Method: <b>SW8260C</b>						
Hexachlorobutadiene	21.27	0.24	0.80	20	0	106	70-155	0	
Isopropylbenzene	22.4	0.31	1.0	20	0	112	80-127	0	
m,p-Xylene	41.21	0.98	3.3	40	0	103	75-130	0	
Methyl tert-butyl ether	28.51	0.12	0.40	20	0	143	80-130	0	S
Methylene chloride	25.77	0.56	1.8	20	0	129	75-140	0	
Naphthalene	20.54	0.18	0.59	20	0	103	55-160	0	
n-Butylbenzene	21.48	0.22	0.73	20	0	107	75-145	0	
n-Propylbenzene	22.25	0.24	0.81	20	0	111	83-135	0	
o-Xylene	22.11	0.35	1.2	20	0	111	80-125	0	
p-Isopropyltoluene	21.91	0.14	0.48	20	0	110	61-164	0	
sec-Butylbenzene	22.11	0.29	0.98	20	0	111	80-134	0	
Styrene	22.86	0.24	0.79	20	0	114	83-137	0	
tert-Butylbenzene	22.33	0.34	1.2	20	0	112	70-130	0	
Tetrachloroethene	23.17	0.27	0.91	20	0	116	68-166	0	
Toluene	21.07	0.37	1.2	20	0	105	76-125	0	
trans-1,2-Dichloroethene	25.12	0.28	0.93	20	0	126	80-140	0	
trans-1,3-Dichloropropene	21.51	0.82	2.7	20	0	108	56-132	0	
Trichloroethene	22.73	0.3	0.99	20	0	114	84-130	0	
Trichlorofluoromethane	24.69	0.2	0.66	20	0	123	60-140	0	
Vinyl chloride	21.48	0.2	0.68	20	0	107	50-136	0	
Xylenes, Total	63.32	1.3	4.4	60	0	106	80-126	0	
<i>Surr: 1,2-Dichloroethane-d4</i>	20.14	0	0	20	0	101	75-120	0	
<i>Surr: 4-Bromofluorobenzene</i>	20.4	0	0	20	0	102	80-110	0	
<i>Surr: Dibromofluoromethane</i>	20.65	0	0	20	0	103	85-115	0	
<i>Surr: Toluene-d8</i>	19.19	0	0	20	0	96	85-110	0	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 18101771  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: **R247966b** Instrument ID **VMS7** Method: **SW8260C**

MS		Sample ID: 18101771-21A MS				Units: µg/L			Analysis Date: 10/27/2018 06:02 A		
Client ID: RW-12		Run ID: VMS7_181026B				SeqNo: 5349986		Prep Date:		DF: 1000	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	14450	220	740	20000	0	72.2	73-114	0			S
1,1,1-Trichloroethane	17670	360	1,200	20000	0	88.4	75-130	0			
1,1,2,2-Tetrachloroethane	15560	190	620	20000	0	77.8	75-130	0			
1,1,2-Trichloroethane	15170	400	1,300	20000	0	75.8	75-125	0			
1,1-Dichloroethane	17710	310	1,000	20000	0	88.6	75-133	0			
1,1-Dichloroethene	19050	280	920	20000	0	95.2	70-145	0			
1,1-Dichloropropene	15230	350	1,200	20000	0	76.2	75-135	0			
1,2,3-Trichlorobenzene	12500	170	550	20000	0	62.5	70-140	0			S
1,2,3-Trichloropropane	15110	110	400	20000	0	75.6	75-125	0			
1,2,4-Trichlorobenzene	11820	210	710	20000	0	59.1	70-135	0			S
1,2,4-Trimethylbenzene	13510	370	1,200	20000	0	67.6	75-130	0			S
1,2-Dibromo-3-chloropropane	13430	970	3,200	20000	0	67.2	60-130	0			
1,2-Dibromoethane	16130	980	3,300	20000	0	80.6	90-195	0			S
1,2-Dichlorobenzene	13330	220	730	20000	0	66.6	70-130	0			S
1,2-Dichloroethane	16540	170	550	20000	0	82.7	78-125	0			
1,2-Dichloropropane	16050	250	830	20000	740	76.6	75-125	0			
1,3,5-Trimethylbenzene	13850	290	950	20000	0	69.2	75-130	0			S
1,3-Dichlorobenzene	13490	290	960	20000	0	67.4	75-130	0			S
1,3-Dichloropropane	14870	180	610	20000	0	74.4	75-125	0			S
1,4-Dichlorobenzene	12930	210	710	20000	0	64.6	75-130	0			S
2,2-Dichloropropane	13650	440	1,500	20000	0	68.2	43-150	0			
2-Butanone	23900	580	2,000	20000	5480	92.1	55-150	0			
2-Chlorotoluene	13970	320	1,100	20000	0	69.8	76-117	0			S
4-Chlorotoluene	13690	280	950	20000	0	68.4	80-125	0			S
4-Methyl-2-pentanone	25100	110	400	20000	2180	115	77-178	0			
Acetone	40140	920	3,100	20000	23590	82.8	60-160	0			
Benzene	15810	300	1,000	20000	0	79	85-125	0			S
Bromobenzene	13940	240	800	20000	0	69.7	80-125	0			S
Bromochloromethane	18350	200	660	20000	0	91.8	72-141	0			
Bromodichloromethane	15630	230	780	20000	0	78.2	75-125	0			
Bromoform	13180	770	2,600	20000	0	65.9	60-125	0			
Bromomethane	199000	380	1,300	20000	0	995	30-185	0			SE
Carbon tetrachloride	16400	310	1,000	20000	0	82	65-140	0			
Chlorobenzene	13710	270	900	20000	0	68.6	80-120	0			S
Chloroethane	19750	290	970	20000	0	98.8	31-172	0			
Chloroform	16970	260	860	20000	0	84.8	80-130	0			
Chloromethane	10130	170	570	20000	0	50.6	46-148	0			
cis-1,2-Dichloroethene	20170	250	850	20000	3130	85.2	75-134	0			
cis-1,3-Dichloropropene	14550	390	1,300	20000	0	72.8	70-130	0			
Dibromochloromethane	13180	380	1,200	20000	0	65.9	60-115	0			
Dibromomethane	15990	250	830	20000	0	80	79-126	0			
Dichlorodifluoromethane	13830	130	440	20000	0	69.2	20-120	0			
Ethylbenzene	15180	400	1,300	20000	1370	69	76-123	0			S

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 18101771  
 Project: WRR (55929.005)

## QC BATCH REPORT

Batch ID: <b>R247966b</b>	Instrument ID <b>VMS7</b>	Method: <b>SW8260C</b>								
Hexachlorobutadiene	11900	240	800	20000	0	59.5	70-155	0	S	
Isopropylbenzene	14050	310	1,000	20000	0	70.2	80-127	0	S	
m,p-Xylene	30020	980	3,300	40000	4170	64.6	75-130	0	S	
Methyl tert-butyl ether	19120	120	400	20000	0	95.6	80-130	0		
Methylene chloride	18270	560	1,800	20000	0	91.4	75-140	0		
Naphthalene	12700	180	590	20000	0	63.5	55-160	0		
n-Butylbenzene	12690	220	730	20000	0	63.4	75-145	0	S	
n-Propylbenzene	13560	240	810	20000	0	67.8	83-135	0	S	
o-Xylene	15690	350	1,200	20000	1680	70	80-125	0	S	
p-Isopropyltoluene	13100	140	480	20000	0	65.5	61-164	0		
sec-Butylbenzene	13830	290	980	20000	0	69.2	80-134	0	S	
Styrene	14790	240	790	20000	0	74	83-137	0	S	
tert-Butylbenzene	12790	340	1,200	20000	0	64	70-130	0	S	
Tetrachloroethene	15360	270	910	20000	0	76.8	68-166	0		
Toluene	32720	370	1,200	20000	19610	65.6	76-125	0	S	
trans-1,2-Dichloroethene	17890	280	930	20000	0	89.4	80-140	0		
trans-1,3-Dichloropropene	12950	820	2,700	20000	0	64.8	56-132	0		
Trichloroethene	16260	300	990	20000	0	81.3	84-130	0	S	
Trichlorofluoromethane	17480	200	660	20000	0	87.4	60-140	0		
Vinyl chloride	14900	200	680	20000	0	74.5	50-136	0		
Xylenes, Total	45710	1300	4,400	60000	5850	66.4	80-126	0	S	
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>20760</i>	<i>0</i>	<i>0</i>	<i>20000</i>	<i>0</i>	<i>104</i>	<i>75-120</i>	<i>0</i>		
<i>Surr: 4-Bromofluorobenzene</i>	<i>20400</i>	<i>0</i>	<i>0</i>	<i>20000</i>	<i>0</i>	<i>102</i>	<i>80-110</i>	<i>0</i>		
<i>Surr: Dibromofluoromethane</i>	<i>20380</i>	<i>0</i>	<i>0</i>	<i>20000</i>	<i>0</i>	<i>102</i>	<i>85-115</i>	<i>0</i>		
<i>Surr: Toluene-d8</i>	<i>18890</i>	<i>0</i>	<i>0</i>	<i>20000</i>	<i>0</i>	<i>94.4</i>	<i>85-110</i>	<i>0</i>		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 18101771  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: **R247966b** Instrument ID **VMS7** Method: **SW8260C**

MSD		Sample ID: 18101771-21A MSD				Units: µg/L			Analysis Date: 10/27/2018 06:18 A		
Client ID: RW-12		Run ID: VMS7_181026B				SeqNo: 5349987		Prep Date:		DF: 1000	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	15920	220	740	20000	0	79.6	73-114	14450	9.68	30	
1,1,1-Trichloroethane	19740	360	1,200	20000	0	98.7	75-130	17670	11.1	30	
1,1,2,2-Tetrachloroethane	15760	190	620	20000	0	78.8	75-130	15560	1.28	30	
1,1,2-Trichloroethane	16120	400	1,300	20000	0	80.6	75-125	15170	6.07	30	
1,1-Dichloroethane	19010	310	1,000	20000	0	95	75-133	17710	7.08	30	
1,1-Dichloroethene	20770	280	920	20000	0	104	70-145	19050	8.64	30	
1,1-Dichloropropene	17410	350	1,200	20000	0	87	75-135	15230	13.4	30	
1,2,3-Trichlorobenzene	13870	170	550	20000	0	69.4	70-140	12500	10.4	30	S
1,2,3-Trichloropropane	15700	110	400	20000	0	78.5	75-125	15110	3.83	30	
1,2,4-Trichlorobenzene	13150	210	710	20000	0	65.8	70-135	11820	10.7	30	S
1,2,4-Trimethylbenzene	14900	370	1,200	20000	0	74.5	75-130	13510	9.79	30	S
1,2-Dibromo-3-chloropropane	14780	970	3,200	20000	0	73.9	60-130	13430	9.57	30	
1,2-Dibromoethane	17140	980	3,300	20000	0	85.7	90-195	16130	6.07	30	S
1,2-Dichlorobenzene	14550	220	730	20000	0	72.8	70-130	13330	8.75	30	
1,2-Dichloroethane	17590	170	550	20000	0	88	78-125	16540	6.15	30	
1,2-Dichloropropane	17360	250	830	20000	740	83.1	75-125	16050	7.84	30	
1,3,5-Trimethylbenzene	14970	290	950	20000	0	74.8	75-130	13850	7.77	30	S
1,3-Dichlorobenzene	14890	290	960	20000	0	74.4	75-130	13490	9.87	30	S
1,3-Dichloropropane	15470	180	610	20000	0	77.4	75-125	14870	3.96	30	
1,4-Dichlorobenzene	14270	210	710	20000	0	71.4	75-130	12930	9.85	30	S
2,2-Dichloropropane	14730	440	1,500	20000	0	73.6	43-150	13650	7.61	30	
2-Butanone	24100	580	2,000	20000	5480	93.1	55-150	23900	0.833	30	
2-Chlorotoluene	14990	320	1,100	20000	0	75	76-117	13970	7.04	30	S
4-Chlorotoluene	14880	280	950	20000	0	74.4	80-125	13690	8.33	30	S
4-Methyl-2-pentanone	26070	110	400	20000	2180	119	77-178	25100	3.79	30	
Acetone	38870	920	3,100	20000	23590	76.4	60-160	40140	3.21	30	
Benzene	17210	300	1,000	20000	0	86	85-125	15810	8.48	30	
Bromobenzene	14670	240	800	20000	0	73.4	80-125	13940	5.1	30	S
Bromochloromethane	19430	200	660	20000	0	97.2	72-141	18350	5.72	30	
Bromodichloromethane	16770	230	780	20000	0	83.8	75-125	15630	7.04	30	
Bromoform	14380	770	2,600	20000	0	71.9	60-125	13180	8.71	30	
Bromomethane	198600	380	1,300	20000	0	993	30-185	199000	0.196	30	SE
Carbon tetrachloride	18620	310	1,000	20000	0	93.1	65-140	16400	12.7	30	
Chlorobenzene	14720	270	900	20000	0	73.6	80-120	13710	7.11	30	S
Chloroethane	21050	290	970	20000	0	105	31-172	19750	6.37	30	
Chloroform	18200	260	860	20000	0	91	80-130	16970	6.99	30	
Chloromethane	10750	170	570	20000	0	53.8	46-148	10130	5.94	30	
cis-1,2-Dichloroethene	20950	250	850	20000	3130	89.1	75-134	20170	3.79	30	
cis-1,3-Dichloropropene	16160	390	1,300	20000	0	80.8	70-130	14550	10.5	30	
Dibromochloromethane	14290	380	1,200	20000	0	71.4	60-115	13180	8.08	30	
Dibromomethane	16890	250	830	20000	0	84.4	79-126	15990	5.47	30	
Dichlorodifluoromethane	15320	130	440	20000	0	76.6	20-120	13830	10.2	30	
Ethylbenzene	16360	400	1,300	20000	1370	75	76-123	15180	7.48	30	S

Note: See Qualifiers Page for a list of Qualifiers and their explanation.



Client: Gannett Fleming, Inc.  
 Work Order: 18101771  
 Project: WRR (55929.005)

## QC BATCH REPORT

Batch ID: <b>R247966b</b>	Instrument ID <b>VMS7</b>	Method: <b>SW8260C</b>										
Hexachlorobutadiene	13600	240	800	20000	0	68	70-155	11900	13.3	30	S	
Isopropylbenzene	15660	310	1,000	20000	0	78.3	80-127	14050	10.8	30	S	
m,p-Xylene	32150	980	3,300	40000	4170	70	75-130	30020	6.85	30	S	
Methyl tert-butyl ether	20310	120	400	20000	0	102	80-130	19120	6.04	30		
Methylene chloride	18880	560	1,800	20000	0	94.4	75-140	18270	3.28	30		
Naphthalene	13730	180	590	20000	0	68.6	55-160	12700	7.79	30		
n-Butylbenzene	14240	220	730	20000	0	71.2	75-145	12690	11.5	30	S	
n-Propylbenzene	15110	240	810	20000	0	75.6	83-135	13560	10.8	30	S	
o-Xylene	16700	350	1,200	20000	1680	75.1	80-125	15690	6.24	30	S	
p-Isopropyltoluene	15310	140	480	20000	0	76.6	61-164	13100	15.6	30		
sec-Butylbenzene	15030	290	980	20000	0	75.2	80-134	13830	8.32	30	S	
Styrene	15950	240	790	20000	0	79.8	83-137	14790	7.55	30	S	
tert-Butylbenzene	14080	340	1,200	20000	0	70.4	70-130	12790	9.6	30		
Tetrachloroethene	16730	270	910	20000	0	83.6	68-166	15360	8.54	30		
Toluene	31730	370	1,200	20000	19610	60.6	76-125	32720	3.07	30	S	
trans-1,2-Dichloroethene	19200	280	930	20000	0	96	80-140	17890	7.06	30		
trans-1,3-Dichloropropene	14070	820	2,700	20000	0	70.4	56-132	12950	8.29	30		
Trichloroethene	17580	300	990	20000	0	87.9	84-130	16260	7.8	30		
Trichlorofluoromethane	20310	200	660	20000	0	102	60-140	17480	15	30		
Vinyl chloride	16580	200	680	20000	0	82.9	50-136	14900	10.7	30		
Xylenes, Total	48850	1300	4,400	60000	5850	71.7	80-126	45710	6.64	30	S	
<i>Surr: 1,2-Dichloroethane-d4</i>	20510	0	0	20000	0	103	75-120	20760	1.21	30		
<i>Surr: 4-Bromofluorobenzene</i>	20170	0	0	20000	0	101	80-110	20400	1.13	30		
<i>Surr: Dibromofluoromethane</i>	21690	0	0	20000	0	108	85-115	20380	6.23	30		
<i>Surr: Toluene-d8</i>	18880	0	0	20000	0	94.4	85-110	18890	0.053	30		

The following samples were analyzed in this batch:

18101771-21A	18101771-22A	18101771-23A
18101771-24A	18101771-25A	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 18101771  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: **R247987** Instrument ID **VMS10** Method: **SW8260C**

MBLK		Sample ID: <b>VBLK2-181026-R247987</b>			Units: <b>µg/L</b>		Analysis Date: <b>10/27/2018 12:43 P</b>				
Client ID:		Run ID: <b>VMS10_181029B</b>			SeqNo: <b>5350241</b>		Prep Date:		DF: <b>1</b>		
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	U	0.22	0.74								
1,1,1-Trichloroethane	U	0.36	1.2								
1,1,2,2-Tetrachloroethane	U	0.19	0.62								
1,1,2-Trichloroethane	U	0.4	1.3								
1,1-Dichloroethane	U	0.31	1.0								
1,1-Dichloroethene	U	0.28	0.92								
1,1-Dichloropropene	U	0.35	1.2								
1,2,3-Trichlorobenzene	U	0.17	0.55								
1,2,3-Trichloropropane	U	0.11	0.40								
1,2,4-Trichlorobenzene	U	0.21	0.71								
1,2,4-Trimethylbenzene	U	0.37	1.2								
1,2-Dibromo-3-chloropropane	U	0.97	3.2								
1,2-Dibromoethane	U	0.98	3.3								
1,2-Dichlorobenzene	U	0.22	0.73								
1,2-Dichloroethane	U	0.17	0.55								
1,2-Dichloropropane	U	0.25	0.83								
1,3,5-Trimethylbenzene	U	0.29	0.95								
1,3-Dichlorobenzene	U	0.29	0.96								
1,3-Dichloropropane	U	0.18	0.61								
1,4-Dichlorobenzene	U	0.21	0.71								
2,2-Dichloropropane	U	0.44	1.5								
2-Butanone	U	0.58	2.0								
2-Chlorotoluene	U	0.32	1.1								
2-Propanol	U	33	110								
4-Chlorotoluene	U	0.28	0.95								
4-Methyl-2-pentanone	U	0.11	0.40								
Acetone	U	0.92	3.1								
Benzene	U	0.3	1.0								
Bromobenzene	U	0.24	0.80								
Bromochloromethane	U	0.2	0.66								
Bromodichloromethane	U	0.23	0.78								
Bromoform	U	0.77	2.6								
Bromomethane	U	0.38	1.3								
Carbon tetrachloride	U	0.31	1.0								
Chlorobenzene	U	0.27	0.90								
Chloroethane	U	0.29	0.97								
Chloroform	U	0.26	0.86								
Chloromethane	U	0.17	0.57								
cis-1,2-Dichloroethene	U	0.25	0.85								
cis-1,3-Dichloropropene	U	0.39	1.3								
Dibromochloromethane	U	0.38	1.2								
Dibromomethane	U	0.25	0.83								
Dichlorodifluoromethane	U	0.13	0.44								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 18101771  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: <b>R247987</b>	Instrument ID <b>VMS10</b>	Method: <b>SW8260C</b>						
Diisopropyl ether	U	0.13	0.43					
Ethylbenzene	U	0.4	1.3					
Hexachlorobutadiene	U	0.24	0.80					
Isopropylbenzene	U	0.31	1.0					
m,p-Xylene	U	0.98	3.3					
Methyl tert-butyl ether	U	0.12	0.40					
Methylene chloride	U	0.56	1.8					
Naphthalene	U	0.18	0.59					
n-Butylbenzene	U	0.22	0.73					
n-Propylbenzene	U	0.24	0.81					
o-Xylene	U	0.35	1.2					
p-Isopropyltoluene	U	0.14	0.48					
sec-Butylbenzene	U	0.29	0.98					
Styrene	U	0.24	0.79					
tert-Butylbenzene	U	0.34	1.2					
Tetrachloroethene	U	0.27	0.91					
Toluene	U	0.37	1.2					
trans-1,2-Dichloroethene	U	0.28	0.93					
trans-1,3-Dichloropropene	U	0.82	2.7					
Trichloroethene	U	0.3	0.99					
Trichlorofluoromethane	U	0.2	0.66					
Vinyl chloride	U	0.2	0.68					
Xylenes, Total	U	1.3	4.4					
<i>Surr: 1,2-Dichloroethane-d4</i>	21.77	0	0	20	0	109	75-120	0
<i>Surr: 4-Bromofluorobenzene</i>	18.16	0	0	20	0	90.8	80-110	0
<i>Surr: Dibromofluoromethane</i>	20.45	0	0	20	0	102	85-115	0
<i>Surr: Toluene-d8</i>	18.3	0	0	20	0	91.5	85-110	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 18101771  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: **R247987** Instrument ID **VMS10** Method: **SW8260C**

LCS		Sample ID: <b>VLCSW2-181026-R247987</b>				Units: <b>µg/L</b>		Analysis Date: <b>10/26/2018 11:55 P</b>			
Client ID:		Run ID: <b>VMS10_181029B</b>				SeqNo: <b>5350216</b>		Prep Date:		DF: <b>1</b>	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	21.72	0.22	0.74	20	0	109	73-114	0			
1,1,1-Trichloroethane	22.89	0.36	1.2	20	0	114	75-130	0			
1,1,2,2-Tetrachloroethane	22.16	0.19	0.62	20	0	111	75-130	0			
1,1,2-Trichloroethane	21.55	0.4	1.3	20	0	108	75-125	0			
1,1-Dichloroethane	21.27	0.31	1.0	20	0	106	75-133	0			
1,1-Dichloroethene	21.66	0.28	0.92	20	0	108	70-145	0			
1,1-Dichloropropene	21.33	0.35	1.2	20	0	107	75-135	0			
1,2,3-Trichlorobenzene	21.33	0.17	0.55	20	0	107	70-140	0			
1,2,3-Trichloropropane	22.6	0.11	0.40	20	0	113	75-125	0			
1,2,4-Trichlorobenzene	20.92	0.21	0.71	20	0	105	70-135	0			
1,2,4-Trimethylbenzene	20.33	0.37	1.2	20	0	102	75-130	0			
1,2-Dibromo-3-chloropropane	21.86	0.97	3.2	20	0	109	60-130	0			
1,2-Dibromoethane	23.61	0.98	3.3	20	0	118	90-195	0			
1,2-Dichlorobenzene	21.41	0.22	0.73	20	0	107	70-130	0			
1,2-Dichloroethane	22.98	0.17	0.55	20	0	115	78-125	0			
1,2-Dichloropropane	20.48	0.25	0.83	20	0	102	75-125	0			
1,3,5-Trimethylbenzene	21.19	0.29	0.95	20	0	106	75-130	0			
1,3-Dichlorobenzene	19.47	0.29	0.96	20	0	97.4	75-130	0			
1,3-Dichloropropane	20.64	0.18	0.61	20	0	103	75-125	0			
1,4-Dichlorobenzene	21.36	0.21	0.71	20	0	107	75-130	0			
2,2-Dichloropropane	18.79	0.44	1.5	20	0	94	43-150	0			
2-Butanone	18.81	0.58	2.0	20	0	94	55-150	0			
2-Chlorotoluene	20.76	0.32	1.1	20	0	104	76-117	0			
4-Chlorotoluene	21.63	0.28	0.95	20	0	108	80-125	0			
4-Methyl-2-pentanone	30.59	0.11	0.40	20	0	153	77-178	0			
Acetone	21.12	0.92	3.1	20	0	106	60-160	0			
Benzene	21.51	0.3	1.0	20	0	108	85-125	0			
Bromobenzene	16.83	0.24	0.80	20	0	84.2	80-125	0			
Bromochloromethane	24.2	0.2	0.66	20	0	121	72-141	0			
Bromodichloromethane	21.47	0.23	0.78	20	0	107	75-125	0			
Bromoform	20.94	0.77	2.6	20	0	105	60-125	0			
Bromomethane	19.26	0.38	1.3	20	0	96.3	30-185	0			
Carbon tetrachloride	21.83	0.31	1.0	20	0	109	65-140	0			
Chlorobenzene	19.44	0.27	0.90	20	0	97.2	80-120	0			
Chloroethane	29.24	0.29	0.97	20	0	146	31-172	0			
Chloroform	21.9	0.26	0.86	20	0	110	80-130	0			
Chloromethane	15.17	0.17	0.57	20	0	75.8	46-148	0			
cis-1,2-Dichloroethene	22.37	0.25	0.85	20	0	112	75-134	0			
cis-1,3-Dichloropropene	21.85	0.39	1.3	20	0	109	70-130	0			
Dibromochloromethane	20.22	0.38	1.2	20	0	101	60-115	0			
Dibromomethane	21.9	0.25	0.83	20	0	110	79-126	0			
Dichlorodifluoromethane	14.67	0.13	0.44	20	0	73.4	20-120	0			
Ethylbenzene	22.12	0.4	1.3	20	0	111	76-123	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** Gannett Fleming, Inc.  
**Work Order:** 18101771  
**Project:** WRR (55929.005)

## QC BATCH REPORT

Batch ID: <b>R247987</b>	Instrument ID <b>VMS10</b>			Method: <b>SW8260C</b>					
Hexachlorobutadiene	20.87	0.24	0.80	20	0	104	70-155	0	
Isopropylbenzene	22.52	0.31	1.0	20	0	113	80-127	0	
m,p-Xylene	45.24	0.98	3.3	40	0	113	75-130	0	
Methyl tert-butyl ether	22.7	0.12	0.40	20	0	114	80-130	0	
Methylene chloride	22.11	0.56	1.8	20	0	111	75-140	0	
Naphthalene	22.57	0.18	0.59	20	0	113	55-160	0	
n-Butylbenzene	20.49	0.22	0.73	20	0	102	75-145	0	
n-Propylbenzene	20.04	0.24	0.81	20	0	100	83-135	0	
o-Xylene	22.93	0.35	1.2	20	0	115	80-125	0	
p-Isopropyltoluene	23.17	0.14	0.48	20	0	116	61-164	0	
sec-Butylbenzene	20.23	0.29	0.98	20	0	101	80-134	0	
Styrene	21.12	0.24	0.79	20	0	106	83-137	0	
tert-Butylbenzene	20.03	0.34	1.2	20	0	100	70-130	0	
Tetrachloroethene	20.91	0.27	0.91	20	0	105	68-166	0	
Toluene	20.02	0.37	1.2	20	0	100	76-125	0	
trans-1,2-Dichloroethene	22.16	0.28	0.93	20	0	111	80-140	0	
trans-1,3-Dichloropropene	21.13	0.82	2.7	20	0	106	56-132	0	
Trichloroethene	21.48	0.3	0.99	20	0	107	84-130	0	
Trichlorofluoromethane	19.67	0.2	0.66	20	0	98.4	60-140	0	
Vinyl chloride	18.92	0.2	0.68	20	0	94.6	50-136	0	
Xylenes, Total	68.17	1.3	4.4	60	0	114	80-126	0	
<i>Surr: 1,2-Dichloroethane-d4</i>	20.41	0	0	20	0	102	75-120	0	
<i>Surr: 4-Bromofluorobenzene</i>	20.7	0	0	20	0	104	80-110	0	
<i>Surr: Dibromofluoromethane</i>	20.11	0	0	20	0	101	85-115	0	
<i>Surr: Toluene-d8</i>	19.79	0	0	20	0	99	85-110	0	

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 18101771  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: **R247987** Instrument ID **VMS10** Method: **SW8260C**

MS		Sample ID: 18101771-04A MS				Units: µg/L		Analysis Date: 10/27/2018 06:33 A			
Client ID: W-17 A		Run ID: VMS10_181029B				SeqNo: 5350239		Prep Date:		DF: 25	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	444.8	5.6	18	500	0	89	73-114	0			
1,1,1-Trichloroethane	498.8	9	30	500	0	99.8	75-130	0			
1,1,2,2-Tetrachloroethane	468.8	4.6	16	500	0	93.8	75-130	0			
1,1,2-Trichloroethane	444.5	10	33	500	0	88.9	75-125	0			
1,1-Dichloroethane	510.8	7.7	26	500	73.5	87.4	75-133	0			
1,1-Dichloroethene	465.8	6.9	23	500	0	93.2	70-145	0			
1,1-Dichloropropene	460	8.8	30	500	0	92	75-135	0			
1,2,3-Trichlorobenzene	424	4.2	14	500	0	84.8	70-140	0			
1,2,3-Trichloropropane	460.2	2.8	10	500	0	92	75-125	0			
1,2,4-Trichlorobenzene	407.5	5.4	18	500	0	81.5	70-135	0			
1,2,4-Trimethylbenzene	425.8	9.3	31	500	0	85.2	75-130	0			
1,2-Dibromo-3-chloropropane	437	24	81	500	0	87.4	60-130	0			
1,2-Dibromoethane	481	25	82	500	0	96.2	90-195	0			
1,2-Dichlorobenzene	453	5.4	18	500	0	90.6	70-130	0			
1,2-Dichloroethane	522	4.2	14	500	0	104	78-125	0			
1,2-Dichloropropane	437	6.2	21	500	0	87.4	75-125	0			
1,3,5-Trimethylbenzene	437.8	7.2	24	500	0	87.6	75-130	0			
1,3-Dichlorobenzene	412.8	7.2	24	500	0	82.6	75-130	0			
1,3-Dichloropropane	423.8	4.6	15	500	0	84.8	75-125	0			
1,4-Dichlorobenzene	446.8	5.3	18	500	0	89.4	75-130	0			
2,2-Dichloropropane	305.2	11	37	500	0	61	43-150	0			
2-Butanone	440.5	15	49	500	0	88.1	55-150	0			
2-Chlorotoluene	431.2	8.1	27	500	0	86.2	76-117	0			
4-Chlorotoluene	446.8	7.1	24	500	0	89.4	80-125	0			
4-Methyl-2-pentanone	671.8	2.8	10	500	66.75	121	77-178	0			
Acetone	700.8	23	76	500	201.8	99.8	60-160	0			
Benzene	473.8	7.6	25	500	0	94.8	85-125	0			
Bromobenzene	349.5	6	20	500	0	69.9	80-125	0			S
Bromochloromethane	519.5	4.9	16	500	0	104	72-141	0			
Bromodichloromethane	446.5	5.8	20	500	0	89.3	75-125	0			
Bromoform	424.2	19	64	500	0	84.8	60-125	0			
Bromomethane	415.5	9.4	32	500	0	83.1	30-185	0			
Carbon tetrachloride	492.2	7.8	26	500	0	98.4	65-140	0			
Chlorobenzene	402.8	6.8	22	500	0	80.6	80-120	0			
Chloroethane	2153	7.3	24	500	1729	84.8	31-172	0			
Chloroform	452.2	6.4	22	500	0	90.4	80-130	0			
Chloromethane	455	4.3	14	500	0	91	46-148	0			
cis-1,2-Dichloroethene	452	6.4	21	500	0	90.4	75-134	0			
cis-1,3-Dichloropropene	457.8	9.8	33	500	0	91.6	70-130	0			
Dibromochloromethane	414.2	9.4	31	500	0	82.8	60-115	0			
Dibromomethane	457.5	6.2	21	500	0	91.5	79-126	0			
Dichlorodifluoromethane	352.2	3.3	11	500	0	70.4	20-120	0			
Ethylbenzene	467.8	10	34	500	0	93.6	76-123	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 18101771  
 Project: WRR (55929.005)

## QC BATCH REPORT

Batch ID: <b>R247987</b>	Instrument ID <b>VMS10</b>		Method: <b>SW8260C</b>						
Hexachlorobutadiene	414.8	6	20	500	0	83	70-155	0	
Isopropylbenzene	478.5	7.8	26	500	0	95.7	80-127	0	
m,p-Xylene	958.5	24	82	1000	0	95.8	75-130	0	
Methyl tert-butyl ether	455.8	2.9	10	500	0	91.2	80-130	0	
Methylene chloride	460.8	14	46	500	0	92.2	75-140	0	
Naphthalene	449.8	4.4	15	500	0	90	55-160	0	
n-Butylbenzene	411.2	5.4	18	500	0	82.2	75-145	0	
n-Propylbenzene	418.8	6.1	20	500	0	83.8	83-135	0	
o-Xylene	495.5	8.8	30	500	0	99.1	80-125	0	
p-Isopropyltoluene	491	3.6	12	500	0	98.2	61-164	0	
sec-Butylbenzene	434.2	7.4	24	500	0	86.8	80-134	0	
Styrene	433	6	20	500	0	86.6	83-137	0	
tert-Butylbenzene	416	8.6	29	500	0	83.2	70-130	0	
Tetrachloroethene	457.2	6.8	23	500	0	91.4	68-166	0	
Toluene	1259	9.2	30	500	808.5	90.1	76-125	0	
trans-1,2-Dichloroethene	483.2	7	23	500	28.75	90.9	80-140	0	
trans-1,3-Dichloropropene	409.8	20	68	500	0	82	56-132	0	
Trichloroethene	454	7.4	25	500	0	90.8	84-130	0	
Trichlorofluoromethane	446.8	5	16	500	0	89.4	60-140	0	
Vinyl chloride	422.2	5.1	17	500	0	84.4	50-136	0	
Xylenes, Total	1454	33	110	1500	0	96.9	80-126	0	
<i>Surr: 1,2-Dichloroethane-d4</i>	524.5	0	0	500	0	105	75-120	0	
<i>Surr: 4-Bromofluorobenzene</i>	523.5	0	0	500	0	105	80-110	0	
<i>Surr: Dibromofluoromethane</i>	503.5	0	0	500	0	101	85-115	0	
<i>Surr: Toluene-d8</i>	488	0	0	500	0	97.6	85-110	0	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 18101771  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: **R247987** Instrument ID **VMS10** Method: **SW8260C**

MSD		Sample ID: 18101771-04A MSD				Units: µg/L			Analysis Date: 10/27/2018 06:49 A		
Client ID: W-17 A		Run ID: VMS10_181029B				SeqNo: 5350240		Prep Date:		DF: 25	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	471.2	5.6	18	500	0	94.2	73-114	444.8	5.79	30	
1,1,1-Trichloroethane	524.8	9	30	500	0	105	75-130	498.8	5.08	30	
1,1,2,2-Tetrachloroethane	470.5	4.6	16	500	0	94.1	75-130	468.8	0.373	30	
1,1,2-Trichloroethane	463.5	10	33	500	0	92.7	75-125	444.5	4.19	30	
1,1-Dichloroethane	528	7.7	26	500	73.5	90.9	75-133	510.8	3.32	30	
1,1-Dichloroethene	489.8	6.9	23	500	0	98	70-145	465.8	5.02	30	
1,1-Dichloropropene	477	8.8	30	500	0	95.4	75-135	460	3.63	30	
1,2,3-Trichlorobenzene	438.8	4.2	14	500	0	87.8	70-140	424	3.42	30	
1,2,3-Trichloropropane	473.5	2.8	10	500	0	94.7	75-125	460.2	2.84	30	
1,2,4-Trichlorobenzene	418.8	5.4	18	500	0	83.8	70-135	407.5	2.72	30	
1,2,4-Trimethylbenzene	447	9.3	31	500	0	89.4	75-130	425.8	4.87	30	
1,2-Dibromo-3-chloropropane	460.8	24	81	500	0	92.2	60-130	437	5.29	30	
1,2-Dibromoethane	486	25	82	500	0	97.2	90-195	481	1.03	30	
1,2-Dichlorobenzene	449.5	5.4	18	500	0	89.9	70-130	453	0.776	30	
1,2-Dichloroethane	517.2	4.2	14	500	0	103	78-125	522	0.914	30	
1,2-Dichloropropane	438.5	6.2	21	500	0	87.7	75-125	437	0.343	30	
1,3,5-Trimethylbenzene	456.2	7.2	24	500	0	91.2	75-130	437.8	4.14	30	
1,3-Dichlorobenzene	413.2	7.2	24	500	0	82.6	75-130	412.8	0.121	30	
1,3-Dichloropropane	436.2	4.6	15	500	0	87.2	75-125	423.8	2.91	30	
1,4-Dichlorobenzene	437.2	5.3	18	500	0	87.4	75-130	446.8	2.15	30	
2,2-Dichloropropane	314	11	37	500	0	62.8	43-150	305.2	2.83	30	
2-Butanone	416	15	49	500	0	83.2	55-150	440.5	5.72	30	
2-Chlorotoluene	444.8	8.1	27	500	0	89	76-117	431.2	3.08	30	
4-Chlorotoluene	463.5	7.1	24	500	0	92.7	80-125	446.8	3.68	30	
4-Methyl-2-pentanone	701.5	2.8	10	500	66.75	127	77-178	671.8	4.33	30	
Acetone	735	23	76	500	201.8	107	60-160	700.8	4.77	30	
Benzene	484	7.6	25	500	0	96.8	85-125	473.8	2.14	30	
Bromobenzene	480	6	20	500	0	96	80-125	349.5	31.5	30	R
Bromochloromethane	542.2	4.9	16	500	0	108	72-141	519.5	4.29	30	
Bromodichloromethane	455.2	5.8	20	500	0	91	75-125	446.5	1.94	30	
Bromoform	431	19	64	500	0	86.2	60-125	424.2	1.58	30	
Bromomethane	431	9.4	32	500	0	86.2	30-185	415.5	3.66	30	
Carbon tetrachloride	487.2	7.8	26	500	0	97.4	65-140	492.2	1.02	30	
Chlorobenzene	429.2	6.8	22	500	0	85.8	80-120	402.8	6.37	30	
Chloroethane	2294	7.3	24	500	1729	113	31-172	2153	6.33	30	
Chloroform	476.2	6.4	22	500	0	95.2	80-130	452.2	5.17	30	
Chloromethane	472.8	4.3	14	500	0	94.6	46-148	455	3.83	30	
cis-1,2-Dichloroethene	475.5	6.4	21	500	0	95.1	75-134	452	5.07	30	
cis-1,3-Dichloropropene	453	9.8	33	500	0	90.6	70-130	457.8	1.04	30	
Dibromochloromethane	413.5	9.4	31	500	0	82.7	60-115	414.2	0.181	30	
Dibromomethane	452.5	6.2	21	500	0	90.5	79-126	457.5	1.1	30	
Dichlorodifluoromethane	365.8	3.3	11	500	0	73.2	20-120	352.2	3.76	30	
Ethylbenzene	483	10	34	500	0	96.6	76-123	467.8	3.21	30	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.



Client: Gannett Fleming, Inc.  
 Work Order: 18101771  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: <b>R247987</b>	Instrument ID <b>VMS10</b>			Method: <b>SW8260C</b>						
Hexachlorobutadiene	404	6	20	500	0	80.8	70-155	414.8	2.63	30
Isopropylbenzene	491.2	7.8	26	500	0	98.2	80-127	478.5	2.63	30
m,p-Xylene	992.5	24	82	1000	0	99.2	75-130	958.5	3.49	30
Methyl tert-butyl ether	475.5	2.9	10	500	0	95.1	80-130	455.8	4.24	30
Methylene chloride	482.5	14	46	500	0	96.5	75-140	460.8	4.61	30
Naphthalene	460.5	4.4	15	500	0	92.1	55-160	449.8	2.36	30
n-Butylbenzene	419.5	5.4	18	500	0	83.9	75-145	411.2	1.99	30
n-Propylbenzene	437.2	6.1	20	500	0	87.4	83-135	418.8	4.32	30
o-Xylene	506.2	8.8	30	500	0	101	80-125	495.5	2.15	30
p-Isopropyltoluene	498	3.6	12	500	0	99.6	61-164	491	1.42	30
sec-Butylbenzene	446.8	7.4	24	500	0	89.4	80-134	434.2	2.84	30
Styrene	456	6	20	500	0	91.2	83-137	433	5.17	30
tert-Butylbenzene	511.8	8.6	29	500	0	102	70-130	416	20.6	30
Tetrachloroethene	481.8	6.8	23	500	0	96.4	68-166	457.2	5.22	30
Toluene	1274	9.2	30	500	808.5	93	76-125	1259	1.16	30
trans-1,2-Dichloroethene	513.8	7	23	500	28.75	97	80-140	483.2	6.12	30
trans-1,3-Dichloropropene	423.2	20	68	500	0	84.6	56-132	409.8	3.24	30
Trichloroethene	472.5	7.4	25	500	0	94.5	84-130	454	3.99	30
Trichlorofluoromethane	464.8	5	16	500	0	93	60-140	446.8	3.95	30
Vinyl chloride	450	5.1	17	500	0	90	50-136	422.2	6.36	30
Xylenes, Total	1499	33	110	1500	0	99.9	80-126	1454	3.03	30
<i>Surr: 1,2-Dichloroethane-d4</i>	523.2	0	0	500	0	105	75-120	524.5	0.239	30
<i>Surr: 4-Bromofluorobenzene</i>	520.2	0	0	500	0	104	80-110	523.5	0.623	30
<i>Surr: Dibromofluoromethane</i>	488	0	0	500	0	97.6	85-115	503.5	3.13	30
<i>Surr: Toluene-d8</i>	495.2	0	0	500	0	99	85-110	488	1.47	30

The following samples were analyzed in this batch:

18101771-01A	18101771-02A	18101771-03A
18101771-04A	18101771-05A	18101771-06A
18101771-07A	18101771-08A	18101771-09A
18101771-10A	18101771-11A	18101771-12A
18101771-13A	18101771-14A	18101771-15A
18101771-16A	18101771-17A	18101771-18A
18101771-19A	18101771-20A	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.



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# Chain of Custody Form

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Page 1 of 3

COC ID: 179207

QUOTE: ALS Unit Rates

ALS Project Manager: EB

ALS Work Order #: 18101771

Customer Information		Project Information		Parameter/Method Request for Analysis											
Purchase Order	55929.005	Project Name	WRR	A	VOCs										
Work Order		Project Number	55929.005	B											
Company Name	Gannett Fleming, Inc.	Bill To Company	Gannett Fleming, Inc.	C											
Send Report To	Anthony Miller	Invoice Attn	Accounts Payable	D											
Address	8025 Excelstor Dr.	Address	8025 Excelstor Dr.	E											
				F											
City/State/Zip	Madison, WI 53717	City/State/Zip	Madison, WI 53717	G											
Phone	(608) 836-1500	Phone	(608) 836-1500	H											
Fax		Fax		I											
e-Mail Address	awmiller@gfnet.com	e-Mail Address		J											

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	W-5	10-23-18	14:45	GW	HCl	3	X										
2	W-6	10-22-18	18:00			3											
3	W- <del>17</del> 6 dup	"	"			3											
4	W-17 A	10-23-18	10:30			3											
5	W-17 B		10:20			3											
6	W-26		11:30			3											
7	W-27		9:40			3											
8	W-28		10:45			3											
9	W-30A		11:15			3											
10	W-30B		11:05			3											

Sampler(s) Please Print & Sign <u>Chelsea Payne</u>		Shipment Method <u>FedEx</u>		Required Turnaround Time: (Check Box) <input type="checkbox"/> Std 10 WK Days <input type="checkbox"/> 5 WK Days <input type="checkbox"/> Other <input type="checkbox"/> 2 WK Days <input type="checkbox"/> 24 Hour				Results Due Date:			
Relinquished by: <u>Chelsea Payne</u>	Date: <u>10/25/18</u>	Time: <u>17:00</u>	Received by:	Notes:							
Relinquished by:	Date:	Time:	Received by (Laboratory): <u>EB</u>	10/26/18	10:30	Cooler ID: <u>SKZ</u>	Cooler Temp.: <u>1.2C</u>	QC Package: (Check One Box Below)			
Logged by (Laboratory): <u>MF</u>	Date: <u>10/26/18</u>	Time: <u>13:15</u>	Checked by (Laboratory): <u>EB</u>					<input type="checkbox"/> Level II Std QC	<input type="checkbox"/> TRRP Check/Int		
Preservative Key: 1-HCl 2-HNO <sub>3</sub> 3-H <sub>2</sub> SO <sub>4</sub> 4-NaOH 5-Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> 6-NaHSO <sub>4</sub> 7-Other 8-4°C 9-5035								<input type="checkbox"/> Level III Std QC/Raw Data	<input type="checkbox"/> TRRP Level IV		
								<input type="checkbox"/> Level IV SW846/CLP			
								<input type="checkbox"/> Other			

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.  
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+1 801 266 7700

South Charleston, WV  
+1 304 356 3168

York, PA  
+1 717 505 5280

18101771

ALS Project Manager: EB

ALS Work Order #: 18101771

Customer Information		Project Information		Parameter/Method Request for Analysis											
Purchase Order	55929.005	Project Name	WRR	A	VOCs										
Work Order		Project Number	55929.005	B											
Company Name	Gannett Fleming, Inc.	Bill To Company	Gannett Fleming, Inc.	C											
Send Report To	Anthony Miller	Invoice Attn	Accounts Payable	D											
Address	8025 Excelsior Dr.	Address	8025 Excelsior Dr.	E											
				F											
City/State/Zip	Madison, WI 53717	City/State/Zip	Madison, WI 53717	G											
Phone	(608) 836-1500	Phone	(608) 836-1500	H											
Fax		Fax		I											
e-Mail Address	awmiller@gfnet.com	e-Mail Address		J											

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
11	W-31A	10-23-18	13:10	GW	HCl	3	X										
12	W-31A dup		"														
13	<del>W-31A</del> W-31B		13:30														
14	MW-111		9:15														
15	MW-111A		9:10														
16	MW-111B		9:08														
17	MW-115		9:30														
18	MW-115A		9:45														
19	MW-115B		10:00														
20	TW-1	10-22-18	19:00	GW	HCl	3	X										

Sampler(s) Please Print & Sign <i>Chelsea Payne</i>		Shipment Method FedEx		Required Turnaround Time: (Check Box) <input type="checkbox"/> Std 10 Wk Days <input type="checkbox"/> 5 Wk Days <input checked="" type="checkbox"/> Other <u>24 Hour</u>				Results Due Date:			
Relinquished by: <i>Chk Ofc</i>	Date: 10/25/18	Time: 17:00	Received by: <i>Chk Ofc</i>	Notes:							
Relinquished by:	Date:	Time:	Received by (Laboratory): <i>Chk Ofc</i>	Cooler ID: SR2				Cooler Temp.: 12C			
Logged by (Laboratory): NF	Date: 10-26-18	Time: 13:15	Checked by (Laboratory): EB	QC Package: (Check One Box Below)							
Preservative Key: 1-HCl 2-HNO <sub>3</sub> 3-H <sub>2</sub> SO <sub>4</sub> 4-NaOH 5-Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> 6-NaHSO <sub>3</sub> 7-Other 8-4°C 9-5036				<input type="checkbox"/> Level II Std QC <input type="checkbox"/> TRRP Check List				<input type="checkbox"/> Level III Std QC/Raw Data <input type="checkbox"/> TRRP Level IV			
				<input type="checkbox"/> Level IV GWS/CLP				<input type="checkbox"/> Other			

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COC ID: 179202

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South Charleston, WV  
+1 304 356 3168

York, PA  
+1 717 505 5280

ALS Project Manager: EB

ALS Work Order #: 18101771

Customer Information		Project Information		Parameter/Method Request for Analysis												
Purchase Order	<u>55929.065</u>	Project Name	<u>WRR</u>	A	<u>VOCs</u>											
Work Order		Project Number	<u>55929.065</u>	B												
Company Name	<u>Gannett Fleming, Inc.</u>	Bill To Company	<u>Gannett Fleming, Inc.</u>	C												
Send Report To	<u>Anthony Miller</u>	Invoice Attn	<u>Accounts Payable</u>	D												
Address	<u>8025 Excelsior Dr.</u>	Address	<u>8025 Excelsior Dr.</u>	E												
				F												
City/State/Zip	<u>Madison, WI 53717</u>	City/State/Zip	<u>Madison, WI 53717</u>	G												
Phone	<u>(608) 836-1500</u>	Phone	<u>(608) 836-1500</u>	H												
Fax		Fax		I												
e-Mail Address	<u>amiller@gfnet.com</u>	e-Mail Address		J												

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
<u>21</u>	<u>RW-12</u>	<u>10-23-18</u>	<u>13:40</u>	<u>GW</u>	<u>HCl</u>	<u>3</u>	<u>X</u>										
<u>22</u>	<u>FB</u>	<u>"</u>	<u>8:10</u>	<u>↓</u>	<u>↓</u>	<u>1</u>	<u>↓</u>										
<u>23</u>	<u>MB</u>	<u>"</u>	<u>10:50</u>	<u>↓</u>	<u>↓</u>	<u>1</u>	<u>↓</u>										
<u>24</u>	<u>Trip Blank</u>	<u>10-22-18</u>		<u>↓</u>	<u>↓</u>	<u>2</u>	<u>↓</u>										
<u>25</u>	<u>W-35</u>	<u>10-25-18</u>	<u>8:50</u>	<u>"</u>	<u>"</u>	<u>3</u>	<u>X</u>										
<u>6</u>																	
<u>7</u>																	
<u>8</u>																	
<u>9</u>																	
<u>10</u>																	

Sampler(s) Please Print & Sign <u>Chelsea Pasque</u>		Shipment Method <u>FedEx</u>		Required Turnaround Time: (Check Box) <input type="checkbox"/> Std 10 Wk Days <input type="checkbox"/> 5 Wk Days <input type="checkbox"/> Other <input type="checkbox"/> 2 Wk Days <input type="checkbox"/> 24 Hour				Results Due Date:					
Relinquished by: <u>Chris Oye</u>	Date: <u>10/25/18</u>	Time: <u>17:00</u>	Received by:	Notes:									
Relinquished by:	Date:	Time:	Received by (Laboratory): <u>CMC</u>	10-26-18	10:30	Cooler ID: <u>SKZ</u>	Cooler Temp.: <u>12C</u>	QC Package: (Check One Box Below)					
Logged by (Laboratory): <u>NF</u>	Date: <u>10-26-18</u>	Time: <u>13:15</u>	Checked by (Laboratory): <u>EB</u>					<input type="checkbox"/> Level II Std QC <input type="checkbox"/> TRRP Checklist <input type="checkbox"/> Level III Std QC/Raw Data <input type="checkbox"/> TRRP Level IV <input type="checkbox"/> Level IV 8WB48CLP <input type="checkbox"/> Other					
Preservative Key: 1-HCl 2-HNO <sub>3</sub> 3-H <sub>2</sub> SO <sub>4</sub> 4-NaOH 5-Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> 6-NaHSO <sub>4</sub> 7-Other 8-4°C 9-5035												<u>PHB</u>	

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Sample Receipt Checklist

Client Name: **GANNETFLEMING - WI**

Date/Time Received: **26-Oct-18 10:30**

Work Order: **18101771**

Received by: **BNF**

Checklist completed by *Lernina France* 29-Oct-18  
eSignature Date

Reviewed by: *Eheland Beaworth* 29-Oct-18  
eSignature Date

Matrices: Groundwater

Carrier name: FedEx

- Shipping container/cooler in good condition? Yes  No  Not Present
- Custody seals intact on shipping container/cooler? Yes  No  Not Present
- Custody seals intact on sample bottles? Yes  No  Not Present
- Chain of custody present? Yes  No
- Chain of custody signed when relinquished and received? Yes  No
- Chain of custody agrees with sample labels? Yes  No
- Samples in proper container/bottle? Yes  No
- Sample containers intact? Yes  No
- Sufficient sample volume for indicated test? Yes  No
- All samples received within holding time? Yes  No
- Container/Temp Blank temperature in compliance? Yes  No
- Sample(s) received on ice? Yes  No

Temperature(s)/Thermometer(s):

Cooler(s)/Kit(s):

Date/Time sample(s) sent to storage:

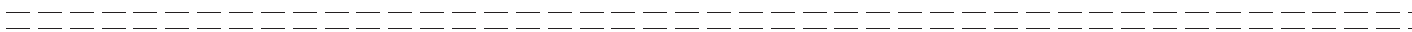
Water - VOA vials have zero headspace? Yes  No  No VOA vials submitted

Water - pH acceptable upon receipt? Yes  No  N/A

pH adjusted? Yes  No  N/A

pH adjusted by:

Login Notes:



Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

The analytical results and  
QA/QC data included with  
this report were reviewed by  
AWM on 12/17/18.



10515 Research Drive  
Knoxville, TN 37932  
Phone: (865) 573-8188  
Fax: (865) 573-8133

**Client:** Anthony Miller  
Gannett Fleming  
8025 Excelsior Drive  
Madison, WI 53717

**Phone:** 608.836.1500

**Fax:** 608.831.3337

**Identifier:** 041PL

**Date Rec:** 12/12/2018

**Report Date:** 12/17/2018

**Client Project #:** 55929.005

**Client Project Name:** WRR

**Purchase Order #:**

**Analysis Requested:** CENSUS

**Reviewed By:**

A handwritten signature in black ink, appearing to read 'Joan Spurr'.

NOTICE: This report is intended only for the addressee shown above and may contain confidential or privileged information. If the recipient of this material is not the intended recipient or if you have received this in error, please notify Microbial Insights, Inc. immediately. The data and other information in this report represent only the sample(s) analyzed and are rendered upon condition that it is not to be reproduced without approval from Microbial Insights, Inc. Thank you for your cooperation.

**Client:** Gannett Fleming  
**Project:** WRR

**MI Project Number:** 041PL  
**Date Received:** 12/12/2018

**Sample Information**

Client Sample ID:	W-32	W-34
Sample Date:	12/11/2018	12/11/2018
Units:	cells/mL	cells/mL
Analyst/Reviewer:	JS	JS

**Dechlorinating Bacteria**

<i>Dehalococcoides</i>	DHC	2.00E-01 (J)	2.46E+06
tceA Reductase	TCE	<5.00E-01	1.70E+06
BAV1 Vinyl Chloride Reductase	BVC	<5.00E-01	7.05E+05
Vinyl Chloride Reductase	VCR	<5.00E-01	2.32E+06
<i>Dehalobacter spp.</i>	DHBt	<4.60E+00	8.87E+05

**Legend:**

NA = Not Analyzed    NS = Not Sampled    J = Estimated gene copies below PQL but above LQL    I = Inhibited  
 < = Result not detected

Quality Assurance/Quality Control Data

Samples Received 12/12/2018

Component	Date Prepared	Date Analyzed	Arrival Temperature	Positive Control	Extraction Blank	Negative Control
DHBt	12/12/2018	12/17/2018	1 °C	101%	non-detect	non-detect
DHC	12/12/2018	12/17/2018	1 °C	104%	non-detect	non-detect
BVC	12/12/2018	12/17/2018	1 °C	105%	non-detect	non-detect
TCE	12/12/2018	12/17/2018	1 °C	107%	non-detect	non-detect
VCR	12/12/2018	12/17/2018	1 °C	104%	non-detect	non-detect



**REPORT TO:**

Name: Anthony Miller  
 Company: Ginnett Learning  
 Address: 5025 Excelsior Dr  
Madison, WI 53717

email: amiller@afnet.com  
 Phone: 608-836-1500  
 Fax: \_\_\_\_\_

Project Manager: Anthony Miller  
 Project Name: WRR  
 Project No.: 55929.605

**INVOICE TO:** (For Invoices paid by a third party it is imperative that all information be provided)

Name: \_\_\_\_\_  
 Company: \_\_\_\_\_  
 Address: \_\_\_\_\_

email: See Report to  
 Phone: \_\_\_\_\_  
 Fax: \_\_\_\_\_

Purchase Order No. \_\_\_\_\_  
 Subcontract No. \_\_\_\_\_  
 MI Quote No. \_\_\_\_\_



10515 Research Dr  
 Knoxville, TN 37932  
 865-573-8188

www.microbe.com

Please Check One:  
 More samples to follow  
 No Additional Samples

Report Type:  Standard (default)     Microbial Insights Level III raw data(15% surcharge)     Microbial Insights Level IV (25% surcharge)     Comprehensive Interpretive(15%)     Historical Interpretive (35%)  
 EDD type:  Microbial Insights Standard (default)     All other available EDDs (5% surcharge)    Specify EDD Type: \_\_\_\_\_

Please contact us with any questions about the analyses or filling out the COC at (865) 573-8188 (9:00 am to 5:00 pm EST, M-F). After hours email: customerservice@microbe.com

Sample Information						Analyses		CENSUS: Please select the target organism/gene																											
MI ID <small>(Laboratory Use Only)</small>	Sample Name	Date Sampled	Time Sampled	Matrix	Total Number of Containers	PLFA	NGS	QuantArray Chlor	QuantArray Petro	DHC (Dehalococoides)	DHC Functional genes <small>(bvc, bsc, vcr)</small>	DHBt (Dehalobacter)	DHG (Dehalogenimonas)	DSM (Desulfuromonas)	DSB (Desulfibacterium)	EBAC (Total)	SRB <small>(Sulfate Reducing Bacteria-APS)</small>	MGN (Methanogens)	MOB (Methanotrophs)	SMMO	DNF (Denitrifiers-nirS and nirK)	AMO <small>(ammonia oxidizing bacteria)</small>	PM1 (MTBE aerobic)	RMO (Toluene Monooxygenase)	RDEG (Toluene Monooxygenase)	PHE (Phenol Hydroxylase)	NAH (Naphthalene-aerobic)	BSSA <small>(Toluene/Xylene-Anaerobic)</small>	add. qPCR:	RNA <small>(Expression Option)*</small>	Other:	Other:	Other:		
041PL1	W-32	12/11/18	15:15	GLW	1					X	✓																								
2	W-34	"	16:45	"	1																														

Relinquished by: Chelsea Page Date: 12/11/18 Received by: [Signature] Date: 12/12/18

It is vital that chain of custody is filled out correctly & that all relative information is provided.  
 Failure to provide sufficient and/or correct information regarding reporting, invoicing & analyses requested information may result in delays for which MI will not be liable.

December 27, 2018

**The analytical results and  
QA/QC data included with  
this report were reviewed by  
AWM on 12/27/18.**

Tony Miller  
Gannett Fleming  
8025 Excelsior Drive  
Madison, WI 53717

RE: Project: 55929.005 WRR  
Pace Project No.: 40180979

Dear Tony Miller:

Enclosed are the analytical results for sample(s) received by the laboratory on December 13, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Dan Milewsky  
dan.milewsky@pacelabs.com  
(920)469-2436  
Project Manager

Enclosures

cc: Chelsea Payne, Gannett Fleming Inc.



## REPORT OF LABORATORY ANALYSIS

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## CERTIFICATIONS

Project: 55929.005 WRR

Pace Project No.: 40180979

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### Green Bay Certification IDs

1241 Bellevue Street, Green Bay, WI 54302

Florida/NELAP Certification #: E87948

Illinois Certification #: 200050

Kentucky UST Certification #: 82

Louisiana Certification #: 04168

Minnesota Certification #: 055-999-334

New York Certification #: 12064

North Dakota Certification #: R-150

Virginia VELAP ID: 460263

South Carolina Certification #: 83006001

Texas Certification #: T104704529-14-1

Wisconsin Certification #: 405132750

Wisconsin DATCP Certification #: 105-444

USDA Soil Permit #: P330-16-00157

Federal Fish & Wildlife Permit #: LE51774A-0

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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: 55929.005 WRR

Pace Project No.: 40180979

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40180979001	W-32	Water	12/11/18 15:15	12/13/18 11:55
40180979002	W-33	Water	12/11/18 14:35	12/13/18 11:55
40180979003	W-34	Water	12/11/18 16:45	12/13/18 11:55
40180979004	SVE-4	Water	12/11/18 16:05	12/13/18 11:55
40180979005	TRIP BLANK	Water	12/11/18 00:00	12/13/18 11:55

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### SAMPLE ANALYTE COUNT

Project: 55929.005 WRR

Pace Project No.: 40180979

Lab ID	Sample ID	Method	Analysts	Analytes Reported
40180979001	W-32	EPA 8015B Modified	ALD	3
		EPA 6010	TXW	2
		EPA 8260	HNW	69
		EPA 300.0	HMB	1
		EPA 300.0	HMB	1
		EPA 310.2	DAW	1
		SM 5310C	TJJ	1
40180979002	W-33	EPA 8015B Modified	ALD	3
		EPA 8260	HNW	69
40180979003	W-34	EPA 8015B Modified	ALD	3
		EPA 6010	TXW	2
		EPA 8260	HNW	69
		EPA 300.0	HMB	1
		EPA 300.0	HMB	1
		EPA 310.2	DAW	1
40180979004	SVE-4	EPA 8015B Modified	ALD	3
		EPA 8260	HNW	69
40180979005	TRIP BLANK	EPA 8260	HNW	69

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### SUMMARY OF DETECTION

Project: 55929.005 WRR

Pace Project No.: 40180979

Lab Sample ID	Client Sample ID	Result	Units	Report Limit	Analyzed	Qualifiers
Method	Parameters					
<b>40180979001</b>	<b>W-32</b>					
EPA 6010	Iron, Dissolved	47.1J	ug/L	118	12/17/18 23:51	
EPA 6010	Manganese, Dissolved	244	ug/L	5.0	12/17/18 23:51	
EPA 8260	1,1,1-Trichloroethane	5860	ug/L	100	12/15/18 01:06	
EPA 8260	1,1-Dichloroethane	124	ug/L	100	12/15/18 01:06	
EPA 8260	1,1-Dichloroethene	327	ug/L	100	12/15/18 01:06	
EPA 8260	Tetrachloroethene	3910	ug/L	109	12/15/18 01:06	
EPA 8260	Trichloroethene	6770	ug/L	100	12/15/18 01:06	
EPA 8260	cis-1,2-Dichloroethene	288	ug/L	100	12/15/18 01:06	
EPA 300.0	Nitrate as N	1.4	mg/L	0.22	12/13/18 13:12	
EPA 300.0	Sulfate	43.3	mg/L	3.0	12/13/18 13:12	
EPA 310.2	Alkalinity, Total as CaCO3	132	mg/L	23.5	12/19/18 15:36	
SM 5310C	Total Organic Carbon	9.4	mg/L	5.0	12/20/18 10:55	
<b>40180979002</b>	<b>W-33</b>					
EPA 8015B Modified	Ethane	5.1J	ug/L	5.6	12/19/18 10:43	
EPA 8015B Modified	Ethene	15.6	ug/L	5.0	12/19/18 10:43	
EPA 8015B Modified	Methane	20.2	ug/L	2.8	12/19/18 10:43	
EPA 8260	1,1,1-Trichloroethane	686	ug/L	50.0	12/17/18 08:24	
EPA 8260	1,1-Dichloroethane	1220	ug/L	50.0	12/17/18 08:24	
EPA 8260	1,1-Dichloroethene	37.2J	ug/L	50.0	12/17/18 08:24	
EPA 8260	1,2,4-Trimethylbenzene	95.7J	ug/L	140	12/17/18 08:24	
EPA 8260	1,2-Dichloroethane	14.5J	ug/L	50.0	12/17/18 08:24	
EPA 8260	Ethylbenzene	225	ug/L	50.0	12/17/18 08:24	
EPA 8260	Methylene Chloride	92.2J	ug/L	250	12/17/18 08:24	
EPA 8260	Tetrachloroethene	19.5J	ug/L	54.4	12/17/18 08:24	
EPA 8260	Toluene	284	ug/L	250	12/17/18 08:24	
EPA 8260	Vinyl chloride	218	ug/L	50.0	12/17/18 08:24	
EPA 8260	Xylene (Total)	723	ug/L	150	12/17/18 08:24	
EPA 8260	cis-1,2-Dichloroethene	3240	ug/L	50.0	12/17/18 08:24	
EPA 8260	m&p-Xylene	477	ug/L	100	12/17/18 08:24	
EPA 8260	o-Xylene	246	ug/L	50.0	12/17/18 08:24	
<b>40180979003</b>	<b>W-34</b>					
EPA 8015B Modified	Ethane	17.6	ug/L	5.6	12/19/18 10:50	
EPA 8015B Modified	Ethene	3080	ug/L	50.0	12/19/18 13:47	
EPA 6010	Iron, Dissolved	156000	ug/L	118	12/17/18 23:53	
EPA 6010	Manganese, Dissolved	7280	ug/L	5.0	12/17/18 23:53	
EPA 8260	1,1,1-Trichloroethane	5080	ug/L	125	12/15/18 00:23	
EPA 8260	1,1,2-Trichloroethane	509J	ug/L	625	12/15/18 00:23	
EPA 8260	1,1-Dichloroethane	2110	ug/L	125	12/15/18 00:23	
EPA 8260	1,1-Dichloroethene	787	ug/L	125	12/15/18 00:23	
EPA 8260	1,2-Dichloroethane	100J	ug/L	125	12/15/18 00:23	
EPA 8260	1,2-Dichloropropane	196	ug/L	125	12/15/18 00:23	
EPA 8260	Ethylbenzene	36.3J	ug/L	125	12/15/18 00:23	
EPA 8260	Methylene Chloride	636	ug/L	625	12/15/18 00:23	
EPA 8260	Toluene	53.5J	ug/L	625	12/15/18 00:23	
EPA 8260	Vinyl chloride	2890	ug/L	125	12/15/18 00:23	
EPA 8260	cis-1,2-Dichloroethene	25600	ug/L	125	12/15/18 00:23	

### REPORT OF LABORATORY ANALYSIS

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### SUMMARY OF DETECTION

Project: 55929.005 WRR

Pace Project No.: 40180979

Lab Sample ID Method	Client Sample ID Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
<b>40180979003</b>	<b>W-34</b>					
EPA 8260	m&p-Xylene	66.6J	ug/L	250	12/15/18 00:23	
EPA 8260	o-Xylene	37.6J	ug/L	125	12/15/18 00:23	
EPA 300.0	Sulfate	13.8J	mg/L	15.0	12/13/18 13:26	D3
EPA 310.2	Alkalinity, Total as CaCO3	87.2	mg/L	23.5	12/19/18 15:37	
SM 5310C	Total Organic Carbon	50.4	mg/L	25.2	12/20/18 11:16	
<b>40180979004</b>	<b>SVE-4</b>					
EPA 8015B Modified	Ethane	4.3J	ug/L	5.6	12/19/18 10:57	
EPA 8015B Modified	Ethene	10.3	ug/L	5.0	12/19/18 10:57	
EPA 8015B Modified	Methane	177	ug/L	2.8	12/19/18 10:57	
EPA 8260	1,1,1-Trichloroethane	302	ug/L	100	12/17/18 08:45	
EPA 8260	1,1,2-Trichloroethane	1300	ug/L	500	12/17/18 08:45	
EPA 8260	1,1-Dichloroethane	668	ug/L	100	12/17/18 08:45	
EPA 8260	1,1-Dichloroethene	65.9J	ug/L	100	12/17/18 08:45	
EPA 8260	1,2-Dichloroethane	120	ug/L	100	12/17/18 08:45	
EPA 8260	1,2-Dichloropropane	59.9J	ug/L	100	12/17/18 08:45	
EPA 8260	Methylene Chloride	449J	ug/L	500	12/17/18 08:45	
EPA 8260	Tetrachloroethene	70.5J	ug/L	109	12/17/18 08:45	
EPA 8260	Toluene	62.5J	ug/L	500	12/17/18 08:45	
EPA 8260	Trichloroethene	151	ug/L	100	12/17/18 08:45	
EPA 8260	Vinyl chloride	669	ug/L	100	12/17/18 08:45	
EPA 8260	cis-1,2-Dichloroethene	17400	ug/L	100	12/17/18 08:45	
EPA 8260	o-Xylene	71.8J	ug/L	100	12/17/18 08:45	

### REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: 55929.005 WRR

Pace Project No.: 40180979

**Sample: W-32**      **Lab ID: 40180979001**      Collected: 12/11/18 15:15      Received: 12/13/18 11:55      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>Methane, Ethane, Ethene GCV</b>		Analytical Method: EPA 8015B Modified							
Ethane	<0.58	ug/L	5.6	0.58	1		12/19/18 10:36	74-84-0	
Ethene	<0.52	ug/L	5.0	0.52	1		12/19/18 10:36	74-85-1	
Methane	<1.4	ug/L	2.8	1.4	1		12/19/18 10:36	74-82-8	
<b>6010 MET ICP, Dissolved</b>		Analytical Method: EPA 6010							
Iron, Dissolved	47.1J	ug/L	118	35.4	1		12/17/18 23:51	7439-89-6	
Manganese, Dissolved	244	ug/L	5.0	1.1	1		12/17/18 23:51	7439-96-5	
<b>8260 MSV Oxygenates</b>		Analytical Method: EPA 8260							
1,1,1,2-Tetrachloroethane	<26.9	ug/L	100	26.9	100		12/15/18 01:06	630-20-6	
1,1,1-Trichloroethane	5860	ug/L	100	24.5	100		12/15/18 01:06	71-55-6	
1,1,2,2-Tetrachloroethane	<27.5	ug/L	100	27.5	100		12/15/18 01:06	79-34-5	
1,1,2-Trichloroethane	<55.2	ug/L	500	55.2	100		12/15/18 01:06	79-00-5	
1,1-Dichloroethane	124	ug/L	100	27.3	100		12/15/18 01:06	75-34-3	
1,1-Dichloroethene	327	ug/L	100	24.5	100		12/15/18 01:06	75-35-4	
1,1-Dichloropropene	<54.0	ug/L	180	54.0	100		12/15/18 01:06	563-58-6	
1,2,3-Trichlorobenzene	<62.6	ug/L	500	62.6	100		12/15/18 01:06	87-61-6	
1,2,3-Trichloropropane	<59.1	ug/L	500	59.1	100		12/15/18 01:06	96-18-4	
1,2,4-Trichlorobenzene	<95.1	ug/L	500	95.1	100		12/15/18 01:06	120-82-1	
1,2,4-Trimethylbenzene	<84.1	ug/L	280	84.1	100		12/15/18 01:06	95-63-6	
1,2-Dibromo-3-chloropropane	<176	ug/L	588	176	100		12/15/18 01:06	96-12-8	
1,2-Dibromoethane (EDB)	<82.9	ug/L	276	82.9	100		12/15/18 01:06	106-93-4	
1,2-Dichlorobenzene	<70.5	ug/L	235	70.5	100		12/15/18 01:06	95-50-1	
1,2-Dichloroethane	<28.0	ug/L	100	28.0	100		12/15/18 01:06	107-06-2	
1,2-Dichloropropane	<28.3	ug/L	100	28.3	100		12/15/18 01:06	78-87-5	
1,3,5-Trimethylbenzene	<87.3	ug/L	291	87.3	100		12/15/18 01:06	108-67-8	
1,3-Dichlorobenzene	<62.8	ug/L	209	62.8	100		12/15/18 01:06	541-73-1	
1,3-Dichloropropane	<82.6	ug/L	275	82.6	100		12/15/18 01:06	142-28-9	
1,4-Dichlorobenzene	<94.4	ug/L	315	94.4	100		12/15/18 01:06	106-46-7	
2,2-Dichloropropane	<227	ug/L	755	227	100		12/15/18 01:06	594-20-7	
2-Butanone (MEK)	<294	ug/L	2000	294	100		12/15/18 01:06	78-93-3	
2-Chlorotoluene	<92.6	ug/L	500	92.6	100		12/15/18 01:06	95-49-8	
2-Propanol	<2890	ug/L	25000	2890	100		12/15/18 01:06	67-63-0	
4-Chlorotoluene	<75.6	ug/L	252	75.6	100		12/15/18 01:06	106-43-4	
4-Methyl-2-pentanone (MIBK)	<153	ug/L	510	153	100		12/15/18 01:06	108-10-1	
Acetone	<274	ug/L	2000	274	100		12/15/18 01:06	67-64-1	
Benzene	<24.6	ug/L	100	24.6	100		12/15/18 01:06	71-43-2	
Bromobenzene	<24.1	ug/L	100	24.1	100		12/15/18 01:06	108-86-1	
Bromochloromethane	<36.2	ug/L	500	36.2	100		12/15/18 01:06	74-97-5	
Bromodichloromethane	<36.4	ug/L	121	36.4	100		12/15/18 01:06	75-27-4	
Bromoform	<397	ug/L	1320	397	100		12/15/18 01:06	75-25-2	
Bromomethane	<97.1	ug/L	500	97.1	100		12/15/18 01:06	74-83-9	
Carbon tetrachloride	<16.6	ug/L	100	16.6	100		12/15/18 01:06	56-23-5	
Chlorobenzene	<71.1	ug/L	237	71.1	100		12/15/18 01:06	108-90-7	
Chloroethane	<134	ug/L	500	134	100		12/15/18 01:06	75-00-3	
Chloroform	<127	ug/L	500	127	100		12/15/18 01:06	67-66-3	

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## ANALYTICAL RESULTS

Project: 55929.005 WRR

Pace Project No.: 40180979

**Sample: W-32**      **Lab ID: 40180979001**      Collected: 12/11/18 15:15      Received: 12/13/18 11:55      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Oxygenates</b>		Analytical Method: EPA 8260							
Chloromethane	<219	ug/L	730	219	100		12/15/18 01:06	74-87-3	
Dibromochloromethane	<260	ug/L	867	260	100		12/15/18 01:06	124-48-1	
Dibromomethane	<93.7	ug/L	312	93.7	100		12/15/18 01:06	74-95-3	
Dichlorodifluoromethane	<50.0	ug/L	500	50.0	100		12/15/18 01:06	75-71-8	
Diisopropyl ether	<189	ug/L	629	189	100		12/15/18 01:06	108-20-3	
Ethylbenzene	<21.8	ug/L	100	21.8	100		12/15/18 01:06	100-41-4	
Hexachloro-1,3-butadiene	<118	ug/L	500	118	100		12/15/18 01:06	87-68-3	
Isopropylbenzene (Cumene)	<39.3	ug/L	500	39.3	100		12/15/18 01:06	98-82-8	
Methyl-tert-butyl ether	<125	ug/L	415	125	100		12/15/18 01:06	1634-04-4	
Methylene Chloride	<58.1	ug/L	500	58.1	100		12/15/18 01:06	75-09-2	
Naphthalene	<118	ug/L	500	118	100		12/15/18 01:06	91-20-3	
Styrene	<46.5	ug/L	155	46.5	100		12/15/18 01:06	100-42-5	
Tetrachloroethene	3910	ug/L	109	32.6	100		12/15/18 01:06	127-18-4	
Toluene	<17.2	ug/L	500	17.2	100		12/15/18 01:06	108-88-3	
Trichloroethene	6770	ug/L	100	25.5	100		12/15/18 01:06	79-01-6	
Trichlorofluoromethane	<21.5	ug/L	100	21.5	100		12/15/18 01:06	75-69-4	
Vinyl chloride	<17.5	ug/L	100	17.5	100		12/15/18 01:06	75-01-4	
Xylene (Total)	<150	ug/L	300	150	100		12/15/18 01:06	1330-20-7	
cis-1,2-Dichloroethene	288	ug/L	100	27.1	100		12/15/18 01:06	156-59-2	
cis-1,3-Dichloropropene	<363	ug/L	1210	363	100		12/15/18 01:06	10061-01-5	
m&p-Xylene	<46.5	ug/L	200	46.5	100		12/15/18 01:06	179601-23-1	
n-Butylbenzene	<70.8	ug/L	236	70.8	100		12/15/18 01:06	104-51-8	
n-Propylbenzene	<81.1	ug/L	500	81.1	100		12/15/18 01:06	103-65-1	
o-Xylene	<26.2	ug/L	100	26.2	100		12/15/18 01:06	95-47-6	
p-Isopropyltoluene	<80.0	ug/L	267	80.0	100		12/15/18 01:06	99-87-6	
sec-Butylbenzene	<84.9	ug/L	500	84.9	100		12/15/18 01:06	135-98-8	
tert-Butylbenzene	<30.4	ug/L	101	30.4	100		12/15/18 01:06	98-06-6	
trans-1,2-Dichloroethene	<109	ug/L	364	109	100		12/15/18 01:06	156-60-5	
trans-1,3-Dichloropropene	<437	ug/L	1460	437	100		12/15/18 01:06	10061-02-6	
<b>Surrogates</b>									
Dibromofluoromethane (S)	98	%	70-130		100		12/15/18 01:06	1868-53-7	
Toluene-d8 (S)	99	%	70-130		100		12/15/18 01:06	2037-26-5	
4-Bromofluorobenzene (S)	94	%	70-130		100		12/15/18 01:06	460-00-4	
<b>300.0 IC Anions</b>		Analytical Method: EPA 300.0							
Nitrate as N	1.4	mg/L	0.22	0.075	1		12/13/18 13:12	14797-55-8	
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Sulfate	43.3	mg/L	3.0	1.0	1		12/13/18 13:12	14808-79-8	
<b>310.2 Alkalinity</b>		Analytical Method: EPA 310.2							
Alkalinity, Total as CaCO3	132	mg/L	23.5	7.0	1		12/19/18 15:36		
<b>5310C TOC</b>		Analytical Method: SM 5310C							
Total Organic Carbon	9.4	mg/L	5.0	1.5	6		12/20/18 10:55	7440-44-0	

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## ANALYTICAL RESULTS

Project: 55929.005 WRR

Pace Project No.: 40180979

**Sample: W-33**      **Lab ID: 40180979002**      Collected: 12/11/18 14:35      Received: 12/13/18 11:55      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>Methane, Ethane, Ethene GCV</b>		Analytical Method: EPA 8015B Modified							
Ethane	5.1J	ug/L	5.6	0.58	1		12/19/18 10:43	74-84-0	
Ethene	15.6	ug/L	5.0	0.52	1		12/19/18 10:43	74-85-1	
Methane	20.2	ug/L	2.8	1.4	1		12/19/18 10:43	74-82-8	
<b>8260 MSV Oxygenates</b>		Analytical Method: EPA 8260							
1,1,1,2-Tetrachloroethane	<13.5	ug/L	50.0	13.5	50		12/17/18 08:24	630-20-6	
1,1,1-Trichloroethane	686	ug/L	50.0	12.2	50		12/17/18 08:24	71-55-6	
1,1,2,2-Tetrachloroethane	<13.8	ug/L	50.0	13.8	50		12/17/18 08:24	79-34-5	
1,1,2-Trichloroethane	<27.6	ug/L	250	27.6	50		12/17/18 08:24	79-00-5	
1,1-Dichloroethane	1220	ug/L	50.0	13.6	50		12/17/18 08:24	75-34-3	
1,1-Dichloroethene	37.2J	ug/L	50.0	12.2	50		12/17/18 08:24	75-35-4	
1,1-Dichloropropene	<27.0	ug/L	90.0	27.0	50		12/17/18 08:24	563-58-6	
1,2,3-Trichlorobenzene	<31.3	ug/L	250	31.3	50		12/17/18 08:24	87-61-6	
1,2,3-Trichloropropane	<29.5	ug/L	250	29.5	50		12/17/18 08:24	96-18-4	
1,2,4-Trichlorobenzene	<47.6	ug/L	250	47.6	50		12/17/18 08:24	120-82-1	
1,2,4-Trimethylbenzene	95.7J	ug/L	140	42.0	50		12/17/18 08:24	95-63-6	
1,2-Dibromo-3-chloropropane	<88.2	ug/L	294	88.2	50		12/17/18 08:24	96-12-8	
1,2-Dibromoethane (EDB)	<41.5	ug/L	138	41.5	50		12/17/18 08:24	106-93-4	
1,2-Dichlorobenzene	<35.3	ug/L	118	35.3	50		12/17/18 08:24	95-50-1	
1,2-Dichloroethane	14.5J	ug/L	50.0	14.0	50		12/17/18 08:24	107-06-2	
1,2-Dichloropropane	<14.1	ug/L	50.0	14.1	50		12/17/18 08:24	78-87-5	
1,3,5-Trimethylbenzene	<43.7	ug/L	146	43.7	50		12/17/18 08:24	108-67-8	
1,3-Dichlorobenzene	<31.4	ug/L	105	31.4	50		12/17/18 08:24	541-73-1	
1,3-Dichloropropane	<41.3	ug/L	138	41.3	50		12/17/18 08:24	142-28-9	
1,4-Dichlorobenzene	<47.2	ug/L	157	47.2	50		12/17/18 08:24	106-46-7	
2,2-Dichloropropane	<113	ug/L	378	113	50		12/17/18 08:24	594-20-7	
2-Butanone (MEK)	<147	ug/L	1000	147	50		12/17/18 08:24	78-93-3	
2-Chlorotoluene	<46.3	ug/L	250	46.3	50		12/17/18 08:24	95-49-8	
2-Propanol	<1450	ug/L	12500	1450	50		12/17/18 08:24	67-63-0	
4-Chlorotoluene	<37.8	ug/L	126	37.8	50		12/17/18 08:24	106-43-4	
4-Methyl-2-pentanone (MIBK)	<76.6	ug/L	255	76.6	50		12/17/18 08:24	108-10-1	
Acetone	<137	ug/L	1000	137	50		12/17/18 08:24	67-64-1	
Benzene	<12.3	ug/L	50.0	12.3	50		12/17/18 08:24	71-43-2	
Bromobenzene	<12.1	ug/L	50.0	12.1	50		12/17/18 08:24	108-86-1	
Bromochloromethane	<18.1	ug/L	250	18.1	50		12/17/18 08:24	74-97-5	
Bromodichloromethane	<18.2	ug/L	60.6	18.2	50		12/17/18 08:24	75-27-4	
Bromoform	<199	ug/L	662	199	50		12/17/18 08:24	75-25-2	
Bromomethane	<48.6	ug/L	250	48.6	50		12/17/18 08:24	74-83-9	
Carbon tetrachloride	<8.3	ug/L	50.0	8.3	50		12/17/18 08:24	56-23-5	
Chlorobenzene	<35.5	ug/L	118	35.5	50		12/17/18 08:24	108-90-7	
Chloroethane	<67.1	ug/L	250	67.1	50		12/17/18 08:24	75-00-3	
Chloroform	<63.7	ug/L	250	63.7	50		12/17/18 08:24	67-66-3	
Chloromethane	<109	ug/L	365	109	50		12/17/18 08:24	74-87-3	
Dibromochloromethane	<130	ug/L	434	130	50		12/17/18 08:24	124-48-1	
Dibromomethane	<46.8	ug/L	156	46.8	50		12/17/18 08:24	74-95-3	
Dichlorodifluoromethane	<25.0	ug/L	250	25.0	50		12/17/18 08:24	75-71-8	

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## ANALYTICAL RESULTS

Project: 55929.005 WRR

Pace Project No.: 40180979

**Sample: W-33**      **Lab ID: 40180979002**      Collected: 12/11/18 14:35      Received: 12/13/18 11:55      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Oxygenates</b>		Analytical Method: EPA 8260							
Diisopropyl ether	<94.4	ug/L	315	94.4	50		12/17/18 08:24	108-20-3	
Ethylbenzene	225	ug/L	50.0	10.9	50		12/17/18 08:24	100-41-4	
Hexachloro-1,3-butadiene	<59.1	ug/L	250	59.1	50		12/17/18 08:24	87-68-3	
Isopropylbenzene (Cumene)	<19.6	ug/L	250	19.6	50		12/17/18 08:24	98-82-8	
Methyl-tert-butyl ether	<62.3	ug/L	208	62.3	50		12/17/18 08:24	1634-04-4	
Methylene Chloride	92.2J	ug/L	250	29.0	50		12/17/18 08:24	75-09-2	
Naphthalene	<58.8	ug/L	250	58.8	50		12/17/18 08:24	91-20-3	
Styrene	<23.3	ug/L	77.6	23.3	50		12/17/18 08:24	100-42-5	
Tetrachloroethene	19.5J	ug/L	54.4	16.3	50		12/17/18 08:24	127-18-4	
Toluene	284	ug/L	250	8.6	50		12/17/18 08:24	108-88-3	
Trichloroethene	<12.8	ug/L	50.0	12.8	50		12/17/18 08:24	79-01-6	
Trichlorofluoromethane	<10.7	ug/L	50.0	10.7	50		12/17/18 08:24	75-69-4	
Vinyl chloride	218	ug/L	50.0	8.7	50		12/17/18 08:24	75-01-4	
Xylene (Total)	723	ug/L	150	75.0	50		12/17/18 08:24	1330-20-7	
cis-1,2-Dichloroethene	3240	ug/L	50.0	13.6	50		12/17/18 08:24	156-59-2	
cis-1,3-Dichloropropene	<181	ug/L	605	181	50		12/17/18 08:24	10061-01-5	
m&p-Xylene	477	ug/L	100	23.3	50		12/17/18 08:24	179601-23-1	
n-Butylbenzene	<35.4	ug/L	118	35.4	50		12/17/18 08:24	104-51-8	
n-Propylbenzene	<40.5	ug/L	250	40.5	50		12/17/18 08:24	103-65-1	
o-Xylene	246	ug/L	50.0	13.1	50		12/17/18 08:24	95-47-6	
p-Isopropyltoluene	<40.0	ug/L	133	40.0	50		12/17/18 08:24	99-87-6	
sec-Butylbenzene	<42.4	ug/L	250	42.4	50		12/17/18 08:24	135-98-8	
tert-Butylbenzene	<15.2	ug/L	50.6	15.2	50		12/17/18 08:24	98-06-6	
trans-1,2-Dichloroethene	<54.5	ug/L	182	54.5	50		12/17/18 08:24	156-60-5	
trans-1,3-Dichloropropene	<219	ug/L	728	219	50		12/17/18 08:24	10061-02-6	
<b>Surrogates</b>									
Dibromofluoromethane (S)	98	%	70-130		50		12/17/18 08:24	1868-53-7	
Toluene-d8 (S)	101	%	70-130		50		12/17/18 08:24	2037-26-5	
4-Bromofluorobenzene (S)	95	%	70-130		50		12/17/18 08:24	460-00-4	

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## ANALYTICAL RESULTS

Project: 55929.005 WRR

Pace Project No.: 40180979

**Sample: W-34**      **Lab ID: 40180979003**      Collected: 12/11/18 16:45      Received: 12/13/18 11:55      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>Methane, Ethane, Ethene GCV</b>		Analytical Method: EPA 8015B Modified							
Ethane	17.6	ug/L	5.6	0.58	1		12/19/18 10:50	74-84-0	
Ethene	3080	ug/L	50.0	5.2	10		12/19/18 13:47	74-85-1	
Methane	<1.4	ug/L	2.8	1.4	1		12/19/18 10:50	74-82-8	
<b>6010 MET ICP, Dissolved</b>		Analytical Method: EPA 6010							
Iron, Dissolved	156000	ug/L	118	35.4	1		12/17/18 23:53	7439-89-6	
Manganese, Dissolved	7280	ug/L	5.0	1.1	1		12/17/18 23:53	7439-96-5	
<b>8260 MSV Oxygenates</b>		Analytical Method: EPA 8260							
1,1,1,2-Tetrachloroethane	<33.6	ug/L	125	33.6	125		12/15/18 00:23	630-20-6	
1,1,1-Trichloroethane	5080	ug/L	125	30.6	125		12/15/18 00:23	71-55-6	
1,1,2,2-Tetrachloroethane	<34.4	ug/L	125	34.4	125		12/15/18 00:23	79-34-5	
1,1,2-Trichloroethane	509J	ug/L	625	69.0	125		12/15/18 00:23	79-00-5	
1,1-Dichloroethane	2110	ug/L	125	34.1	125		12/15/18 00:23	75-34-3	
1,1-Dichloroethene	787	ug/L	125	30.6	125		12/15/18 00:23	75-35-4	
1,1-Dichloropropene	<67.6	ug/L	225	67.6	125		12/15/18 00:23	563-58-6	
1,2,3-Trichlorobenzene	<78.2	ug/L	625	78.2	125		12/15/18 00:23	87-61-6	
1,2,3-Trichloropropane	<73.8	ug/L	625	73.8	125		12/15/18 00:23	96-18-4	
1,2,4-Trichlorobenzene	<119	ug/L	625	119	125		12/15/18 00:23	120-82-1	
1,2,4-Trimethylbenzene	<105	ug/L	350	105	125		12/15/18 00:23	95-63-6	
1,2-Dibromo-3-chloropropane	<220	ug/L	735	220	125		12/15/18 00:23	96-12-8	
1,2-Dibromoethane (EDB)	<104	ug/L	346	104	125		12/15/18 00:23	106-93-4	
1,2-Dichlorobenzene	<88.2	ug/L	294	88.2	125		12/15/18 00:23	95-50-1	
1,2-Dichloroethane	100J	ug/L	125	35.0	125		12/15/18 00:23	107-06-2	
1,2-Dichloropropane	196	ug/L	125	35.3	125		12/15/18 00:23	78-87-5	
1,3,5-Trimethylbenzene	<109	ug/L	364	109	125		12/15/18 00:23	108-67-8	
1,3-Dichlorobenzene	<78.5	ug/L	262	78.5	125		12/15/18 00:23	541-73-1	
1,3-Dichloropropane	<103	ug/L	344	103	125		12/15/18 00:23	142-28-9	
1,4-Dichlorobenzene	<118	ug/L	393	118	125		12/15/18 00:23	106-46-7	
2,2-Dichloropropane	<283	ug/L	944	283	125		12/15/18 00:23	594-20-7	
2-Butanone (MEK)	<367	ug/L	2500	367	125		12/15/18 00:23	78-93-3	
2-Chlorotoluene	<116	ug/L	625	116	125		12/15/18 00:23	95-49-8	
2-Propanol	<3610	ug/L	31200	3610	125		12/15/18 00:23	67-63-0	
4-Chlorotoluene	<94.5	ug/L	315	94.5	125		12/15/18 00:23	106-43-4	
4-Methyl-2-pentanone (MIBK)	<191	ug/L	638	191	125		12/15/18 00:23	108-10-1	
Acetone	<343	ug/L	2500	343	125		12/15/18 00:23	67-64-1	
Benzene	<30.8	ug/L	125	30.8	125		12/15/18 00:23	71-43-2	
Bromobenzene	<30.1	ug/L	125	30.1	125		12/15/18 00:23	108-86-1	
Bromochloromethane	<45.3	ug/L	625	45.3	125		12/15/18 00:23	74-97-5	
Bromodichloromethane	<45.5	ug/L	152	45.5	125		12/15/18 00:23	75-27-4	
Bromoform	<496	ug/L	1650	496	125		12/15/18 00:23	75-25-2	
Bromomethane	<121	ug/L	625	121	125		12/15/18 00:23	74-83-9	
Carbon tetrachloride	<20.7	ug/L	125	20.7	125		12/15/18 00:23	56-23-5	
Chlorobenzene	<88.9	ug/L	296	88.9	125		12/15/18 00:23	108-90-7	
Chloroethane	<168	ug/L	625	168	125		12/15/18 00:23	75-00-3	
Chloroform	<159	ug/L	625	159	125		12/15/18 00:23	67-66-3	

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## ANALYTICAL RESULTS

Project: 55929.005 WRR

Pace Project No.: 40180979

**Sample: W-34**      **Lab ID: 40180979003**      Collected: 12/11/18 16:45      Received: 12/13/18 11:55      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Oxygenates</b>		Analytical Method: EPA 8260							
Chloromethane	<274	ug/L	912	274	125		12/15/18 00:23	74-87-3	
Dibromochloromethane	<325	ug/L	1080	325	125		12/15/18 00:23	124-48-1	
Dibromomethane	<117	ug/L	390	117	125		12/15/18 00:23	74-95-3	
Dichlorodifluoromethane	<62.4	ug/L	625	62.4	125		12/15/18 00:23	75-71-8	
Diisopropyl ether	<236	ug/L	787	236	125		12/15/18 00:23	108-20-3	
Ethylbenzene	36.3J	ug/L	125	27.3	125		12/15/18 00:23	100-41-4	
Hexachloro-1,3-butadiene	<148	ug/L	625	148	125		12/15/18 00:23	87-68-3	
Isopropylbenzene (Cumene)	<49.1	ug/L	625	49.1	125		12/15/18 00:23	98-82-8	
Methyl-tert-butyl ether	<156	ug/L	519	156	125		12/15/18 00:23	1634-04-4	
Methylene Chloride	636	ug/L	625	72.6	125		12/15/18 00:23	75-09-2	
Naphthalene	<147	ug/L	625	147	125		12/15/18 00:23	91-20-3	
Styrene	<58.2	ug/L	194	58.2	125		12/15/18 00:23	100-42-5	
Tetrachloroethene	<40.8	ug/L	136	40.8	125		12/15/18 00:23	127-18-4	
Toluene	53.5J	ug/L	625	21.5	125		12/15/18 00:23	108-88-3	
Trichloroethene	<31.9	ug/L	125	31.9	125		12/15/18 00:23	79-01-6	
Trichlorofluoromethane	<26.9	ug/L	125	26.9	125		12/15/18 00:23	75-69-4	
Vinyl chloride	2890	ug/L	125	21.8	125		12/15/18 00:23	75-01-4	
Xylene (Total)	<188	ug/L	375	188	125		12/15/18 00:23	1330-20-7	
cis-1,2-Dichloroethene	25600	ug/L	125	33.9	125		12/15/18 00:23	156-59-2	
cis-1,3-Dichloropropene	<454	ug/L	1510	454	125		12/15/18 00:23	10061-01-5	
m&p-Xylene	66.6J	ug/L	250	58.2	125		12/15/18 00:23	179601-23-1	
n-Butylbenzene	<88.5	ug/L	295	88.5	125		12/15/18 00:23	104-51-8	
n-Propylbenzene	<101	ug/L	625	101	125		12/15/18 00:23	103-65-1	
o-Xylene	37.6J	ug/L	125	32.7	125		12/15/18 00:23	95-47-6	
p-Isopropyltoluene	<100	ug/L	333	100	125		12/15/18 00:23	99-87-6	
sec-Butylbenzene	<106	ug/L	625	106	125		12/15/18 00:23	135-98-8	
tert-Butylbenzene	<38.0	ug/L	127	38.0	125		12/15/18 00:23	98-06-6	
trans-1,2-Dichloroethene	<136	ug/L	454	136	125		12/15/18 00:23	156-60-5	
trans-1,3-Dichloropropene	<546	ug/L	1820	546	125		12/15/18 00:23	10061-02-6	
<b>Surrogates</b>									
Dibromofluoromethane (S)	99	%	70-130		125		12/15/18 00:23	1868-53-7	
Toluene-d8 (S)	100	%	70-130		125		12/15/18 00:23	2037-26-5	
4-Bromofluorobenzene (S)	93	%	70-130		125		12/15/18 00:23	460-00-4	
<b>300.0 IC Anions</b>		Analytical Method: EPA 300.0							
Nitrate as N	<0.38	mg/L	1.1	0.38	5		12/13/18 13:26	14797-55-8	D3
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Sulfate	13.8J	mg/L	15.0	5.0	5		12/13/18 13:26	14808-79-8	D3
<b>310.2 Alkalinity</b>		Analytical Method: EPA 310.2							
Alkalinity, Total as CaCO3	87.2	mg/L	23.5	7.0	1		12/19/18 15:37		
<b>5310C TOC</b>		Analytical Method: SM 5310C							
Total Organic Carbon	50.4	mg/L	25.2	7.6	30		12/20/18 11:16	7440-44-0	

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## ANALYTICAL RESULTS

Project: 55929.005 WRR

Pace Project No.: 40180979

**Sample: SVE-4**      **Lab ID: 40180979004**      Collected: 12/11/18 16:05      Received: 12/13/18 11:55      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>Methane, Ethane, Ethene GCV</b>		Analytical Method: EPA 8015B Modified							
Ethane	4.3J	ug/L	5.6	0.58	1		12/19/18 10:57	74-84-0	
Ethene	10.3	ug/L	5.0	0.52	1		12/19/18 10:57	74-85-1	
Methane	177	ug/L	2.8	1.4	1		12/19/18 10:57	74-82-8	
<b>8260 MSV Oxygenates</b>		Analytical Method: EPA 8260							
1,1,1,2-Tetrachloroethane	<26.9	ug/L	100	26.9	100		12/17/18 08:45	630-20-6	
1,1,1-Trichloroethane	302	ug/L	100	24.5	100		12/17/18 08:45	71-55-6	
1,1,2,2-Tetrachloroethane	<27.5	ug/L	100	27.5	100		12/17/18 08:45	79-34-5	
1,1,2-Trichloroethane	1300	ug/L	500	55.2	100		12/17/18 08:45	79-00-5	
1,1-Dichloroethane	668	ug/L	100	27.3	100		12/17/18 08:45	75-34-3	
1,1-Dichloroethene	65.9J	ug/L	100	24.5	100		12/17/18 08:45	75-35-4	
1,1-Dichloropropene	<54.0	ug/L	180	54.0	100		12/17/18 08:45	563-58-6	
1,2,3-Trichlorobenzene	<62.6	ug/L	500	62.6	100		12/17/18 08:45	87-61-6	
1,2,3-Trichloropropane	<59.1	ug/L	500	59.1	100		12/17/18 08:45	96-18-4	
1,2,4-Trichlorobenzene	<95.1	ug/L	500	95.1	100		12/17/18 08:45	120-82-1	
1,2,4-Trimethylbenzene	<84.1	ug/L	280	84.1	100		12/17/18 08:45	95-63-6	
1,2-Dibromo-3-chloropropane	<176	ug/L	588	176	100		12/17/18 08:45	96-12-8	
1,2-Dibromoethane (EDB)	<82.9	ug/L	276	82.9	100		12/17/18 08:45	106-93-4	
1,2-Dichlorobenzene	<70.5	ug/L	235	70.5	100		12/17/18 08:45	95-50-1	
1,2-Dichloroethane	120	ug/L	100	28.0	100		12/17/18 08:45	107-06-2	
1,2-Dichloropropane	59.9J	ug/L	100	28.3	100		12/17/18 08:45	78-87-5	
1,3,5-Trimethylbenzene	<87.3	ug/L	291	87.3	100		12/17/18 08:45	108-67-8	
1,3-Dichlorobenzene	<62.8	ug/L	209	62.8	100		12/17/18 08:45	541-73-1	
1,3-Dichloropropane	<82.6	ug/L	275	82.6	100		12/17/18 08:45	142-28-9	
1,4-Dichlorobenzene	<94.4	ug/L	315	94.4	100		12/17/18 08:45	106-46-7	
2,2-Dichloropropane	<227	ug/L	755	227	100		12/17/18 08:45	594-20-7	
2-Butanone (MEK)	<294	ug/L	2000	294	100		12/17/18 08:45	78-93-3	
2-Chlorotoluene	<92.6	ug/L	500	92.6	100		12/17/18 08:45	95-49-8	
2-Propanol	<2890	ug/L	25000	2890	100		12/17/18 08:45	67-63-0	
4-Chlorotoluene	<75.6	ug/L	252	75.6	100		12/17/18 08:45	106-43-4	
4-Methyl-2-pentanone (MIBK)	<153	ug/L	510	153	100		12/17/18 08:45	108-10-1	
Acetone	<274	ug/L	2000	274	100		12/17/18 08:45	67-64-1	
Benzene	<24.6	ug/L	100	24.6	100		12/17/18 08:45	71-43-2	
Bromobenzene	<24.1	ug/L	100	24.1	100		12/17/18 08:45	108-86-1	
Bromochloromethane	<36.2	ug/L	500	36.2	100		12/17/18 08:45	74-97-5	
Bromodichloromethane	<36.4	ug/L	121	36.4	100		12/17/18 08:45	75-27-4	
Bromoform	<397	ug/L	1320	397	100		12/17/18 08:45	75-25-2	
Bromomethane	<97.1	ug/L	500	97.1	100		12/17/18 08:45	74-83-9	
Carbon tetrachloride	<16.6	ug/L	100	16.6	100		12/17/18 08:45	56-23-5	
Chlorobenzene	<71.1	ug/L	237	71.1	100		12/17/18 08:45	108-90-7	
Chloroethane	<134	ug/L	500	134	100		12/17/18 08:45	75-00-3	
Chloroform	<127	ug/L	500	127	100		12/17/18 08:45	67-66-3	
Chloromethane	<219	ug/L	730	219	100		12/17/18 08:45	74-87-3	
Dibromochloromethane	<260	ug/L	867	260	100		12/17/18 08:45	124-48-1	
Dibromomethane	<93.7	ug/L	312	93.7	100		12/17/18 08:45	74-95-3	
Dichlorodifluoromethane	<50.0	ug/L	500	50.0	100		12/17/18 08:45	75-71-8	

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### ANALYTICAL RESULTS

Project: 55929.005 WRR  
Pace Project No.: 40180979

**Sample: SVE-4**      **Lab ID: 40180979004**      Collected: 12/11/18 16:05      Received: 12/13/18 11:55      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Oxygenates</b>		Analytical Method: EPA 8260							
Diisopropyl ether	<189	ug/L	629	189	100		12/17/18 08:45	108-20-3	
Ethylbenzene	<21.8	ug/L	100	21.8	100		12/17/18 08:45	100-41-4	
Hexachloro-1,3-butadiene	<118	ug/L	500	118	100		12/17/18 08:45	87-68-3	
Isopropylbenzene (Cumene)	<39.3	ug/L	500	39.3	100		12/17/18 08:45	98-82-8	
Methyl-tert-butyl ether	<125	ug/L	415	125	100		12/17/18 08:45	1634-04-4	
Methylene Chloride	449J	ug/L	500	58.1	100		12/17/18 08:45	75-09-2	
Naphthalene	<118	ug/L	500	118	100		12/17/18 08:45	91-20-3	
Styrene	<46.5	ug/L	155	46.5	100		12/17/18 08:45	100-42-5	
Tetrachloroethene	70.5J	ug/L	109	32.6	100		12/17/18 08:45	127-18-4	
Toluene	62.5J	ug/L	500	17.2	100		12/17/18 08:45	108-88-3	
Trichloroethene	151	ug/L	100	25.5	100		12/17/18 08:45	79-01-6	
Trichlorofluoromethane	<21.5	ug/L	100	21.5	100		12/17/18 08:45	75-69-4	
Vinyl chloride	669	ug/L	100	17.5	100		12/17/18 08:45	75-01-4	
Xylene (Total)	<150	ug/L	300	150	100		12/17/18 08:45	1330-20-7	
cis-1,2-Dichloroethene	17400	ug/L	100	27.1	100		12/17/18 08:45	156-59-2	
cis-1,3-Dichloropropene	<363	ug/L	1210	363	100		12/17/18 08:45	10061-01-5	
m&p-Xylene	<46.5	ug/L	200	46.5	100		12/17/18 08:45	179601-23-1	
n-Butylbenzene	<70.8	ug/L	236	70.8	100		12/17/18 08:45	104-51-8	
n-Propylbenzene	<81.1	ug/L	500	81.1	100		12/17/18 08:45	103-65-1	
o-Xylene	71.8J	ug/L	100	26.2	100		12/17/18 08:45	95-47-6	
p-Isopropyltoluene	<80.0	ug/L	267	80.0	100		12/17/18 08:45	99-87-6	
sec-Butylbenzene	<84.9	ug/L	500	84.9	100		12/17/18 08:45	135-98-8	
tert-Butylbenzene	<30.4	ug/L	101	30.4	100		12/17/18 08:45	98-06-6	
trans-1,2-Dichloroethene	<109	ug/L	364	109	100		12/17/18 08:45	156-60-5	
trans-1,3-Dichloropropene	<437	ug/L	1460	437	100		12/17/18 08:45	10061-02-6	
<b>Surrogates</b>									
Dibromofluoromethane (S)	101	%	70-130		100		12/17/18 08:45	1868-53-7	
Toluene-d8 (S)	102	%	70-130		100		12/17/18 08:45	2037-26-5	
4-Bromofluorobenzene (S)	97	%	70-130		100		12/17/18 08:45	460-00-4	

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## ANALYTICAL RESULTS

Project: 55929.005 WRR

Pace Project No.: 40180979

**Sample: TRIP BLANK**      **Lab ID: 40180979005**      Collected: 12/11/18 00:00      Received: 12/13/18 11:55      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Oxygenates</b>		Analytical Method: EPA 8260							
1,1,1,2-Tetrachloroethane	<0.27	ug/L	1.0	0.27	1		12/14/18 21:32	630-20-6	
1,1,1-Trichloroethane	<0.24	ug/L	1.0	0.24	1		12/14/18 21:32	71-55-6	
1,1,2,2-Tetrachloroethane	<0.28	ug/L	1.0	0.28	1		12/14/18 21:32	79-34-5	
1,1,2-Trichloroethane	<0.55	ug/L	5.0	0.55	1		12/14/18 21:32	79-00-5	
1,1-Dichloroethane	<0.27	ug/L	1.0	0.27	1		12/14/18 21:32	75-34-3	
1,1-Dichloroethene	<0.24	ug/L	1.0	0.24	1		12/14/18 21:32	75-35-4	
1,1-Dichloropropene	<0.54	ug/L	1.8	0.54	1		12/14/18 21:32	563-58-6	
1,2,3-Trichlorobenzene	<0.63	ug/L	5.0	0.63	1		12/14/18 21:32	87-61-6	
1,2,3-Trichloropropane	<0.59	ug/L	5.0	0.59	1		12/14/18 21:32	96-18-4	
1,2,4-Trichlorobenzene	<0.95	ug/L	5.0	0.95	1		12/14/18 21:32	120-82-1	
1,2,4-Trimethylbenzene	<0.84	ug/L	2.8	0.84	1		12/14/18 21:32	95-63-6	
1,2-Dibromo-3-chloropropane	<1.8	ug/L	5.9	1.8	1		12/14/18 21:32	96-12-8	
1,2-Dibromoethane (EDB)	<0.83	ug/L	2.8	0.83	1		12/14/18 21:32	106-93-4	
1,2-Dichlorobenzene	<0.71	ug/L	2.4	0.71	1		12/14/18 21:32	95-50-1	
1,2-Dichloroethane	<0.28	ug/L	1.0	0.28	1		12/14/18 21:32	107-06-2	
1,2-Dichloropropane	<0.28	ug/L	1.0	0.28	1		12/14/18 21:32	78-87-5	
1,3,5-Trimethylbenzene	<0.87	ug/L	2.9	0.87	1		12/14/18 21:32	108-67-8	
1,3-Dichlorobenzene	<0.63	ug/L	2.1	0.63	1		12/14/18 21:32	541-73-1	
1,3-Dichloropropane	<0.83	ug/L	2.8	0.83	1		12/14/18 21:32	142-28-9	
1,4-Dichlorobenzene	<0.94	ug/L	3.1	0.94	1		12/14/18 21:32	106-46-7	
2,2-Dichloropropane	<2.3	ug/L	7.6	2.3	1		12/14/18 21:32	594-20-7	
2-Butanone (MEK)	<2.9	ug/L	20.0	2.9	1		12/14/18 21:32	78-93-3	
2-Chlorotoluene	<0.93	ug/L	5.0	0.93	1		12/14/18 21:32	95-49-8	
2-Propanol	<28.9	ug/L	250	28.9	1		12/14/18 21:32	67-63-0	
4-Chlorotoluene	<0.76	ug/L	2.5	0.76	1		12/14/18 21:32	106-43-4	
4-Methyl-2-pentanone (MIBK)	<1.5	ug/L	5.1	1.5	1		12/14/18 21:32	108-10-1	
Acetone	<2.7	ug/L	20.0	2.7	1		12/14/18 21:32	67-64-1	
Benzene	<0.25	ug/L	1.0	0.25	1		12/14/18 21:32	71-43-2	
Bromobenzene	<0.24	ug/L	1.0	0.24	1		12/14/18 21:32	108-86-1	
Bromochloromethane	<0.36	ug/L	5.0	0.36	1		12/14/18 21:32	74-97-5	
Bromodichloromethane	<0.36	ug/L	1.2	0.36	1		12/14/18 21:32	75-27-4	
Bromoform	<4.0	ug/L	13.2	4.0	1		12/14/18 21:32	75-25-2	
Bromomethane	<0.97	ug/L	5.0	0.97	1		12/14/18 21:32	74-83-9	
Carbon tetrachloride	<0.17	ug/L	1.0	0.17	1		12/14/18 21:32	56-23-5	
Chlorobenzene	<0.71	ug/L	2.4	0.71	1		12/14/18 21:32	108-90-7	
Chloroethane	<1.3	ug/L	5.0	1.3	1		12/14/18 21:32	75-00-3	
Chloroform	<1.3	ug/L	5.0	1.3	1		12/14/18 21:32	67-66-3	
Chloromethane	<2.2	ug/L	7.3	2.2	1		12/14/18 21:32	74-87-3	
Dibromochloromethane	<2.6	ug/L	8.7	2.6	1		12/14/18 21:32	124-48-1	
Dibromomethane	<0.94	ug/L	3.1	0.94	1		12/14/18 21:32	74-95-3	
Dichlorodifluoromethane	<0.50	ug/L	5.0	0.50	1		12/14/18 21:32	75-71-8	
Diisopropyl ether	<1.9	ug/L	6.3	1.9	1		12/14/18 21:32	108-20-3	
Ethylbenzene	<0.22	ug/L	1.0	0.22	1		12/14/18 21:32	100-41-4	
Hexachloro-1,3-butadiene	<1.2	ug/L	5.0	1.2	1		12/14/18 21:32	87-68-3	
Isopropylbenzene (Cumene)	<0.39	ug/L	5.0	0.39	1		12/14/18 21:32	98-82-8	
Methyl-tert-butyl ether	<1.2	ug/L	4.2	1.2	1		12/14/18 21:32	1634-04-4	

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### ANALYTICAL RESULTS

Project: 55929.005 WRR

Pace Project No.: 40180979

**Sample: TRIP BLANK**      **Lab ID: 40180979005**      Collected: 12/11/18 00:00      Received: 12/13/18 11:55      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Oxygenates</b>		Analytical Method: EPA 8260							
Methylene Chloride	<0.58	ug/L	5.0	0.58	1		12/14/18 21:32	75-09-2	
Naphthalene	<1.2	ug/L	5.0	1.2	1		12/14/18 21:32	91-20-3	
Styrene	<0.47	ug/L	1.6	0.47	1		12/14/18 21:32	100-42-5	
Tetrachloroethene	<0.33	ug/L	1.1	0.33	1		12/14/18 21:32	127-18-4	
Toluene	<0.17	ug/L	5.0	0.17	1		12/14/18 21:32	108-88-3	
Trichloroethene	<0.26	ug/L	1.0	0.26	1		12/14/18 21:32	79-01-6	
Trichlorofluoromethane	<0.21	ug/L	1.0	0.21	1		12/14/18 21:32	75-69-4	
Vinyl chloride	<0.17	ug/L	1.0	0.17	1		12/14/18 21:32	75-01-4	
Xylene (Total)	<1.5	ug/L	3.0	1.5	1		12/14/18 21:32	1330-20-7	
cis-1,2-Dichloroethene	<0.27	ug/L	1.0	0.27	1		12/14/18 21:32	156-59-2	
cis-1,3-Dichloropropene	<3.6	ug/L	12.1	3.6	1		12/14/18 21:32	10061-01-5	
m&p-Xylene	<0.47	ug/L	2.0	0.47	1		12/14/18 21:32	179601-23-1	
n-Butylbenzene	<0.71	ug/L	2.4	0.71	1		12/14/18 21:32	104-51-8	
n-Propylbenzene	<0.81	ug/L	5.0	0.81	1		12/14/18 21:32	103-65-1	
o-Xylene	<0.26	ug/L	1.0	0.26	1		12/14/18 21:32	95-47-6	
p-Isopropyltoluene	<0.80	ug/L	2.7	0.80	1		12/14/18 21:32	99-87-6	
sec-Butylbenzene	<0.85	ug/L	5.0	0.85	1		12/14/18 21:32	135-98-8	
tert-Butylbenzene	<0.30	ug/L	1.0	0.30	1		12/14/18 21:32	98-06-6	
trans-1,2-Dichloroethene	<1.1	ug/L	3.6	1.1	1		12/14/18 21:32	156-60-5	
trans-1,3-Dichloropropene	<4.4	ug/L	14.6	4.4	1		12/14/18 21:32	10061-02-6	
<b>Surrogates</b>									
Dibromofluoromethane (S)	97	%	70-130		1		12/14/18 21:32	1868-53-7	
Toluene-d8 (S)	102	%	70-130		1		12/14/18 21:32	2037-26-5	
4-Bromofluorobenzene (S)	96	%	70-130		1		12/14/18 21:32	460-00-4	

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### QUALITY CONTROL DATA

Project: 55929.005 WRR

Pace Project No.: 40180979

QC Batch: 309595 Analysis Method: EPA 8015B Modified  
 QC Batch Method: EPA 8015B Modified Analysis Description: Methane, Ethane, Ethene GCV  
 Associated Lab Samples: 40180979001, 40180979002, 40180979003, 40180979004

METHOD BLANK: 1808376 Matrix: Water  
 Associated Lab Samples: 40180979001, 40180979002, 40180979003, 40180979004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Ethane	ug/L	<0.58	5.6	12/19/18 09:25	
Ethene	ug/L	<0.52	5.0	12/19/18 09:25	
Methane	ug/L	<1.4	2.8	12/19/18 09:25	

LABORATORY CONTROL SAMPLE & LCSD: 1808377 1808378

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Ethane	ug/L	53.6	55.1	55.3	103	103	80-120	0	20	
Ethene	ug/L	50	51.3	51.3	103	103	81-120	0	20	
Methane	ug/L	28.6	29.1	29.1	102	102	80-120	0	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1808379 1808380

Parameter	Units	40181071007 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Ethane	ug/L	<0.58	53.6	53.6	51.2	53.3	96	100	80-120	4	20	
Ethene	ug/L	<0.52	50	50	47.3	49.1	95	98	81-122	4	20	
Methane	ug/L	5.1	28.6	28.6	48.7	47.0	153	147	44-167	4	20	

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### QUALITY CONTROL DATA

Project: 55929.005 WRR

Pace Project No.: 40180979

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QC Batch: 309433	Analysis Method: EPA 6010
QC Batch Method: EPA 6010	Analysis Description: ICP Metals, Trace, Dissolved
Associated Lab Samples: 40180979001, 40180979003	

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METHOD BLANK: 1807723 Matrix: Water

Associated Lab Samples: 40180979001, 40180979003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Iron, Dissolved	ug/L	<35.4	118	12/19/18 11:12	
Manganese, Dissolved	ug/L	<1.1	5.0	12/19/18 11:12	

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LABORATORY CONTROL SAMPLE: 1807724

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Iron, Dissolved	ug/L	5000	5180	104	80-120	
Manganese, Dissolved	ug/L	500	517	103	80-120	

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MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1807725 1807726

Parameter	Units	40181097016 Result	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	MS Result	MSD Result	MSD Result						
Iron, Dissolved	ug/L	0.064J mg/L	5000	5340	5300	106	105	75-125	1	20		
Manganese, Dissolved	ug/L	0.48 mg/L	500	987	987	101	101	75-125	0	20		

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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### QUALITY CONTROL DATA

Project: 55929.005 WRR  
Pace Project No.: 40180979

QC Batch: 309217 Analysis Method: EPA 8260  
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV Oxygenates  
Associated Lab Samples: 40180979001, 40180979002, 40180979003, 40180979004, 40180979005

METHOD BLANK: 1806120 Matrix: Water  
Associated Lab Samples: 40180979001, 40180979002, 40180979003, 40180979004, 40180979005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	<0.27	1.0	12/14/18 16:52	
1,1,1-Trichloroethane	ug/L	<0.24	1.0	12/14/18 16:52	
1,1,2,2-Tetrachloroethane	ug/L	<0.28	1.0	12/14/18 16:52	
1,1,2-Trichloroethane	ug/L	<0.55	5.0	12/14/18 16:52	
1,1-Dichloroethane	ug/L	<0.27	1.0	12/14/18 16:52	
1,1-Dichloroethene	ug/L	<0.24	1.0	12/14/18 16:52	
1,1-Dichloropropene	ug/L	<0.54	1.8	12/14/18 16:52	
1,2,3-Trichlorobenzene	ug/L	<0.63	5.0	12/14/18 16:52	
1,2,3-Trichloropropane	ug/L	<0.59	5.0	12/14/18 16:52	
1,2,4-Trichlorobenzene	ug/L	<0.95	5.0	12/14/18 16:52	
1,2,4-Trimethylbenzene	ug/L	<0.84	2.8	12/14/18 16:52	
1,2-Dibromo-3-chloropropane	ug/L	<1.8	5.9	12/14/18 16:52	
1,2-Dibromoethane (EDB)	ug/L	<0.83	2.8	12/14/18 16:52	
1,2-Dichlorobenzene	ug/L	<0.71	2.4	12/14/18 16:52	
1,2-Dichloroethane	ug/L	<0.28	1.0	12/14/18 16:52	
1,2-Dichloropropane	ug/L	<0.28	1.0	12/14/18 16:52	
1,3,5-Trimethylbenzene	ug/L	<0.87	2.9	12/14/18 16:52	
1,3-Dichlorobenzene	ug/L	<0.63	2.1	12/14/18 16:52	
1,3-Dichloropropane	ug/L	<0.83	2.8	12/14/18 16:52	
1,4-Dichlorobenzene	ug/L	<0.94	3.1	12/14/18 16:52	
2,2-Dichloropropane	ug/L	<2.3	7.6	12/14/18 16:52	
2-Butanone (MEK)	ug/L	<2.9	20.0	12/14/18 16:52	
2-Chlorotoluene	ug/L	<0.93	5.0	12/14/18 16:52	
2-Propanol	ug/L	<28.9	250	12/14/18 16:52	
4-Chlorotoluene	ug/L	<0.76	2.5	12/14/18 16:52	
4-Methyl-2-pentanone (MIBK)	ug/L	<1.5	5.1	12/14/18 16:52	
Acetone	ug/L	<2.7	20.0	12/14/18 16:52	
Benzene	ug/L	<0.25	1.0	12/14/18 16:52	
Bromobenzene	ug/L	<0.24	1.0	12/14/18 16:52	
Bromochloromethane	ug/L	<0.36	5.0	12/14/18 16:52	
Bromodichloromethane	ug/L	<0.36	1.2	12/14/18 16:52	
Bromoform	ug/L	<4.0	13.2	12/14/18 16:52	
Bromomethane	ug/L	<0.97	5.0	12/14/18 16:52	
Carbon tetrachloride	ug/L	<0.17	1.0	12/14/18 16:52	
Chlorobenzene	ug/L	<0.71	2.4	12/14/18 16:52	
Chloroethane	ug/L	<1.3	5.0	12/14/18 16:52	
Chloroform	ug/L	<1.3	5.0	12/14/18 16:52	
Chloromethane	ug/L	<2.2	7.3	12/14/18 16:52	
cis-1,2-Dichloroethene	ug/L	<0.27	1.0	12/14/18 16:52	
cis-1,3-Dichloropropene	ug/L	<3.6	12.1	12/14/18 16:52	
Dibromochloromethane	ug/L	<2.6	8.7	12/14/18 16:52	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: 55929.005 WRR

Project No.: 40180979

METHOD BLANK: 1806120

Matrix: Water

Associated Lab Samples: 40180979001, 40180979002, 40180979003, 40180979004, 40180979005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Dibromomethane	ug/L	<0.94	3.1	12/14/18 16:52	
Dichlorodifluoromethane	ug/L	<0.50	5.0	12/14/18 16:52	
Diisopropyl ether	ug/L	<1.9	6.3	12/14/18 16:52	
Ethylbenzene	ug/L	<0.22	1.0	12/14/18 16:52	
Hexachloro-1,3-butadiene	ug/L	<1.2	5.0	12/14/18 16:52	
Isopropylbenzene (Cumene)	ug/L	<0.39	5.0	12/14/18 16:52	
m&p-Xylene	ug/L	<0.47	2.0	12/14/18 16:52	
Methyl-tert-butyl ether	ug/L	<1.2	4.2	12/14/18 16:52	
Methylene Chloride	ug/L	<0.58	5.0	12/14/18 16:52	
n-Butylbenzene	ug/L	<0.71	2.4	12/14/18 16:52	
n-Propylbenzene	ug/L	<0.81	5.0	12/14/18 16:52	
Naphthalene	ug/L	<1.2	5.0	12/14/18 16:52	
o-Xylene	ug/L	<0.26	1.0	12/14/18 16:52	
p-Isopropyltoluene	ug/L	<0.80	2.7	12/14/18 16:52	
sec-Butylbenzene	ug/L	<0.85	5.0	12/14/18 16:52	
Styrene	ug/L	<0.47	1.6	12/14/18 16:52	
tert-Butylbenzene	ug/L	<0.30	1.0	12/14/18 16:52	
Tetrachloroethene	ug/L	<0.33	1.1	12/14/18 16:52	
Toluene	ug/L	<0.17	5.0	12/14/18 16:52	
trans-1,2-Dichloroethene	ug/L	<1.1	3.6	12/14/18 16:52	
trans-1,3-Dichloropropene	ug/L	<4.4	14.6	12/14/18 16:52	
Trichloroethene	ug/L	<0.26	1.0	12/14/18 16:52	
Trichlorofluoromethane	ug/L	<0.21	1.0	12/14/18 16:52	
Vinyl chloride	ug/L	<0.17	1.0	12/14/18 16:52	
Xylene (Total)	ug/L	<1.5	3.0	12/14/18 16:52	
4-Bromofluorobenzene (S)	%	97	70-130	12/14/18 16:52	
Dibromofluoromethane (S)	%	100	70-130	12/14/18 16:52	
Toluene-d8 (S)	%	102	70-130	12/14/18 16:52	

LABORATORY CONTROL SAMPLE: 1806121

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/L	50	48.1	96	70-133	
1,1,2,2-Tetrachloroethane	ug/L	50	53.0	106	67-130	
1,1,2-Trichloroethane	ug/L	50	50.9	102	70-130	
1,1-Dichloroethane	ug/L	50	61.0	122	70-134	
1,1-Dichloroethene	ug/L	50	55.7	111	75-132	
1,2,4-Trichlorobenzene	ug/L	50	51.4	103	68-130	
1,2-Dibromo-3-chloropropane	ug/L	50	46.8	94	60-126	
1,2-Dibromoethane (EDB)	ug/L	50	52.7	105	70-130	
1,2-Dichlorobenzene	ug/L	50	51.3	103	70-130	
1,2-Dichloroethane	ug/L	50	54.7	109	73-134	
1,2-Dichloropropane	ug/L	50	49.1	98	79-128	
1,3-Dichlorobenzene	ug/L	50	51.3	103	70-130	

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: 55929.005 WRR

Pace Project No.: 40180979

LABORATORY CONTROL SAMPLE: 1806121

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,4-Dichlorobenzene	ug/L	50	51.9	104	70-130	
Benzene	ug/L	50	51.6	103	69-137	
Bromodichloromethane	ug/L	50	49.1	98	70-130	
Bromoform	ug/L	50	43.9	88	64-133	
Bromomethane	ug/L	50	31.6	63	29-123	
Carbon tetrachloride	ug/L	50	46.9	94	73-142	
Chlorobenzene	ug/L	50	52.1	104	70-130	
Chloroethane	ug/L	50	51.9	104	59-133	
Chloroform	ug/L	50	49.0	98	80-129	
Chloromethane	ug/L	50	34.8	70	27-125	
cis-1,2-Dichloroethene	ug/L	50	51.0	102	70-134	
cis-1,3-Dichloropropene	ug/L	50	47.0	94	70-130	
Dibromochloromethane	ug/L	50	48.0	96	70-130	
Dichlorodifluoromethane	ug/L	50	22.4	45	12-127	
Ethylbenzene	ug/L	50	53.9	108	86-127	
Isopropylbenzene (Cumene)	ug/L	50	54.1	108	70-130	
m&p-Xylene	ug/L	100	107	107	70-131	
Methyl-tert-butyl ether	ug/L	50	55.9	112	65-136	
Methylene Chloride	ug/L	50	58.2	116	72-133	
o-Xylene	ug/L	50	52.6	105	70-130	
Styrene	ug/L	50	53.7	107	70-130	
Tetrachloroethene	ug/L	50	49.6	99	70-130	
Toluene	ug/L	50	52.8	106	84-124	
trans-1,2-Dichloroethene	ug/L	50	59.8	120	70-133	
trans-1,3-Dichloropropene	ug/L	50	45.7	91	67-130	
Trichloroethene	ug/L	50	51.8	104	70-130	
Trichlorofluoromethane	ug/L	50	57.7	115	69-147	
Vinyl chloride	ug/L	50	42.6	85	48-134	
Xylene (Total)	ug/L	150	160	107	70-130	
4-Bromofluorobenzene (S)	%			98	70-130	
Dibromofluoromethane (S)	%			99	70-130	
Toluene-d8 (S)	%			101	70-130	

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### QUALITY CONTROL DATA

Project: 55929.005 WRR

Pace Project No.: 40180979

QC Batch: 309234 Analysis Method: EPA 300.0  
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions  
Associated Lab Samples: 40180979001, 40180979003

METHOD BLANK: 1806165 Matrix: Water

Associated Lab Samples: 40180979001, 40180979003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrate as N	mg/L	<0.075	0.22	12/13/18 12:44	
Sulfate	mg/L	<1.0	3.0	12/13/18 12:44	

LABORATORY CONTROL SAMPLE: 1806166

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrate as N	mg/L	1.5	1.5	98	90-110	
Sulfate	mg/L	20	19.7	99	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1806167 1806168

Parameter	Units	40180979003 Result	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	MS Result	Spike Conc.	MSD Result						
Nitrate as N	mg/L	<0.38	7.5	7.5	7.2	7.1	96	94	90-110	2	15	
Sulfate	mg/L	13.8J	100	100	121	119	107	106	90-110	1	15	

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### QUALITY CONTROL DATA

Project: 55929.005 WRR  
Pace Project No.: 40180979

QC Batch: 309558 Analysis Method: EPA 310.2  
QC Batch Method: EPA 310.2 Analysis Description: 310.2 Alkalinity  
Associated Lab Samples: 40180979001, 40180979003

METHOD BLANK: 1808151 Matrix: Water  
Associated Lab Samples: 40180979001, 40180979003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Total as CaCO <sub>3</sub>	mg/L	<7.0	23.5	12/19/18 14:37	

LABORATORY CONTROL SAMPLE: 1808152

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO <sub>3</sub>	mg/L	100	99.7	100	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1808153 1808154

Parameter	Units	40180529018 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max		
										RPD	RPD	Qual
Alkalinity, Total as CaCO <sub>3</sub>	mg/L	137	100	100	222	220	84	83	90-110	1	20	M0

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1808155 1808156

Parameter	Units	40180957002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max		
										RPD	RPD	Qual
Alkalinity, Total as CaCO <sub>3</sub>	mg/L	300	200	200	518	478	109	89	90-110	8	20	M0

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### QUALITY CONTROL DATA

Project: 55929.005 WRR  
Pace Project No.: 40180979

QC Batch: 309580 Analysis Method: SM 5310C  
QC Batch Method: SM 5310C Analysis Description: 5310C Total Organic Carbon  
Associated Lab Samples: 40180979001, 40180979003

METHOD BLANK: 1808324 Matrix: Water  
Associated Lab Samples: 40180979001, 40180979003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Organic Carbon	mg/L	<0.25	0.84	12/20/18 09:52	

LABORATORY CONTROL SAMPLE: 1808325

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	2.5	2.4	97	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1808326 1808327

Parameter	Units	40181104001 Result	MS	MSD	MS	MSD	MS	MSD	% Rec	Max		Qual
			Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	
Total Organic Carbon	mg/L	2.7J	6	6	7.4	6.8	80	70	80-120	9	10	M0

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1808328 1808329

Parameter	Units	40181104011 Result	MS	MSD	MS	MSD	MS	MSD	% Rec	Max		Qual
			Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	
Total Organic Carbon	mg/L	1.3	1	1	2.4	2.4	111	109	80-120	1	10	

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## QUALIFIERS

Project: 55929.005 WRR

Pace Project No.: 40180979

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### 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 LOD.

J - Estimated concentration at or above the LOD and below the LOQ.

LOD - Limit of Detection adjusted for dilution factor, percent moisture, initial weight and final volume.

LOQ - Limit of Quantitation adjusted for dilution factor, percent moisture, initial weight and final volume.

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 at or above the adjusted LOD.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

### ANALYTE QUALIFIERS

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

M0 Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 55929.005 WRR

Pace Project No.: 40180979

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40180979001	W-32	EPA 8015B Modified	309595		
40180979002	W-33	EPA 8015B Modified	309595		
40180979003	W-34	EPA 8015B Modified	309595		
40180979004	SVE-4	EPA 8015B Modified	309595		
40180979001	W-32	EPA 6010	309433		
40180979003	W-34	EPA 6010	309433		
40180979001	W-32	EPA 8260	309217		
40180979002	W-33	EPA 8260	309217		
40180979003	W-34	EPA 8260	309217		
40180979004	SVE-4	EPA 8260	309217		
40180979005	TRIP BLANK	EPA 8260	309217		
40180979001	W-32	EPA 300.0	309234		
40180979003	W-34	EPA 300.0	309234		
40180979001	W-32	EPA 300.0	309234		
40180979003	W-34	EPA 300.0	309234		
40180979001	W-32	EPA 310.2	309558		
40180979003	W-34	EPA 310.2	309558		
40180979001	W-32	SM 5310C	309580		
40180979003	W-34	SM 5310C	309580		

### REPORT OF LABORATORY ANALYSIS

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(Please Print Clearly)

Company Name: Gannett Fleming  
 Branch/Location: Madison, WI  
 Project Contact: Anthony Miller  
 Phone: 608-836-1500  
 Project Number: 55929.005  
 Project Name: WRR  
 Project State: WI  
 Sampled By (Print): Chelsea Payne  
 Sampled By (Sign): [Signature]  
 PO #:



UPPER MIDWEST REGION  
 MN: 612-607-1700 WI: 920-469-2436

40180979

### CHAIN OF CUSTODY

**Preservation Codes**  
 A=None B=HCL C=H2SO4 D=HNO3 E=DI Water F=Methanol G=NaOH  
 H=Sodium Bisulfate Solution I=Sodium Thiosulfate J=Other

FILTERED?  
(YES/NO)  
 PRESERVATION  
(CODE)\*

Y/N	N	N	Y	N	N
Pick Letter	B	B	D	A	C
Analyses Requested	VOC	MEC	Diss. metals (see HPL)	Alkalinity/nitrate sulfate	TOC

Quote #:                       
 Mail To Contact: Anthony Miller  
 Mail To Company: Gannett Fleming  
 Mail To Address: 3025 Excelsior Dr  
Madison, WI 53717  
 Invoice To Contact:                       
 Invoice To Company: See Mail to  
 Invoice To Address:                       
 Invoice To Phone: 608-836-1500  
 CLIENT COMMENTS:                       
 LAB COMMENTS (Lab Use Only):                       
 Profile #:

**Data Package Options** (billable)  
 EPA Level III  
 EPA Level IV

**MS/MSD**  
 On your sample (billable)  
 NOT needed on your sample

**Matrix Codes**  
 A = Air W = Water  
 B = Biota DW = Drinking Water  
 C = Charcoal GW = Ground Water  
 O = Oil SW = Surface Water  
 S = Soil WW = Waste Water  
 SI = Sludge WP = Wipe

PACE LAB #	CLIENT FIELD ID	COLLECTION		MATRIX
		DATE	TIME	
001	W-32	12/11/18	15:15	GW
002	W-33		14:35	
003	W-34		16:45	
004	SVE-4		16:05	
005	Trip Blank			
12/13/18	AL			

Rush Turnaround Time Requested - Prelims (Rush TAT subject to approval/surcharge)  
 Date Needed:                     

Transmit Prelim Rush Results by (complete what you want):

Relinquished By: <u>Chelsea Payne</u>	Date/Time: <u>12/12/18 15:00</u>	Received By: <u>                    </u>	Date/Time: <u>                    </u>
Relinquished By: <u>Fedex</u>	Date/Time: <u>12-13-18 1155</u>	Received By: <u>Susan K. Uhl</u>	Date/Time: <u>12-13-18 1155</u>
Relinquished By: <u>                    </u>	Date/Time: <u>                    </u>	Received By: <u>                    </u>	Date/Time: <u>                    </u>
Relinquished By: <u>                    </u>	Date/Time: <u>                    </u>	Received By: <u>                    </u>	Date/Time: <u>                    </u>

Samples on HOLD are subject to special pricing and release of liability

PACE Project No.                       
 Receipt Temp = ROI°C  
 Sample Receipt pH OK/Adjusted  
 Chain Custody Seal Present / Not Present                       
 Intact / Not Intact

### Sample Preservation Receipt Form

Client Name: Gannett Fleming Project # 40180979

All containers needing preservation have been checked and noted below:  Yes  No  N/A


Lab Lot# of pH paper: 1045268 Lab Std #ID of preservation (if pH adjusted):

Initial when completed: SW Date/Time:


Pace Lab #	Glass						Plastic						Vials					Jars			General		VOA Vials (>6mm) *	H2SO4 pH ≤2	NaOH+Zn Act pH ≥9	NaOH pH ≥12	HNO3 pH ≤2	pH after adjusted	Volume (mL)						
	AG1U	AG1H	AG4S	AG4U	AG5U	AG2S	BG3U	BP1U	BP2N	BP2Z	BP3U	BP3C	BP3N	BP3S	DG9A	DG9T	VG9U	VG9H	VG9M	VG9D	JGFU	WGFU								WPFU	SP5T	ZPLC	GN		
001			X							1		1				6																		X	2.5 / 5 / 10
002																6																			2.5 / 5 / 10
003			1							1		1				6																		X	2.5 / 5 / 10
004																6																			2.5 / 5 / 10
005																6																			2.5 / 5 / 10
006																2																			2.5 / 5 / 10
007																																			2.5 / 5 / 10
008																																			2.5 / 5 / 10
009																																			2.5 / 5 / 10
010																																			2.5 / 5 / 10
011																																			2.5 / 5 / 10
012																																			2.5 / 5 / 10
013																																			2.5 / 5 / 10
014																																			2.5 / 5 / 10
015																																			2.5 / 5 / 10
016																																			2.5 / 5 / 10
017																																			2.5 / 5 / 10
018																																			2.5 / 5 / 10
019																																			2.5 / 5 / 10
020																																			2.5 / 5 / 10

Exceptions to preservation check: VOA, Coliform, TOC, TOX, TOH, O&G, WI DRO, Phenolics, Other: \_\_\_\_\_ Headspace in VOA Vials (>6mm) :  Yes  No  N/A \*If yes look in headspace column

<b>AG1U</b>	1 liter amber glass	<b>BP1U</b>	1 liter plastic unpres	<b>DG9A</b>	40 mL amber ascorbic	<b>JGFU</b>	4 oz amber jar unpres
<b>AG1H</b>	1 liter amber glass HCL	<b>BP2N</b>	500 mL plastic HNO3	<b>DG9T</b>	40 mL amber Na Thio	<b>WGFU</b>	4 oz clear jar unpres
<b>AG4S</b>	125 mL amber glass H2SO4	<b>BP2Z</b>	500 mL plastic NaOH, Znact	<b>VG9U</b>	40 mL clear vial unpres	<b>WPFU</b>	4 oz plastic jar unpres
<b>AG4U</b>	120 mL amber glass unpres	<b>BP3U</b>	250 mL plastic unpres	<b>VG9H</b>	40 mL clear vial HCL		
<b>AG5U</b>	100 mL amber glass unpres	<b>BP3C</b>	250 mL plastic NaOH	<b>VG9M</b>	40 mL clear vial MeOH	<b>SP5T</b>	120 mL plastic Na Thiosulfate
<b>AG2S</b>	500 mL amber glass H2SO4	<b>BP3N</b>	250 mL plastic HNO3	<b>VG9D</b>	40 mL clear vial DI	<b>ZPLC</b>	ziploc bag
<b>BG3U</b>	250 mL clear glass unpres	<b>BP3S</b>	250 mL plastic H2SO4			<b>GN:</b>	

 1241 Bellevue Street, Green Bay, WI 54302	Document Name: <b>Sample Condition Upon Receipt (SCUR)</b>	Document Revised: 25Apr2018
	Document No.: F-GB-C-031-Rev.07	Issuing Authority: Pace Green Bay Quality Office

### Sample Condition Upon Receipt Form (SCUR)

**Client Name:** Gannett Fleming Project #: 
**WO# : 40180979**  
  
 40180979

Courier:  CS Logistics  Fed Ex  Speedee  UPS  Walto  
 Client  Pace, Other: \_\_\_\_\_

Tracking #: 8133 93862980

Custody Seal on Cooler/Box Present:  yes  no    Seals intact:  yes  no

Custody Seal on Samples Present:  yes  no    Seals intact:  yes  no

Packing Material:  Bubble Wrap  Bubble Bags  None  Other

Thermometer Used SR - N/A    Type of Ice:  Wet  Blue  Dry  None     Samples on ice, cooling process has begun

Cooler Temperature    Uncorr: ROI    ICorr: \_\_\_\_\_

Temp Blank Present:  yes  no    Biological Tissue is Frozen:  yes  no

Temp should be above freezing to 6°C.  
Biota Samples may be received at ≤ 0°C.

Person examining contents:  
 Date: 12-13-18  
 Initials: [Signature]

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5.
- VOA Samples frozen upon receipt	<input type="checkbox"/> Yes <input type="checkbox"/> No	Date/Time: _____
Short Hold Time Analysis (<72hr):	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	7.
Sufficient Volume:		8.
For Analysis: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No    MS/MSD: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A		
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
-Pace Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
-Pace IR Containers Used:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	10.
Filtered volume received for Dissolved tests	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	11.
Sample Labels match COC:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	12. <u>002 - H0mUB No time 12/13/18</u>
-Includes date/time/ID/Analysis    Matrix: <u>W</u>		
Trip Blank Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	13.
Trip Blank Custody Seals Present	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased): <u>410</u>		

Client Notification/ Resolution: \_\_\_\_\_ If checked, see attached form for additional comments

Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Comments/ Resolution: \_\_\_\_\_

Project Manager Review: Ar for DM    Date: 12/13/18

**REPORT TO:**

Name: Anthony Miller  
 Company: Ginnett Learning  
 Address: 5025 Excelsior Dr  
Madison, WI 53717

email: amiller@afnet.com  
 Phone: 608-536-1500  
 Fax: \_\_\_\_\_

Project Manager: Anthony Miller  
 Project Name: WRR  
 Project No.: 55929.605

**INVOICE TO:** (For Invoices paid by a third party it is imperative that all information be provided)

Name: \_\_\_\_\_  
 Company: \_\_\_\_\_  
 Address: \_\_\_\_\_

email: See Report to  
 Phone: \_\_\_\_\_  
 Fax: \_\_\_\_\_

Purchase Order No. \_\_\_\_\_  
 Subcontract No. \_\_\_\_\_  
 MI Quote No. \_\_\_\_\_



10515 Research Dr  
 Knoxville, TN 37932  
 865-573-8188

www.microbe.com

**Please Check One:**

- More samples to follow
- No Additional Samples

Report Type:  Standard (default)     Microbial Insights Level III raw data(15% surcharge)     Microbial Insights Level IV (25% surcharge)     Comprehensive Interpretive(15%)     Historical Interpretive (35%)  
 EDD type:  Microbial Insights Standard (default)     All other available EDDs (5% surcharge)    Specify EDD Type: \_\_\_\_\_

Please contact us with any questions about the analyses or filling out the COC at (865) 573-8188 (9:00 am to 5:00 pm EST, M-F). After hours email: customerservice@microbe.com

Sample Information						Analyses		CENSUS: Please select the target organism/gene																											
MI ID <small>(Laboratory Use Only)</small>	Sample Name	Date Sampled	Time Sampled	Matrix	Total Number of Containers	PLFA	NGS	QuantArray Chlor	QuantArray Petro	DHC (Dehalococoides)	DHC Functional genes <small>(bvc, bsc, vcr)</small>	DHBt (Dehalobacter)	DHG (Dehalogenimonas)	DSM (Desulfuromonas)	DSB (Desulfibacterium)	EBAC (Total)	SRB <small>(Sulfate Reducing Bacteria-APS)</small>	MGN (Methanogens)	MOB (Methanotrophs)	SMMO	DNF (Denitrifiers-nirS and nirK)	AMO <small>(ammonia oxidizing bacteria)</small>	PM1 (MTBE aerobic)	RMO (Toluene Monooxygenase)	RDEG (Toluene Monooxygenase)	PHE (Phenol Hydroxylase)	NAH (Naphthalene-aerobic)	BSSA <small>(Toluene/Xylene-Anaerobic)</small>	add. qPCR:	RNA <small>(Expression Option)*</small>	Other:	Other:	Other:		
041PL1	W-32	12/11/18	15:15	GLW	1					X	✓																								
2	W-34	"	16:45	"	1																														

Relinquished by: Chelsea Page Date: 12/11/18 Received by: [Signature] Date: 12/12/18

It is vital that chain of custody is filled out correctly & that all relative information is provided.  
 Failure to provide sufficient and/or correct information regarding reporting, invoicing & analyses requested information may result in delays for which MI will not be liable.



The analytical results and QA/QC data included with this report were reviewed by AWM on 04/09/19.

08-Apr-2019

Anthony Miller  
Gannett Fleming, Inc.  
8025 Excelsior Dr.  
Madison, WI 53717-1900

Re: **WRR (55929.005)**

Work Order: **19031609**

Dear Anthony,

ALS Environmental received 6 samples on 28-Mar-2019 for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental - Holland and for only the analyses requested.

Sample results are compliant with industry accepted practices and Quality Control results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 43.

If you have any questions regarding this report, please feel free to contact me:

ADDRESS: 3352 128th Avenue, Holland, MI, USA  
PHONE: +1 (616) 399-6070 FAX: +1 (616) 399-6185

Sincerely,

A handwritten signature in cursive script that reads "Ehrland Bosworth".

Electronically approved by: Ehrland Bosworth

Ehrland Bosworth  
Project Manager

## Report of Laboratory Analysis

Certificate No: WI: 399084510

ALS GROUP USA, CORP Part of the ALS Laboratory Group A Campbell Brothers Limited Company

Environmental

[www.alsglobal.com](http://www.alsglobal.com)

RIGHT SOLUTIONS RIGHT PARTNER



**Client:** Gannett Fleming, Inc.  
**Project:** WRR (55929.005)  
**Work Order:** 19031609

**Work Order Sample Summary**

<u>Lab Samp ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Tag Number</u>	<u>Collection Date</u>	<u>Date Received</u>	<u>Hold</u>
19031609-01	W-32	Groundwater		3/27/2019 11:45	3/28/2019 09:00	<input type="checkbox"/>
19031609-02	W-33	Groundwater		3/27/2019 11:15	3/28/2019 09:00	<input type="checkbox"/>
19031609-03	W-34	Groundwater		3/27/2019 12:30	3/28/2019 09:00	<input type="checkbox"/>
19031609-04	W-35	Groundwater		3/27/2019 14:15	3/28/2019 09:00	<input type="checkbox"/>
19031609-05	SVE-4	Groundwater		3/27/2019 15:05	3/28/2019 09:00	<input type="checkbox"/>
19031609-06	Trip Blank	Water		3/26/2019	3/28/2019 09:00	<input type="checkbox"/>

**Client:** Gannett Fleming, Inc.  
**Project:** WRR (55929.005)  
**WorkOrder:** 19031609

**QUALIFIERS,  
ACRONYMS, UNITS**

<u>Qualifier</u>	<u>Description</u>
*	Value exceeds Regulatory Limit
**	Estimated Value
a	Analyte is non-accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
Hr	BOD/CBOD - Sample was reset outside Hold Time, value should be considered estimated.
J	Analyte is present at an estimated concentration between the MDL and Report Limit
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and Reporting Limit, sample results may exhibit background or reagent contamination at the observed level.

<u>Acronym</u>	<u>Description</u>
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

<u>Units Reported</u>	<u>Description</u>
µg/L	Micrograms per Liter
mg/L	Milligrams per Liter

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**Client:** Gannett Fleming, Inc.  
**Project:** WRR (55929.005)  
**Work Order:** 19031609

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**Case Narrative**

Samples for the above noted Work Order were received on 03/28/19. The attached "Sample Receipt Checklist" documents the status of custody seals, container integrity, sample condition, preservation, and temperature compliance.

In order to ensure compliance with NR 149 criteria, please note the following report format:

- (1) The Limit of Detection (LOD) is reported as the MDL (Method Detection Limit)
- (2) The Limit of Quantitation (LOQ) is reported as the PQL (Practical Quantitation Limit)
- (3) All reported concentrations, including those for the LOD and LOQ, are adjusted for any required dilutions
- (4) All reported concentrations, including those for the LOD and LOQ, are adjusted for moisture content when samples are reported on a dry weight basis.

Samples were analyzed according to the analytical methodology previously documented in the "Work Order Acknowledgement". Methodologies are also documented in the "Analytical Result" section for each sample. Quality control results are listed in the "QC Report" section. Detail as to the associated samples can be found at the end of each batch summary. If applicable, results are appropriately qualified in the Analytical Result and QC Report sections. The "Qualifiers" section documents the various qualifiers, acronyms, and units utilized in reporting.

With the following exceptions, all sample analyses achieved analytical criteria.

**Volatile Organics:**

Batch R257585b, Method WI\_VOC\_8260\_W, Sample 19031609-03A MS and -03A MSD: The VOC MS and/or MSD recoveries were outside of the control limit; however, the result in the parent sample is greater than 4x the spike amount. No qualification is required for 1,1,1-Tetrachloroethane and cis-1,2-Dichloroethene.

Batch R257585b, Method WI\_VOC\_8260\_W, Sample 19031609-03A MS: The VOC MS recovery was outside of the control limit. However, the MSD recovery and the RPD between the MS and MSD were in control. No qualification is required for 1,2,4-Trimethylbenzene.

Batch R257585b, Method WI\_VOC\_8260\_W, Sample 19031609-03A MSD: The VOC RPD between the MS and MSD was outside the control limit. The corresponding result in the parent sample should be considered estimated for Naphthalene.

Batch R257585b, Method WI\_VOC\_8260\_W, Sample VBLKW2-190401: The VOC concentration in the Method Blank was greater than the quantitation limit. All samples in the batch were non-detect; therefore, no qualification is needed for Hexachlorobutadiene and 1,2,3-Trichlorobenzene.

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**Client:** Gannett Fleming, Inc.  
**Project:** WRR (55929.005)  
**Work Order:** 19031609

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**Case Narrative**

Batch R257585b, Method WI\_VOC\_8260\_W, Sample 19031609-01A: The VOC reporting limit is elevated due to dilution needed to eliminate matrix-related interference.

Batch R257585b, Method WI\_VOC\_8260\_W, Sample 19031609-02A: The VOC reporting limit is elevated due to dilution needed to eliminate matrix-related interference.

Batch R257585b, Method WI\_VOC\_8260\_W, Sample 19031609-03A: The VOC reporting limit is elevated due to dilution needed to eliminate matrix-related interference.

Batch R257585b, Method WI\_VOC\_8260\_W, Sample 19031609-04A: The VOC reporting limit is elevated due to dilution needed to eliminate matrix-related interference.

Batch R257585b, Method WI\_VOC\_8260\_W, Sample 19031609-05A: The VOC reporting limit is elevated due to dilution needed to eliminate matrix-related interference.

# ALS Group, USA

Date: 08-Apr-19

**Client:** Gannett Fleming, Inc.  
**Project:** WRR (55929.005)  
**Sample ID:** W-32  
**Collection Date:** 3/27/2019 11:45 AM

**Work Order:** 19031609  
**Lab ID:** 19031609-01  
**Matrix:** GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>GASES IN WATER</b>			Method: RSK-175			Analyst: <b>KB</b>	
Ethane	U		0.21	5.0	µg/L	1	4/1/2019 11:24
Ethene	U		0.41	5.0	µg/L	1	4/1/2019 11:24
<b>Methane</b>	<b>4.0</b>	J	<b>0.64</b>	<b>5.0</b>	<b>µg/L</b>	1	4/1/2019 11:24
<b>METALS BY ICP-MS (DISSOLVED)</b>			Method: SW6020A			Analyst: <b>STP</b>	
Iron	U		0.015	0.049	mg/L	1	4/3/2019 19:45
<b>Manganese</b>	<b>0.77</b>		<b>0.00026</b>	<b>0.00085</b>	<b>mg/L</b>	1	4/3/2019 19:45
<b>VOLATILE ORGANIC COMPOUNDS</b>			Method: SW8260C			Analyst: <b>BG</b>	
1,1,1,2-Tetrachloroethane	U		11	37	µg/L	50	4/2/2019 05:30
<b>1,1,1-Trichloroethane</b>	<b>9,400</b>		<b>72</b>	<b>240</b>	<b>µg/L</b>	200	3/30/2019 04:38
1,1,2,2-Tetrachloroethane	U		9.3	31	µg/L	50	4/2/2019 05:30
1,1,2-Trichloroethane	U		20	66	µg/L	50	4/2/2019 05:30
<b>1,1-Dichloroethane</b>	<b>170</b>		<b>15</b>	<b>52</b>	<b>µg/L</b>	50	4/2/2019 05:30
<b>1,1-Dichloroethene</b>	<b>810</b>		<b>14</b>	<b>46</b>	<b>µg/L</b>	50	4/2/2019 05:30
1,1-Dichloropropene	U		18	59	µg/L	50	4/2/2019 05:30
1,2,3-Trichlorobenzene	U		8.3	28	µg/L	50	4/2/2019 05:30
1,2,3-Trichloropropane	U		5.5	20	µg/L	50	4/2/2019 05:30
1,2,4-Trichlorobenzene	U		11	36	µg/L	50	4/2/2019 05:30
1,2,4-Trimethylbenzene	U		19	62	µg/L	50	4/2/2019 05:30
1,2-Dibromo-3-chloropropane	U		49	160	µg/L	50	4/2/2019 05:30
1,2-Dibromoethane	U		49	160	µg/L	50	4/2/2019 05:30
1,2-Dichlorobenzene	U		11	36	µg/L	50	4/2/2019 05:30
1,2-Dichloroethane	U		8.3	28	µg/L	50	4/2/2019 05:30
<b>1,2-Dichloropropane</b>	<b>37</b>	J	<b>12</b>	<b>42</b>	<b>µg/L</b>	50	4/2/2019 05:30
1,3,5-Trimethylbenzene	U		14	48	µg/L	50	4/2/2019 05:30
1,3-Dichlorobenzene	U		14	48	µg/L	50	4/2/2019 05:30
1,3-Dichloropropane	U		9.2	30	µg/L	50	4/2/2019 05:30
1,4-Dichlorobenzene	U		11	36	µg/L	50	4/2/2019 05:30
2,2-Dichloropropane	U		22	74	µg/L	50	4/2/2019 05:30
2-Butanone	U		29	98	µg/L	50	4/2/2019 05:30
2-Chlorotoluene	U		16	54	µg/L	50	4/2/2019 05:30
2-Propanol	U		1,600	5,400	µg/L	50	4/2/2019 05:30
4-Chlorotoluene	U		14	48	µg/L	50	4/2/2019 05:30
4-Methyl-2-pentanone	U		5.7	20	µg/L	50	4/2/2019 05:30
Acetone	U		46	150	µg/L	50	4/2/2019 05:30
Benzene	U		15	50	µg/L	50	4/2/2019 05:30
Bromobenzene	U		12	40	µg/L	50	4/2/2019 05:30
Bromochloromethane	U		9.8	33	µg/L	50	4/2/2019 05:30

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group, USA

Date: 08-Apr-19

**Client:** Gannett Fleming, Inc.  
**Project:** WRR (55929.005)  
**Sample ID:** W-32  
**Collection Date:** 3/27/2019 11:45 AM

**Work Order:** 19031609  
**Lab ID:** 19031609-01  
**Matrix:** GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Bromodichloromethane	U		12	39	µg/L	50	4/2/2019 05:30
Bromoform	U		38	130	µg/L	50	4/2/2019 05:30
Bromomethane	U		19	63	µg/L	50	4/2/2019 05:30
Carbon tetrachloride	U		16	52	µg/L	50	4/2/2019 05:30
Chlorobenzene	U		14	45	µg/L	50	4/2/2019 05:30
Chloroethane	U		15	48	µg/L	50	4/2/2019 05:30
<b>Chloroform</b>	<b>26</b>	J	<b>13</b>	<b>43</b>	<b>µg/L</b>	50	4/2/2019 05:30
Chloromethane	U		8.6	28	µg/L	50	4/2/2019 05:30
<b>cis-1,2-Dichloroethene</b>	<b>290</b>		<b>13</b>	<b>42</b>	<b>µg/L</b>	50	4/2/2019 05:30
cis-1,3-Dichloropropene	U		20	66	µg/L	50	4/2/2019 05:30
Dibromochloromethane	U		19	62	µg/L	50	4/2/2019 05:30
Dibromomethane	U		12	42	µg/L	50	4/2/2019 05:30
Dichlorodifluoromethane	U		6.6	22	µg/L	50	4/2/2019 05:30
Diisopropyl ether	U		6.5	22	µg/L	50	4/2/2019 05:30
Ethylbenzene	U		20	67	µg/L	50	4/2/2019 05:30
Hexachlorobutadiene	U		12	40	µg/L	50	4/2/2019 05:30
Isopropylbenzene	U		16	52	µg/L	50	4/2/2019 05:30
m,p-Xylene	U		49	160	µg/L	50	4/2/2019 05:30
Methyl tert-butyl ether	U		5.8	20	µg/L	50	4/2/2019 05:30
Methylene chloride	U		28	92	µg/L	50	4/2/2019 05:30
Naphthalene	U		8.8	30	µg/L	50	4/2/2019 05:30
n-Butylbenzene	U		11	36	µg/L	50	4/2/2019 05:30
n-Propylbenzene	U		12	40	µg/L	50	4/2/2019 05:30
o-Xylene	U		18	59	µg/L	50	4/2/2019 05:30
p-Isopropyltoluene	U		7.2	24	µg/L	50	4/2/2019 05:30
sec-Butylbenzene	U		15	49	µg/L	50	4/2/2019 05:30
Styrene	U		12	40	µg/L	50	4/2/2019 05:30
tert-Butylbenzene	U		17	58	µg/L	50	4/2/2019 05:30
<b>Tetrachloroethene</b>	<b>4,100</b>		<b>14</b>	<b>46</b>	<b>µg/L</b>	50	4/2/2019 05:30
Toluene	U		18	61	µg/L	50	4/2/2019 05:30
trans-1,2-Dichloroethene	U		14	46	µg/L	50	4/2/2019 05:30
trans-1,3-Dichloropropene	U		41	140	µg/L	50	4/2/2019 05:30
<b>Trichloroethene</b>	<b>8,600</b>		<b>60</b>	<b>200</b>	<b>µg/L</b>	200	3/30/2019 04:38
Trichlorofluoromethane	U		10	33	µg/L	50	4/2/2019 05:30
Vinyl chloride	U		10	34	µg/L	50	4/2/2019 05:30
Xylenes, Total	U		66	220	µg/L	50	4/2/2019 05:30
Surr: 1,2-Dichloroethane-d4	102			75-120	%REC	200	3/30/2019 04:38
Surr: 1,2-Dichloroethane-d4	99.2			75-120	%REC	50	4/2/2019 05:30
Surr: 4-Bromofluorobenzene	87.8			80-110	%REC	200	3/30/2019 04:38
Surr: 4-Bromofluorobenzene	101			80-110	%REC	50	4/2/2019 05:30

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

**ALS Group, USA**

Date: 08-Apr-19

**Client:** Gannett Fleming, Inc.  
**Project:** WRR (55929.005)  
**Sample ID:** W-32  
**Collection Date:** 3/27/2019 11:45 AM

**Work Order:** 19031609  
**Lab ID:** 19031609-01  
**Matrix:** GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Surr: Dibromofluoromethane	102			85-115	%REC	200	3/30/2019 04:38
Surr: Dibromofluoromethane	104			85-115	%REC	50	4/2/2019 05:30
Surr: Toluene-d8	97.8			85-110	%REC	200	3/30/2019 04:38
Surr: Toluene-d8	99.8			85-110	%REC	50	4/2/2019 05:30
<b>ALKALINITY</b>				Method: A2320 B-11			Analyst: JEB
Alkalinity, Total (as CaCO3)	110		8.4	10	mg/L	1	4/2/2019 12:45
<b>ANIONS BY ION CHROMATOGRAPHY</b>				Method: SW9056A			Analyst: JDR
Sulfate	87		0.57	10	mg/L	10	3/29/2019 14:14
<b>NITROGEN, NITRATE-NITRITE</b>				Method: E353.2 R2.0			Analyst: JZB
Nitrogen, Nitrate-Nitrite	1.6		0.012	0.020	mg/L	1	4/1/2019 17:17
<b>ORGANIC CARBON, TOTAL</b>				Method: SW9060A			Analyst: JZB
Organic Carbon, Total	14		0.28	1.0	mg/L	2	4/3/2019 15:11

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group, USA

Date: 08-Apr-19

**Client:** Gannett Fleming, Inc.  
**Project:** WRR (55929.005)  
**Sample ID:** W-33  
**Collection Date:** 3/27/2019 11:15 AM

**Work Order:** 19031609  
**Lab ID:** 19031609-02  
**Matrix:** GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>GASES IN WATER</b>			Method: RSK-175			Analyst: <b>KB</b>	
Ethane	U		0.21	5.0	µg/L	1	4/1/2019 11:26
Ethene	U		0.41	5.0	µg/L	1	4/1/2019 11:26
<b>Methane</b>	<b>5.5</b>		<b>0.64</b>	<b>5.0</b>	<b>µg/L</b>	1	4/1/2019 11:26
<b>VOLATILE ORGANIC COMPOUNDS</b>			Method: SW8260C			Analyst: <b>BG</b>	
1,1,1,2-Tetrachloroethane	U		2.2	7.4	µg/L	10	4/2/2019 05:08
<b>1,1,1-Trichloroethane</b>	<b>1,100</b>		<b>18</b>	<b>60</b>	<b>µg/L</b>	50	4/2/2019 03:41
1,1,2,2-Tetrachloroethane	U		1.9	6.2	µg/L	10	4/2/2019 05:08
1,1,2-Trichloroethane	U		4.0	13	µg/L	10	4/2/2019 05:08
<b>1,1-Dichloroethane</b>	<b>550</b>		<b>3.1</b>	<b>10</b>	<b>µg/L</b>	10	4/2/2019 05:08
<b>1,1-Dichloroethene</b>	<b>12</b>		<b>2.8</b>	<b>9.2</b>	<b>µg/L</b>	10	4/2/2019 05:08
1,1-Dichloropropene	U		3.5	12	µg/L	10	4/2/2019 05:08
1,2,3-Trichlorobenzene	U		1.7	5.5	µg/L	10	4/2/2019 05:08
1,2,3-Trichloropropane	U		1.1	4.0	µg/L	10	4/2/2019 05:08
1,2,4-Trichlorobenzene	U		2.1	7.1	µg/L	10	4/2/2019 05:08
<b>1,2,4-Trimethylbenzene</b>	<b>5.1</b>	J	<b>3.7</b>	<b>12</b>	<b>µg/L</b>	10	4/2/2019 05:08
1,2-Dibromo-3-chloropropane	U		9.7	32	µg/L	10	4/2/2019 05:08
1,2-Dibromoethane	U		9.8	33	µg/L	10	4/2/2019 05:08
1,2-Dichlorobenzene	U		2.2	7.3	µg/L	10	4/2/2019 05:08
1,2-Dichloroethane	U		1.7	5.5	µg/L	10	4/2/2019 05:08
<b>1,2-Dichloropropane</b>	<b>4.7</b>	J	<b>2.5</b>	<b>8.3</b>	<b>µg/L</b>	10	4/2/2019 05:08
1,3,5-Trimethylbenzene	U		2.9	9.5	µg/L	10	4/2/2019 05:08
1,3-Dichlorobenzene	U		2.9	9.6	µg/L	10	4/2/2019 05:08
1,3-Dichloropropane	U		1.8	6.1	µg/L	10	4/2/2019 05:08
1,4-Dichlorobenzene	U		2.1	7.1	µg/L	10	4/2/2019 05:08
2,2-Dichloropropane	U		4.4	15	µg/L	10	4/2/2019 05:08
<b>2-Butanone</b>	<b>180</b>		<b>5.8</b>	<b>20</b>	<b>µg/L</b>	10	4/2/2019 05:08
2-Chlorotoluene	U		3.2	11	µg/L	10	4/2/2019 05:08
2-Propanol	U		330	1,100	µg/L	10	4/2/2019 05:08
4-Chlorotoluene	U		2.8	9.5	µg/L	10	4/2/2019 05:08
4-Methyl-2-pentanone	U		1.1	4.0	µg/L	10	4/2/2019 05:08
<b>Acetone</b>	<b>1,700</b>		<b>46</b>	<b>150</b>	<b>µg/L</b>	50	4/2/2019 03:41
Benzene	U		3.0	10	µg/L	10	4/2/2019 05:08
Bromobenzene	U		2.4	8.0	µg/L	10	4/2/2019 05:08
Bromochloromethane	U		2.0	6.6	µg/L	10	4/2/2019 05:08
Bromodichloromethane	U		2.3	7.8	µg/L	10	4/2/2019 05:08
Bromoform	U		7.7	26	µg/L	10	4/2/2019 05:08
Bromomethane	U		3.8	13	µg/L	10	4/2/2019 05:08
Carbon tetrachloride	U		3.1	10	µg/L	10	4/2/2019 05:08

**Note:** See Qualifiers page for a list of qualifiers and their definitions.



**ALS Group, USA**

Date: 08-Apr-19

**Client:** Gannett Fleming, Inc.  
**Project:** WRR (55929.005)  
**Sample ID:** W-33  
**Collection Date:** 3/27/2019 11:15 AM

**Work Order:** 19031609  
**Lab ID:** 19031609-02  
**Matrix:** GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>Chlorobenzene</b>	<b>6.0</b>	J	<b>2.7</b>	<b>9.0</b>	<b>µg/L</b>	10	4/2/2019 05:08
<b>Chloroethane</b>	<b>60</b>		<b>2.9</b>	<b>9.7</b>	<b>µg/L</b>	10	4/2/2019 05:08
<b>Chloroform</b>	<b>13</b>		<b>2.6</b>	<b>8.6</b>	<b>µg/L</b>	10	4/2/2019 05:08
Chloromethane	U		1.7	5.7	µg/L	10	4/2/2019 05:08
<b>cis-1,2-Dichloroethene</b>	<b>2,400</b>		<b>13</b>	<b>42</b>	<b>µg/L</b>	50	4/2/2019 03:41
cis-1,3-Dichloropropene	U		3.9	13	µg/L	10	4/2/2019 05:08
Dibromochloromethane	U		3.8	12	µg/L	10	4/2/2019 05:08
Dibromomethane	U		2.5	8.3	µg/L	10	4/2/2019 05:08
Dichlorodifluoromethane	U		1.3	4.4	µg/L	10	4/2/2019 05:08
Diisopropyl ether	U		1.3	4.3	µg/L	10	4/2/2019 05:08
<b>Ethylbenzene</b>	<b>10</b>	J	<b>4.0</b>	<b>13</b>	<b>µg/L</b>	10	4/2/2019 05:08
Hexachlorobutadiene	U		2.4	8.0	µg/L	10	4/2/2019 05:08
Isopropylbenzene	U		3.1	10	µg/L	10	4/2/2019 05:08
<b>m,p-Xylene</b>	<b>23</b>	J	<b>9.8</b>	<b>33</b>	<b>µg/L</b>	10	4/2/2019 05:08
<b>Methyl tert-butyl ether</b>	<b>3.1</b>	J	<b>1.2</b>	<b>4.0</b>	<b>µg/L</b>	10	4/2/2019 05:08
<b>Methylene chloride</b>	<b>85</b>		<b>5.6</b>	<b>18</b>	<b>µg/L</b>	10	4/2/2019 05:08
Naphthalene	U		1.8	5.9	µg/L	10	4/2/2019 05:08
n-Butylbenzene	U		2.2	7.3	µg/L	10	4/2/2019 05:08
n-Propylbenzene	U		2.4	8.1	µg/L	10	4/2/2019 05:08
<b>o-Xylene</b>	<b>18</b>		<b>3.5</b>	<b>12</b>	<b>µg/L</b>	10	4/2/2019 05:08
p-Isopropyltoluene	U		1.4	4.8	µg/L	10	4/2/2019 05:08
sec-Butylbenzene	U		2.9	9.8	µg/L	10	4/2/2019 05:08
Styrene	U		2.4	7.9	µg/L	10	4/2/2019 05:08
tert-Butylbenzene	U		3.4	12	µg/L	10	4/2/2019 05:08
<b>Tetrachloroethene</b>	<b>1,200</b>		<b>14</b>	<b>46</b>	<b>µg/L</b>	50	4/2/2019 03:41
<b>Toluene</b>	<b>15</b>		<b>3.7</b>	<b>12</b>	<b>µg/L</b>	10	4/2/2019 05:08
<b>trans-1,2-Dichloroethene</b>	<b>11</b>		<b>2.8</b>	<b>9.3</b>	<b>µg/L</b>	10	4/2/2019 05:08
trans-1,3-Dichloropropene	U		8.2	27	µg/L	10	4/2/2019 05:08
<b>Trichloroethene</b>	<b>790</b>		<b>3.0</b>	<b>9.9</b>	<b>µg/L</b>	10	4/2/2019 05:08
Trichlorofluoromethane	U		2.0	6.6	µg/L	10	4/2/2019 05:08
<b>Vinyl chloride</b>	<b>23</b>		<b>2.0</b>	<b>6.8</b>	<b>µg/L</b>	10	4/2/2019 05:08
<b>Xylenes, Total</b>	<b>41</b>	J	<b>13</b>	<b>44</b>	<b>µg/L</b>	10	4/2/2019 05:08
Surr: 1,2-Dichloroethane-d4	102			75-120	%REC	50	4/2/2019 03:41
Surr: 1,2-Dichloroethane-d4	100			75-120	%REC	10	4/2/2019 05:08
Surr: 4-Bromofluorobenzene	97.9			80-110	%REC	50	4/2/2019 03:41
Surr: 4-Bromofluorobenzene	101			80-110	%REC	10	4/2/2019 05:08
Surr: Dibromofluoromethane	104			85-115	%REC	50	4/2/2019 03:41
Surr: Dibromofluoromethane	105			85-115	%REC	10	4/2/2019 05:08
Surr: Toluene-d8	100			85-110	%REC	50	4/2/2019 03:41
Surr: Toluene-d8	99.0			85-110	%REC	10	4/2/2019 05:08

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

**ALS Group, USA**

Date: 08-Apr-19

**Client:** Gannett Fleming, Inc.  
**Project:** WRR (55929.005)  
**Sample ID:** W-34  
**Collection Date:** 3/27/2019 12:30 PM

**Work Order:** 19031609  
**Lab ID:** 19031609-03  
**Matrix:** GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>GASES IN WATER</b>			Method: RSK-175			Analyst: <b>KB</b>	
Ethane	16		0.21	5.0	µg/L	1	4/1/2019 11:55
Ethene	600		4.1	50	µg/L	10	4/1/2019 12:44
Methane	U		0.64	5.0	µg/L	1	4/1/2019 11:55
<b>METALS BY ICP-MS (DISSOLVED)</b>			Method: SW6020A			Analyst: <b>STP</b>	
Iron	99		0.015	0.049	mg/L	1	4/3/2019 19:54
Manganese	6.0		0.0026	0.0085	mg/L	10	4/4/2019 15:08
<b>VOLATILE ORGANIC COMPOUNDS</b>			Method: SW8260C			Analyst: <b>BG</b>	
1,1,1,2-Tetrachloroethane	U		22	74	µg/L	100	4/2/2019 04:47
<b>1,1,1-Trichloroethane</b>	<b>9,300</b>		<b>36</b>	<b>120</b>	<b>µg/L</b>	100	4/2/2019 04:47
1,1,2,2-Tetrachloroethane	U		19	62	µg/L	100	4/2/2019 04:47
<b>1,1,2-Trichloroethane</b>	<b>800</b>		<b>40</b>	<b>130</b>	<b>µg/L</b>	100	4/2/2019 04:47
<b>1,1-Dichloroethane</b>	<b>1,400</b>		<b>31</b>	<b>100</b>	<b>µg/L</b>	100	4/2/2019 04:47
<b>1,1-Dichloroethene</b>	<b>1,100</b>		<b>28</b>	<b>92</b>	<b>µg/L</b>	100	4/2/2019 04:47
1,1-Dichloropropene	U		35	120	µg/L	100	4/2/2019 04:47
1,2,3-Trichlorobenzene	U		17	55	µg/L	100	4/2/2019 04:47
1,2,3-Trichloropropane	U		11	40	µg/L	100	4/2/2019 04:47
1,2,4-Trichlorobenzene	U		21	71	µg/L	100	4/2/2019 04:47
1,2,4-Trimethylbenzene	U		37	120	µg/L	100	4/2/2019 04:47
1,2-Dibromo-3-chloropropane	U		97	320	µg/L	100	4/2/2019 04:47
1,2-Dibromoethane	U		98	330	µg/L	100	4/2/2019 04:47
1,2-Dichlorobenzene	U		22	73	µg/L	100	4/2/2019 04:47
1,2-Dichloroethane	U		17	55	µg/L	100	4/2/2019 04:47
<b>1,2-Dichloropropane</b>	<b>220</b>		<b>25</b>	<b>83</b>	<b>µg/L</b>	100	4/2/2019 04:47
1,3,5-Trimethylbenzene	U		29	95	µg/L	100	4/2/2019 04:47
1,3-Dichlorobenzene	U		29	96	µg/L	100	4/2/2019 04:47
1,3-Dichloropropane	U		18	61	µg/L	100	4/2/2019 04:47
1,4-Dichlorobenzene	U		21	71	µg/L	100	4/2/2019 04:47
2,2-Dichloropropane	U		44	150	µg/L	100	4/2/2019 04:47
2-Butanone	U		58	200	µg/L	100	4/2/2019 04:47
2-Chlorotoluene	U		32	110	µg/L	100	4/2/2019 04:47
2-Propanol	U		3,300	11,000	µg/L	100	4/2/2019 04:47
4-Chlorotoluene	U		28	95	µg/L	100	4/2/2019 04:47
4-Methyl-2-pentanone	U		11	40	µg/L	100	4/2/2019 04:47
<b>Acetone</b>	<b>110</b>		<b>92</b>	<b>100</b>	<b>µg/L</b>	100	4/2/2019 04:47
Benzene	U		30	100	µg/L	100	4/2/2019 04:47
Bromobenzene	U		24	80	µg/L	100	4/2/2019 04:47
Bromochloromethane	U		20	66	µg/L	100	4/2/2019 04:47

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group, USA

Date: 08-Apr-19

**Client:** Gannett Fleming, Inc.  
**Project:** WRR (55929.005)  
**Sample ID:** W-34  
**Collection Date:** 3/27/2019 12:30 PM

**Work Order:** 19031609  
**Lab ID:** 19031609-03  
**Matrix:** GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Bromodichloromethane	U		23	78	µg/L	100	4/2/2019 04:47
Bromoform	U		77	260	µg/L	100	4/2/2019 04:47
Bromomethane	U		38	130	µg/L	100	4/2/2019 04:47
Carbon tetrachloride	U		31	100	µg/L	100	4/2/2019 04:47
Chlorobenzene	U		27	90	µg/L	100	4/2/2019 04:47
Chloroethane	U		29	97	µg/L	100	4/2/2019 04:47
<b>Chloroform</b>	<b>44</b>	J	<b>26</b>	<b>86</b>	<b>µg/L</b>	100	4/2/2019 04:47
Chloromethane	U		17	57	µg/L	100	4/2/2019 04:47
<b>cis-1,2-Dichloroethene</b>	<b>31,000</b>		<b>130</b>	<b>420</b>	<b>µg/L</b>	500	3/30/2019 05:08
cis-1,3-Dichloropropene	U		39	130	µg/L	100	4/2/2019 04:47
Dibromochloromethane	U		38	120	µg/L	100	4/2/2019 04:47
Dibromomethane	U		25	83	µg/L	100	4/2/2019 04:47
Dichlorodifluoromethane	U		13	44	µg/L	100	4/2/2019 04:47
Diisopropyl ether	U		13	43	µg/L	100	4/2/2019 04:47
<b>Ethylbenzene</b>	<b>61</b>		<b>40</b>	<b>60</b>	<b>µg/L</b>	100	4/2/2019 04:47
Hexachlorobutadiene	U		24	80	µg/L	100	4/2/2019 04:47
Isopropylbenzene	U		31	100	µg/L	100	4/2/2019 04:47
<b>m,p-Xylene</b>	<b>170</b>		<b>98</b>	<b>120</b>	<b>µg/L</b>	100	4/2/2019 04:47
Methyl tert-butyl ether	U		12	40	µg/L	100	4/2/2019 04:47
<b>Methylene chloride</b>	<b>390</b>		<b>56</b>	<b>180</b>	<b>µg/L</b>	100	4/2/2019 04:47
Naphthalene	U		18	59	µg/L	100	4/2/2019 04:47
n-Butylbenzene	U		22	73	µg/L	100	4/2/2019 04:47
n-Propylbenzene	U		24	81	µg/L	100	4/2/2019 04:47
<b>o-Xylene</b>	<b>72</b>		<b>35</b>	<b>60</b>	<b>µg/L</b>	100	4/2/2019 04:47
p-Isopropyltoluene	U		14	48	µg/L	100	4/2/2019 04:47
sec-Butylbenzene	U		29	98	µg/L	100	4/2/2019 04:47
Styrene	U		24	79	µg/L	100	4/2/2019 04:47
tert-Butylbenzene	U		34	120	µg/L	100	4/2/2019 04:47
<b>Tetrachloroethene</b>	<b>200</b>		<b>27</b>	<b>91</b>	<b>µg/L</b>	100	4/2/2019 04:47
<b>Toluene</b>	<b>56</b>		<b>37</b>	<b>40</b>	<b>µg/L</b>	100	4/2/2019 04:47
trans-1,2-Dichloroethene	U		28	93	µg/L	100	4/2/2019 04:47
trans-1,3-Dichloropropene	U		82	270	µg/L	100	4/2/2019 04:47
<b>Trichloroethene</b>	<b>240</b>		<b>30</b>	<b>99</b>	<b>µg/L</b>	100	4/2/2019 04:47
Trichlorofluoromethane	U		20	66	µg/L	100	4/2/2019 04:47
<b>Vinyl chloride</b>	<b>3,400</b>		<b>20</b>	<b>68</b>	<b>µg/L</b>	100	4/2/2019 04:47
<b>Xylenes, Total</b>	<b>240</b>		<b>130</b>	<b>180</b>	<b>µg/L</b>	100	4/2/2019 04:47
Surr: 1,2-Dichloroethane-d4	99.6			75-120	%REC	500	3/30/2019 05:08
Surr: 1,2-Dichloroethane-d4	99.2			75-120	%REC	100	4/2/2019 04:47
Surr: 4-Bromofluorobenzene	90.0			80-110	%REC	500	3/30/2019 05:08
Surr: 4-Bromofluorobenzene	98.0			80-110	%REC	100	4/2/2019 04:47

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

**ALS Group, USA**

Date: 08-Apr-19

**Client:** Gannett Fleming, Inc.  
**Project:** WRR (55929.005)  
**Sample ID:** W-34  
**Collection Date:** 3/27/2019 12:30 PM

**Work Order:** 19031609  
**Lab ID:** 19031609-03  
**Matrix:** GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<i>Surr: Dibromofluoromethane</i>	98.2			85-115	%REC	500	3/30/2019 05:08
<i>Surr: Dibromofluoromethane</i>	103			85-115	%REC	100	4/2/2019 04:47
<i>Surr: Toluene-d8</i>	99.5			85-110	%REC	500	3/30/2019 05:08
<i>Surr: Toluene-d8</i>	99.4			85-110	%REC	100	4/2/2019 04:47
<b>ALKALINITY</b>				Method: A2320 B-11			Analyst: JEB
Alkalinity, Total (as CaCO3)	120		8.4	10	mg/L	1	4/2/2019 12:45
<b>ANIONS BY ION CHROMATOGRAPHY</b>				Method: SW9056A			Analyst: JDR
Sulfate	12		0.28	5.0	mg/L	5	3/29/2019 14:31
<b>NITROGEN, NITRATE-NITRITE</b>				Method: E353.2 R2.0			Analyst: JZB
Nitrogen, Nitrate-Nitrite	0.15		0.012	0.020	mg/L	1	4/1/2019 17:18
<b>ORGANIC CARBON, TOTAL</b>				Method: SW9060A			Analyst: JZB
Organic Carbon, Total	35		0.56	2.0	mg/L	4	4/3/2019 15:11

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group, USA

Date: 08-Apr-19

**Client:** Gannett Fleming, Inc.  
**Project:** WRR (55929.005)  
**Sample ID:** W-35  
**Collection Date:** 3/27/2019 02:15 PM

**Work Order:** 19031609  
**Lab ID:** 19031609-04  
**Matrix:** GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>GASES IN WATER</b>			Method: RSK-175			Analyst: <b>KB</b>	
Ethane		U	0.21	5.0	µg/L	1	4/1/2019 12:38
Ethene		U	0.41	5.0	µg/L	1	4/1/2019 12:38
<b>Methane</b>	<b>6.1</b>		<b>0.64</b>	<b>5.0</b>	<b>µg/L</b>	1	4/1/2019 12:38
<b>METALS BY ICP-MS (DISSOLVED)</b>			Method: SW6020A			Analyst: <b>STP</b>	
<b>Iron</b>	<b>0.41</b>		<b>0.015</b>	<b>0.049</b>	<b>mg/L</b>	1	4/3/2019 19:56
<b>Manganese</b>	<b>3.7</b>		<b>0.0026</b>	<b>0.0085</b>	<b>mg/L</b>	10	4/4/2019 15:09
<b>VOLATILE ORGANIC COMPOUNDS</b>			Method: SW8260C			Analyst: <b>BG</b>	
1,1,1,2-Tetrachloroethane		U	0.44	1.5	µg/L	2	4/2/2019 05:52
<b>1,1,1-Trichloroethane</b>	<b>200</b>		<b>3.6</b>	<b>12</b>	<b>µg/L</b>	10	3/30/2019 05:24
1,1,2,2-Tetrachloroethane		U	0.37	1.2	µg/L	2	4/2/2019 05:52
1,1,2-Trichloroethane		U	0.80	2.7	µg/L	2	4/2/2019 05:52
<b>1,1-Dichloroethane</b>	<b>54</b>		<b>0.62</b>	<b>2.1</b>	<b>µg/L</b>	2	4/2/2019 05:52
<b>1,1-Dichloroethene</b>	<b>8.7</b>		<b>0.55</b>	<b>1.8</b>	<b>µg/L</b>	2	4/2/2019 05:52
1,1-Dichloropropene		U	0.71	2.4	µg/L	2	4/2/2019 05:52
1,2,3-Trichlorobenzene		U	0.33	1.1	µg/L	2	4/2/2019 05:52
1,2,3-Trichloropropane		U	0.22	0.80	µg/L	2	4/2/2019 05:52
1,2,4-Trichlorobenzene		U	0.43	1.4	µg/L	2	4/2/2019 05:52
1,2,4-Trimethylbenzene		U	0.74	2.5	µg/L	2	4/2/2019 05:52
1,2-Dibromo-3-chloropropane		U	1.9	6.5	µg/L	2	4/2/2019 05:52
1,2-Dibromoethane		U	2.0	6.6	µg/L	2	4/2/2019 05:52
1,2-Dichlorobenzene		U	0.44	1.5	µg/L	2	4/2/2019 05:52
1,2-Dichloroethane		U	0.33	1.1	µg/L	2	4/2/2019 05:52
<b>1,2-Dichloropropane</b>	<b>2.0</b>		<b>0.50</b>	<b>1.7</b>	<b>µg/L</b>	2	4/2/2019 05:52
1,3,5-Trimethylbenzene		U	0.57	1.9	µg/L	2	4/2/2019 05:52
1,3-Dichlorobenzene		U	0.58	1.9	µg/L	2	4/2/2019 05:52
1,3-Dichloropropane		U	0.37	1.2	µg/L	2	4/2/2019 05:52
1,4-Dichlorobenzene		U	0.43	1.4	µg/L	2	4/2/2019 05:52
2,2-Dichloropropane		U	0.89	3.0	µg/L	2	4/2/2019 05:52
2-Butanone		U	1.2	3.9	µg/L	2	4/2/2019 05:52
2-Chlorotoluene		U	0.65	2.2	µg/L	2	4/2/2019 05:52
2-Propanol		U	66	220	µg/L	2	4/2/2019 05:52
4-Chlorotoluene		U	0.57	1.9	µg/L	2	4/2/2019 05:52
4-Methyl-2-pentanone		U	0.23	0.80	µg/L	2	4/2/2019 05:52
Acetone		U	1.8	6.1	µg/L	2	4/2/2019 05:52
Benzene		U	0.61	2.0	µg/L	2	4/2/2019 05:52
Bromobenzene		U	0.48	1.6	µg/L	2	4/2/2019 05:52
Bromochloromethane		U	0.39	1.3	µg/L	2	4/2/2019 05:52

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

**ALS Group, USA**

Date: 08-Apr-19

**Client:** Gannett Fleming, Inc.  
**Project:** WRR (55929.005)  
**Sample ID:** W-35  
**Collection Date:** 3/27/2019 02:15 PM

**Work Order:** 19031609  
**Lab ID:** 19031609-04  
**Matrix:** GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Bromodichloromethane	U		0.47	1.6	µg/L	2	4/2/2019 05:52
Bromoform	U		1.5	5.1	µg/L	2	4/2/2019 05:52
Bromomethane	U		0.75	2.5	µg/L	2	4/2/2019 05:52
Carbon tetrachloride	U		0.62	2.1	µg/L	2	4/2/2019 05:52
Chlorobenzene	U		0.54	1.8	µg/L	2	4/2/2019 05:52
Chloroethane	U		0.58	1.9	µg/L	2	4/2/2019 05:52
<b>Chloroform</b>	<b>6.8</b>		<b>0.51</b>	<b>1.7</b>	<b>µg/L</b>	2	4/2/2019 05:52
Chloromethane	U		0.34	1.1	µg/L	2	4/2/2019 05:52
<b>cis-1,2-Dichloroethene</b>	<b>350</b>		<b>2.5</b>	<b>8.5</b>	<b>µg/L</b>	10	3/30/2019 05:24
cis-1,3-Dichloropropene	U		0.78	2.6	µg/L	2	4/2/2019 05:52
Dibromochloromethane	U		0.75	2.5	µg/L	2	4/2/2019 05:52
Dibromomethane	U		0.50	1.7	µg/L	2	4/2/2019 05:52
Dichlorodifluoromethane	U		0.27	0.88	µg/L	2	4/2/2019 05:52
Diisopropyl ether	U		0.26	0.86	µg/L	2	4/2/2019 05:52
Ethylbenzene	U		0.81	2.7	µg/L	2	4/2/2019 05:52
Hexachlorobutadiene	U		0.48	1.6	µg/L	2	4/2/2019 05:52
Isopropylbenzene	U		0.63	2.1	µg/L	2	4/2/2019 05:52
m,p-Xylene	U		2.0	6.5	µg/L	2	4/2/2019 05:52
<b>Methyl tert-butyl ether</b>	<b>2.1</b>		<b>0.23</b>	<b>0.80</b>	<b>µg/L</b>	2	4/2/2019 05:52
<b>Methylene chloride</b>	<b>8.5</b>		<b>1.1</b>	<b>3.7</b>	<b>µg/L</b>	2	4/2/2019 05:52
Naphthalene	U		0.35	1.2	µg/L	2	4/2/2019 05:52
n-Butylbenzene	U		0.44	1.5	µg/L	2	4/2/2019 05:52
n-Propylbenzene	U		0.49	1.6	µg/L	2	4/2/2019 05:52
o-Xylene	U		0.71	2.4	µg/L	2	4/2/2019 05:52
p-Isopropyltoluene	U		0.29	0.96	µg/L	2	4/2/2019 05:52
sec-Butylbenzene	U		0.59	2.0	µg/L	2	4/2/2019 05:52
Styrene	U		0.48	1.6	µg/L	2	4/2/2019 05:52
tert-Butylbenzene	U		0.69	2.3	µg/L	2	4/2/2019 05:52
<b>Tetrachloroethene</b>	<b>470</b>		<b>2.7</b>	<b>9.1</b>	<b>µg/L</b>	10	3/30/2019 05:24
Toluene	U		0.73	2.4	µg/L	2	4/2/2019 05:52
<b>trans-1,2-Dichloroethene</b>	<b>2.8</b>		<b>0.56</b>	<b>1.9</b>	<b>µg/L</b>	2	4/2/2019 05:52
trans-1,3-Dichloropropene	U		1.6	5.5	µg/L	2	4/2/2019 05:52
<b>Trichloroethene</b>	<b>220</b>		<b>3.0</b>	<b>9.9</b>	<b>µg/L</b>	10	3/30/2019 05:24
Trichlorofluoromethane	U		0.40	1.3	µg/L	2	4/2/2019 05:52
Vinyl chloride	U		0.41	1.4	µg/L	2	4/2/2019 05:52
Xylenes, Total	U		2.7	8.9	µg/L	2	4/2/2019 05:52
Surr: 1,2-Dichloroethane-d4	98.0			75-120	%REC	10	3/30/2019 05:24
Surr: 1,2-Dichloroethane-d4	100			75-120	%REC	2	4/2/2019 05:52
Surr: 4-Bromofluorobenzene	93.1			80-110	%REC	10	3/30/2019 05:24
Surr: 4-Bromofluorobenzene	98.1			80-110	%REC	2	4/2/2019 05:52

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

**ALS Group, USA**

Date: 08-Apr-19

**Client:** Gannett Fleming, Inc.  
**Project:** WRR (55929.005)  
**Sample ID:** W-35  
**Collection Date:** 3/27/2019 02:15 PM

**Work Order:** 19031609  
**Lab ID:** 19031609-04  
**Matrix:** GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Surr: Dibromofluoromethane	96.6			85-115	%REC	10	3/30/2019 05:24
Surr: Dibromofluoromethane	105			85-115	%REC	2	4/2/2019 05:52
Surr: Toluene-d8	99.2			85-110	%REC	10	3/30/2019 05:24
Surr: Toluene-d8	97.8			85-110	%REC	2	4/2/2019 05:52
<b>ALKALINITY</b>				Method: A2320 B-11			Analyst: JEB
Alkalinity, Total (as CaCO3)	57		8.4	10	mg/L	1	4/2/2019 12:45
<b>ANIONS BY ION CHROMATOGRAPHY</b>				Method: SW9056A			Analyst: JDR
Sulfate	41		0.28	5.0	mg/L	5	3/29/2019 14:48
<b>NITROGEN, NITRATE-NITRITE</b>				Method: E353.2 R2.0			Analyst: JZB
Nitrogen, Nitrate-Nitrite	8.4		0.012	0.020	mg/L	1	4/1/2019 17:19
<b>ORGANIC CARBON, TOTAL</b>				Method: SW9060A			Analyst: JZB
Organic Carbon, Total	4.0		0.14	0.50	mg/L	1	4/2/2019 08:02

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group, USA

Date: 08-Apr-19

**Client:** Gannett Fleming, Inc.  
**Project:** WRR (55929.005)  
**Sample ID:** SVE-4  
**Collection Date:** 3/27/2019 03:05 PM

**Work Order:** 19031609  
**Lab ID:** 19031609-05  
**Matrix:** GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>GASES IN WATER</b>			Method: RSK-175			Analyst: <b>KB</b>	
Ethane	U		0.21	5.0	µg/L	1	4/1/2019 12:02
<b>Ethene</b>	<b>260</b>		<b>0.41</b>	<b>5.0</b>	<b>µg/L</b>	1	4/1/2019 12:02
<b>Methane</b>	<b>380</b>		<b>6.4</b>	<b>50</b>	<b>µg/L</b>	10	4/1/2019 12:46
<b>VOLATILE ORGANIC COMPOUNDS</b>			Method: SW8260C			Analyst: <b>BG</b>	
1,1,1,2-Tetrachloroethane	U		11	37	µg/L	50	4/2/2019 03:19
<b>1,1,1-Trichloroethane</b>	<b>4,200</b>		<b>18</b>	<b>60</b>	<b>µg/L</b>	50	4/2/2019 03:19
1,1,2,2-Tetrachloroethane	U		9.3	31	µg/L	50	4/2/2019 03:19
<b>1,1,2-Trichloroethane</b>	<b>2,400</b>		<b>20</b>	<b>66</b>	<b>µg/L</b>	50	4/2/2019 03:19
<b>1,1-Dichloroethane</b>	<b>290</b>		<b>15</b>	<b>52</b>	<b>µg/L</b>	50	4/2/2019 03:19
<b>1,1-Dichloroethene</b>	<b>91</b>		<b>14</b>	<b>46</b>	<b>µg/L</b>	50	4/2/2019 03:19
1,1-Dichloropropene	U		18	59	µg/L	50	4/2/2019 03:19
1,2,3-Trichlorobenzene	U		8.3	28	µg/L	50	4/2/2019 03:19
1,2,3-Trichloropropane	U		5.5	20	µg/L	50	4/2/2019 03:19
1,2,4-Trichlorobenzene	U		11	36	µg/L	50	4/2/2019 03:19
1,2,4-Trimethylbenzene	U		19	62	µg/L	50	4/2/2019 03:19
1,2-Dibromo-3-chloropropane	U		49	160	µg/L	50	4/2/2019 03:19
1,2-Dibromoethane	U		49	160	µg/L	50	4/2/2019 03:19
<b>1,2-Dichlorobenzene</b>	<b>26</b>		<b>11</b>	<b>20</b>	<b>µg/L</b>	50	4/2/2019 03:19
1,2-Dichloroethane	U		8.3	28	µg/L	50	4/2/2019 03:19
<b>1,2-Dichloropropane</b>	<b>72</b>		<b>12</b>	<b>42</b>	<b>µg/L</b>	50	4/2/2019 03:19
1,3,5-Trimethylbenzene	U		14	48	µg/L	50	4/2/2019 03:19
1,3-Dichlorobenzene	U		14	48	µg/L	50	4/2/2019 03:19
1,3-Dichloropropane	U		9.2	30	µg/L	50	4/2/2019 03:19
1,4-Dichlorobenzene	U		11	36	µg/L	50	4/2/2019 03:19
2,2-Dichloropropane	U		22	74	µg/L	50	4/2/2019 03:19
2-Butanone	U		29	98	µg/L	50	4/2/2019 03:19
2-Chlorotoluene	U		16	54	µg/L	50	4/2/2019 03:19
2-Propanol	U		1,600	5,400	µg/L	50	4/2/2019 03:19
4-Chlorotoluene	U		14	48	µg/L	50	4/2/2019 03:19
4-Methyl-2-pentanone	U		5.7	20	µg/L	50	4/2/2019 03:19
Acetone	U		46	150	µg/L	50	4/2/2019 03:19
Benzene	U		15	50	µg/L	50	4/2/2019 03:19
Bromobenzene	U		12	40	µg/L	50	4/2/2019 03:19
Bromochloromethane	U		9.8	33	µg/L	50	4/2/2019 03:19
Bromodichloromethane	U		12	39	µg/L	50	4/2/2019 03:19
Bromoform	U		38	130	µg/L	50	4/2/2019 03:19
Bromomethane	U		19	63	µg/L	50	4/2/2019 03:19
Carbon tetrachloride	U		16	52	µg/L	50	4/2/2019 03:19

**Note:** See Qualifiers page for a list of qualifiers and their definitions.



# ALS Group, USA

Date: 08-Apr-19

**Client:** Gannett Fleming, Inc.  
**Project:** WRR (55929.005)  
**Sample ID:** SVE-4  
**Collection Date:** 3/27/2019 03:05 PM

**Work Order:** 19031609  
**Lab ID:** 19031609-05  
**Matrix:** GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Chlorobenzene	U		14	45	µg/L	50	4/2/2019 03:19
Chloroethane	U		15	48	µg/L	50	4/2/2019 03:19
Chloroform	U		13	43	µg/L	50	4/2/2019 03:19
Chloromethane	U		8.6	28	µg/L	50	4/2/2019 03:19
<b>cis-1,2-Dichloroethene</b>	<b>2,100</b>		<b>13</b>	<b>42</b>	<b>µg/L</b>	50	4/2/2019 03:19
cis-1,3-Dichloropropene	U		20	66	µg/L	50	4/2/2019 03:19
Dibromochloromethane	U		19	62	µg/L	50	4/2/2019 03:19
Dibromomethane	U		12	42	µg/L	50	4/2/2019 03:19
Dichlorodifluoromethane	U		6.6	22	µg/L	50	4/2/2019 03:19
Diisopropyl ether	U		6.5	22	µg/L	50	4/2/2019 03:19
Ethylbenzene	U		20	67	µg/L	50	4/2/2019 03:19
Hexachlorobutadiene	U		12	40	µg/L	50	4/2/2019 03:19
Isopropylbenzene	U		16	52	µg/L	50	4/2/2019 03:19
m,p-Xylene	U		49	160	µg/L	50	4/2/2019 03:19
<b>Methyl tert-butyl ether</b>	<b>30</b>		<b>5.8</b>	<b>20</b>	<b>µg/L</b>	50	4/2/2019 03:19
<b>Methylene chloride</b>	<b>890</b>		<b>28</b>	<b>92</b>	<b>µg/L</b>	50	4/2/2019 03:19
Naphthalene	U		8.8	30	µg/L	50	4/2/2019 03:19
n-Butylbenzene	U		11	36	µg/L	50	4/2/2019 03:19
n-Propylbenzene	U		12	40	µg/L	50	4/2/2019 03:19
<b>o-Xylene</b>	<b>38</b>		<b>18</b>	<b>30</b>	<b>µg/L</b>	50	4/2/2019 03:19
p-Isopropyltoluene	U		7.2	24	µg/L	50	4/2/2019 03:19
sec-Butylbenzene	U		15	49	µg/L	50	4/2/2019 03:19
Styrene	U		12	40	µg/L	50	4/2/2019 03:19
tert-Butylbenzene	U		17	58	µg/L	50	4/2/2019 03:19
<b>Tetrachloroethene</b>	<b>5,500</b>		<b>68</b>	<b>230</b>	<b>µg/L</b>	250	4/2/2019 14:35
<b>Toluene</b>	<b>33</b>		<b>18</b>	<b>30</b>	<b>µg/L</b>	50	4/2/2019 03:19
trans-1,2-Dichloroethene	U		14	46	µg/L	50	4/2/2019 03:19
trans-1,3-Dichloropropene	U		41	140	µg/L	50	4/2/2019 03:19
<b>Trichloroethene</b>	<b>14,000</b>		<b>74</b>	<b>250</b>	<b>µg/L</b>	250	4/2/2019 14:35
Trichlorofluoromethane	U		10	33	µg/L	50	4/2/2019 03:19
<b>Vinyl chloride</b>	<b>100</b>		<b>10</b>	<b>34</b>	<b>µg/L</b>	50	4/2/2019 03:19
Xylenes, Total	U		66	220	µg/L	50	4/2/2019 03:19
Surr: 1,2-Dichloroethane-d4	102			75-120	%REC	50	4/2/2019 03:19
Surr: 1,2-Dichloroethane-d4	98.4			75-120	%REC	250	4/2/2019 14:35
Surr: 4-Bromofluorobenzene	98.1			80-110	%REC	50	4/2/2019 03:19
Surr: 4-Bromofluorobenzene	99.3			80-110	%REC	250	4/2/2019 14:35
Surr: Dibromofluoromethane	105			85-115	%REC	50	4/2/2019 03:19
Surr: Dibromofluoromethane	97.9			85-115	%REC	250	4/2/2019 14:35
Surr: Toluene-d8	99.7			85-110	%REC	50	4/2/2019 03:19
Surr: Toluene-d8	98.3			85-110	%REC	250	4/2/2019 14:35

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

**ALS Group, USA**

Date: 08-Apr-19

**Client:** Gannett Fleming, Inc.  
**Project:** WRR (55929.005)  
**Sample ID:** Trip Blank  
**Collection Date:** 3/26/2019

**Work Order:** 19031609  
**Lab ID:** 19031609-06  
**Matrix:** WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>VOLATILE ORGANIC COMPOUNDS</b>			Method: SW8260C			Analyst: <b>BG</b>	
1,1,1,2-Tetrachloroethane	U		0.22	0.74	µg/L	1	4/2/2019 02:35
1,1,1-Trichloroethane	U		0.36	1.2	µg/L	1	4/2/2019 02:35
1,1,2,2-Tetrachloroethane	U		0.19	0.62	µg/L	1	4/2/2019 02:35
1,1,2-Trichloroethane	U		0.40	1.3	µg/L	1	4/2/2019 02:35
1,1-Dichloroethane	U		0.31	1.0	µg/L	1	4/2/2019 02:35
1,1-Dichloroethene	U		0.28	0.92	µg/L	1	4/2/2019 02:35
1,1-Dichloropropene	U		0.35	1.2	µg/L	1	4/2/2019 02:35
1,2,3-Trichlorobenzene	U		0.17	0.55	µg/L	1	4/2/2019 02:35
1,2,3-Trichloropropane	U		0.11	0.40	µg/L	1	4/2/2019 02:35
1,2,4-Trichlorobenzene	U		0.21	0.71	µg/L	1	4/2/2019 02:35
1,2,4-Trimethylbenzene	U		0.37	1.2	µg/L	1	4/2/2019 02:35
1,2-Dibromo-3-chloropropane	U		0.97	3.2	µg/L	1	4/2/2019 02:35
1,2-Dibromoethane	U		0.98	3.3	µg/L	1	4/2/2019 02:35
1,2-Dichlorobenzene	U		0.22	0.73	µg/L	1	4/2/2019 02:35
1,2-Dichloroethane	U		0.17	0.55	µg/L	1	4/2/2019 02:35
1,2-Dichloropropane	U		0.25	0.83	µg/L	1	4/2/2019 02:35
1,3,5-Trimethylbenzene	U		0.29	0.95	µg/L	1	4/2/2019 02:35
1,3-Dichlorobenzene	U		0.29	0.96	µg/L	1	4/2/2019 02:35
1,3-Dichloropropane	U		0.18	0.61	µg/L	1	4/2/2019 02:35
1,4-Dichlorobenzene	U		0.21	0.71	µg/L	1	4/2/2019 02:35
2,2-Dichloropropane	U		0.44	1.5	µg/L	1	4/2/2019 02:35
2-Butanone	U		0.58	2.0	µg/L	1	4/2/2019 02:35
2-Chlorotoluene	U		0.32	1.1	µg/L	1	4/2/2019 02:35
2-Propanol	U		33	110	µg/L	1	4/2/2019 02:35
4-Chlorotoluene	U		0.28	0.95	µg/L	1	4/2/2019 02:35
4-Methyl-2-pentanone	U		0.11	0.40	µg/L	1	4/2/2019 02:35
Acetone	U		0.92	3.1	µg/L	1	4/2/2019 02:35
Benzene	U		0.30	1.0	µg/L	1	4/2/2019 02:35
Bromobenzene	U		0.24	0.80	µg/L	1	4/2/2019 02:35
Bromochloromethane	U		0.20	0.66	µg/L	1	4/2/2019 02:35
Bromodichloromethane	U		0.23	0.78	µg/L	1	4/2/2019 02:35
Bromoform	U		0.77	2.6	µg/L	1	4/2/2019 02:35
Bromomethane	U		0.38	1.3	µg/L	1	4/2/2019 02:35
Carbon tetrachloride	U		0.31	1.0	µg/L	1	4/2/2019 02:35
Chlorobenzene	U		0.27	0.90	µg/L	1	4/2/2019 02:35
Chloroethane	U		0.29	0.97	µg/L	1	4/2/2019 02:35
Chloroform	U		0.26	0.86	µg/L	1	4/2/2019 02:35
<b>Chloromethane</b>	<b>0.20</b>	<b>J</b>	<b>0.17</b>	<b>0.57</b>	<b>µg/L</b>	1	4/2/2019 02:35

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group, USA

Date: 08-Apr-19

**Client:** Gannett Fleming, Inc.  
**Project:** WRR (55929.005)  
**Sample ID:** Trip Blank  
**Collection Date:** 3/26/2019

**Work Order:** 19031609  
**Lab ID:** 19031609-06  
**Matrix:** WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
cis-1,2-Dichloroethene	U		0.25	0.85	µg/L	1	4/2/2019 02:35
cis-1,3-Dichloropropene	U		0.39	1.3	µg/L	1	4/2/2019 02:35
Dibromochloromethane	U		0.38	1.2	µg/L	1	4/2/2019 02:35
Dibromomethane	U		0.25	0.83	µg/L	1	4/2/2019 02:35
Dichlorodifluoromethane	U		0.13	0.44	µg/L	1	4/2/2019 02:35
Diisopropyl ether	U		0.13	0.43	µg/L	1	4/2/2019 02:35
Ethylbenzene	U		0.40	1.3	µg/L	1	4/2/2019 02:35
Hexachlorobutadiene	U		0.24	0.80	µg/L	1	4/2/2019 02:35
Isopropylbenzene	U		0.31	1.0	µg/L	1	4/2/2019 02:35
m,p-Xylene	U		0.98	3.3	µg/L	1	4/2/2019 02:35
Methyl tert-butyl ether	U		0.12	0.40	µg/L	1	4/2/2019 02:35
Methylene chloride	U		0.56	1.8	µg/L	1	4/2/2019 02:35
Naphthalene	U		0.18	0.59	µg/L	1	4/2/2019 02:35
n-Butylbenzene	U		0.22	0.73	µg/L	1	4/2/2019 02:35
n-Propylbenzene	U		0.24	0.81	µg/L	1	4/2/2019 02:35
o-Xylene	U		0.35	1.2	µg/L	1	4/2/2019 02:35
p-Isopropyltoluene	U		0.14	0.48	µg/L	1	4/2/2019 02:35
sec-Butylbenzene	U		0.29	0.98	µg/L	1	4/2/2019 02:35
Styrene	U		0.24	0.79	µg/L	1	4/2/2019 02:35
tert-Butylbenzene	U		0.34	1.2	µg/L	1	4/2/2019 02:35
Tetrachloroethene	U		0.27	0.91	µg/L	1	4/2/2019 02:35
Toluene	U		0.37	1.2	µg/L	1	4/2/2019 02:35
trans-1,2-Dichloroethene	U		0.28	0.93	µg/L	1	4/2/2019 02:35
trans-1,3-Dichloropropene	U		0.82	2.7	µg/L	1	4/2/2019 02:35
Trichloroethene	U		0.30	0.99	µg/L	1	4/2/2019 02:35
Trichlorofluoromethane	U		0.20	0.66	µg/L	1	4/2/2019 02:35
Vinyl chloride	U		0.20	0.68	µg/L	1	4/2/2019 02:35
Xylenes, Total	U		1.3	4.4	µg/L	1	4/2/2019 02:35
Surr: 1,2-Dichloroethane-d4	100			75-120	%REC	1	4/2/2019 02:35
Surr: 4-Bromofluorobenzene	97.0			80-110	%REC	1	4/2/2019 02:35
Surr: Dibromofluoromethane	98.6			85-115	%REC	1	4/2/2019 02:35
Surr: Toluene-d8	98.8			85-110	%REC	1	4/2/2019 02:35

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

**Client:** Gannett Fleming, Inc.  
**Work Order:** 19031609  
**Project:** WRR (55929.005)

**QC BATCH REPORT**

Batch ID: **R257598** Instrument ID **GC10** Method: **RSK-175**

MBLK		Sample ID: <b>MBLK-190401-R257598</b>				Units: <b>µg/L</b>		Analysis Date: <b>4/1/2019 11:00 AM</b>			
Client ID:		Run ID: <b>GC10_190401A</b>				SeqNo: <b>5586672</b>		Prep Date:		DF: <b>1</b>	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ethane	U	0.21	5.0								
Ethene	U	0.41	5.0								
Methane	1.99	0.64	5.0								J

MBLK		Sample ID: <b>MBLK2-190401-R257598</b>				Units: <b>µg/L</b>		Analysis Date: <b>4/1/2019 04:22 PM</b>			
Client ID:		Run ID: <b>GC10_190401A</b>				SeqNo: <b>5586701</b>		Prep Date:		DF: <b>1</b>	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Methane	0.71	0.64	5.0								J

LCS		Sample ID: <b>LCS-190401-R257598</b>				Units: <b>µg/L</b>		Analysis Date: <b>4/1/2019 10:58 AM</b>			
Client ID:		Run ID: <b>GC10_190401A</b>				SeqNo: <b>5586671</b>		Prep Date:		DF: <b>1</b>	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ethane	33.21	0.21	5.0	36.1	0	92	75-125	0			
Ethene	37.64	0.41	5.0	33.7	0	112	75-125	0			
Methane	17.94	0.64	5.0	19.2	0	93.4	75-125	0			

LCS		Sample ID: <b>LCS2-190401-R257598</b>				Units: <b>µg/L</b>		Analysis Date: <b>4/1/2019 04:20 PM</b>			
Client ID:		Run ID: <b>GC10_190401A</b>				SeqNo: <b>5586700</b>		Prep Date:		DF: <b>1</b>	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Methane	16.92	0.64	5.0	19.2	0	88.1	75-125	0			

MS		Sample ID: <b>19031605-02A MS</b>				Units: <b>µg/L</b>		Analysis Date: <b>4/1/2019 12:55 PM</b>			
Client ID:		Run ID: <b>GC10_190401A</b>				SeqNo: <b>5586698</b>		Prep Date:		DF: <b>1</b>	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ethane	31.28	0.21	5.0	36.1	0	86.6	70-130	0			
Ethene	47.08	0.41	5.0	33.7	0	140	70-130	0			S
Methane	24.68	0.64	5.0	19.2	28.1	-17.8	70-130	0			S

MS		Sample ID: <b>19031451-14A MS</b>				Units: <b>µg/L</b>		Analysis Date: <b>4/1/2019 05:49 PM</b>			
Client ID:		Run ID: <b>GC10_190401A</b>				SeqNo: <b>5586729</b>		Prep Date:		DF: <b>1</b>	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Methane	17.25	0.64	5.0	19.2	3.62	71	70-130	0			

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 19031609  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: **R257598** Instrument ID **GC10** Method: **RSK-175**

MSD		Sample ID: 19031605-02A MSD				Units: µg/L		Analysis Date: 4/1/2019 12:57 PM			
Client ID:		Run ID: GC10_190401A				SeqNo: 5586699		Prep Date:		DF: 1	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ethane	33.06	0.21	5.0	36.1	0	91.6	70-130	31.28	5.53	30	
Ethene	41.57	0.41	5.0	33.7	0	123	70-130	47.08	12.4	30	
Methane	23.04	0.64	5.0	19.2	28.1	-26.4	70-130	24.68	6.87	30	S

MSD		Sample ID: 19031451-14A MSD				Units: µg/L		Analysis Date: 4/1/2019 05:51 PM			
Client ID:		Run ID: GC10_190401A				SeqNo: 5586730		Prep Date:		DF: 1	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Methane	14.45	0.64	5.0	19.2	3.62	56.4	70-130	17.25	17.7	30	S

The following samples were analyzed in this batch:

19031609-01B	19031609-02B	19031609-03B
19031609-04B	19031609-05B	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 19031609  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: **R257735A** Instrument ID **ICPMS3** Method: **SW6020A (Dissolve)**

MBLK		Sample ID: <b>MBLK-R257735A-R257735A</b>				Units: <b>mg/L</b>		Analysis Date: <b>4/3/2019 07:49 PM</b>			
Client ID:		Run ID: <b>ICPMS3_190403A</b>				SeqNo: <b>5590826</b>		Prep Date:		DF: <b>1</b>	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	U	0.015	0.080								
Manganese	U	0.00026	0.0050								

LCS		Sample ID: <b>LCS-R257735A-R257735A</b>				Units: <b>mg/L</b>		Analysis Date: <b>4/3/2019 07:47 PM</b>			
Client ID:		Run ID: <b>ICPMS3_190403A</b>				SeqNo: <b>5590827</b>		Prep Date:		DF: <b>1</b>	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	9.666	0.015	0.080	10	0	96.7	80-120	0			
Manganese	0.09768	0.00026	0.0050	0.1	0	97.7	80-120	0			

MS		Sample ID: <b>19031609-01CMS</b>				Units: <b>mg/L</b>		Analysis Date: <b>4/3/2019 07:50 PM</b>			
Client ID: <b>W-32</b>		Run ID: <b>ICPMS3_190403A</b>				SeqNo: <b>5590755</b>		Prep Date:		DF: <b>1</b>	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	9.451	0.015	0.049	10	0.007582	94.4	75-125	0			
Manganese	0.8555	0.00026	0.00085	0.1	0.772	83.5	75-125	0			O

MSD		Sample ID: <b>19031609-01CMSD</b>				Units: <b>mg/L</b>		Analysis Date: <b>4/3/2019 07:52 PM</b>			
Client ID: <b>W-32</b>		Run ID: <b>ICPMS3_190403A</b>				SeqNo: <b>5590756</b>		Prep Date:		DF: <b>1</b>	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	9.574	0.015	0.049	10	0.007582	95.7	75-125	9.451	1.29	20	
Manganese	0.8595	0.00026	0.00085	0.1	0.772	87.5	75-125	0.8555	0.474	20	O

The following samples were analyzed in this batch:

19031609-01C	19031609-03C	19031609-04C
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Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 19031609  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: **R257563** Instrument ID **VMS9** Method: **SW8260C**

MBLK		Sample ID: <b>VBLKW-190329-R257563</b>				Units: <b>µg/L</b>		Analysis Date: <b>3/30/2019 12:19 PM</b>			
Client ID:		Run ID: <b>VMS9_190329B</b>				SeqNo: <b>5585280</b>		Prep Date:		DF: <b>1</b>	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	U	0.36	1.2								
cis-1,2-Dichloroethene	U	0.25	0.85								
Tetrachloroethene	U	0.27	0.91								
Trichloroethene	U	0.3	0.99								
1,2-Dichloroethene, Total	U	0.53	1.8								
<i>Surr: 1,2-Dichloroethane-d4</i>	20.35	0	0	20	0	102	75-120	0			
<i>Surr: 4-Bromofluorobenzene</i>	18	0	0	20	0	90	80-110	0			
<i>Surr: Dibromofluoromethane</i>	19.32	0	0	20	0	96.6	85-115	0			
<i>Surr: Toluene-d8</i>	19.97	0	0	20	0	99.8	85-110	0			

LCS		Sample ID: <b>VLCSW2-190329-R257563</b>				Units: <b>µg/L</b>		Analysis Date: <b>3/29/2019 11:33 PM</b>			
Client ID:		Run ID: <b>VMS9_190329B</b>				SeqNo: <b>5585268</b>		Prep Date:		DF: <b>1</b>	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	19.35	0.36	1.2	20	0	96.8	75-130	0			
cis-1,2-Dichloroethene	21.06	0.25	0.85	20	0	105	75-134	0			
Tetrachloroethene	19.26	0.27	0.91	20	0	96.3	68-166	0			
Trichloroethene	18.07	0.3	0.99	20	0	90.4	84-130	0			
<i>Surr: 1,2-Dichloroethane-d4</i>	19.64	0	0	20	0	98.2	75-120	0			
<i>Surr: 4-Bromofluorobenzene</i>	20.49	0	0	20	0	102	80-110	0			
<i>Surr: Dibromofluoromethane</i>	19.1	0	0	20	0	95.5	85-115	0			
<i>Surr: Toluene-d8</i>	20.22	0	0	20	0	101	85-110	0			

MS		Sample ID: <b>19031584-10A MS</b>				Units: <b>µg/L</b>		Analysis Date: <b>3/30/2019 05:54 AM</b>			
Client ID:		Run ID: <b>VMS9_190329B</b>				SeqNo: <b>5585278</b>		Prep Date:		DF: <b>1</b>	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	20.08	0.36	1.2	20	0	100	75-130	0			
cis-1,2-Dichloroethene	22.1	0.25	0.85	20	0	110	75-134	0			
Tetrachloroethene	22.08	0.27	0.91	20	0	110	68-166	0			
Trichloroethene	20.2	0.3	0.99	20	0	101	84-130	0			
<i>Surr: 1,2-Dichloroethane-d4</i>	19.4	0	0	20	0	97	75-120	0			
<i>Surr: 4-Bromofluorobenzene</i>	19.81	0	0	20	0	99	80-110	0			
<i>Surr: Dibromofluoromethane</i>	19.95	0	0	20	0	99.8	85-115	0			
<i>Surr: Toluene-d8</i>	19.69	0	0	20	0	98.4	85-110	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 19031609  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: **R257563** Instrument ID **VMS9** Method: **SW8260C**

MSD		Sample ID: 19031584-10A MSD				Units: µg/L		Analysis Date: 3/30/2019 06:09 AM			
Client ID:		Run ID: VMS9_190329B			SeqNo: 5585279		Prep Date:		DF: 1		
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	19.19	0.36	1.2	20	0	96	75-130	20.08	4.53	30	
cis-1,2-Dichloroethene	23.48	0.25	0.85	20	0	117	75-134	22.1	6.06	30	
Tetrachloroethene	19.88	0.27	0.91	20	0	99.4	68-166	22.08	10.5	30	
Trichloroethene	18.84	0.3	0.99	20	0	94.2	84-130	20.2	6.97	30	
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>20.02</i>	<i>0</i>	<i>0</i>	<i>20</i>	<i>0</i>	<i>100</i>	<i>75-120</i>	<i>19.4</i>	<i>3.15</i>	<i>30</i>	
<i>Surr: 4-Bromofluorobenzene</i>	<i>19.33</i>	<i>0</i>	<i>0</i>	<i>20</i>	<i>0</i>	<i>96.6</i>	<i>80-110</i>	<i>19.81</i>	<i>2.45</i>	<i>30</i>	
<i>Surr: Dibromofluoromethane</i>	<i>20.53</i>	<i>0</i>	<i>0</i>	<i>20</i>	<i>0</i>	<i>103</i>	<i>85-115</i>	<i>19.95</i>	<i>2.87</i>	<i>30</i>	
<i>Surr: Toluene-d8</i>	<i>19.59</i>	<i>0</i>	<i>0</i>	<i>20</i>	<i>0</i>	<i>98</i>	<i>85-110</i>	<i>19.69</i>	<i>0.509</i>	<i>30</i>	

The following samples were analyzed in this batch:

19031609-01A	19031609-02A	19031609-03A
19031609-04A	19031609-05A	19031609-06A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.



Client: Gannett Fleming, Inc.  
 Work Order: 19031609  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: **R257585b** Instrument ID **VMS11** Method: **SW8260C**

MBLK		Sample ID: <b>VBLKW2-190401-R257585b</b>				Units: <b>µg/L</b>		Analysis Date: <b>4/2/2019 01:29 AM</b>			
Client ID:		Run ID: <b>VMS11_190401B</b>				SeqNo: <b>5587190</b>		Prep Date:		DF: <b>1</b>	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	U	0.22	0.74								
1,1,1-Trichloroethane	U	0.36	1.2								
1,1,2,2-Tetrachloroethane	U	0.19	0.62								
1,1,2-Trichloroethane	U	0.4	1.3								
1,1-Dichloroethane	U	0.31	1.0								
1,1-Dichloroethene	U	0.28	0.92								
1,1-Dichloropropene	U	0.35	1.2								
1,2,3-Trichlorobenzene	0.7	0.17	0.55								
1,2,3-Trichloropropane	U	0.11	0.40								
1,2,4-Trichlorobenzene	0.5	0.21	0.71								J
1,2,4-Trimethylbenzene	U	0.37	1.2								
1,2-Dibromo-3-chloropropane	U	0.97	3.2								
1,2-Dibromoethane	U	0.98	3.3								
1,2-Dichlorobenzene	U	0.22	0.73								
1,2-Dichloroethane	U	0.17	0.55								
1,2-Dichloropropane	U	0.25	0.83								
1,3,5-Trimethylbenzene	U	0.29	0.95								
1,3-Dichlorobenzene	U	0.29	0.96								
1,3-Dichloropropane	U	0.18	0.61								
1,4-Dichlorobenzene	U	0.21	0.71								
2,2-Dichloropropane	U	0.44	1.5								
2-Butanone	U	0.58	2.0								
2-Chlorotoluene	U	0.32	1.1								
2-Propanol	U	33	110								
4-Chlorotoluene	U	0.28	0.95								
4-Methyl-2-pentanone	U	0.11	0.40								
Acetone	U	0.92	3.1								
Benzene	U	0.3	1.0								
Bromobenzene	U	0.24	0.80								
Bromochloromethane	U	0.2	0.66								
Bromodichloromethane	U	0.23	0.78								
Bromoform	U	0.77	2.6								
Bromomethane	U	0.38	1.3								
Carbon tetrachloride	U	0.31	1.0								
Chlorobenzene	U	0.27	0.90								
Chloroethane	U	0.29	0.97								
Chloroform	U	0.26	0.86								
Chloromethane	U	0.17	0.57								
cis-1,2-Dichloroethene	U	0.25	0.85								
cis-1,3-Dichloropropene	U	0.39	1.3								
Dibromochloromethane	U	0.38	1.2								
Dibromomethane	U	0.25	0.83								
Dichlorodifluoromethane	U	0.13	0.44								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** Gannett Fleming, Inc.  
**Work Order:** 19031609  
**Project:** WRR (55929.005)

## QC BATCH REPORT

Batch ID: <b>R257585b</b>	Instrument ID <b>VMS11</b>	Method: <b>SW8260C</b>						
Diisopropyl ether	U	0.13	0.43					
Ethylbenzene	U	0.4	1.3					
Hexachlorobutadiene	1.29	0.24	0.80					
Isopropylbenzene	U	0.31	1.0					
m,p-Xylene	U	0.98	3.3					
Methyl tert-butyl ether	U	0.12	0.40					
Methylene chloride	U	0.56	1.8					
Naphthalene	U	0.18	0.59					
n-Butylbenzene	0.26	0.22	0.73					
n-Propylbenzene	U	0.24	0.81					
o-Xylene	U	0.35	1.2					
p-Isopropyltoluene	U	0.14	0.48					
sec-Butylbenzene	U	0.29	0.98					
Styrene	U	0.24	0.79					
tert-Butylbenzene	U	0.34	1.2					
Tetrachloroethene	U	0.27	0.91					
Toluene	U	0.37	1.2					
trans-1,2-Dichloroethene	U	0.28	0.93					
trans-1,3-Dichloropropene	U	0.82	2.7					
Trichloroethene	U	0.3	0.99					
Trichlorofluoromethane	U	0.2	0.66					
Vinyl chloride	U	0.2	0.68					
Xylenes, Total	U	1.3	4.4					
<i>Surr: 1,2-Dichloroethane-d4</i>	20.12	0	0	20	0	101	75-120	0
<i>Surr: 4-Bromofluorobenzene</i>	19.75	0	0	20	0	98.8	80-110	0
<i>Surr: Dibromofluoromethane</i>	20.55	0	0	20	0	103	85-115	0
<i>Surr: Toluene-d8</i>	20.17	0	0	20	0	101	85-110	0

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 19031609  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: **R257585b** Instrument ID **VMS11** Method: **SW8260C**

LCS		Sample ID: <b>VLCSW2-190401-R257585b</b>				Units: <b>µg/L</b>		Analysis Date: <b>4/2/2019 12:24 PM</b>			
Client ID:		Run ID: <b>VMS11_190401B</b>				SeqNo: <b>5587207</b>		Prep Date:		DF: <b>1</b>	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	19.03	0.22	0.74	20	0	95.2	73-114	0			
1,1,1-Trichloroethane	22.83	0.36	1.2	20	0	114	75-130	0			
1,1,2,2-Tetrachloroethane	21.75	0.19	0.62	20	0	109	75-130	0			
1,1,2-Trichloroethane	20.54	0.4	1.3	20	0	103	75-125	0			
1,1-Dichloroethane	22.19	0.31	1.0	20	0	111	75-133	0			
1,1-Dichloroethene	23.48	0.28	0.92	20	0	117	70-145	0			
1,1-Dichloropropene	18.47	0.35	1.2	20	0	92.4	75-135	0			
1,2,3-Trichlorobenzene	21.54	0.17	0.55	20	0	108	70-140	0			B
1,2,3-Trichloropropane	19.22	0.11	0.40	20	0	96.1	75-125	0			
1,2,4-Trichlorobenzene	21.81	0.21	0.71	20	0	109	70-135	0			
1,2,4-Trimethylbenzene	21.14	0.37	1.2	20	0	106	75-130	0			
1,2-Dibromo-3-chloropropane	20.56	0.97	3.2	20	0	103	60-130	0			
1,2-Dibromoethane	24.01	0.98	3.3	20	0	120	90-195	0			
1,2-Dichlorobenzene	19.66	0.22	0.73	20	0	98.3	70-130	0			
1,2-Dichloroethane	19.85	0.17	0.55	20	0	99.2	78-125	0			
1,2-Dichloropropane	21.84	0.25	0.83	20	0	109	75-125	0			
1,3,5-Trimethylbenzene	21.67	0.29	0.95	20	0	108	75-130	0			
1,3-Dichlorobenzene	19.54	0.29	0.96	20	0	97.7	75-130	0			
1,3-Dichloropropane	20.22	0.18	0.61	20	0	101	75-125	0			
1,4-Dichlorobenzene	19.36	0.21	0.71	20	0	96.8	75-130	0			
2,2-Dichloropropane	23.05	0.44	1.5	20	0	115	43-150	0			
2-Butanone	20.08	0.58	2.0	20	0	100	55-150	0			
2-Chlorotoluene	20.68	0.32	1.1	20	0	103	76-117	0			
4-Chlorotoluene	20.66	0.28	0.95	20	0	103	80-125	0			
4-Methyl-2-pentanone	25.06	0.11	0.40	20	0	125	77-178	0			
Acetone	19.04	0.92	3.1	20	0	95.2	60-160	0			
Benzene	20.53	0.3	1.0	20	0	103	85-125	0			
Bromobenzene	19.95	0.24	0.80	20	0	99.8	80-125	0			
Bromochloromethane	22.09	0.2	0.66	20	0	110	72-141	0			
Bromodichloromethane	24.52	0.23	0.78	20	0	123	75-125	0			
Bromoform	21.57	0.77	2.6	20	0	108	60-125	0			
Bromomethane	18.41	0.38	1.3	20	0	92	30-185	0			
Carbon tetrachloride	23.2	0.31	1.0	20	0	116	65-140	0			
Chlorobenzene	19.52	0.27	0.90	20	0	97.6	80-120	0			
Chloroethane	21.46	0.29	0.97	20	0	107	31-172	0			
Chloroform	21.37	0.26	0.86	20	0	107	80-130	0			
Chloromethane	20.53	0.17	0.57	20	0	103	46-148	0			
cis-1,2-Dichloroethene	22.61	0.25	0.85	20	0	113	75-134	0			
cis-1,3-Dichloropropene	22.35	0.39	1.3	20	0	112	70-130	0			
Dibromochloromethane	20.19	0.38	1.2	20	0	101	60-115	0			
Dibromomethane	21.09	0.25	0.83	20	0	105	79-126	0			
Dichlorodifluoromethane	15.89	0.13	0.44	20	0	79.4	20-120	0			
Ethylbenzene	20.64	0.4	1.3	20	0	103	76-123	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 19031609  
 Project: WRR (55929.005)

## QC BATCH REPORT

Batch ID: <b>R257585b</b>	Instrument ID <b>VMS11</b>		Method: <b>SW8260C</b>						
Hexachlorobutadiene	23.23	0.24	0.80	20	0	116	70-155	0	B
Isopropylbenzene	21.53	0.31	1.0	20	0	108	80-127	0	
m,p-Xylene	41.53	0.98	3.3	40	0	104	75-130	0	
Methyl tert-butyl ether	22.95	0.12	0.40	20	0	115	80-130	0	
Methylene chloride	20.95	0.56	1.8	20	0	105	75-140	0	
Naphthalene	22.35	0.18	0.59	20	0	112	55-160	0	
n-Butylbenzene	24.62	0.22	0.73	20	0	123	75-145	0	
n-Propylbenzene	21.37	0.24	0.81	20	0	107	83-135	0	
o-Xylene	20.84	0.35	1.2	20	0	104	80-125	0	
p-Isopropyltoluene	23.11	0.14	0.48	20	0	116	61-164	0	
sec-Butylbenzene	22.78	0.29	0.98	20	0	114	80-134	0	
Styrene	21.93	0.24	0.79	20	0	110	83-137	0	
tert-Butylbenzene	21.87	0.34	1.2	20	0	109	70-130	0	
Tetrachloroethene	19.69	0.27	0.91	20	0	98.4	68-166	0	
Toluene	20.19	0.37	1.2	20	0	101	76-125	0	
trans-1,2-Dichloroethene	22.36	0.28	0.93	20	0	112	80-140	0	
trans-1,3-Dichloropropene	19.51	0.82	2.7	20	0	97.6	56-132	0	
Trichloroethene	20.32	0.3	0.99	20	0	102	84-130	0	
Trichlorofluoromethane	20.89	0.2	0.66	20	0	104	60-140	0	
Vinyl chloride	22.39	0.2	0.68	20	0	112	50-136	0	
Xylenes, Total	62.37	1.3	4.4	60	0	104	80-126	0	
<i>Surr: 1,2-Dichloroethane-d4</i>	20.42	0	0	20	0	102	75-120	0	
<i>Surr: 4-Bromofluorobenzene</i>	20.61	0	0	20	0	103	80-110	0	
<i>Surr: Dibromofluoromethane</i>	20.79	0	0	20	0	104	85-115	0	
<i>Surr: Toluene-d8</i>	19.97	0	0	20	0	99.8	85-110	0	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 19031609  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: **R257585b** Instrument ID **VMS11** Method: **SW8260C**

MS		Sample ID: 19031609-03A MS				Units: µg/L		Analysis Date: 4/2/2019 08:47 AM			
Client ID: W-34		Run ID: VMS11_190401B				SeqNo: 5587205		Prep Date:		DF: 100	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	1645	22	74	2000	0	82.2	73-114	0			
1,1,1-Trichloroethane	10670	36	120	2000	9283	69.5	75-130	0			SEO
1,1,2,2-Tetrachloroethane	2060	19	62	2000	0	103	75-130	0			
1,1,2-Trichloroethane	2858	40	130	2000	802	103	75-125	0			
1,1-Dichloroethane	3531	31	100	2000	1403	106	75-133	0			
1,1-Dichloroethene	3250	28	92	2000	1064	109	70-145	0			
1,1-Dichloropropene	1893	35	120	2000	0	94.6	75-135	0			
1,2,3-Trichlorobenzene	1888	17	55	2000	0	94.4	70-140	0			B
1,2,3-Trichloropropane	1901	11	40	2000	0	95	75-125	0			
1,2,4-Trichlorobenzene	1958	21	71	2000	0	97.9	70-135	0			
1,2,4-Trimethylbenzene	2769	37	120	2000	0	138	75-130	0			S
1,2-Dibromo-3-chloropropane	1585	97	320	2000	0	79.2	60-130	0			
1,2-Dibromoethane	2245	98	330	2000	0	112	90-195	0			
1,2-Dichlorobenzene	1930	22	73	2000	0	96.5	70-130	0			
1,2-Dichloroethane	1981	17	55	2000	0	99	78-125	0			
1,2-Dichloropropane	2371	25	83	2000	216	108	75-125	0			
1,3,5-Trimethylbenzene	2295	29	95	2000	0	115	75-130	0			
1,3-Dichlorobenzene	1896	29	96	2000	0	94.8	75-130	0			
1,3-Dichloropropane	1993	18	61	2000	0	99.6	75-125	0			
1,4-Dichlorobenzene	1853	21	71	2000	0	92.6	75-130	0			
2,2-Dichloropropane	1754	44	150	2000	0	87.7	43-150	0			
2-Butanone	2172	58	200	2000	0	109	55-150	0			
2-Chlorotoluene	2067	32	110	2000	0	103	76-117	0			
4-Chlorotoluene	2004	28	95	2000	0	100	80-125	0			
4-Methyl-2-pentanone	2455	11	40	2000	0	123	77-178	0			
Acetone	1900	92	310	2000	110	89.5	60-160	0			
Benzene	2037	30	100	2000	0	102	85-125	0			
Bromobenzene	1946	24	80	2000	0	97.3	80-125	0			
Bromochloromethane	2124	20	66	2000	0	106	72-141	0			
Bromodichloromethane	1997	23	78	2000	0	99.8	75-125	0			
Bromoform	1558	77	260	2000	0	77.9	60-125	0			
Bromomethane	1508	38	130	2000	0	75.4	30-185	0			
Carbon tetrachloride	2015	31	100	2000	0	101	65-140	0			
Chlorobenzene	1929	27	90	2000	11	95.9	80-120	0			
Chloroethane	2116	29	97	2000	0	106	31-172	0			
Chloroform	2108	26	86	2000	44	103	80-130	0			
Chloromethane	2119	17	57	2000	0	106	46-148	0			
cis-1,2-Dichloroethene	34960	25	85	2000	33470	74.1	75-134	0			SEO
cis-1,3-Dichloropropene	1865	39	130	2000	0	93.2	70-130	0			
Dibromochloromethane	1618	38	120	2000	0	80.9	60-115	0			
Dibromomethane	1998	25	83	2000	0	99.9	79-126	0			
Dichlorodifluoromethane	1606	13	44	2000	0	80.3	20-120	0			
Ethylbenzene	2179	40	130	2000	61	106	76-123	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** Gannett Fleming, Inc.  
**Work Order:** 19031609  
**Project:** WRR (55929.005)

## QC BATCH REPORT

Batch ID: <b>R257585b</b>	Instrument ID <b>VMS11</b>			Method: <b>SW8260C</b>						
Hexachlorobutadiene	1962	24	80	2000	0	98.1	70-155	0	B	
Isopropylbenzene	2138	31	100	2000	0	107	80-127	0		
m,p-Xylene	4566	98	330	4000	166	110	75-130	0		
Methyl tert-butyl ether	2146	12	40	2000	0	107	80-130	0		
Methylene chloride	2538	56	180	2000	393	107	75-140	0		
Naphthalene	3141	18	59	2000	0	157	55-160	0		
n-Butylbenzene	2568	22	73	2000	0	128	75-145	0		
n-Propylbenzene	2167	24	81	2000	0	108	83-135	0		
o-Xylene	2231	35	120	2000	72	108	80-125	0		
p-Isopropyltoluene	2210	14	48	2000	0	110	61-164	0		
sec-Butylbenzene	2161	29	98	2000	0	108	80-134	0		
Styrene	2162	24	79	2000	0	108	83-137	0		
tert-Butylbenzene	2079	34	120	2000	0	104	70-130	0		
Tetrachloroethene	2146	27	91	2000	195	97.6	68-166	0		
Toluene	2123	37	120	2000	56	103	76-125	0		
trans-1,2-Dichloroethene	2207	28	93	2000	14	110	80-140	0		
trans-1,3-Dichloropropene	1603	82	270	2000	0	80.2	56-132	0		
Trichloroethene	2177	30	99	2000	243	96.7	84-130	0		
Trichlorofluoromethane	1999	20	66	2000	0	100	60-140	0		
Vinyl chloride	5608	20	68	2000	3434	109	50-136	0		
Xylenes, Total	6797	130	440	6000	238	109	80-126	0		
<i>Surr: 1,2-Dichloroethane-d4</i>	1961	0	0	2000	0	98	75-120	0		
<i>Surr: 4-Bromofluorobenzene</i>	2044	0	0	2000	0	102	80-110	0		
<i>Surr: Dibromofluoromethane</i>	2028	0	0	2000	0	101	85-115	0		
<i>Surr: Toluene-d8</i>	2001	0	0	2000	0	100	85-110	0		

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 19031609  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: **R257585b** Instrument ID **VMS11** Method: **SW8260C**

MSD		Sample ID: 19031609-03A MSD				Units: µg/L		Analysis Date: 4/2/2019 09:09 AM			
Client ID: W-34		Run ID: VMS11_190401B				SeqNo: 5587206		Prep Date:		DF: 100	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	1700	22	74	2000	0	85	73-114	1645	3.29	30	
1,1,1-Trichloroethane	11280	36	120	2000	9283	100	75-130	10670	5.56	30	EO
1,1,2,2-Tetrachloroethane	2115	19	62	2000	0	106	75-130	2060	2.63	30	
1,1,2-Trichloroethane	2903	40	130	2000	802	105	75-125	2858	1.56	30	
1,1-Dichloroethane	3520	31	100	2000	1403	106	75-133	3531	0.312	30	
1,1-Dichloroethene	3317	28	92	2000	1064	113	70-145	3250	2.04	30	
1,1-Dichloropropene	1915	35	120	2000	0	95.8	75-135	1893	1.16	30	
1,2,3-Trichlorobenzene	1920	17	55	2000	0	96	70-140	1888	1.68	30	B
1,2,3-Trichloropropane	1948	11	40	2000	0	97.4	75-125	1901	2.44	30	
1,2,4-Trichlorobenzene	1987	21	71	2000	0	99.4	70-135	1958	1.47	30	
1,2,4-Trimethylbenzene	2131	37	120	2000	0	107	75-130	2769	26	30	
1,2-Dibromo-3-chloropropane	1623	97	320	2000	0	81.2	60-130	1585	2.37	30	
1,2-Dibromoethane	2311	98	330	2000	0	116	90-195	2245	2.9	30	
1,2-Dichlorobenzene	1962	22	73	2000	0	98.1	70-130	1930	1.64	30	
1,2-Dichloroethane	1971	17	55	2000	0	98.6	78-125	1981	0.506	30	
1,2-Dichloropropane	2355	25	83	2000	216	107	75-125	2371	0.677	30	
1,3,5-Trimethylbenzene	2122	29	95	2000	0	106	75-130	2295	7.83	30	
1,3-Dichlorobenzene	1915	29	96	2000	0	95.8	75-130	1896	0.997	30	
1,3-Dichloropropane	2014	18	61	2000	0	101	75-125	1993	1.05	30	
1,4-Dichlorobenzene	1930	21	71	2000	0	96.5	75-130	1853	4.07	30	
2,2-Dichloropropane	1772	44	150	2000	0	88.6	43-150	1754	1.02	30	
2-Butanone	2109	58	200	2000	0	105	55-150	2172	2.94	30	
2-Chlorotoluene	1986	32	110	2000	0	99.3	76-117	2067	4	30	
4-Chlorotoluene	1981	28	95	2000	0	99	80-125	2004	1.15	30	
4-Methyl-2-pentanone	2452	11	40	2000	0	123	77-178	2455	0.122	30	
Acetone	2019	92	310	2000	110	95.4	60-160	1900	6.07	30	
Benzene	2042	30	100	2000	0	102	85-125	2037	0.245	30	
Bromobenzene	1973	24	80	2000	0	98.6	80-125	1946	1.38	30	
Bromochloromethane	2088	20	66	2000	0	104	72-141	2124	1.71	30	
Bromodichloromethane	2099	23	78	2000	0	105	75-125	1997	4.98	30	
Bromoform	1630	77	260	2000	0	81.5	60-125	1558	4.52	30	
Bromomethane	1903	38	130	2000	0	95.2	30-185	1508	23.2	30	
Carbon tetrachloride	2113	31	100	2000	0	106	65-140	2015	4.75	30	
Chlorobenzene	1901	27	90	2000	11	94.5	80-120	1929	1.46	30	
Chloroethane	2126	29	97	2000	0	106	31-172	2116	0.471	30	
Chloroform	2058	26	86	2000	44	101	80-130	2108	2.4	30	
Chloromethane	1996	17	57	2000	0	99.8	46-148	2119	5.98	30	
cis-1,2-Dichloroethene	35190	25	85	2000	33470	85.7	75-134	34960	0.661	30	EO
cis-1,3-Dichloropropene	1989	39	130	2000	0	99.4	70-130	1865	6.43	30	
Dibromochloromethane	1681	38	120	2000	0	84	60-115	1618	3.82	30	
Dibromomethane	2040	25	83	2000	0	102	79-126	1998	2.08	30	
Dichlorodifluoromethane	1560	13	44	2000	0	78	20-120	1606	2.91	30	
Ethylbenzene	2096	40	130	2000	61	102	76-123	2179	3.88	30	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 19031609  
 Project: WRR (55929.005)

## QC BATCH REPORT

Batch ID: <b>R257585b</b>	Instrument ID <b>VMS11</b>	Method: <b>SW8260C</b>									
Hexachlorobutadiene	2043	24	80	2000	0	102	70-155	1962	4.04	30	B
Isopropylbenzene	2104	31	100	2000	0	105	80-127	2138	1.6	30	
m,p-Xylene	4283	98	330	4000	166	103	75-130	4566	6.4	30	
Methyl tert-butyl ether	2143	12	40	2000	0	107	80-130	2146	0.14	30	
Methylene chloride	2489	56	180	2000	393	105	75-140	2538	1.95	30	
Naphthalene	2226	18	59	2000	0	111	55-160	3141	34.1	30	R
n-Butylbenzene	2333	22	73	2000	0	117	75-145	2568	9.59	30	
n-Propylbenzene	2088	24	81	2000	0	104	83-135	2167	3.71	30	
o-Xylene	2147	35	120	2000	72	104	80-125	2231	3.84	30	
p-Isopropyltoluene	2210	14	48	2000	0	110	61-164	2210	0	30	
sec-Butylbenzene	2119	29	98	2000	0	106	80-134	2161	1.96	30	
Styrene	2169	24	79	2000	0	108	83-137	2162	0.323	30	
tert-Butylbenzene	2109	34	120	2000	0	105	70-130	2079	1.43	30	
Tetrachloroethene	2163	27	91	2000	195	98.4	68-166	2146	0.789	30	
Toluene	2077	37	120	2000	56	101	76-125	2123	2.19	30	
trans-1,2-Dichloroethene	2168	28	93	2000	14	108	80-140	2207	1.78	30	
trans-1,3-Dichloropropene	1655	82	270	2000	0	82.8	56-132	1603	3.19	30	
Trichloroethene	2229	30	99	2000	243	99.3	84-130	2177	2.36	30	
Trichlorofluoromethane	2023	20	66	2000	0	101	60-140	1999	1.19	30	
Vinyl chloride	5708	20	68	2000	3434	114	50-136	5608	1.77	30	
Xylenes, Total	6430	130	440	6000	238	103	80-126	6797	5.55	30	
<i>Surr: 1,2-Dichloroethane-d4</i>	2004	0	0	2000	0	100	75-120	1961	2.17	30	
<i>Surr: 4-Bromofluorobenzene</i>	2039	0	0	2000	0	102	80-110	2044	0.245	30	
<i>Surr: Dibromofluoromethane</i>	2020	0	0	2000	0	101	85-115	2028	0.395	30	
<i>Surr: Toluene-d8</i>	2002	0	0	2000	0	100	85-110	2001	0.05	30	

The following samples were analyzed in this batch:

19031609-01A	19031609-02A	19031609-03A
19031609-04A	19031609-05A	19031609-06A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.



Client: Gannett Fleming, Inc.  
 Work Order: 19031609  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: **R257624b** Instrument ID **VMS11** Method: **SW8260C**

MBLK		Sample ID: <b>VBLKW1-190402-R257624b</b>				Units: <b>µg/L</b>		Analysis Date: <b>4/2/2019 01:51 PM</b>			
Client ID:		Run ID: <b>VMS11_190402A</b>				SeqNo: <b>5589272</b>		Prep Date:		DF: <b>1</b>	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Tetrachloroethene	U	0.27	0.91								
Trichloroethene	U	0.3	0.99								
<i>Surr: 1,2-Dichloroethane-d4</i>	19.51	0	0	20	0	97.6	75-120	0			
<i>Surr: 4-Bromofluorobenzene</i>	19.89	0	0	20	0	99.4	80-110	0			
<i>Surr: Dibromofluoromethane</i>	17.74	0	0	20	0	88.7	85-115	0			
<i>Surr: Toluene-d8</i>	19.8	0	0	20	0	99	85-110	0			

LCS		Sample ID: <b>VLCSW1-190402-R257624b</b>				Units: <b>µg/L</b>		Analysis Date: <b>4/2/2019 11:59 AM</b>			
Client ID:		Run ID: <b>VMS11_190402A</b>				SeqNo: <b>5589271</b>		Prep Date:		DF: <b>1</b>	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Tetrachloroethene	18.55	0.27	0.91	20	0	92.8	68-166	0			
Trichloroethene	19.06	0.3	0.99	20	0	95.3	84-130	0			
<i>Surr: 1,2-Dichloroethane-d4</i>	19.68	0	0	20	0	98.4	75-120	0			
<i>Surr: 4-Bromofluorobenzene</i>	20.44	0	0	20	0	102	80-110	0			
<i>Surr: Dibromofluoromethane</i>	20.63	0	0	20	0	103	85-115	0			
<i>Surr: Toluene-d8</i>	20.05	0	0	20	0	100	85-110	0			

MS		Sample ID: <b>19031687-04A MS</b>				Units: <b>µg/L</b>		Analysis Date: <b>4/2/2019 09:57 PM</b>			
Client ID:		Run ID: <b>VMS11_190402A</b>				SeqNo: <b>5589275</b>		Prep Date:		DF: <b>100</b>	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Tetrachloroethene	2023	27	91	2000	0	101	68-166	0			
Trichloroethene	2035	30	99	2000	0	102	84-130	0			
<i>Surr: 1,2-Dichloroethane-d4</i>	1984	0	0	2000	0	99.2	75-120	0			
<i>Surr: 4-Bromofluorobenzene</i>	1977	0	0	2000	0	98.8	80-110	0			
<i>Surr: Dibromofluoromethane</i>	1957	0	0	2000	0	97.8	85-115	0			
<i>Surr: Toluene-d8</i>	1963	0	0	2000	0	98.2	85-110	0			

MSD		Sample ID: <b>19031687-04A MSD</b>				Units: <b>µg/L</b>		Analysis Date: <b>4/2/2019 10:19 PM</b>			
Client ID:		Run ID: <b>VMS11_190402A</b>				SeqNo: <b>5589276</b>		Prep Date:		DF: <b>100</b>	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Tetrachloroethene	2100	27	91	2000	0	105	68-166	2023	3.74	30	
Trichloroethene	2159	30	99	2000	0	108	84-130	2035	5.91	30	
<i>Surr: 1,2-Dichloroethane-d4</i>	2019	0	0	2000	0	101	75-120	1984	1.75	30	
<i>Surr: 4-Bromofluorobenzene</i>	2008	0	0	2000	0	100	80-110	1977	1.56	30	
<i>Surr: Dibromofluoromethane</i>	2046	0	0	2000	0	102	85-115	1957	4.45	30	
<i>Surr: Toluene-d8</i>	1971	0	0	2000	0	98.6	85-110	1963	0.407	30	

The following samples were analyzed in this batch:

19031609-05A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 19031609  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: **R257521** Instrument ID **IC3** Method: **SW9056A**

MBLK		Sample ID: <b>CCB/MBLK-R257521</b>				Units: <b>mg/L</b>		Analysis Date: <b>3/29/2019 09:56 AM</b>			
Client ID:		Run ID: <b>IC3_190329A</b>				SeqNo: <b>5584272</b>		Prep Date:		DF: <b>1</b>	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	U	0.057	1.0								

LCS		Sample ID: <b>LCS-R257521</b>				Units: <b>mg/L</b>		Analysis Date: <b>3/29/2019 10:13 AM</b>			
Client ID:		Run ID: <b>IC3_190329A</b>				SeqNo: <b>5584273</b>		Prep Date:		DF: <b>1</b>	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	10.04	0.057	1.0	10	0	100	90-110	0			

MS		Sample ID: <b>19031451-05C MS</b>				Units: <b>mg/L</b>		Analysis Date: <b>3/29/2019 03:49 PM</b>			
Client ID:		Run ID: <b>IC3_190329A</b>				SeqNo: <b>5584289</b>		Prep Date:		DF: <b>2</b>	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	29.75	0.11	2.0	20	8.499	106	90-110	0			

MSD		Sample ID: <b>19031451-05C MSD</b>				Units: <b>mg/L</b>		Analysis Date: <b>3/29/2019 04:07 PM</b>			
Client ID:		Run ID: <b>IC3_190329A</b>				SeqNo: <b>5584290</b>		Prep Date:		DF: <b>2</b>	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	29.75	0.11	2.0	20	8.499	106	90-110	29.75	0.0013	20	

The following samples were analyzed in this batch:

19031609-01D	19031609-03D	19031609-04D
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Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 19031609  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: **R257582** Instrument ID **LACHAT2** Method: **E353.2 R2.0**

<b>MBLK</b>		Sample ID: <b>MBLK-R257582</b>				Units: <b>mg/L</b>		Analysis Date: <b>4/1/2019 04:31 PM</b>			
Client ID:		Run ID: <b>LACHAT2_190401A</b>				SeqNo: <b>5586034</b>		Prep Date:		DF: <b>1</b>	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate-Nitrite	U	0.012	0.020								

<b>MBLK</b>		Sample ID: <b>MBLK-R257582</b>				Units: <b>mg/L</b>		Analysis Date: <b>4/1/2019 05:05 PM</b>			
Client ID:		Run ID: <b>LACHAT2_190401A</b>				SeqNo: <b>5586062</b>		Prep Date:		DF: <b>1</b>	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate-Nitrite	U	0.012	0.020								

<b>LCS</b>		Sample ID: <b>LCS-R257582</b>				Units: <b>mg/L</b>		Analysis Date: <b>4/1/2019 04:32 PM</b>			
Client ID:		Run ID: <b>LACHAT2_190401A</b>				SeqNo: <b>5586035</b>		Prep Date:		DF: <b>1</b>	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate-Nitrite	4.898	0.012	0.020	5	0	98	80-120	0			

<b>LCS</b>		Sample ID: <b>LCS-R257582</b>				Units: <b>mg/L</b>		Analysis Date: <b>4/1/2019 05:06 PM</b>			
Client ID:		Run ID: <b>LACHAT2_190401A</b>				SeqNo: <b>5586063</b>		Prep Date:		DF: <b>1</b>	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate-Nitrite	4.983	0.012	0.020	5	0	99.7	80-120	0			

<b>MS</b>		Sample ID: <b>19031563-02C MS</b>				Units: <b>mg/L</b>		Analysis Date: <b>4/1/2019 05:10 PM</b>			
Client ID:		Run ID: <b>LACHAT2_190401A</b>				SeqNo: <b>5586066</b>		Prep Date:		DF: <b>1</b>	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate-Nitrite	9.001	0.012	0.020	5	4.64	87.2	75-125	0			

<b>MS</b>		Sample ID: <b>19031663-02A MS</b>				Units: <b>mg/L</b>		Analysis Date: <b>4/1/2019 05:30 PM</b>			
Client ID:		Run ID: <b>LACHAT2_190401A</b>				SeqNo: <b>5586083</b>		Prep Date:		DF: <b>1</b>	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate-Nitrite	4.966	0.012	0.020	5	0.02876	98.7	75-125	0			

<b>MSD</b>		Sample ID: <b>19031563-02C MSD</b>				Units: <b>mg/L</b>		Analysis Date: <b>4/1/2019 05:11 PM</b>			
Client ID:		Run ID: <b>LACHAT2_190401A</b>				SeqNo: <b>5586067</b>		Prep Date:		DF: <b>1</b>	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate-Nitrite	9.136	0.012	0.020	5	4.64	89.9	75-125	9.001	1.49	20	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** Gannett Fleming, Inc.  
**Work Order:** 19031609  
**Project:** WRR (55929.005)

# QC BATCH REPORT

Batch ID: **R257582**      Instrument ID **LACHAT2**      Method: **E353.2 R2.0**

MSD		Sample ID: 19031663-02A MSD				Units: mg/L		Analysis Date: 4/1/2019 05:31 PM			
Client ID:		Run ID: LACHAT2_190401A			SeqNo: 5586084		Prep Date:		DF: 1		
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate-Nitrite	4.944	0.012	0.020	5	0.02876	98.3	75-125	4.966	0.444	20	

The following samples were analyzed in this batch:

19031609-01E	19031609-03E	19031609-04E
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**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 19031609  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: **R257631** Instrument ID **Titrator 1** Method: **A2320 B-11**

MBLK		Sample ID: <b>MB-R257631-R257631</b>				Units: <b>mg/L</b>		Analysis Date: <b>4/2/2019 12:45 PM</b>			
Client ID:		Run ID: <b>TITRATOR 1_190402A</b>				SeqNo: <b>5587584</b>		Prep Date:		DF: <b>1</b>	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Total (as CaCO3)	U	8.4	10								

LCS		Sample ID: <b>LCS-R257631-R257631</b>				Units: <b>mg/L</b>		Analysis Date: <b>4/2/2019 12:45 PM</b>			
Client ID:		Run ID: <b>TITRATOR 1_190402A</b>				SeqNo: <b>5587585</b>		Prep Date:		DF: <b>1</b>	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Total (as CaCO3)	969.4	8.4	10	1000	0	96.9	89-103	0			

DUP		Sample ID: <b>19031609-01D DUP</b>				Units: <b>mg/L</b>		Analysis Date: <b>4/2/2019 12:45 PM</b>			
Client ID: <b>W-32</b>		Run ID: <b>TITRATOR 1_190402A</b>				SeqNo: <b>5587590</b>		Prep Date:		DF: <b>1</b>	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Total (as CaCO3)	103.1	8.4	10	0	0	0	0-0	109.1	5.64	10	

The following samples were analyzed in this batch:

19031609-01D	19031609-03D	19031609-04D
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Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 19031609  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: **R257680a** Instrument ID **TOC3** Method: **SW9060A**

MBLK		Sample ID: <b>MBLK-R257680a</b>				Units: <b>mg/L</b>		Analysis Date: <b>4/2/2019 08:02 AM</b>			
Client ID:		Run ID: <b>TOC3_190402A</b>				SeqNo: <b>5588424</b>		Prep Date:		DF: <b>1</b>	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	U	0.14	0.50								

LCS		Sample ID: <b>LCS-R257680a</b>				Units: <b>mg/L</b>		Analysis Date: <b>4/2/2019 08:02 AM</b>			
Client ID:		Run ID: <b>TOC3_190402A</b>				SeqNo: <b>5588425</b>		Prep Date:		DF: <b>1</b>	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	4.669	0.14	0.50	5	0	93.4	80-120	0			

MS		Sample ID: <b>19031440-01B MS</b>				Units: <b>mg/L</b>		Analysis Date: <b>4/2/2019 08:02 AM</b>			
Client ID:		Run ID: <b>TOC3_190402A</b>				SeqNo: <b>5588427</b>		Prep Date:		DF: <b>1</b>	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	8.2	0.14	0.50	5	3.983	84.3	70-130	0			

MSD		Sample ID: <b>19031440-01B MSD</b>				Units: <b>mg/L</b>		Analysis Date: <b>4/2/2019 08:02 AM</b>			
Client ID:		Run ID: <b>TOC3_190402A</b>				SeqNo: <b>5588428</b>		Prep Date:		DF: <b>1</b>	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	8.149	0.14	0.50	5	3.983	83.3	70-130	8.2	0.624	20	

The following samples were analyzed in this batch:

19031609-01F	19031609-03F	19031609-04F
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Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 19031609  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: **R257799** Instrument ID **TOC3** Method: **A5310C-11**

MBLK		Sample ID: <b>MBLK-R257799</b>				Units: <b>mg/L</b>		Analysis Date: <b>4/3/2019 03:11 PM</b>			
Client ID:		Run ID: <b>TOC3_190403A</b>				SeqNo: <b>5591147</b>		Prep Date:		DF: <b>1</b>	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	U	0.14	0.50								

MBLK		Sample ID: <b>MBLK-R257799</b>				Units: <b>mg/L</b>		Analysis Date: <b>4/3/2019 03:11 PM</b>			
Client ID:		Run ID: <b>TOC3_190403A</b>				SeqNo: <b>5591209</b>		Prep Date:		DF: <b>1</b>	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	U	0.14	0.50								

LCS		Sample ID: <b>LCS-R257799</b>				Units: <b>mg/L</b>		Analysis Date: <b>4/3/2019 03:11 PM</b>			
Client ID:		Run ID: <b>TOC3_190403A</b>				SeqNo: <b>5591148</b>		Prep Date:		DF: <b>1</b>	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	4.564	0.14	0.50	5	0	91.3	80-120	0			

LCS		Sample ID: <b>LCS-R257799</b>				Units: <b>mg/L</b>		Analysis Date: <b>4/3/2019 03:11 PM</b>			
Client ID:		Run ID: <b>TOC3_190403A</b>				SeqNo: <b>5591210</b>		Prep Date:		DF: <b>1</b>	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	4.564	0.14	0.50	5	0	91.3	80-120	0			

MS		Sample ID: <b>19041668-01C MS</b>				Units: <b>mg/L</b>		Analysis Date: <b>4/3/2019 03:11 PM</b>			
Client ID:		Run ID: <b>TOC3_190403A</b>				SeqNo: <b>5591151</b>		Prep Date:		DF: <b>1</b>	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	13.3	0.14	0.50	5	9.453	77	70-130	0			E

MS		Sample ID: <b>19031668-01C MS</b>				Units: <b>mg/L</b>		Analysis Date: <b>4/3/2019 03:11 PM</b>			
Client ID:		Run ID: <b>TOC3_190403A</b>				SeqNo: <b>5591226</b>		Prep Date:		DF: <b>1</b>	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	13.3	0.14	0.50	5	9.453	77	70-130	0			E

MSD		Sample ID: <b>19041668-01C MSD</b>				Units: <b>mg/L</b>		Analysis Date: <b>4/3/2019 03:11 PM</b>			
Client ID:		Run ID: <b>TOC3_190403A</b>				SeqNo: <b>5591152</b>		Prep Date:		DF: <b>1</b>	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	13.05	0.14	0.50	5	9.453	72	70-130	13.3	1.88	20	E

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** Gannett Fleming, Inc.  
**Work Order:** 19031609  
**Project:** WRR (55929.005)

# QC BATCH REPORT

Batch ID: **R257799** Instrument ID **TOC3** Method: **A5310C-11**

MSD		Sample ID: 19031668-01C MSD				Units: mg/L		Analysis Date: 4/3/2019 03:11 PM			
Client ID:		Run ID: TOC3_190403A			SeqNo: 5591227		Prep Date:		DF: 1		
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	13.05	0.14	0.50	5	9.453	72	70-130	13.3	1.88	20	E

The following samples were analyzed in this batch:

19031609-01F	19031609-03F
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Cincinnati, OH  
+1 513 733 5336

Fort Collins, CO  
+1 970 490 1511

Everett, WA  
+1 425 356 2600

Holland, MI  
+1 616 399 6070

# Chain of Custody Form

Page 1 of 1

COC ID: 179205

Houston, TX  
+1 281 530 5656

Spring City, PA  
+1 610 948 4903

South Charleston, WV  
+1 304 356 3168

Middletown, PA  
+1 717 944 5541

Salt Lake City, UT  
+1 801 266 7700

York, PA  
+1 717 505 5280

Please put the samples on this COC on 1 report.

ALS Project Manager:

ALS Work Order #: 19031609

Customer Information		Project Information		Parameter/Method Request for Analysis												
Purchase Order	55929.005	Project Name	WRR	A	VOC											
Work Order		Project Number	55929.005	B	MEE											
Company Name	Gannett Fleming, Inc.	Bill To Company	Gannett Fleming, Inc	C	Diss Fe + Mn +											
Send Report To	Anthony Miller	Invoice Attn	Accounts Payable	D	Alkalinity, Sulfate →											
Address	8025 Excelsior Dr.	Address	8025 Excelsior Dr.	E	Nitrate + Nitrite											
City/State/Zip	Madison, WI 53717	City/State/Zip	Madison, WI 53717	F	<del>Sulfate</del> TOC											
Phone	(608) 836-1500	Phone	(608) 836-1500	G	<del>TOC</del>											
Fax		Fax		H												
e-Mail Address	awmiller@gfnet.com	e-Mail Address		I												
				J												

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	W-32	3/27/19	11:45	GW	H <sub>2</sub> SO <sub>4</sub> , HNO <sub>3</sub> HCl, None	9	3	2	1	1	1	1					
2	W-33		11:15		HCl	5	3	2									
3	W-34		12:30		H <sub>2</sub> SO <sub>4</sub> , HNO <sub>3</sub> HCl, None	9	3	2	1	1	1	1					
4	W-35		14:15		"	9	4	4	1	1	1	1					
5	SVE-4		15:05		HCl	5	3	2									
6	Trip Blank	3/26/19			HCl	1	1										
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign <i>Cheba Payne Ch Be</i>		Shipment Method FedEx		Required Turnaround Time: (Check Box) <input checked="" type="checkbox"/> Std 10 WK Days <input type="checkbox"/> 5 WK Days <input type="checkbox"/> Other <input type="checkbox"/> 2 WK Days <input type="checkbox"/> 24 Hour				Results Due Date:				
Relinquished by: <i>Ch Be</i>	Date: 3/27/19	Time: 16:30	Received by:		Notes:							
Relinquished by:	Date:	Time:	Received by (Laboratory): <i>Ch Be</i> 3/28/19		Cooler ID SKL	Cooler Temp. 4.0C	QC Package: (Check One Box Below)					
Logged by (Laboratory): <i>MF</i>	Date: 3/28/19	Time: 15:30	Checked by (Laboratory): <i>MF</i>		<input type="checkbox"/> Level II Std QC	<input type="checkbox"/> TRRP CheckList						
Preservative Key: 1-HCl 2-HNO <sub>3</sub> 3-H <sub>2</sub> SO <sub>4</sub> 4-NaOH 5-Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> 6-NaHSO <sub>4</sub> 7-Other 8-4°C 9-5035					<input type="checkbox"/> Level III Std QC/Raw Data	<input type="checkbox"/> TRRP Level IV						
					<input type="checkbox"/> Level IV SW846/CLP	<input type="checkbox"/> Other						

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.  
 2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.  
 3. The Chain of Custody is a legal document. All information must be completed accurately.

Copyright 2011 by ALS Environmental.

Sample Receipt Checklist

Client Name: **GANNETT FLEMING - WI**

Date/Time Received: **28-Mar-19 09:00**

Work Order: **19031609**

Received by: **BNF**

Checklist completed by *Lernina France* 28-Mar-19  
eSignature Date

Reviewed by: *Bill Carey* 28-Mar-19  
eSignature Date

Matrices: Groundwater

Carrier name: FedEx

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on shipping container/cooler?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Container/Temp Blank temperature in compliance?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample(s) received on ice?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Temperature(s)/Thermometer(s):	<input type="text" value="4.0/4.0 C"/>		<input type="text" value="SR2"/>
Cooler(s)/Kit(s):	<input type="text" value="1"/>		
Date/Time sample(s) sent to storage:	<input type="text" value="3/28/2019 3:50:46 PM"/>		
Water - VOA vials have zero headspace?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	No VOA vials submitted <input type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>
pH adjusted?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	N/A <input type="checkbox"/>
pH adjusted by:	<input type="text"/>		

Login Notes:

Client Contacted: \_\_\_\_\_ Date Contacted: \_\_\_\_\_ Person Contacted: \_\_\_\_\_

Contacted By: \_\_\_\_\_ Regarding: \_\_\_\_\_

Comments:

CorrectiveAction:



10515 Research Drive  
Knoxville, TN 37932  
Phone: (865) 573-8188  
Fax: (865) 573-8133

The analytical results and  
QA/QC data included with  
this report were reviewed by  
AWM on 04/03/19.

**Client:** Anthony Miller  
Gannett Fleming  
8025 Excelsior Drive  
Madison, WI 53717

**Phone:** 608.836.1500

**Fax:** 608.831.3337

**Identifier:** 092QC

**Date Rec:** 03/28/2019

**Report Date:** 04/03/2019

**Client Project #:** 55929.005

**Client Project Name:** WRR

**Purchase Order #:** 55929.005

**Analysis Requested:** CENSUS

**Reviewed By:**

NOTICE: This report is intended only for the addressee shown above and may contain confidential or privileged information. If the recipient of this material is not the intended recipient or if you have received this in error, please notify Microbial Insights, Inc. immediately. The data and other information in this report represent only the sample(s) analyzed and are rendered upon condition that it is not to be reproduced without approval from Microbial Insights, Inc. Thank you for your cooperation.

**Client:** Gannett Fleming  
**Project:** WRR

**MI Project Number:** 092QC  
**Date Received:** 03/28/2019

**Sample Information**

Client Sample ID:	W-32	W-34	W-35
Sample Date:	03/27/2019	03/27/2019	03/27/2019
Units:	cells/mL	cells/mL	cells/mL
Analyst/Reviewer:	JS	JS	JS

**Dechlorinating Bacteria**

<i>Dehalococcoides</i>	DHC	<5.00E-01	<b>3.17E+05</b>	<b>2.00E+00</b>
tceA Reductase	TCE	<5.00E-01	<b>4.49E+05</b>	<b>5.00E-01 (J)</b>
BAV1 Vinyl Chloride Reductase	BVC	<5.00E-01	<b>3.66E+03</b>	<1.50E+00
Vinyl Chloride Reductase	VCR	<5.00E-01	<b>3.12E+05</b>	<b>4.40E+00</b>
<i>Dehalobacter spp.</i>	DHBt	<b>3.30E+00 (J)</b>	<b>7.00E+04</b>	<1.52E+01

**Legend:**

NA = Not Analyzed    NS = Not Sampled    J = Estimated gene copies below PQL but above LQL    I = Inhibited  
 < = Result not detected

Quality Assurance/Quality Control Data

Samples Received 3/28/2019

Component	Date Prepared	Date Analyzed	Arrival Temperature	Positive Control	Extraction Blank	Negative Control
DHC	03/28/2019	04/03/2019	0 °C	114%	non-detect	non-detect
BVC	03/28/2019	04/03/2019	0 °C	112%	non-detect	non-detect
DHBt	03/28/2019	04/03/2019	0 °C	98%	non-detect	non-detect
TCE	03/28/2019	04/03/2019	0 °C	118%	non-detect	non-detect
VCR	03/28/2019	04/03/2019	0 °C	103%	non-detect	non-detect

**REPORT TO:**

Name: Anthony Miller  
 Company: Granneth Fleming  
 Address: 8025 Excelsior Dr  
Madison, WI  
53717  
 email: awmiller@cfnet.com  
 Phone: 608-836-1500  
 Fax: \_\_\_\_\_

Project Manager: Anthony Miller  
 Project Name: WRR  
 Project No.: 55929.005

**INVOICE TO:** (For Invoices paid by a third party it is imperative that all information be provided)

Name: \_\_\_\_\_  
 Company: \_\_\_\_\_  
 Address: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 email: See Report  
to  
 Phone: \_\_\_\_\_  
 Fax: \_\_\_\_\_

Purchase Order No. 55929.005  
 Subcontract No. \_\_\_\_\_  
 MI Quote No. 220181129.0002



10515 Research Dr  
 Knoxville, TN 37932  
 865-573-8188

www.microbe.com

**Please Check One:**

- More samples to follow
- No Additional Samples

Report Type:  Standard (default)     Microbial Insights Level III raw data(15% surcharge)     Microbial Insights Level IV (25% surcharge)     Comprehensive Interpretive(15%)     Historical Interpretive (35%)  
 EDD type:  Microbial Insights Standard (default)     All other available EDDs (5% surcharge)    Specify EDD Type: \_\_\_\_\_

Please contact us with any questions about the analyses or filling out the COC at (865) 573-8188 (9:00 am to 5:00 pm EST, M-F). After hours email: customerservice@microbe.com

Sample Information						Analyses		CENSUS: Please select the target organism/gene																												
MI ID (Laboratory Use Only)	Sample Name	Date Sampled	Time Sampled	Matrix	Total Number of Containers	PLFA	NGS	QuantArray Chlor	QuantArray Petro	DHC (Dehalococcoides)	DHC Functional genes (bq, E. coli, vfr)	DHB (Dehalobacter)	DHG (Dehalogenimonas)	DSM (Desulfuromonas)	DSB (Desulfobacterium)	EBAC (Total)	SRB (Sulfate Reducing Bacteria-APS)	MGN (Methanogens)	MOB (Methanotrophs)	SMMO	DNF (Denitrifiers-niS and niK)	AMO (ammonia oxidizing bacteria)	PM1 (MTBE aerobic)	RMO (Toluene Monooxygenase)	RDEG (Toluene Monooxygenase)	PHE (Phenol Hydroxylase)	NAH (Naphthalene-aerobic)	BSSA (Toluene/Xylene-Anaerobic)	add qPCR	RNA (Expression Option)*	Other	Other	Other			
0920C.1	W-32	3/27/19	11:45	GW	1					X	X	X																								
2	W-34	↓	12:30	↓	1					↓	↓	↓																								
3	W-35	↓	14:15	↓	1					↓	↓	↓																								

Relinquished by: Chelsea Payne Date: 3/27/19 Received by: [Signature] Date: 3/28/19

It is vital that chain of custody is filled out correctly & that all relative information is provided.  
 Failure to provide sufficient and/or correct information regarding reporting, invoicing & analyses requested information may result in delays for which MI will not be liable.



05-Jun-2019

Anthony Miller  
Gannett Fleming, Inc.  
8025 Excelsior Dr.  
Madison, WI 53717-1900

The analytical results and  
QA/QC data included with  
this report were reviewed by  
AWM on 06/05/19.

Re: **WRR (55929.005)**

Work Order: **19051617**

Dear Anthony,

ALS Environmental received 48 samples on 23-May-2019 for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental - Holland and for only the analyses requested.

Sample results are compliant with industry accepted practices and Quality Control results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 148.

If you have any questions regarding this report, please feel free to contact me:

ADDRESS: 3352 128th Avenue, Holland, MI, USA  
PHONE: +1 (616) 399-6070 FAX: +1 (616) 399-6185

Sincerely,

A handwritten signature in cursive script that reads "Ehrland Bosworth".

Electronically approved by: Ehrland Bosworth

Ehrland Bosworth  
Project Manager

## Report of Laboratory Analysis

Certificate No: WI: 399084510

ALS GROUP USA, CORP Part of the ALS Laboratory Group A Campbell Brothers Limited Company

**Client:** Gannett Fleming, Inc.  
**Project:** WRR (55929.005)  
**Work Order:** 19051617

**Work Order Sample Summary**

<u>Lab Samp ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Tag Number</u>	<u>Collection Date</u>	<u>Date Received</u>	<u>Hold</u>
19051617-01	W-2A	Water		5/22/2019 12:55	5/23/2019 09:30	<input type="checkbox"/>
19051617-02	W-2B	Water		5/22/2019 13:05	5/23/2019 09:30	<input type="checkbox"/>
19051617-03	W-3A	Water		5/22/2019 12:30	5/23/2019 09:30	<input type="checkbox"/>
19051617-04	W-3B	Water		5/22/2019 12:35	5/23/2019 09:30	<input type="checkbox"/>
19051617-05	W-7	Water		5/22/2019 13:10	5/23/2019 09:30	<input type="checkbox"/>
19051617-06	W-7A	Water		5/22/2019 13:05	5/23/2019 09:30	<input type="checkbox"/>
19051617-07	W-17	Water		5/22/2019 10:30	5/23/2019 09:30	<input type="checkbox"/>
19051617-08	W-17A	Water		5/22/2019 09:45	5/23/2019 09:30	<input type="checkbox"/>
19051617-09	W-17B	Water		5/22/2019 09:40	5/23/2019 09:30	<input type="checkbox"/>
19051617-10	W-18A	Water		5/21/2019 15:30	5/23/2019 09:30	<input type="checkbox"/>
19051617-11	W-18	Water		5/21/2019 15:50	5/23/2019 09:30	<input type="checkbox"/>
19051617-12	W-19R	Water		5/21/2019 16:35	5/23/2019 09:30	<input type="checkbox"/>
19051617-13	W-26	Water		5/22/2019 09:00	5/23/2019 09:30	<input type="checkbox"/>
19051617-14	W-27	Water		5/21/2019 14:05	5/23/2019 09:30	<input type="checkbox"/>
19051617-15	W-28	Water		5/21/2019 17:00	5/23/2019 09:30	<input type="checkbox"/>
19051617-16	W-29	Water		5/22/2019 09:25	5/23/2019 09:30	<input type="checkbox"/>
19051617-17	W-30A	Water		5/22/2019 07:10	5/23/2019 09:30	<input type="checkbox"/>
19051617-18	W-30B	Water		5/22/2019 07:00	5/23/2019 09:30	<input type="checkbox"/>
19051617-19	W-31A	Water		5/22/2019 13:40	5/23/2019 09:30	<input type="checkbox"/>
19051617-20	W-31B	Water		5/22/2019 13:35	5/23/2019 09:30	<input type="checkbox"/>
19051617-21	W-32	Water		5/22/2019 14:10	5/23/2019 09:30	<input type="checkbox"/>
19051617-22	W-35	Water		5/22/2019 14:35	5/23/2019 09:30	<input type="checkbox"/>
19051617-23	MW-106	Water		5/22/2019 08:15	5/23/2019 09:30	<input type="checkbox"/>
19051617-24	MW-106A	Water		5/22/2019 08:25	5/23/2019 09:30	<input type="checkbox"/>
19051617-25	MW-111	Water		5/21/2019 12:35	5/23/2019 09:30	<input type="checkbox"/>
19051617-26	MW-111A	Water		5/21/2019 12:45	5/23/2019 09:30	<input type="checkbox"/>
19051617-27	MW-111A Dup	Water		5/21/2019 13:00	5/23/2019 09:30	<input type="checkbox"/>
19051617-28	MW-111B	Water		5/21/2019 12:50	5/23/2019 09:30	<input type="checkbox"/>
19051617-29	MW-112	Water		5/22/2019 09:00	5/23/2019 09:30	<input type="checkbox"/>
19051617-30	MW-112A	Water		5/21/2019 14:25	5/23/2019 09:30	<input type="checkbox"/>
19051617-31	MW-112B	Water		5/21/2019 14:15	5/23/2019 09:30	<input type="checkbox"/>
19051617-32	MW-113A	Water		5/21/2019 13:30	5/23/2019 09:30	<input type="checkbox"/>
19051617-33	MW-113B	Water		5/21/2019 13:40	5/23/2019 09:30	<input type="checkbox"/>
19051617-34	MW-114	Water		5/22/2019 10:05	5/23/2019 09:30	<input type="checkbox"/>
19051617-35	MW-114A	Water		5/22/2019 10:00	5/23/2019 09:30	<input type="checkbox"/>
19051617-36	MW-114B	Water		5/22/2019 09:50	5/23/2019 09:30	<input type="checkbox"/>
19051617-37	MW-115	Water		5/22/2019 11:05	5/23/2019 09:30	<input type="checkbox"/>
19051617-38	MW-115A	Water		5/22/2019 11:15	5/23/2019 09:30	<input type="checkbox"/>
19051617-39	MW-115B	Water		5/22/2019 11:00	5/23/2019 09:30	<input type="checkbox"/>



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**Client:** Gannett Fleming, Inc.  
**Project:** WRR (55929.005)  
**Work Order:** 19051617

## Work Order Sample Summary

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<u>Lab Samp ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Tag Number</u>	<u>Collection Date</u>	<u>Date Received</u>	<u>Hold</u>
19051617-40	MW-116	Water		5/22/2019 09:20	5/23/2019 09:30	<input type="checkbox"/>
19051617-41	Trip Blank	Water		5/21/2019	5/23/2019 09:30	<input type="checkbox"/>
19051617-42	MW-104	Water		5/22/2019 07:40	5/23/2019 09:30	<input type="checkbox"/>
19051617-43	MW-104A	Water		5/22/2019 08:05	5/23/2019 09:30	<input type="checkbox"/>
19051617-44	W-4	Water		5/22/2019 15:05	5/23/2019 09:30	<input type="checkbox"/>
19051617-45	MB	Water		5/22/2019 09:50	5/23/2019 09:30	<input type="checkbox"/>
19051617-46	Seep 2N	Water		5/21/2019 13:25	5/23/2019 09:30	<input type="checkbox"/>
19051617-47	Seep 7N	Water		5/21/2019 13:30	5/23/2019 09:30	<input type="checkbox"/>
19051617-48	FB	Water		5/21/2019 13:00	5/23/2019 09:30	<input type="checkbox"/>

**Client:** Gannett Fleming, Inc.  
**Project:** WRR (55929.005)  
**WorkOrder:** 19051617

**QUALIFIERS,  
ACRONYMS, UNITS**

<u>Qualifier</u>	<u>Description</u>
*	Value exceeds Regulatory Limit
**	Estimated Value
a	Analyte is non-accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
Hr	BOD/CBOD - Sample was reset outside Hold Time, value should be considered estimated.
J	Analyte is present at an estimated concentration between the MDL and Report Limit
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and Reporting Limit, sample results may exhibit background or reagent contamination at the observed level.

<u>Acronym</u>	<u>Description</u>
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

<u>Units Reported</u>	<u>Description</u>
µg/L	Micrograms per Liter

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**Client:** Gannett Fleming, Inc.  
**Project:** WRR (55929.005)  
**Work Order:** 19051617

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**Case Narrative**

Samples for the above noted Work Order were received on 05/23/19. The attached "Sample Receipt Checklist" documents the status of custody seals, container integrity, sample condition, preservation, and temperature compliance.

In order to ensure compliance with NR 149 criteria, please note the following report format:

- (1) The Limit of Detection (LOD) is reported as the MDL (Method Detection Limit)
- (2) The Limit of Quantitation (LOQ) is reported as the PQL (Practical Quantitation Limit)
- (3) All reported concentrations, including those for the LOD and LOQ, are adjusted for any required dilutions
- (4) All reported concentrations, including those for the LOD and LOQ, are adjusted for moisture content when samples are reported on a dry weight basis.

Samples were analyzed according to the analytical methodology previously documented in the "Work Order Acknowledgement". Methodologies are also documented in the "Analytical Result" section for each sample. Quality control results are listed in the "QC Report" section. Detail as to the associated samples can be found at the end of each batch summary. If applicable, results are appropriately qualified in the Analytical Result and QC Report sections. The "Qualifiers" section documents the various qualifiers, acronyms, and units utilized in reporting.

With the following exceptions, all sample analyses achieved analytical criteria.

**Volatile Organics:**

Batch R261552b, Method WI\_VOC\_8260\_W, Sample 19051617-08A: The VOC reporting limit is elevated due to dilution for high concentrations of non-target analytes.

Batch R261552b, Method WI\_VOC\_8260\_W, Sample 19051617-12A: The VOC reporting limit is elevated due to dilution for high concentrations of non-target analytes.

Batch R261552b, Method WI\_VOC\_8260\_W, Sample 19051617-19A MS and -19A MSD: The VOC MS and/or MSD recoveries were above the upper control limit. The corresponding result in the parent sample was non-detect, therefore no qualification is necessary for Bromomethane.

Batch R261552b, Method WI\_VOC\_8260\_W, Sample VLCSW2-190529: The VOC LCS recovery was above the upper control limit. All the sample results in the batch were non-detect. No qualification is necessary for Bromomethane.

Batch R261653a, Method WI\_VOC\_8260\_W, Sample 19051617-21A: The VOC reporting limit is elevated due to dilution for high concentrations of non-target analytes.

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**Client:** Gannett Fleming, Inc.  
**Project:** WRR (55929.005)  
**Work Order:** 19051617

## Case Narrative

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Batch R261653a, Method WI\_VOC\_8260\_W, Sample 19051617-37A: The VOC reporting limit is elevated due to dilution for high concentrations of non-target analytes.

Batch R261653a, Method WI\_VOC\_8260\_W, Sample 19051617-38A MS and -38A MSD: The VOC MS and/or MSD recoveries were above the upper control limit. The corresponding result in the parent sample was non-detect, therefore no qualification is necessary for Bromomethane.

Batch R261653a, Method WI\_VOC\_8260\_W, Sample 19051617-38A MSD: The VOC RPD between the MS and MSD was outside the control limit. The corresponding result in the parent sample should be considered estimated for Chloromethane.

Batch R261653a, Method WI\_VOC\_8260\_W, Sample 19051617-38A MSD: The VOC MSD recovery was outside of the control limit. However, the MS recovery and the RPD between the MS and MSD was in control. No qualification is required for n-Propylbenzene.

Batch R261653a, Method WI\_VOC\_8260\_W, Sample VLCSW2-190530: The VOC LCS recovery was above the upper control limit. All the sample results in the batch were non-detect. No qualification is necessary for Bromomethane.

Batch R261663a, Method WI\_VOC\_8260\_W, Sample 19051617-19A: The VOC reporting limit is elevated due to dilution for high concentrations of non-target analytes.

Batch R261663a, Method WI\_VOC\_8260\_W, Sample VLCSW3-190530: The VOC LCS recovery was above the upper control limit. All the sample results in the batch were non-detect. No qualification is necessary for Bromomethane.

Batch R261701, Method WI\_VOC\_8260\_W, Sample VLCSW1-190531: The VOC LCS recovery was above the upper control limit. All the sample results in the batch were non-detect. No qualification is necessary for Bromomethane.

Batch R261838b, Method WI\_VOC\_8260\_W, Sample VLCSW2-190603: The VOC LCS recovery was above the upper control limit. All the sample results in the batch were non-detect. No qualification is necessary for multiple analytes. Please reference QC Report for full compound list.

# ALS Group, USA

Date: 05-Jun-19

**Client:** Gannett Fleming, Inc.  
**Project:** WRR (55929.005)  
**Sample ID:** W-32  
**Collection Date:** 5/22/2019 02:10 PM

**Work Order:** 19051617  
**Lab ID:** 19051617-21  
**Matrix:** WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>VOLATILE ORGANIC COMPOUNDS</b>			Method: SW8260C			Analyst: WH	
1,1,1,2-Tetrachloroethane	U		19	64	µg/L	50	5/30/2019 22:21
<b>1,1,1-Trichloroethane</b>	<b>8,600</b>		<b>120</b>	<b>380</b>	<b>µg/L</b>	250	5/31/2019 16:43
1,1,2,2-Tetrachloroethane	U		20	67	µg/L	50	5/30/2019 22:21
1,1,2-Trichloroethane	U		23	77	µg/L	50	5/30/2019 22:21
<b>1,1-Dichloroethane</b>	<b>160</b>		<b>22</b>	<b>74</b>	<b>µg/L</b>	50	5/30/2019 22:21
<b>1,1-Dichloroethene</b>	<b>450</b>		<b>20</b>	<b>68</b>	<b>µg/L</b>	50	5/30/2019 22:21
1,1-Dichloropropene	U		18	62	µg/L	50	5/30/2019 22:21
1,2,3-Trichlorobenzene	U		21	70	µg/L	50	5/30/2019 22:21
1,2,3-Trichloropropane	U		20	66	µg/L	50	5/30/2019 22:21
1,2,4-Trichlorobenzene	U		22	76	µg/L	50	5/30/2019 22:21
1,2,4-Trimethylbenzene	U		22	75	µg/L	50	5/30/2019 22:21
1,2-Dibromo-3-chloropropane	U		22	72	µg/L	50	5/30/2019 22:21
1,2-Dibromoethane	U		20	68	µg/L	50	5/30/2019 22:21
1,2-Dichlorobenzene	U		16	54	µg/L	50	5/30/2019 22:21
1,2-Dichloroethane	U		22	72	µg/L	50	5/30/2019 22:21
1,2-Dichloropropane	U		24	80	µg/L	50	5/30/2019 22:21
1,3,5-Trimethylbenzene	U		32	110	µg/L	50	5/30/2019 22:21
1,3-Dichlorobenzene	U		16	54	µg/L	50	5/30/2019 22:21
1,3-Dichloropropane	U		20	66	µg/L	50	5/30/2019 22:21
1,4-Dichlorobenzene	U		18	58	µg/L	50	5/30/2019 22:21
2,2-Dichloropropane	U		26	86	µg/L	50	5/30/2019 22:21
2-Butanone	U		26	86	µg/L	50	5/30/2019 22:21
2-Chlorotoluene	U		18	60	µg/L	50	5/30/2019 22:21
2-Propanol	U		1,600	5,400	µg/L	50	5/30/2019 22:21
4-Chlorotoluene	U		16	51	µg/L	50	5/30/2019 22:21
4-Methyl-2-pentanone	U		26	86	µg/L	50	5/30/2019 22:21
Acetone	U		54	180	µg/L	50	5/30/2019 22:21
Benzene	U		23	76	µg/L	50	5/30/2019 22:21
Bromobenzene	U		19	63	µg/L	50	5/30/2019 22:21
Bromochloromethane	U		22	74	µg/L	50	5/30/2019 22:21
Bromodichloromethane	U		24	82	µg/L	50	5/30/2019 22:21
Bromoform	U		28	94	µg/L	50	5/30/2019 22:21
Bromomethane	U		45	150	µg/L	50	5/30/2019 22:21
Carbon tetrachloride	U		20	68	µg/L	50	5/30/2019 22:21
Chlorobenzene	U		20	67	µg/L	50	5/30/2019 22:21
Chloroethane	U		34	110	µg/L	50	5/30/2019 22:21
<b>Chloroform</b>	<b>24</b>	J	<b>23</b>	<b>76</b>	<b>µg/L</b>	50	5/30/2019 22:21
Chloromethane	U		42	140	µg/L	50	5/30/2019 22:21

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group, USA

Date: 05-Jun-19

**Client:** Gannett Fleming, Inc.  
**Project:** WRR (55929.005)  
**Sample ID:** W-32  
**Collection Date:** 5/22/2019 02:10 PM

**Work Order:** 19051617  
**Lab ID:** 19051617-21  
**Matrix:** WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>cis-1,2-Dichloroethene</b>	<b>350</b>		<b>21</b>	<b>69</b>	<b>µg/L</b>	50	5/30/2019 22:21
cis-1,3-Dichloropropene	U		28	96	µg/L	50	5/30/2019 22:21
Dibromochloromethane	U		20	66	µg/L	50	5/30/2019 22:21
Dibromomethane	U		32	110	µg/L	50	5/30/2019 22:21
Dichlorodifluoromethane	U		34	110	µg/L	50	5/30/2019 22:21
Diisopropyl ether	U		20	68	µg/L	50	5/30/2019 22:21
Ethylbenzene	U		17	56	µg/L	50	5/30/2019 22:21
Hexachlorobutadiene	U		28	94	µg/L	50	5/30/2019 22:21
Isopropylbenzene	U		18	58	µg/L	50	5/30/2019 22:21
m,p-Xylene	U		40	140	µg/L	50	5/30/2019 22:21
Methyl tert-butyl ether	U		22	76	µg/L	50	5/30/2019 22:21
Methylene chloride	U		43	140	µg/L	50	5/30/2019 22:21
Naphthalene	U		38	130	µg/L	50	5/30/2019 22:21
n-Butylbenzene	U		17	56	µg/L	50	5/30/2019 22:21
n-Propylbenzene	U		24	80	µg/L	50	5/30/2019 22:21
o-Xylene	U		16	52	µg/L	50	5/30/2019 22:21
p-Isopropyltoluene	U		13	44	µg/L	50	5/30/2019 22:21
sec-Butylbenzene	U		15	50	µg/L	50	5/30/2019 22:21
Styrene	U		16	56	µg/L	50	5/30/2019 22:21
tert-Butylbenzene	U		20	66	µg/L	50	5/30/2019 22:21
<b>Tetrachloroethene</b>	<b>4,300</b>		<b>20</b>	<b>66</b>	<b>µg/L</b>	50	5/30/2019 22:21
Toluene	U		22	76	µg/L	50	5/30/2019 22:21
trans-1,2-Dichloroethene	U		24	80	µg/L	50	5/30/2019 22:21
trans-1,3-Dichloropropene	U		19	140	µg/L	50	5/30/2019 22:21
<b>Trichloroethene</b>	<b>7,600</b>		<b>110</b>	<b>360</b>	<b>µg/L</b>	250	5/31/2019 16:43
Trichlorofluoromethane	U		26	86	µg/L	50	5/30/2019 22:21
Vinyl chloride	U		26	88	µg/L	50	5/30/2019 22:21
Xylenes, Total	U		40	220	µg/L	50	5/30/2019 22:21
Surr: 1,2-Dichloroethane-d4	100			75-120	%REC	50	5/30/2019 22:21
Surr: 1,2-Dichloroethane-d4	102			75-120	%REC	250	5/31/2019 16:43
Surr: 4-Bromofluorobenzene	97.1			80-110	%REC	50	5/30/2019 22:21
Surr: 4-Bromofluorobenzene	94.5			80-110	%REC	250	5/31/2019 16:43
Surr: Dibromofluoromethane	98.4			85-115	%REC	50	5/30/2019 22:21
Surr: Dibromofluoromethane	101			85-115	%REC	250	5/31/2019 16:43
Surr: Toluene-d8	100			85-110	%REC	50	5/30/2019 22:21
Surr: Toluene-d8	98.4			85-110	%REC	250	5/31/2019 16:43

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

Client: Gannett Fleming, Inc.  
 Project: WRR (55929.005)  
 Sample ID: W-35  
 Collection Date: 5/22/2019 02:35 PM

Work Order: 19051617  
 Lab ID: 19051617-22  
 Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>VOLATILE ORGANIC COMPOUNDS</b>			Method: SW8260C			Analyst: AK	
1,1,1,2-Tetrachloroethane	U		0.38	1.3	µg/L	1	5/31/2019 18:07
<b>1,1,1-Trichloroethane</b>	<b>200</b>		<b>2.3</b>	<b>7.6</b>	<b>µg/L</b>	5	5/30/2019 22:37
1,1,2,2-Tetrachloroethane	U		0.40	1.3	µg/L	1	5/31/2019 18:07
1,1,2-Trichloroethane	U		0.46	1.5	µg/L	1	5/31/2019 18:07
<b>1,1-Dichloroethane</b>	<b>32</b>		<b>0.44</b>	<b>1.5</b>	<b>µg/L</b>	1	5/31/2019 18:07
<b>1,1-Dichloroethene</b>	<b>8.2</b>		<b>0.40</b>	<b>1.4</b>	<b>µg/L</b>	1	5/31/2019 18:07
1,1-Dichloropropene	U		0.37	1.2	µg/L	1	5/31/2019 18:07
1,2,3-Trichlorobenzene	U		0.42	1.4	µg/L	1	5/31/2019 18:07
1,2,3-Trichloropropane	U		0.40	1.3	µg/L	1	5/31/2019 18:07
1,2,4-Trichlorobenzene	U		0.45	1.5	µg/L	1	5/31/2019 18:07
1,2,4-Trimethylbenzene	U		0.45	1.5	µg/L	1	5/31/2019 18:07
1,2-Dibromo-3-chloropropane	U		0.43	1.4	µg/L	1	5/31/2019 18:07
1,2-Dibromoethane	U		0.41	1.4	µg/L	1	5/31/2019 18:07
1,2-Dichlorobenzene	U		0.32	1.1	µg/L	1	5/31/2019 18:07
<b>1,2-Dichloroethane</b>	<b>0.53</b>	J	<b>0.44</b>	<b>1.4</b>	<b>µg/L</b>	1	5/31/2019 18:07
<b>1,2-Dichloropropane</b>	<b>0.81</b>	J	<b>0.48</b>	<b>1.6</b>	<b>µg/L</b>	1	5/31/2019 18:07
1,3,5-Trimethylbenzene	U		0.65	2.2	µg/L	1	5/31/2019 18:07
1,3-Dichlorobenzene	U		0.33	1.1	µg/L	1	5/31/2019 18:07
1,3-Dichloropropane	U		0.40	1.3	µg/L	1	5/31/2019 18:07
1,4-Dichlorobenzene	U		0.35	1.2	µg/L	1	5/31/2019 18:07
2,2-Dichloropropane	U		0.52	1.7	µg/L	1	5/31/2019 18:07
<b>2-Butanone</b>	<b>6.2</b>		<b>0.52</b>	<b>1.7</b>	<b>µg/L</b>	1	5/31/2019 18:07
2-Chlorotoluene	U		0.36	1.2	µg/L	1	5/31/2019 18:07
2-Propanol	U		33	110	µg/L	1	5/31/2019 18:07
4-Chlorotoluene	U		0.31	1.0	µg/L	1	5/31/2019 18:07
4-Methyl-2-pentanone	U		0.52	1.7	µg/L	1	5/31/2019 18:07
<b>Acetone</b>	<b>4.6</b>		<b>1.1</b>	<b>3.6</b>	<b>µg/L</b>	1	5/31/2019 18:07
Benzene	U		0.46	1.5	µg/L	1	5/31/2019 18:07
Bromobenzene	U		0.38	1.3	µg/L	1	5/31/2019 18:07
Bromochloromethane	U		0.45	1.5	µg/L	1	5/31/2019 18:07
Bromodichloromethane	U		0.49	1.6	µg/L	1	5/31/2019 18:07
Bromoform	U		0.56	1.9	µg/L	1	5/31/2019 18:07
Bromomethane	U		0.90	3.0	µg/L	1	5/31/2019 18:07
Carbon tetrachloride	U		0.40	1.4	µg/L	1	5/31/2019 18:07
Chlorobenzene	U		0.40	1.3	µg/L	1	5/31/2019 18:07
Chloroethane	U		0.68	2.3	µg/L	1	5/31/2019 18:07
<b>Chloroform</b>	<b>3.9</b>		<b>0.46</b>	<b>1.5</b>	<b>µg/L</b>	1	5/31/2019 18:07
Chloromethane	U		0.83	2.8	µg/L	1	5/31/2019 18:07

Note: See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group, USA

Date: 05-Jun-19

**Client:** Gannett Fleming, Inc.  
**Project:** WRR (55929.005)  
**Sample ID:** W-35  
**Collection Date:** 5/22/2019 02:35 PM

**Work Order:** 19051617  
**Lab ID:** 19051617-22  
**Matrix:** WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>cis-1,2-Dichloroethene</b>	<b>200</b>		<b>2.1</b>	<b>6.9</b>	<b>µg/L</b>	5	5/30/2019 22:37
cis-1,3-Dichloropropene	U		0.57	1.9	µg/L	1	5/31/2019 18:07
Dibromochloromethane	U		0.40	1.3	µg/L	1	5/31/2019 18:07
Dibromomethane	U		0.65	2.2	µg/L	1	5/31/2019 18:07
Dichlorodifluoromethane	U		0.68	2.3	µg/L	1	5/31/2019 18:07
Diisopropyl ether	U		0.41	1.4	µg/L	1	5/31/2019 18:07
<b>Ethylbenzene</b>	<b>0.38</b>	J	<b>0.34</b>	<b>1.1</b>	<b>µg/L</b>	1	5/31/2019 18:07
Hexachlorobutadiene	U		0.56	1.9	µg/L	1	5/31/2019 18:07
Isopropylbenzene	U		0.35	1.2	µg/L	1	5/31/2019 18:07
<b>m,p-Xylene</b>	<b>0.95</b>	J	<b>0.81</b>	<b>2.7</b>	<b>µg/L</b>	1	5/31/2019 18:07
<b>Methyl tert-butyl ether</b>	<b>11</b>		<b>0.45</b>	<b>1.5</b>	<b>µg/L</b>	1	5/31/2019 18:07
<b>Methylene chloride</b>	<b>2.5</b>	J	<b>0.86</b>	<b>2.9</b>	<b>µg/L</b>	1	5/31/2019 18:07
Naphthalene	U		0.77	2.6	µg/L	1	5/31/2019 18:07
n-Butylbenzene	U		0.34	1.1	µg/L	1	5/31/2019 18:07
n-Propylbenzene	U		0.48	1.6	µg/L	1	5/31/2019 18:07
<b>o-Xylene</b>	<b>0.32</b>	J	<b>0.31</b>	<b>1.0</b>	<b>µg/L</b>	1	5/31/2019 18:07
p-Isopropyltoluene	U		0.26	0.88	µg/L	1	5/31/2019 18:07
sec-Butylbenzene	U		0.30	1.0	µg/L	1	5/31/2019 18:07
Styrene	U		0.33	1.1	µg/L	1	5/31/2019 18:07
tert-Butylbenzene	U		0.39	1.3	µg/L	1	5/31/2019 18:07
<b>Tetrachloroethene</b>	<b>380</b>		<b>2.0</b>	<b>6.6</b>	<b>µg/L</b>	5	5/30/2019 22:37
<b>Toluene</b>	<b>5.3</b>		<b>0.45</b>	<b>1.5</b>	<b>µg/L</b>	1	5/31/2019 18:07
<b>trans-1,2-Dichloroethene</b>	<b>3.7</b>		<b>0.48</b>	<b>1.6</b>	<b>µg/L</b>	1	5/31/2019 18:07
trans-1,3-Dichloropropene	U		0.38	2.7	µg/L	1	5/31/2019 18:07
<b>Trichloroethene</b>	<b>190</b>		<b>2.2</b>	<b>7.2</b>	<b>µg/L</b>	5	5/30/2019 22:37
Trichlorofluoromethane	U		0.52	1.7	µg/L	1	5/31/2019 18:07
Vinyl chloride	U		0.53	1.8	µg/L	1	5/31/2019 18:07
<b>Xylenes, Total</b>	<b>1.3</b>	J	<b>0.81</b>	<b>4.4</b>	<b>µg/L</b>	1	5/31/2019 18:07
Surr: 1,2-Dichloroethane-d4	101			75-120	%REC	5	5/30/2019 22:37
Surr: 1,2-Dichloroethane-d4	102			75-120	%REC	1	5/31/2019 18:07
Surr: 4-Bromofluorobenzene	99.1			80-110	%REC	5	5/30/2019 22:37
Surr: 4-Bromofluorobenzene	94.9			80-110	%REC	1	5/31/2019 18:07
Surr: Dibromofluoromethane	98.3			85-115	%REC	5	5/30/2019 22:37
Surr: Dibromofluoromethane	97.2			85-115	%REC	1	5/31/2019 18:07
Surr: Toluene-d8	99.6			85-110	%REC	5	5/30/2019 22:37
Surr: Toluene-d8	101			85-110	%REC	1	5/31/2019 18:07

**Note:** See Qualifiers page for a list of qualifiers and their definitions.



**Client:** Gannett Fleming, Inc.  
**Project:** WRR (55929.005)  
**Sample ID:** Trip Blank  
**Collection Date:** 5/21/2019

**Work Order:** 19051617  
**Lab ID:** 19051617-41  
**Matrix:** WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>VOLATILE ORGANIC COMPOUNDS</b>			Method: SW8260C				Analyst: WH
1,1,1,2-Tetrachloroethane	U		0.38	1.3	µg/L	1	6/4/2019 12:20
1,1,1-Trichloroethane	U		0.46	1.5	µg/L	1	6/4/2019 12:20
1,1,2,2-Tetrachloroethane	U		0.40	1.3	µg/L	1	6/4/2019 12:20
1,1,2-Trichloroethane	U		0.46	1.5	µg/L	1	6/4/2019 12:20
1,1-Dichloroethane	U		0.44	1.5	µg/L	1	6/4/2019 12:20
1,1-Dichloroethene	U		0.40	1.4	µg/L	1	6/4/2019 12:20
1,1-Dichloropropene	U		0.37	1.2	µg/L	1	6/4/2019 12:20
1,2,3-Trichlorobenzene	U		0.42	1.4	µg/L	1	6/4/2019 12:20
1,2,3-Trichloropropane	U		0.40	1.3	µg/L	1	6/4/2019 12:20
1,2,4-Trichlorobenzene	U		0.45	1.5	µg/L	1	6/4/2019 12:20
1,2,4-Trimethylbenzene	U		0.45	1.5	µg/L	1	6/4/2019 12:20
1,2-Dibromo-3-chloropropane	U		0.43	1.4	µg/L	1	6/4/2019 12:20
1,2-Dibromoethane	U		0.41	1.4	µg/L	1	6/4/2019 12:20
1,2-Dichlorobenzene	U		0.32	1.1	µg/L	1	6/4/2019 12:20
1,2-Dichloroethane	U		0.44	1.4	µg/L	1	6/4/2019 12:20
1,2-Dichloropropane	U		0.48	1.6	µg/L	1	6/4/2019 12:20
1,3,5-Trimethylbenzene	U		0.65	2.2	µg/L	1	6/4/2019 12:20
1,3-Dichlorobenzene	U		0.33	1.1	µg/L	1	6/4/2019 12:20
1,3-Dichloropropane	U		0.40	1.3	µg/L	1	6/4/2019 12:20
1,4-Dichlorobenzene	U		0.35	1.2	µg/L	1	6/4/2019 12:20
2,2-Dichloropropane	U		0.52	1.7	µg/L	1	6/4/2019 12:20
2-Butanone	U		0.52	1.7	µg/L	1	6/4/2019 12:20
2-Chlorotoluene	U		0.36	1.2	µg/L	1	6/4/2019 12:20
2-Propanol	U		33	110	µg/L	1	6/4/2019 12:20
4-Chlorotoluene	U		0.31	1.0	µg/L	1	6/4/2019 12:20
4-Methyl-2-pentanone	U		0.52	1.7	µg/L	1	6/4/2019 12:20
Acetone	U		3.0	3.6	µg/L	1	5/31/2019 06:47
Benzene	U		0.46	1.5	µg/L	1	6/4/2019 12:20
Bromobenzene	U		0.38	1.3	µg/L	1	6/4/2019 12:20
Bromochloromethane	U		0.45	1.5	µg/L	1	6/4/2019 12:20
Bromodichloromethane	U		0.49	1.6	µg/L	1	6/4/2019 12:20
Bromoform	U		0.56	1.9	µg/L	1	6/4/2019 12:20
Bromomethane	U		0.90	3.0	µg/L	1	6/4/2019 12:20
Carbon tetrachloride	U		0.40	1.4	µg/L	1	6/4/2019 12:20
Chlorobenzene	U		0.40	1.3	µg/L	1	6/4/2019 12:20
Chloroethane	U		0.68	2.3	µg/L	1	6/4/2019 12:20
Chloroform	U		0.46	1.5	µg/L	1	6/4/2019 12:20
Chloromethane	U		0.83	2.8	µg/L	1	6/4/2019 12:20

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group, USA

Date: 05-Jun-19

**Client:** Gannett Fleming, Inc.  
**Project:** WRR (55929.005)  
**Sample ID:** Trip Blank  
**Collection Date:** 5/21/2019

**Work Order:** 19051617  
**Lab ID:** 19051617-41  
**Matrix:** WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
cis-1,2-Dichloroethene	U		0.42	1.4	µg/L	1	6/4/2019 12:20
cis-1,3-Dichloropropene	U		0.57	1.9	µg/L	1	6/4/2019 12:20
Dibromochloromethane	U		0.40	1.3	µg/L	1	6/4/2019 12:20
Dibromomethane	U		0.65	2.2	µg/L	1	6/4/2019 12:20
Dichlorodifluoromethane	U		0.68	2.3	µg/L	1	6/4/2019 12:20
Diisopropyl ether	U		0.41	1.4	µg/L	1	6/4/2019 12:20
Ethylbenzene	U		0.34	1.1	µg/L	1	6/4/2019 12:20
Hexachlorobutadiene	U		0.56	1.9	µg/L	1	6/4/2019 12:20
Isopropylbenzene	U		0.35	1.2	µg/L	1	6/4/2019 12:20
m,p-Xylene	U		0.81	2.7	µg/L	1	6/4/2019 12:20
Methyl tert-butyl ether	U		0.45	1.5	µg/L	1	6/4/2019 12:20
Methylene chloride	U		0.86	2.9	µg/L	1	6/4/2019 12:20
Naphthalene	U		0.77	2.6	µg/L	1	6/4/2019 12:20
n-Butylbenzene	U		0.34	1.1	µg/L	1	6/4/2019 12:20
n-Propylbenzene	U		0.48	1.6	µg/L	1	6/4/2019 12:20
o-Xylene	U		0.31	1.0	µg/L	1	6/4/2019 12:20
p-Isopropyltoluene	U		0.26	0.88	µg/L	1	6/4/2019 12:20
sec-Butylbenzene	U		0.30	1.0	µg/L	1	6/4/2019 12:20
Styrene	U		0.33	1.1	µg/L	1	6/4/2019 12:20
tert-Butylbenzene	U		0.39	1.3	µg/L	1	6/4/2019 12:20
Tetrachloroethene	U		0.39	1.3	µg/L	1	6/4/2019 12:20
Toluene	U		0.45	1.5	µg/L	1	6/4/2019 12:20
trans-1,2-Dichloroethene	U		0.48	1.6	µg/L	1	6/4/2019 12:20
trans-1,3-Dichloropropene	U		0.38	2.7	µg/L	1	6/4/2019 12:20
Trichloroethene	U		0.43	1.4	µg/L	1	6/4/2019 12:20
Trichlorofluoromethane	U		0.52	1.7	µg/L	1	6/4/2019 12:20
Vinyl chloride	U		0.53	1.8	µg/L	1	6/4/2019 12:20
Xylenes, Total	U		0.81	4.4	µg/L	1	6/4/2019 12:20
Surr: 1,2-Dichloroethane-d4	95.8			75-120	%REC	1	6/4/2019 12:20
Surr: 4-Bromofluorobenzene	98.0			80-110	%REC	1	6/4/2019 12:20
Surr: Dibromofluoromethane	98.2			85-115	%REC	1	6/4/2019 12:20
Surr: Toluene-d8	92.6			85-110	%REC	1	6/4/2019 12:20

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

**Client:** Gannett Fleming, Inc.  
**Work Order:** 19051617  
**Project:** WRR (55929.005)

**QC BATCH REPORT**

Batch ID: **R261552b** Instrument ID **VMS8** Method: **SW8260C**

MBLK		Sample ID: <b>VBLKW3-190529-R261552b</b>			Units: <b>µg/L</b>		Analysis Date: <b>5/30/2019 01:48 AM</b>				
Client ID:		Run ID: <b>VMS8_190529B</b>			SeqNo: <b>5685416</b>		Prep Date:		DF: <b>1</b>		
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	U	0.38	1.3								
1,1,1-Trichloroethane	U	0.46	1.5								
1,1,2,2-Tetrachloroethane	U	0.4	1.3								
1,1,2-Trichloroethane	U	0.46	1.5								
1,1-Dichloroethane	U	0.44	1.5								
1,1-Dichloroethene	U	0.4	1.4								
1,1-Dichloropropene	U	0.37	1.2								
1,2,3-Trichlorobenzene	U	0.42	1.4								
1,2,3-Trichloropropane	U	0.4	1.3								
1,2,4-Trichlorobenzene	U	0.45	1.5								
1,2,4-Trimethylbenzene	U	0.45	1.5								
1,2-Dibromo-3-chloropropane	U	0.43	1.4								
1,2-Dibromoethane	U	0.41	1.4								
1,2-Dichlorobenzene	U	0.32	1.1								
1,2-Dichloroethane	U	0.44	1.4								
1,2-Dichloropropane	U	0.48	1.6								
1,3,5-Trimethylbenzene	U	0.65	2.2								
1,3-Dichlorobenzene	U	0.33	1.1								
1,3-Dichloropropane	U	0.4	1.3								
1,4-Dichlorobenzene	U	0.35	1.2								
2,2-Dichloropropane	U	0.52	1.7								
2-Butanone	U	0.52	1.7								
2-Chlorotoluene	U	0.36	1.2								
2-Propanol	U	33	110								
4-Chlorotoluene	U	0.31	1.0								
4-Methyl-2-pentanone	U	0.52	1.7								
Acetone	U	1.1	3.6								
Benzene	U	0.46	1.5								
Bromobenzene	U	0.38	1.3								
Bromochloromethane	U	0.45	1.5								
Bromodichloromethane	U	0.49	1.6								
Bromoform	U	0.56	1.9								
Bromomethane	U	0.9	3.0								
Carbon tetrachloride	U	0.4	1.4								
Chlorobenzene	U	0.4	1.3								
Chloroethane	U	0.68	2.3								
Chloroform	U	0.46	1.5								
Chloromethane	U	0.83	2.8								
cis-1,2-Dichloroethene	U	0.42	1.4								
cis-1,3-Dichloropropene	U	0.57	1.9								
Dibromochloromethane	U	0.4	1.3								

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 19051617  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: <b>R261552b</b>	Instrument ID <b>VMS8</b>	Method: <b>SW8260C</b>						
Dibromomethane	U	0.65	2.2					
Dichlorodifluoromethane	U	0.68	2.3					
Diisopropyl ether	U	0.41	1.4					
Ethylbenzene	U	0.34	1.1					
Hexachlorobutadiene	U	0.56	1.9					
Isopropylbenzene	U	0.35	1.2					
m,p-Xylene	U	0.81	2.7					
Methyl tert-butyl ether	U	0.45	1.5					
Methylene chloride	U	0.86	2.9					
Naphthalene	U	0.77	2.6					
n-Butylbenzene	U	0.34	1.1					
n-Propylbenzene	U	0.48	1.6					
o-Xylene	U	0.31	1.0					
p-Isopropyltoluene	U	0.26	0.88					
sec-Butylbenzene	U	0.3	1.0					
Styrene	U	0.33	1.1					
tert-Butylbenzene	U	0.39	1.3					
Tetrachloroethene	U	0.39	1.3					
Toluene	U	0.45	1.5					
trans-1,2-Dichloroethene	U	0.48	1.6					
trans-1,3-Dichloropropene	U	0.38	2.7					
Trichloroethene	U	0.43	1.4					
Trichlorofluoromethane	U	0.52	1.7					
Vinyl chloride	U	0.53	1.8					
Xylenes, Total	U	0.81	4.4					
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>20.13</i>	<i>0</i>	<i>0</i>	<i>20</i>	<i>0</i>	<i>101</i>	<i>75-120</i>	<i>0</i>
<i>Surr: 4-Bromofluorobenzene</i>	<i>18.97</i>	<i>0</i>	<i>0</i>	<i>20</i>	<i>0</i>	<i>94.8</i>	<i>80-110</i>	<i>0</i>
<i>Surr: Dibromofluoromethane</i>	<i>20.34</i>	<i>0</i>	<i>0</i>	<i>20</i>	<i>0</i>	<i>102</i>	<i>85-115</i>	<i>0</i>
<i>Surr: Toluene-d8</i>	<i>20.17</i>	<i>0</i>	<i>0</i>	<i>20</i>	<i>0</i>	<i>101</i>	<i>85-110</i>	<i>0</i>

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 19051617  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: **R261552b** Instrument ID **VMS8** Method: **SW8260C**

LCS		Sample ID: <b>VLCSW2-190529-R261552b</b>				Units: <b>µg/L</b>		Analysis Date: <b>5/30/2019 12:59 PM</b>			
Client ID:		Run ID: <b>VMS8_190529B</b>				SeqNo: <b>5685439</b>		Prep Date:		DF: <b>1</b>	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	21.03	0.38	1.3	20	0	105	73-114	0			
1,1,1-Trichloroethane	23	0.46	1.5	20	0	115	75-130	0			
1,1,2,2-Tetrachloroethane	23.58	0.4	1.3	20	0	118	75-130	0			
1,1,2-Trichloroethane	21.43	0.46	1.5	20	0	107	75-125	0			
1,1-Dichloroethane	23.41	0.44	1.5	20	0	117	75-133	0			
1,1-Dichloroethene	24.5	0.4	1.4	20	0	122	70-145	0			
1,1-Dichloropropene	20.57	0.37	1.2	20	0	103	75-135	0			
1,2,3-Trichlorobenzene	22.25	0.42	1.4	20	0	111	70-140	0			
1,2,3-Trichloropropane	20.15	0.4	1.3	20	0	101	75-125	0			
1,2,4-Trichlorobenzene	22.38	0.45	1.5	20	0	112	70-135	0			
1,2,4-Trimethylbenzene	22.36	0.45	1.5	20	0	112	75-130	0			
1,2-Dibromo-3-chloropropane	22.38	0.43	1.4	20	0	112	60-130	0			
1,2-Dibromoethane	21.01	0.41	1.4	20	0	105	90-195	0			
1,2-Dichlorobenzene	22.66	0.32	1.1	20	0	113	70-130	0			
1,2-Dichloroethane	21.98	0.44	1.4	20	0	110	78-125	0			
1,2-Dichloropropane	22.45	0.48	1.6	20	0	112	75-125	0			
1,3,5-Trimethylbenzene	23.14	0.65	2.2	20	0	116	75-130	0			
1,3-Dichlorobenzene	22.85	0.33	1.1	20	0	114	75-130	0			
1,3-Dichloropropane	20.73	0.4	1.3	20	0	104	75-125	0			
1,4-Dichlorobenzene	23.33	0.35	1.2	20	0	117	75-130	0			
2,2-Dichloropropane	20.45	0.52	1.7	20	0	102	43-150	0			
2-Butanone	23.95	0.52	1.7	20	0	120	55-150	0			
2-Chlorotoluene	21.98	0.36	1.2	20	0	110	76-117	0			
4-Chlorotoluene	22.53	0.31	1.0	20	0	113	80-125	0			
4-Methyl-2-pentanone	32.02	0.52	1.7	20	0	160	77-178	0			
Acetone	24.67	1.1	3.6	20	0	123	60-160	0			
Benzene	22.01	0.46	1.5	20	0	110	85-125	0			
Bromobenzene	21.1	0.38	1.3	20	0	106	80-125	0			
Bromochloromethane	24.94	0.45	1.5	20	0	125	72-141	0			
Bromodichloromethane	21.03	0.49	1.6	20	0	105	75-125	0			
Bromoform	18.77	0.56	1.9	20	0	93.8	60-125	0			
Bromomethane	40.79	0.9	3.0	20	0	204	30-185	0			S
Carbon tetrachloride	19.49	0.4	1.4	20	0	97.4	65-140	0			
Chlorobenzene	21.63	0.4	1.3	20	0	108	80-120	0			
Chloroethane	22.54	0.68	2.3	20	0	113	31-172	0			
Chloroform	21.65	0.46	1.5	20	0	108	80-130	0			
Chloromethane	13.17	0.83	2.8	20	0	65.8	46-148	0			
cis-1,2-Dichloroethene	21.79	0.42	1.4	20	0	109	75-134	0			
cis-1,3-Dichloropropene	21.48	0.57	1.9	20	0	107	70-130	0			
Dibromochloromethane	20.21	0.4	1.3	20	0	101	60-115	0			
Dibromomethane	21.18	0.65	2.2	20	0	106	79-126	0			
Dichlorodifluoromethane	22.02	0.68	2.3	20	0	110	20-120	0			
Ethylbenzene	21.94	0.34	1.1	20	0	110	76-123	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** Gannett Fleming, Inc.  
**Work Order:** 19051617  
**Project:** WRR (55929.005)

## QC BATCH REPORT

Batch ID: <b>R261552b</b>	Instrument ID <b>VMS8</b>		Method: <b>SW8260C</b>					
Hexachlorobutadiene	23.1	0.56	1.9	20	0	116	70-155	0
Isopropylbenzene	23.03	0.35	1.2	20	0	115	80-127	0
m,p-Xylene	48.52	0.81	2.7	40	0	121	75-130	0
Methyl tert-butyl ether	23.74	0.45	1.5	20	0	119	80-130	0
Methylene chloride	20.63	0.86	2.9	20	0	103	72-125	0
Naphthalene	20.56	0.77	2.6	20	0	103	55-160	0
n-Butylbenzene	24.9	0.34	1.1	20	0	124	75-145	0
n-Propylbenzene	20.41	0.48	1.6	20	0	102	83-135	0
o-Xylene	22.81	0.31	1.0	20	0	114	80-125	0
p-Isopropyltoluene	24.71	0.26	0.88	20	0	124	61-164	0
sec-Butylbenzene	23.55	0.3	1.0	20	0	118	80-134	0
Styrene	24.11	0.33	1.1	20	0	121	83-137	0
tert-Butylbenzene	21.42	0.39	1.3	20	0	107	70-130	0
Tetrachloroethene	21	0.39	1.3	20	0	105	68-166	0
Toluene	22.08	0.45	1.5	20	0	110	76-125	0
trans-1,2-Dichloroethene	23.9	0.48	1.6	20	0	120	80-140	0
trans-1,3-Dichloropropene	20.34	0.38	2.7	20	0	102	56-132	0
Trichloroethene	20.89	0.43	1.4	20	0	104	77-125	0
Trichlorofluoromethane	21.57	0.52	1.7	20	0	108	60-140	0
Vinyl chloride	20.68	0.53	1.8	20	0	103	50-136	0
Xylenes, Total	71.33	0.81	4.4	60	0	119	80-126	0
<i>Surr: 1,2-Dichloroethane-d4</i>	20.54	0	0	20	0	103	75-120	0
<i>Surr: 4-Bromofluorobenzene</i>	19.42	0	0	20	0	97.1	80-110	0
<i>Surr: Dibromofluoromethane</i>	20.17	0	0	20	0	101	85-115	0
<i>Surr: Toluene-d8</i>	19.43	0	0	20	0	97.2	85-110	0

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 19051617  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: **R261552b** Instrument ID **VMS8** Method: **SW8260C**

MS		Sample ID: 19051617-19A MS				Units: µg/L		Analysis Date: 5/30/2019 07:50 AM			
Client ID: W-31A		Run ID: VMS8_190529B				SeqNo: 5685437		Prep Date:		DF: 200	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	3888	76	260	4000	0	97.2	73-114	0			
1,1,1-Trichloroethane	4104	92	300	4000	0	103	75-130	0			
1,1,2,2-Tetrachloroethane	4218	80	270	4000	0	105	75-130	0			
1,1,2-Trichloroethane	4016	92	310	4000	0	100	75-125	0			
1,1-Dichloroethane	4020	88	290	4000	60	99	75-133	0			
1,1-Dichloroethene	4156	80	270	4000	0	104	70-145	0			
1,1-Dichloropropene	3532	74	250	4000	0	88.3	75-135	0			
1,2,3-Trichlorobenzene	3874	84	280	4000	0	96.8	70-140	0			
1,2,3-Trichloropropane	3756	80	260	4000	0	93.9	75-125	0			
1,2,4-Trichlorobenzene	3834	90	300	4000	0	95.8	70-135	0			
1,2,4-Trimethylbenzene	3862	90	300	4000	0	96.6	75-130	0			
1,2-Dibromo-3-chloropropane	4148	86	290	4000	0	104	60-130	0			
1,2-Dibromoethane	3844	82	270	4000	0	96.1	90-195	0			
1,2-Dichlorobenzene	3826	64	210	4000	0	95.6	70-130	0			
1,2-Dichloroethane	4134	88	290	4000	0	103	78-125	0			
1,2-Dichloropropane	3982	96	320	4000	0	99.6	75-125	0			
1,3,5-Trimethylbenzene	3994	130	430	4000	0	99.8	75-130	0			
1,3-Dichlorobenzene	3824	66	220	4000	0	95.6	75-130	0			
1,3-Dichloropropane	3820	80	260	4000	0	95.5	75-125	0			
1,4-Dichlorobenzene	3882	70	230	4000	0	97	75-130	0			
2,2-Dichloropropane	2840	100	340	4000	0	71	43-150	0			
2-Butanone	6118	100	350	4000	1630	112	55-150	0			
2-Chlorotoluene	3842	72	240	4000	0	96	76-117	0			
4-Chlorotoluene	3810	62	200	4000	0	95.2	80-125	0			
4-Methyl-2-pentanone	7546	100	350	4000	1382	154	77-178	0			
Acetone	10790	220	720	4000	5758	126	60-160	0			
Benzene	3892	92	300	4000	0	97.3	85-125	0			
Bromobenzene	3780	76	250	4000	0	94.5	80-125	0			
Bromochloromethane	4820	90	300	4000	0	120	72-141	0			
Bromodichloromethane	3860	98	330	4000	0	96.5	75-125	0			
Bromoform	3376	110	370	4000	0	84.4	60-125	0			
Bromomethane	12250	180	600	4000	0	306	30-185	0			S
Carbon tetrachloride	3452	80	270	4000	0	86.3	65-140	0			
Chlorobenzene	3754	80	270	4000	0	93.8	80-120	0			
Chloroethane	3500	140	450	4000	214	82.2	31-172	0			
Chloroform	3818	92	310	4000	0	95.4	80-130	0			
Chloromethane	2086	170	550	4000	0	52.2	46-148	0			
cis-1,2-Dichloroethene	3852	84	280	4000	0	96.3	75-134	0			
cis-1,3-Dichloropropene	3794	110	380	4000	0	94.8	70-130	0			
Dibromochloromethane	3702	80	260	4000	0	92.6	60-115	0			
Dibromomethane	4032	130	430	4000	0	101	79-126	0			
Dichlorodifluoromethane	4058	140	450	4000	0	101	20-120	0			
Ethylbenzene	4048	68	220	4000	196	96.3	76-123	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** Gannett Fleming, Inc.  
**Work Order:** 19051617  
**Project:** WRR (55929.005)

## QC BATCH REPORT

Batch ID: <b>R261552b</b>	Instrument ID <b>VMS8</b>		Method: <b>SW8260C</b>						
Hexachlorobutadiene	3600	110	370	4000	0	90	70-155	0	
Isopropylbenzene	4024	70	230	4000	0	101	80-127	0	
m,p-Xylene	8958	160	540	8000	438	106	75-130	0	
Methyl tert-butyl ether	4294	90	300	4000	0	107	80-130	0	
Methylene chloride	3598	170	580	4000	0	90	72-125	0	
Naphthalene	3668	150	510	4000	0	91.7	55-160	0	
n-Butylbenzene	3984	68	220	4000	0	99.6	75-145	0	
n-Propylbenzene	3408	96	320	4000	0	85.2	83-135	0	
o-Xylene	4224	62	210	4000	168	101	80-125	0	
p-Isopropyltoluene	4086	52	180	4000	0	102	61-164	0	
sec-Butylbenzene	3948	60	200	4000	0	98.7	80-134	0	
Styrene	4256	66	220	4000	0	106	83-137	0	
tert-Butylbenzene	3596	78	260	4000	0	89.9	70-130	0	
Tetrachloroethene	3612	78	260	4000	0	90.3	68-166	0	
Toluene	7566	90	300	4000	3806	94	76-125	0	
trans-1,2-Dichloroethene	4102	96	320	4000	0	103	80-140	0	
trans-1,3-Dichloropropene	3586	76	550	4000	0	89.6	56-132	0	
Trichloroethene	3626	86	290	4000	0	90.6	77-125	0	
Trichlorofluoromethane	4234	100	340	4000	0	106	60-140	0	
Vinyl chloride	3900	110	350	4000	0	97.5	50-136	0	
Xylenes, Total	13180	160	890	12000	606	105	80-126	0	
<i>Surr: 1,2-Dichloroethane-d4</i>	3992	0	0	4000	0	99.8	75-120	0	
<i>Surr: 4-Bromofluorobenzene</i>	3864	0	0	4000	0	96.6	80-110	0	
<i>Surr: Dibromofluoromethane</i>	4122	0	0	4000	0	103	85-115	0	
<i>Surr: Toluene-d8</i>	3878	0	0	4000	0	97	85-110	0	

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.



Client: Gannett Fleming, Inc.  
 Work Order: 19051617  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: **R261552b** Instrument ID **VMS8** Method: **SW8260C**

MSD		Sample ID: 19051617-19A MSD				Units: µg/L		Analysis Date: 5/30/2019 08:06 AM			
Client ID: W-31A		Run ID: VMS8_190529B				SeqNo: 5685438		Prep Date:		DF: 200	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	4010	76	260	4000	0	100	73-114	3888	3.09	30	
1,1,1-Trichloroethane	4382	92	300	4000	0	110	75-130	4104	6.55	30	
1,1,2,2-Tetrachloroethane	4250	80	270	4000	0	106	75-130	4218	0.756	30	
1,1,2-Trichloroethane	3946	92	310	4000	0	98.6	75-125	4016	1.76	30	
1,1-Dichloroethane	4150	88	290	4000	60	102	75-133	4020	3.18	30	
1,1-Dichloroethene	4178	80	270	4000	0	104	70-145	4156	0.528	30	
1,1-Dichloropropene	3682	74	250	4000	0	92	75-135	3532	4.16	30	
1,2,3-Trichlorobenzene	4030	84	280	4000	0	101	70-140	3874	3.95	30	
1,2,3-Trichloropropane	3694	80	260	4000	0	92.4	75-125	3756	1.66	30	
1,2,4-Trichlorobenzene	3920	90	300	4000	0	98	70-135	3834	2.22	30	
1,2,4-Trimethylbenzene	4116	90	300	4000	0	103	75-130	3862	6.37	30	
1,2-Dibromo-3-chloropropane	4148	86	290	4000	0	104	60-130	4148	0	30	
1,2-Dibromoethane	3970	82	270	4000	0	99.2	90-195	3844	3.22	30	
1,2-Dichlorobenzene	4124	64	210	4000	0	103	70-130	3826	7.5	30	
1,2-Dichloroethane	4118	88	290	4000	0	103	78-125	4134	0.388	30	
1,2-Dichloropropane	4022	96	320	4000	0	101	75-125	3982	1	30	
1,3,5-Trimethylbenzene	4286	130	430	4000	0	107	75-130	3994	7.05	30	
1,3-Dichlorobenzene	4066	66	220	4000	0	102	75-130	3824	6.13	30	
1,3-Dichloropropane	3788	80	260	4000	0	94.7	75-125	3820	0.841	30	
1,4-Dichlorobenzene	4220	70	230	4000	0	106	75-130	3882	8.34	30	
2,2-Dichloropropane	2938	100	340	4000	0	73.4	43-150	2840	3.39	30	
2-Butanone	5996	100	350	4000	1630	109	55-150	6118	2.01	30	
2-Chlorotoluene	3970	72	240	4000	0	99.2	76-117	3842	3.28	30	
4-Chlorotoluene	4072	62	200	4000	0	102	80-125	3810	6.65	30	
4-Methyl-2-pentanone	7274	100	350	4000	1382	147	77-178	7546	3.67	30	
Acetone	9962	220	720	4000	5758	105	60-160	10790	7.94	30	
Benzene	4084	92	300	4000	0	102	85-125	3892	4.81	30	
Bromobenzene	3900	76	250	4000	0	97.5	80-125	3780	3.12	30	
Bromochloromethane	4748	90	300	4000	0	119	72-141	4820	1.51	30	
Bromodichloromethane	3926	98	330	4000	0	98.2	75-125	3860	1.7	30	
Bromoform	3514	110	370	4000	0	87.8	60-125	3376	4.01	30	
Bromomethane	13020	180	600	4000	0	325	30-185	12250	6.08	30	S
Carbon tetrachloride	3620	80	270	4000	0	90.5	65-140	3452	4.75	30	
Chlorobenzene	4004	80	270	4000	0	100	80-120	3754	6.44	30	
Chloroethane	3888	140	450	4000	214	91.8	31-172	3500	10.5	30	
Chloroform	3860	92	310	4000	0	96.5	80-130	3818	1.09	30	
Chloromethane	2006	170	550	4000	0	50.2	46-148	2086	3.91	30	
cis-1,2-Dichloroethene	3944	84	280	4000	0	98.6	75-134	3852	2.36	30	
cis-1,3-Dichloropropene	3738	110	380	4000	0	93.4	70-130	3794	1.49	30	
Dibromochloromethane	3776	80	260	4000	0	94.4	60-115	3702	1.98	30	
Dibromomethane	3986	130	430	4000	0	99.6	79-126	4032	1.15	30	
Dichlorodifluoromethane	4118	140	450	4000	0	103	20-120	4058	1.47	30	
Ethylbenzene	4270	68	220	4000	196	102	76-123	4048	5.34	30	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 19051617  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: <b>R261552b</b>	Instrument ID <b>VMS8</b>		Method: <b>SW8260C</b>							
Hexachlorobutadiene	3908	110	370	4000	0	97.7	70-155	3600	8.2	30
Isopropylbenzene	4442	70	230	4000	0	111	80-127	4024	9.87	30
m,p-Xylene	9526	160	540	8000	438	114	75-130	8958	6.15	30
Methyl tert-butyl ether	4202	90	300	4000	0	105	80-130	4294	2.17	30
Methylene chloride	3556	170	580	4000	0	88.9	72-125	3598	1.17	30
Naphthalene	3690	150	510	4000	0	92.2	55-160	3668	0.598	30
n-Butylbenzene	4232	68	220	4000	0	106	75-145	3984	6.04	30
n-Propylbenzene	3650	96	320	4000	0	91.2	83-135	3408	6.86	30
o-Xylene	4490	62	210	4000	168	108	80-125	4224	6.11	30
p-Isopropyltoluene	4364	52	180	4000	0	109	61-164	4086	6.58	30
sec-Butylbenzene	4294	60	200	4000	0	107	80-134	3948	8.4	30
Styrene	4468	66	220	4000	0	112	83-137	4256	4.86	30
tert-Butylbenzene	3830	78	260	4000	0	95.8	70-130	3596	6.3	30
Tetrachloroethene	3858	78	260	4000	0	96.4	68-166	3612	6.59	30
Toluene	7758	90	300	4000	3806	98.8	76-125	7566	2.51	30
trans-1,2-Dichloroethene	4066	96	320	4000	0	102	80-140	4102	0.881	30
trans-1,3-Dichloropropene	3548	76	550	4000	0	88.7	56-132	3586	1.07	30
Trichloroethene	3850	86	290	4000	0	96.2	77-125	3626	5.99	30
Trichlorofluoromethane	3350	100	340	4000	0	83.8	60-140	4234	23.3	30
Vinyl chloride	3632	110	350	4000	0	90.8	50-136	3900	7.12	30
Xylenes, Total	14020	160	890	12000	606	112	80-126	13180	6.13	30
<i>Surr: 1,2-Dichloroethane-d4</i>	3940	0	0	4000	0	98.5	75-120	3992	1.31	30
<i>Surr: 4-Bromofluorobenzene</i>	3788	0	0	4000	0	94.7	80-110	3864	1.99	30
<i>Surr: Dibromofluoromethane</i>	4030	0	0	4000	0	101	85-115	4122	2.26	30
<i>Surr: Toluene-d8</i>	3916	0	0	4000	0	97.9	85-110	3878	0.975	30

The following samples were analyzed in this batch:

19051617-01A	19051617-02A	19051617-03A
19051617-04A	19051617-05A	19051617-06A
19051617-07A	19051617-08A	19051617-09A
19051617-10A	19051617-11A	19051617-12A
19051617-13A	19051617-14A	19051617-15A
19051617-16A	19051617-17A	19051617-18A
19051617-19A	19051617-20A	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 19051617  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: **R261653a** Instrument ID **VMS8** Method: **SW8260C**

MBLK		Sample ID: <b>VBLKW3-190530-R261653a</b>			Units: <b>µg/L</b>		Analysis Date: <b>5/30/2019 09:48 PM</b>				
Client ID:		Run ID: <b>VMS8_190530A</b>			SeqNo: <b>5687821</b>		Prep Date:		DF: <b>1</b>		
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	U	0.38	1.3								
1,1,1-Trichloroethane	U	0.46	1.5								
1,1,2,2-Tetrachloroethane	U	0.4	1.3								
1,1,2-Trichloroethane	U	0.46	1.5								
1,1-Dichloroethane	U	0.44	1.5								
1,1-Dichloroethene	U	0.4	1.4								
1,1-Dichloropropene	U	0.37	1.2								
1,2,3-Trichlorobenzene	U	0.42	1.4								
1,2,3-Trichloropropane	U	0.4	1.3								
1,2,4-Trichlorobenzene	U	0.45	1.5								
1,2,4-Trimethylbenzene	U	0.45	1.5								
1,2-Dibromo-3-chloropropane	U	0.43	1.4								
1,2-Dibromoethane	U	0.41	1.4								
1,2-Dichlorobenzene	U	0.32	1.1								
1,2-Dichloroethane	U	0.44	1.4								
1,2-Dichloropropane	U	0.48	1.6								
1,3,5-Trimethylbenzene	U	0.65	2.2								
1,3-Dichlorobenzene	U	0.33	1.1								
1,3-Dichloropropane	U	0.4	1.3								
1,4-Dichlorobenzene	U	0.35	1.2								
2,2-Dichloropropane	U	0.52	1.7								
2-Butanone	U	0.52	1.7								
2-Chlorotoluene	U	0.36	1.2								
2-Propanol	U	33	110								
4-Chlorotoluene	U	0.31	1.0								
4-Methyl-2-pentanone	U	0.52	1.7								
Acetone	U	1.1	3.6								
Benzene	U	0.46	1.5								
Bromobenzene	U	0.38	1.3								
Bromochloromethane	U	0.45	1.5								
Bromodichloromethane	U	0.49	1.6								
Bromoform	U	0.56	1.9								
Bromomethane	U	0.9	3.0								
Carbon tetrachloride	U	0.4	1.4								
Chlorobenzene	U	0.4	1.3								
Chloroethane	U	0.68	2.3								
Chloroform	U	0.46	1.5								
Chloromethane	U	0.83	2.8								
cis-1,2-Dichloroethene	U	0.42	1.4								
cis-1,3-Dichloropropene	U	0.57	1.9								
Dibromochloromethane	U	0.4	1.3								
Dibromomethane	U	0.65	2.2								
Dichlorodifluoromethane	U	0.68	2.3								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** Gannett Fleming, Inc.  
**Work Order:** 19051617  
**Project:** WRR (55929.005)

## QC BATCH REPORT

Batch ID: <b>R261653a</b>	Instrument ID <b>VMS8</b>	Method: <b>SW8260C</b>						
Diisopropyl ether	U	0.41	1.4					
Ethylbenzene	U	0.34	1.1					
Hexachlorobutadiene	U	0.56	1.9					
Isopropylbenzene	U	0.35	1.2					
m,p-Xylene	U	0.81	2.7					
Methyl tert-butyl ether	U	0.45	1.5					
Methylene chloride	U	0.86	2.9					
Naphthalene	U	0.77	2.6					
n-Butylbenzene	U	0.34	1.1					
n-Propylbenzene	U	0.48	1.6					
o-Xylene	U	0.31	1.0					
p-Isopropyltoluene	U	0.26	0.88					
sec-Butylbenzene	U	0.3	1.0					
Styrene	U	0.33	1.1					
tert-Butylbenzene	U	0.39	1.3					
Tetrachloroethene	U	0.39	1.3					
Toluene	U	0.45	1.5					
trans-1,2-Dichloroethene	U	0.48	1.6					
trans-1,3-Dichloropropene	U	0.38	2.7					
Trichloroethene	U	0.43	1.4					
Trichlorofluoromethane	U	0.52	1.7					
Vinyl chloride	U	0.53	1.8					
Xylenes, Total	U	0.81	4.4					
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>20.04</i>	<i>0</i>	<i>0</i>	<i>20</i>	<i>0</i>	<i>100</i>	<i>75-120</i>	<i>0</i>
<i>Surr: 4-Bromofluorobenzene</i>	<i>19.24</i>	<i>0</i>	<i>0</i>	<i>20</i>	<i>0</i>	<i>96.2</i>	<i>80-110</i>	<i>0</i>
<i>Surr: Dibromofluoromethane</i>	<i>20.73</i>	<i>0</i>	<i>0</i>	<i>20</i>	<i>0</i>	<i>104</i>	<i>85-115</i>	<i>0</i>
<i>Surr: Toluene-d8</i>	<i>20.16</i>	<i>0</i>	<i>0</i>	<i>20</i>	<i>0</i>	<i>101</i>	<i>85-110</i>	<i>0</i>

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 19051617  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: **R261653a** Instrument ID **VMS8** Method: **SW8260C**

LCS		Sample ID: <b>VLCSW2-190530-R261653a</b>				Units: <b>µg/L</b>		Analysis Date: <b>5/30/2019 08:58 PM</b>			
Client ID:		Run ID: <b>VMS8_190530A</b>			SeqNo: <b>5687820</b>		Prep Date:		DF: <b>1</b>		
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	21.67	0.38	1.3	20	0	108	73-114	0			
1,1,1-Trichloroethane	22.91	0.46	1.5	20	0	115	75-130	0			
1,1,2,2-Tetrachloroethane	23.6	0.4	1.3	20	0	118	75-130	0			
1,1,2-Trichloroethane	22.67	0.46	1.5	20	0	113	75-125	0			
1,1-Dichloroethane	22.41	0.44	1.5	20	0	112	75-133	0			
1,1-Dichloroethene	22.95	0.4	1.4	20	0	115	70-145	0			
1,1-Dichloropropene	20.45	0.37	1.2	20	0	102	75-135	0			
1,2,3-Trichlorobenzene	23.49	0.42	1.4	20	0	117	70-140	0			
1,2,3-Trichloropropane	22	0.4	1.3	20	0	110	75-125	0			
1,2,4-Trichlorobenzene	23.94	0.45	1.5	20	0	120	70-135	0			
1,2,4-Trimethylbenzene	23.18	0.45	1.5	20	0	116	75-130	0			
1,2-Dibromo-3-chloropropane	24.17	0.43	1.4	20	0	121	60-130	0			
1,2-Dibromoethane	25.82	0.41	1.4	20	0	129	90-195	0			
1,2-Dichlorobenzene	23.82	0.32	1.1	20	0	119	70-130	0			
1,2-Dichloroethane	22.55	0.44	1.4	20	0	113	78-125	0			
1,2-Dichloropropane	22.47	0.48	1.6	20	0	112	75-125	0			
1,3,5-Trimethylbenzene	23.22	0.65	2.2	20	0	116	75-130	0			
1,3-Dichlorobenzene	24.09	0.33	1.1	20	0	120	75-130	0			
1,3-Dichloropropane	21.38	0.4	1.3	20	0	107	75-125	0			
1,4-Dichlorobenzene	23.82	0.35	1.2	20	0	119	75-130	0			
2,2-Dichloropropane	20.85	0.52	1.7	20	0	104	43-150	0			
2-Butanone	25.94	0.52	1.7	20	0	130	55-150	0			
2-Chlorotoluene	22.41	0.36	1.2	20	0	112	76-117	0			
4-Chlorotoluene	22.83	0.31	1.0	20	0	114	80-125	0			
4-Methyl-2-pentanone	34.35	0.52	1.7	20	0	172	77-178	0			
Acetone	23.92	1.1	3.6	20	0	120	60-160	0			
Benzene	22.18	0.46	1.5	20	0	111	85-125	0			
Bromobenzene	21.48	0.38	1.3	20	0	107	80-125	0			
Bromochloromethane	24.71	0.45	1.5	20	0	124	72-141	0			
Bromodichloromethane	21.36	0.49	1.6	20	0	107	75-125	0			
Bromoform	19.95	0.56	1.9	20	0	99.8	60-125	0			
Bromomethane	46.78	0.9	3.0	20	0	234	30-185	0			S
Carbon tetrachloride	19.41	0.4	1.4	20	0	97	65-140	0			
Chlorobenzene	21.91	0.4	1.3	20	0	110	80-120	0			
Chloroethane	19.78	0.68	2.3	20	0	98.9	31-172	0			
Chloroform	21.53	0.46	1.5	20	0	108	80-130	0			
Chloromethane	14.17	0.83	2.8	20	0	70.8	46-148	0			
cis-1,2-Dichloroethene	22.08	0.42	1.4	20	0	110	75-134	0			
cis-1,3-Dichloropropene	22.37	0.57	1.9	20	0	112	70-130	0			
Dibromochloromethane	19.56	0.4	1.3	20	0	97.8	60-115	0			
Dibromomethane	22.42	0.65	2.2	20	0	112	79-126	0			
Dichlorodifluoromethane	18.36	0.68	2.3	20	0	91.8	20-120	0			
Ethylbenzene	23.09	0.34	1.1	20	0	115	76-123	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** Gannett Fleming, Inc.  
**Work Order:** 19051617  
**Project:** WRR (55929.005)

## QC BATCH REPORT

Batch ID: <b>R261653a</b>	Instrument ID <b>VMS8</b>		Method: <b>SW8260C</b>						
Hexachlorobutadiene	24.04	0.56	1.9	20	0	120	70-155	0	
Isopropylbenzene	23.17	0.35	1.2	20	0	116	80-127	0	
m,p-Xylene	45.76	0.81	2.7	40	0	114	75-130	0	
Methyl tert-butyl ether	24.85	0.45	1.5	20	0	124	80-130	0	
Methylene chloride	20.27	0.86	2.9	20	0	101	72-125	0	
Naphthalene	22.28	0.77	2.6	20	0	111	55-160	0	
n-Butylbenzene	25.26	0.34	1.1	20	0	126	75-145	0	
n-Propylbenzene	20.8	0.48	1.6	20	0	104	83-135	0	
o-Xylene	22.72	0.31	1.0	20	0	114	80-125	0	
p-Isopropyltoluene	25.48	0.26	0.88	20	0	127	61-164	0	
sec-Butylbenzene	23.77	0.3	1.0	20	0	119	80-134	0	
Styrene	26.72	0.33	1.1	20	0	134	83-137	0	
tert-Butylbenzene	21.77	0.39	1.3	20	0	109	70-130	0	
Tetrachloroethene	21.79	0.39	1.3	20	0	109	68-166	0	
Toluene	23.04	0.45	1.5	20	0	115	76-125	0	
trans-1,2-Dichloroethene	23.6	0.48	1.6	20	0	118	80-140	0	
trans-1,3-Dichloropropene	20.49	0.38	2.7	20	0	102	56-132	0	
Trichloroethene	21.44	0.43	1.4	20	0	107	77-125	0	
Trichlorofluoromethane	21.22	0.52	1.7	20	0	106	60-140	0	
Vinyl chloride	18.41	0.53	1.8	20	0	92	50-136	0	
Xylenes, Total	68.48	0.81	4.4	60	0	114	80-126	0	
<i>Surr: 1,2-Dichloroethane-d4</i>	20.37	0	0	20	0	102	75-120	0	
<i>Surr: 4-Bromofluorobenzene</i>	19.57	0	0	20	0	97.8	80-110	0	
<i>Surr: Dibromofluoromethane</i>	21.12	0	0	20	0	106	85-115	0	
<i>Surr: Toluene-d8</i>	19.93	0	0	20	0	99.6	85-110	0	

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 19051617  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: **R261653a** Instrument ID **VMS8** Method: **SW8260C**

MS		Sample ID: 19051617-38A MS				Units: µg/L		Analysis Date: 5/31/2019 03:49 AM			
Client ID: MW-115A		Run ID: VMS8_190530A				SeqNo: 5687839		Prep Date:		DF: 50	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	969.5	19	64	1000	0	97	73-114	0			
1,1,1-Trichloroethane	1064	23	76	1000	0	106	75-130	0			
1,1,2,2-Tetrachloroethane	1041	20	67	1000	0	104	75-130	0			
1,1,2-Trichloroethane	1066	23	77	1000	20	105	75-125	0			
1,1-Dichloroethane	1478	22	74	1000	428	105	75-133	0			
1,1-Dichloroethene	1300	20	68	1000	197	110	70-145	0			
1,1-Dichloropropene	951	18	62	1000	0	95.1	75-135	0			
1,2,3-Trichlorobenzene	1010	21	70	1000	0	101	70-140	0			
1,2,3-Trichloropropane	906.5	20	66	1000	0	90.6	75-125	0			
1,2,4-Trichlorobenzene	1018	22	76	1000	0	102	70-135	0			
1,2,4-Trimethylbenzene	1036	22	75	1000	0	104	75-130	0			
1,2-Dibromo-3-chloropropane	986	22	72	1000	0	98.6	60-130	0			
1,2-Dibromoethane	1174	20	68	1000	0	117	90-195	0			
1,2-Dichlorobenzene	1050	16	54	1000	0	105	70-130	0			
1,2-Dichloroethane	1006	22	72	1000	0	101	78-125	0			
1,2-Dichloropropane	990.5	24	80	1000	21.5	96.9	75-125	0			
1,3,5-Trimethylbenzene	1080	32	110	1000	0	108	75-130	0			
1,3-Dichlorobenzene	1056	16	54	1000	0	106	75-130	0			
1,3-Dichloropropane	949	20	66	1000	0	94.9	75-125	0			
1,4-Dichlorobenzene	1038	18	58	1000	0	104	75-130	0			
2,2-Dichloropropane	814.5	26	86	1000	0	81.4	43-150	0			
2-Butanone	1046	26	86	1000	0	105	55-150	0			
2-Chlorotoluene	1040	18	60	1000	0	104	76-117	0			
4-Chlorotoluene	1024	16	51	1000	0	102	80-125	0			
4-Methyl-2-pentanone	1448	26	86	1000	0	145	77-178	0			
Acetone	1040	54	180	1000	0	104	60-160	0			
Benzene	996	23	76	1000	0	99.6	85-125	0			
Bromobenzene	955.5	19	63	1000	0	95.6	80-125	0			
Bromochloromethane	1216	22	74	1000	0	122	72-141	0			
Bromodichloromethane	957.5	24	82	1000	0	95.8	75-125	0			
Bromoform	828.5	28	94	1000	0	82.8	60-125	0			
Bromomethane	3936	45	150	1000	0	394	30-185	0			S
Carbon tetrachloride	906	20	68	1000	0	90.6	65-140	0			
Chlorobenzene	1018	20	67	1000	0	102	80-120	0			
Chloroethane	983.5	34	110	1000	0	98.4	31-172	0			
Chloroform	978.5	23	76	1000	0	97.8	80-130	0			
Chloromethane	777.5	42	140	1000	0	77.8	46-148	0			
cis-1,2-Dichloroethene	3140	21	69	1000	2134	101	75-134	0			
cis-1,3-Dichloropropene	918.5	28	96	1000	0	91.8	70-130	0			
Dibromochloromethane	847	20	66	1000	0	84.7	60-115	0			
Dibromomethane	964.5	32	110	1000	0	96.4	79-126	0			
Dichlorodifluoromethane	944	34	110	1000	0	94.4	20-120	0			
Ethylbenzene	1076	17	56	1000	0	108	76-123	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** Gannett Fleming, Inc.  
**Work Order:** 19051617  
**Project:** WRR (55929.005)

## QC BATCH REPORT

Batch ID: <b>R261653a</b>	Instrument ID <b>VMS8</b>	Method: <b>SW8260C</b>							
Hexachlorobutadiene	1082	28	94	1000	0	108	70-155	0	
Isopropylbenzene	1118	18	58	1000	0	112	80-127	0	
m,p-Xylene	2162	40	140	2000	0	108	75-130	0	
Methyl tert-butyl ether	1056	22	76	1000	0	106	80-130	0	
Methylene chloride	899.5	43	140	1000	0	90	72-125	0	
Naphthalene	939.5	38	130	1000	0	94	55-160	0	
n-Butylbenzene	1115	17	56	1000	0	112	75-145	0	
n-Propylbenzene	969.5	24	80	1000	0	97	83-135	0	
o-Xylene	1070	16	52	1000	0	107	80-125	0	
p-Isopropyltoluene	1154	13	44	1000	0	115	61-164	0	
sec-Butylbenzene	1108	15	50	1000	0	111	80-134	0	
Styrene	1187	16	56	1000	0	119	83-137	0	
tert-Butylbenzene	1006	20	66	1000	0	101	70-130	0	
Tetrachloroethene	1065	20	66	1000	0	106	68-166	0	
Toluene	1060	22	76	1000	0	106	76-125	0	
trans-1,2-Dichloroethene	1135	24	80	1000	53	108	80-140	0	
trans-1,3-Dichloropropene	861	19	140	1000	0	86.1	56-132	0	
Trichloroethene	1072	22	72	1000	88	98.4	77-125	0	
Trichlorofluoromethane	1122	26	86	1000	0	112	60-140	0	
Vinyl chloride	995.5	26	88	1000	44.5	95.1	50-136	0	
Xylenes, Total	3232	40	220	3000	0	108	80-126	0	
<i>Surr: 1,2-Dichloroethane-d4</i>	1007	0	0	1000	0	101	75-120	0	
<i>Surr: 4-Bromofluorobenzene</i>	997.5	0	0	1000	0	99.8	80-110	0	
<i>Surr: Dibromofluoromethane</i>	1006	0	0	1000	0	101	85-115	0	
<i>Surr: Toluene-d8</i>	1002	0	0	1000	0	100	85-110	0	

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.



Client: Gannett Fleming, Inc.  
 Work Order: 19051617  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: **R261653a** Instrument ID **VMS8** Method: **SW8260C**

MSD		Sample ID: 19051617-38A MSD				Units: µg/L			Analysis Date: 5/31/2019 04:06 AM		
Client ID: MW-115A		Run ID: VMS8_190530A				SeqNo: 5687840		Prep Date:		DF: 50	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	880.5	19	64	1000	0	88	73-114	969.5	9.62	30	
1,1,1-Trichloroethane	915.5	23	76	1000	0	91.6	75-130	1064	15	30	
1,1,2,2-Tetrachloroethane	967	20	67	1000	0	96.7	75-130	1041	7.37	30	
1,1,2-Trichloroethane	994	23	77	1000	20	97.4	75-125	1066	7.04	30	
1,1-Dichloroethane	1319	22	74	1000	428	89.1	75-133	1478	11.4	30	
1,1-Dichloroethene	1152	20	68	1000	197	95.5	70-145	1300	12.1	30	
1,1-Dichloropropene	818.5	18	62	1000	0	81.8	75-135	951	15	30	
1,2,3-Trichlorobenzene	964.5	21	70	1000	0	96.4	70-140	1010	4.56	30	
1,2,3-Trichloropropane	889.5	20	66	1000	0	89	75-125	906.5	1.89	30	
1,2,4-Trichlorobenzene	964	22	76	1000	0	96.4	70-135	1018	5.4	30	
1,2,4-Trimethylbenzene	911.5	22	75	1000	0	91.2	75-130	1036	12.7	30	
1,2-Dibromo-3-chloropropane	1016	22	72	1000	0	102	60-130	986	2.95	30	
1,2-Dibromoethane	1119	20	68	1000	0	112	90-195	1174	4.75	30	
1,2-Dichlorobenzene	974.5	16	54	1000	0	97.4	70-130	1050	7.51	30	
1,2-Dichloroethane	944	22	72	1000	0	94.4	78-125	1006	6.41	30	
1,2-Dichloropropane	905	24	80	1000	21.5	88.4	75-125	990.5	9.02	30	
1,3,5-Trimethylbenzene	945.5	32	110	1000	0	94.6	75-130	1080	13.3	30	
1,3-Dichlorobenzene	974.5	16	54	1000	0	97.4	75-130	1056	8.07	30	
1,3-Dichloropropane	908	20	66	1000	0	90.8	75-125	949	4.42	30	
1,4-Dichlorobenzene	966.5	18	58	1000	0	96.6	75-130	1038	7.18	30	
2,2-Dichloropropane	691	26	86	1000	0	69.1	43-150	814.5	16.4	30	
2-Butanone	1024	26	86	1000	0	102	55-150	1046	2.12	30	
2-Chlorotoluene	906	18	60	1000	0	90.6	76-117	1040	13.7	30	
4-Chlorotoluene	910.5	16	51	1000	0	91	80-125	1024	11.7	30	
4-Methyl-2-pentanone	1460	26	86	1000	0	146	77-178	1448	0.86	30	
Acetone	1016	54	180	1000	0	102	60-160	1040	2.43	30	
Benzene	896.5	23	76	1000	0	89.6	85-125	996	10.5	30	
Bromobenzene	870	19	63	1000	0	87	80-125	955.5	9.37	30	
Bromochloromethane	1098	22	74	1000	0	110	72-141	1216	10.2	30	
Bromodichloromethane	897.5	24	82	1000	0	89.8	75-125	957.5	6.47	30	
Bromoform	821	28	94	1000	0	82.1	60-125	828.5	0.909	30	
Bromomethane	3742	45	150	1000	0	374	30-185	3936	5.04	30	S
Carbon tetrachloride	770	20	68	1000	0	77	65-140	906	16.2	30	
Chlorobenzene	903.5	20	67	1000	0	90.4	80-120	1018	12	30	
Chloroethane	873	34	110	1000	0	87.3	31-172	983.5	11.9	30	
Chloroform	874.5	23	76	1000	0	87.4	80-130	978.5	11.2	30	
Chloromethane	524.5	42	140	1000	0	52.4	46-148	777.5	38.9	30	R
cis-1,2-Dichloroethene	2950	21	69	1000	2134	81.7	75-134	3140	6.21	30	
cis-1,3-Dichloropropene	882.5	28	96	1000	0	88.2	70-130	918.5	4	30	
Dibromochloromethane	829	20	66	1000	0	82.9	60-115	847	2.15	30	
Dibromomethane	934.5	32	110	1000	0	93.4	79-126	964.5	3.16	30	
Dichlorodifluoromethane	750	34	110	1000	0	75	20-120	944	22.9	30	
Ethylbenzene	943.5	17	56	1000	0	94.4	76-123	1076	13.2	30	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 19051617  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: <b>R261653a</b>	Instrument ID <b>VMS8</b>			Method: <b>SW8260C</b>							
Hexachlorobutadiene	949	28	94	1000	0	94.9	70-155	1082	13.1	30	
Isopropylbenzene	984	18	58	1000	0	98.4	80-127	1118	12.7	30	
m,p-Xylene	1868	40	140	2000	0	93.4	75-130	2162	14.5	30	
Methyl tert-butyl ether	1040	22	76	1000	0	104	80-130	1056	1.57	30	
Methylene chloride	803	43	140	1000	0	80.3	72-125	899.5	11.3	30	
Naphthalene	925	38	130	1000	0	92.5	55-160	939.5	1.56	30	
n-Butylbenzene	1014	17	56	1000	0	101	75-145	1115	9.54	30	
n-Propylbenzene	828	24	80	1000	0	82.8	83-135	969.5	15.7	30 S	
o-Xylene	975	16	52	1000	0	97.5	80-125	1070	9.34	30	
p-Isopropyltoluene	1034	13	44	1000	0	103	61-164	1154	10.9	30	
sec-Butylbenzene	948	15	50	1000	0	94.8	80-134	1108	15.6	30	
Styrene	1080	16	56	1000	0	108	83-137	1187	9.49	30	
tert-Butylbenzene	872	20	66	1000	0	87.2	70-130	1006	14.3	30	
Tetrachloroethene	924	20	66	1000	0	92.4	68-166	1065	14.2	30	
Toluene	940	22	76	1000	0	94	76-125	1060	12	30	
trans-1,2-Dichloroethene	990.5	24	80	1000	53	93.8	80-140	1135	13.6	30	
trans-1,3-Dichloropropene	802.5	19	140	1000	0	80.2	56-132	861	7.03	30	
Trichloroethene	962.5	22	72	1000	88	87.4	77-125	1072	10.8	30	
Trichlorofluoromethane	968	26	86	1000	0	96.8	60-140	1122	14.7	30	
Vinyl chloride	902.5	26	88	1000	44.5	85.8	50-136	995.5	9.8	30	
Xylenes, Total	2844	40	220	3000	0	94.8	80-126	3232	12.8	30	
<i>Surr: 1,2-Dichloroethane-d4</i>	983	0	0	1000	0	98.3	75-120	1007	2.41	30	
<i>Surr: 4-Bromofluorobenzene</i>	959	0	0	1000	0	95.9	80-110	997.5	3.94	30	
<i>Surr: Dibromofluoromethane</i>	992.5	0	0	1000	0	99.2	85-115	1006	1.35	30	
<i>Surr: Toluene-d8</i>	994.5	0	0	1000	0	99.4	85-110	1002	0.701	30	

The following samples were analyzed in this batch:

19051617-21A	19051617-22A	19051617-23A
19051617-24A	19051617-25A	19051617-26A
19051617-27A	19051617-28A	19051617-29A
19051617-30A	19051617-31A	19051617-32A
19051617-33A	19051617-34A	19051617-35A
19051617-36A	19051617-37A	19051617-38A
19051617-39A	19051617-40A	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 19051617  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: **R261663a** Instrument ID **VMS8** Method: **SW8260C**

MBLK		Sample ID: <b>VLKW5-190530-R261663a</b>			Units: <b>µg/L</b>		Analysis Date: <b>5/31/2019 06:15 AM</b>				
Client ID:		Run ID: <b>VMS8_190530B</b>			SeqNo: <b>5688285</b>		Prep Date:		DF: <b>1</b>		
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	U	0.38	1.3								
1,1,1-Trichloroethane	U	0.46	1.5								
1,1,2,2-Tetrachloroethane	U	0.4	1.3								
1,1,2-Trichloroethane	U	0.46	1.5								
1,1-Dichloroethane	U	0.44	1.5								
1,1-Dichloroethene	U	0.4	1.4								
1,1-Dichloropropene	U	0.37	1.2								
1,2,3-Trichlorobenzene	U	0.42	1.4								
1,2,3-Trichloropropane	U	0.4	1.3								
1,2,4-Trichlorobenzene	U	0.45	1.5								
1,2,4-Trimethylbenzene	U	0.45	1.5								
1,2-Dibromo-3-chloropropane	U	0.43	1.4								
1,2-Dibromoethane	U	0.41	1.4								
1,2-Dichlorobenzene	U	0.32	1.1								
1,2-Dichloroethane	U	0.44	1.4								
1,2-Dichloropropane	U	0.48	1.6								
1,3,5-Trimethylbenzene	U	0.65	2.2								
1,3-Dichlorobenzene	U	0.33	1.1								
1,3-Dichloropropane	U	0.4	1.3								
1,4-Dichlorobenzene	U	0.35	1.2								
2,2-Dichloropropane	U	0.52	1.7								
2-Butanone	U	0.52	1.7								
2-Chlorotoluene	U	0.36	1.2								
2-Propanol	U	33	110								
4-Chlorotoluene	U	0.31	1.0								
4-Methyl-2-pentanone	U	0.52	1.7								
Acetone	U	1.1	3.6								
Benzene	U	0.46	1.5								
Bromobenzene	U	0.38	1.3								
Bromochloromethane	U	0.45	1.5								
Bromodichloromethane	U	0.49	1.6								
Bromoform	U	0.56	1.9								
Bromomethane	U	0.9	3.0								
Carbon tetrachloride	U	0.4	1.4								
Chlorobenzene	U	0.4	1.3								
Chloroethane	U	0.68	2.3								
Chloroform	U	0.46	1.5								
Chloromethane	U	0.83	2.8								
cis-1,2-Dichloroethene	U	0.42	1.4								
cis-1,3-Dichloropropene	U	0.57	1.9								
Dibromochloromethane	U	0.4	1.3								
Dibromomethane	U	0.65	2.2								
Dichlorodifluoromethane	U	0.68	2.3								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** Gannett Fleming, Inc.  
**Work Order:** 19051617  
**Project:** WRR (55929.005)

## QC BATCH REPORT

Batch ID: <b>R261663a</b>	Instrument ID <b>VMS8</b>	Method: <b>SW8260C</b>						
Diisopropyl ether	U	0.41	1.4					
Ethylbenzene	U	0.34	1.1					
Hexachlorobutadiene	U	0.56	1.9					
Isopropylbenzene	U	0.35	1.2					
m,p-Xylene	U	0.81	2.7					
Methyl tert-butyl ether	U	0.45	1.5					
Methylene chloride	U	0.86	2.9					
Naphthalene	U	0.77	2.6					
n-Butylbenzene	U	0.34	1.1					
n-Propylbenzene	U	0.48	1.6					
o-Xylene	U	0.31	1.0					
p-Isopropyltoluene	U	0.26	0.88					
sec-Butylbenzene	U	0.3	1.0					
Styrene	U	0.33	1.1					
tert-Butylbenzene	U	0.39	1.3					
Tetrachloroethene	U	0.39	1.3					
Toluene	U	0.45	1.5					
trans-1,2-Dichloroethene	U	0.48	1.6					
trans-1,3-Dichloropropene	U	0.38	2.7					
Trichloroethene	U	0.43	1.4					
Trichlorofluoromethane	U	0.52	1.7					
Vinyl chloride	U	0.53	1.8					
Xylenes, Total	U	0.81	4.4					
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>18.81</i>	<i>0</i>	<i>0</i>	<i>20</i>	<i>0</i>	<i>94</i>	<i>75-120</i>	<i>0</i>
<i>Surr: 4-Bromofluorobenzene</i>	<i>18.56</i>	<i>0</i>	<i>0</i>	<i>20</i>	<i>0</i>	<i>92.8</i>	<i>80-110</i>	<i>0</i>
<i>Surr: Dibromofluoromethane</i>	<i>19.56</i>	<i>0</i>	<i>0</i>	<i>20</i>	<i>0</i>	<i>97.8</i>	<i>85-115</i>	<i>0</i>
<i>Surr: Toluene-d8</i>	<i>20.09</i>	<i>0</i>	<i>0</i>	<i>20</i>	<i>0</i>	<i>100</i>	<i>85-110</i>	<i>0</i>

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 19051617  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: **R261663a** Instrument ID **VMS8** Method: **SW8260C**

LCS		Sample ID: <b>VLCSW3-190530-R261663a</b>				Units: <b>µg/L</b>		Analysis Date: <b>5/31/2019 05:42 AM</b>			
Client ID:		Run ID: <b>VMS8_190530B</b>				SeqNo: <b>5688284</b>		Prep Date:		DF: <b>1</b>	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	20.95	0.38	1.3	20	0	105	73-114	0			
1,1,1-Trichloroethane	21.52	0.46	1.5	20	0	108	75-130	0			
1,1,2,2-Tetrachloroethane	23.16	0.4	1.3	20	0	116	75-130	0			
1,1,2-Trichloroethane	22.1	0.46	1.5	20	0	110	75-125	0			
1,1-Dichloroethane	21.38	0.44	1.5	20	0	107	75-133	0			
1,1-Dichloroethene	21.75	0.4	1.4	20	0	109	70-145	0			
1,1-Dichloropropene	19.9	0.37	1.2	20	0	99.5	75-135	0			
1,2,3-Trichlorobenzene	21.39	0.42	1.4	20	0	107	70-140	0			
1,2,3-Trichloropropane	21.5	0.4	1.3	20	0	108	75-125	0			
1,2,4-Trichlorobenzene	21.58	0.45	1.5	20	0	108	70-135	0			
1,2,4-Trimethylbenzene	22.66	0.45	1.5	20	0	113	75-130	0			
1,2-Dibromo-3-chloropropane	21.47	0.43	1.4	20	0	107	60-130	0			
1,2-Dibromoethane	24.59	0.41	1.4	20	0	123	90-195	0			
1,2-Dichlorobenzene	22.35	0.32	1.1	20	0	112	70-130	0			
1,2-Dichloroethane	21.59	0.44	1.4	20	0	108	78-125	0			
1,2-Dichloropropane	21	0.48	1.6	20	0	105	75-125	0			
1,3,5-Trimethylbenzene	23.36	0.65	2.2	20	0	117	75-130	0			
1,3-Dichlorobenzene	22.12	0.33	1.1	20	0	111	75-130	0			
1,3-Dichloropropane	20.88	0.4	1.3	20	0	104	75-125	0			
1,4-Dichlorobenzene	22.12	0.35	1.2	20	0	111	75-130	0			
2,2-Dichloropropane	16.52	0.52	1.7	20	0	82.6	43-150	0			
2-Butanone	24.1	0.52	1.7	20	0	120	55-150	0			
2-Chlorotoluene	22.06	0.36	1.2	20	0	110	76-117	0			
4-Chlorotoluene	22.16	0.31	1.0	20	0	111	80-125	0			
4-Methyl-2-pentanone	32.21	0.52	1.7	20	0	161	77-178	0			
Acetone	24.02	1.1	3.6	20	0	120	60-160	0			
Benzene	21.01	0.46	1.5	20	0	105	85-125	0			
Bromobenzene	21.04	0.38	1.3	20	0	105	80-125	0			
Bromochloromethane	22.9	0.45	1.5	20	0	114	72-141	0			
Bromodichloromethane	20.41	0.49	1.6	20	0	102	75-125	0			
Bromoform	19.7	0.56	1.9	20	0	98.5	60-125	0			
Bromomethane	47.1	0.9	3.0	20	0	236	30-185	0			S
Carbon tetrachloride	18.23	0.4	1.4	20	0	91.2	65-140	0			
Chlorobenzene	21.07	0.4	1.3	20	0	105	80-120	0			
Chloroethane	20.94	0.68	2.3	20	0	105	31-172	0			
Chloroform	20.53	0.46	1.5	20	0	103	80-130	0			
Chloromethane	15.57	0.83	2.8	20	0	77.8	46-148	0			
cis-1,2-Dichloroethene	20.78	0.42	1.4	20	0	104	75-134	0			
cis-1,3-Dichloropropene	19.68	0.57	1.9	20	0	98.4	70-130	0			
Dibromochloromethane	19.37	0.4	1.3	20	0	96.8	60-115	0			
Dibromomethane	21.34	0.65	2.2	20	0	107	79-126	0			
Dichlorodifluoromethane	16.03	0.68	2.3	20	0	80.2	20-120	0			
Ethylbenzene	22.23	0.34	1.1	20	0	111	76-123	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** Gannett Fleming, Inc.  
**Work Order:** 19051617  
**Project:** WRR (55929.005)

## QC BATCH REPORT

Batch ID: <b>R261663a</b>	Instrument ID <b>VMS8</b>		Method: <b>SW8260C</b>						
Hexachlorobutadiene	21.42	0.56	1.9	20	0	107	70-155	0	
Isopropylbenzene	22.97	0.35	1.2	20	0	115	80-127	0	
m,p-Xylene	44.52	0.81	2.7	40	0	111	75-130	0	
Methyl tert-butyl ether	23.15	0.45	1.5	20	0	116	80-130	0	
Methylene chloride	19.34	0.86	2.9	20	0	96.7	72-125	0	
Naphthalene	20.29	0.77	2.6	20	0	101	55-160	0	
n-Butylbenzene	23.44	0.34	1.1	20	0	117	75-145	0	
n-Propylbenzene	20.32	0.48	1.6	20	0	102	83-135	0	
o-Xylene	22.93	0.31	1.0	20	0	115	80-125	0	
p-Isopropyltoluene	23.75	0.26	0.88	20	0	119	61-164	0	
sec-Butylbenzene	23.56	0.3	1.0	20	0	118	80-134	0	
Styrene	25.56	0.33	1.1	20	0	128	83-137	0	
tert-Butylbenzene	21.21	0.39	1.3	20	0	106	70-130	0	
Tetrachloroethene	20.98	0.39	1.3	20	0	105	68-166	0	
Toluene	21.98	0.45	1.5	20	0	110	76-125	0	
trans-1,2-Dichloroethene	22.39	0.48	1.6	20	0	112	80-140	0	
trans-1,3-Dichloropropene	18.93	0.38	2.7	20	0	94.6	56-132	0	
Trichloroethene	20.27	0.43	1.4	20	0	101	77-125	0	
Trichlorofluoromethane	18.01	0.52	1.7	20	0	90	60-140	0	
Vinyl chloride	20.79	0.53	1.8	20	0	104	50-136	0	
Xylenes, Total	67.45	0.81	4.4	60	0	112	80-126	0	
<i>Surr: 1,2-Dichloroethane-d4</i>	20.23	0	0	20	0	101	75-120	0	
<i>Surr: 4-Bromofluorobenzene</i>	20.38	0	0	20	0	102	80-110	0	
<i>Surr: Dibromofluoromethane</i>	20.69	0	0	20	0	103	85-115	0	
<i>Surr: Toluene-d8</i>	20.06	0	0	20	0	100	85-110	0	

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 19051617  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: **R261663a** Instrument ID **VMS8** Method: **SW8260C**

MS		Sample ID: 19051723-03A MS				Units: µg/L		Analysis Date: 5/31/2019 12:17 PM			
Client ID:		Run ID: VMS8_190530B				SeqNo: 5688306		Prep Date:		DF: 20	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	380	7.6	26	400	0	95	73-114	0			
1,1,1-Trichloroethane	410.8	9.2	30	400	0	103	75-130	0			
1,1,2,2-Tetrachloroethane	408.6	8	27	400	0	102	75-130	0			
1,1,2-Trichloroethane	412.4	9.2	31	400	0	103	75-125	0			
1,1-Dichloroethane	402.8	8.8	29	400	0	101	75-133	0			
1,1-Dichloroethene	425.2	8	27	400	0	106	70-145	0			
1,1-Dichloropropene	363.8	7.4	25	400	0	91	75-135	0			
1,2,3-Trichlorobenzene	400.6	8.4	28	400	0	100	70-140	0			
1,2,3-Trichloropropane	363.4	8	26	400	0	90.8	75-125	0			
1,2,4-Trichlorobenzene	381.6	9	30	400	0	95.4	70-135	0			
1,2,4-Trimethylbenzene	386.8	9	30	400	0	96.7	75-130	0			
1,2-Dibromo-3-chloropropane	406.2	8.6	29	400	0	102	60-130	0			
1,2-Dibromoethane	461.8	8.2	27	400	0	115	90-195	0			
1,2-Dichlorobenzene	407.4	6.4	21	400	0	102	70-130	0			
1,2-Dichloroethane	392.4	8.8	29	400	0	98.1	78-125	0			
1,2-Dichloropropane	393	9.6	32	400	0	98.2	75-125	0			
1,3,5-Trimethylbenzene	397.8	13	43	400	0	99.4	75-130	0			
1,3-Dichlorobenzene	407.2	6.6	22	400	0	102	75-130	0			
1,3-Dichloropropane	376.6	8	26	400	0	94.2	75-125	0			
1,4-Dichlorobenzene	405.8	7	23	400	0	101	75-130	0			
2,2-Dichloropropane	253.2	10	34	400	0	63.3	43-150	0			
2-Butanone	438.8	10	35	400	0	110	55-150	0			
2-Chlorotoluene	380.4	7.2	24	400	0	95.1	76-117	0			
4-Chlorotoluene	389.2	6.2	20	400	0	97.3	80-125	0			
4-Methyl-2-pentanone	583.4	10	35	400	0	146	77-178	0			
Acetone	467.8	22	72	400	7.8	115	60-160	0			
Benzene	388.8	9.2	30	400	0	97.2	85-125	0			
Bromobenzene	364.8	7.6	25	400	0	91.2	80-125	0			
Bromochloromethane	484.2	9	30	400	0	121	72-141	0			
Bromodichloromethane	380.4	9.8	33	400	0	95.1	75-125	0			
Bromoform	341.4	11	37	400	0	85.4	60-125	0			
Bromomethane	1606	18	60	400	0	402	30-185	0			S
Carbon tetrachloride	332.8	8	27	400	0	83.2	65-140	0			
Chlorobenzene	394	8	27	400	0	98.5	80-120	0			
Chloroethane	392	14	45	400	0	98	31-172	0			
Chloroform	395.6	9.2	31	400	0	98.9	80-130	0			
Chloromethane	221.8	17	55	400	0	55.4	46-148	0			
cis-1,2-Dichloroethene	389.2	8.4	28	400	7.2	95.5	75-134	0			
cis-1,3-Dichloropropene	362.6	11	38	400	0	90.6	70-130	0			
Dibromochloromethane	347.8	8	26	400	0	87	60-115	0			
Dibromomethane	398.2	13	43	400	0	99.6	79-126	0			
Dichlorodifluoromethane	343.4	14	45	400	0	85.8	20-120	0			
Ethylbenzene	477.8	6.8	22	400	78.8	99.8	76-123	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** Gannett Fleming, Inc.  
**Work Order:** 19051617  
**Project:** WRR (55929.005)

## QC BATCH REPORT

Batch ID: <b>R261663a</b>	Instrument ID <b>VMS8</b>			Method: <b>SW8260C</b>					
Hexachlorobutadiene	285.6	11	37	400	0	71.4	70-155	0	
Isopropylbenzene	412	7	23	400	7	101	80-127	0	
m,p-Xylene	928	16	54	800	127.2	100	75-130	0	
Methyl tert-butyl ether	437.6	9	30	400	0	109	80-130	0	
Methylene chloride	356.8	17	58	400	0	89.2	72-125	0	
Naphthalene	372.8	15	51	400	0	93.2	55-160	0	
n-Butylbenzene	398.6	6.8	22	400	0	99.6	75-145	0	
n-Propylbenzene	347.6	9.6	32	400	0	86.9	83-135	0	
o-Xylene	457.8	6.2	21	400	45.2	103	80-125	0	
p-Isopropyltoluene	429	5.2	18	400	0	107	61-164	0	
sec-Butylbenzene	391	6	20	400	0	97.8	80-134	0	
Styrene	462.8	6.6	22	400	0	116	83-137	0	
tert-Butylbenzene	370.4	7.8	26	400	0	92.6	70-130	0	
Tetrachloroethene	387	7.8	26	400	0	96.8	68-166	0	
Toluene	407.8	9	30	400	0	102	76-125	0	
trans-1,2-Dichloroethene	429	9.6	32	400	0	107	80-140	0	
trans-1,3-Dichloropropene	322.4	7.6	55	400	0	80.6	56-132	0	
Trichloroethene	374.2	8.6	29	400	18.2	89	77-125	0	
Trichlorofluoromethane	404	10	34	400	0	101	60-140	0	
Vinyl chloride	406.2	11	35	400	0	102	50-136	0	
Xylenes, Total	1386	16	89	1200	172.4	101	80-126	0	
<i>Surr: 1,2-Dichloroethane-d4</i>	403	0	0	400	0	101	75-120	0	
<i>Surr: 4-Bromofluorobenzene</i>	377.2	0	0	400	0	94.3	80-110	0	
<i>Surr: Dibromofluoromethane</i>	411.4	0	0	400	0	103	85-115	0	
<i>Surr: Toluene-d8</i>	391.8	0	0	400	0	98	85-110	0	

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.



Client: Gannett Fleming, Inc.  
 Work Order: 19051617  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: **R261663a** Instrument ID **VMS8** Method: **SW8260C**

MSD		Sample ID: 19051723-03A MSD				Units: µg/L			Analysis Date: 5/31/2019 12:34 PM		
Client ID:		Run ID: VMS8_190530B				SeqNo: 5688307		Prep Date:		DF: 20	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	371.6	7.6	26	400	0	92.9	73-114	380	2.24	30	
1,1,1-Trichloroethane	397.8	9.2	30	400	0	99.4	75-130	410.8	3.22	30	
1,1,2,2-Tetrachloroethane	404.4	8	27	400	0	101	75-130	408.6	1.03	30	
1,1,2-Trichloroethane	412.4	9.2	31	400	0	103	75-125	412.4	0	30	
1,1-Dichloroethane	388.4	8.8	29	400	0	97.1	75-133	402.8	3.64	30	
1,1-Dichloroethene	403.4	8	27	400	0	101	70-145	425.2	5.26	30	
1,1-Dichloropropene	354.8	7.4	25	400	0	88.7	75-135	363.8	2.5	30	
1,2,3-Trichlorobenzene	410.2	8.4	28	400	0	103	70-140	400.6	2.37	30	
1,2,3-Trichloropropane	367.8	8	26	400	0	92	75-125	363.4	1.2	30	
1,2,4-Trichlorobenzene	387.2	9	30	400	0	96.8	70-135	381.6	1.46	30	
1,2,4-Trimethylbenzene	388.2	9	30	400	0	97	75-130	386.8	0.361	30	
1,2-Dibromo-3-chloropropane	402.6	8.6	29	400	0	101	60-130	406.2	0.89	30	
1,2-Dibromoethane	458.2	8.2	27	400	0	115	90-195	461.8	0.783	30	
1,2-Dichlorobenzene	420.2	6.4	21	400	0	105	70-130	407.4	3.09	30	
1,2-Dichloroethane	392.8	8.8	29	400	0	98.2	78-125	392.4	0.102	30	
1,2-Dichloropropane	380.4	9.6	32	400	0	95.1	75-125	393	3.26	30	
1,3,5-Trimethylbenzene	390.6	13	43	400	0	97.6	75-130	397.8	1.83	30	
1,3-Dichlorobenzene	418.2	6.6	22	400	0	105	75-130	407.2	2.67	30	
1,3-Dichloropropane	385	8	26	400	0	96.2	75-125	376.6	2.21	30	
1,4-Dichlorobenzene	404.8	7	23	400	0	101	75-130	405.8	0.247	30	
2,2-Dichloropropane	252.6	10	34	400	0	63.2	43-150	253.2	0.237	30	
2-Butanone	436.6	10	35	400	0	109	55-150	438.8	0.503	30	
2-Chlorotoluene	384.4	7.2	24	400	0	96.1	76-117	380.4	1.05	30	
4-Chlorotoluene	386	6.2	20	400	0	96.5	80-125	389.2	0.826	30	
4-Methyl-2-pentanone	556.6	10	35	400	0	139	77-178	583.4	4.7	30	
Acetone	434.8	22	72	400	7.8	107	60-160	467.8	7.31	30	
Benzene	388.8	9.2	30	400	0	97.2	85-125	388.8	0	30	
Bromobenzene	370.2	7.6	25	400	0	92.6	80-125	364.8	1.47	30	
Bromochloromethane	462.6	9	30	400	0	116	72-141	484.2	4.56	30	
Bromodichloromethane	381.4	9.8	33	400	0	95.4	75-125	380.4	0.263	30	
Bromoform	345	11	37	400	0	86.2	60-125	341.4	1.05	30	
Bromomethane	1533	18	60	400	0	383	30-185	1606	4.68	30	S
Carbon tetrachloride	327.8	8	27	400	0	82	65-140	332.8	1.51	30	
Chlorobenzene	391	8	27	400	0	97.8	80-120	394	0.764	30	
Chloroethane	340.4	14	45	400	0	85.1	31-172	392	14.1	30	
Chloroform	380.8	9.2	31	400	0	95.2	80-130	395.6	3.81	30	
Chloromethane	201.2	17	55	400	0	50.3	46-148	221.8	9.74	30	
cis-1,2-Dichloroethene	376	8.4	28	400	7.2	92.2	75-134	389.2	3.45	30	
cis-1,3-Dichloropropene	350.4	11	38	400	0	87.6	70-130	362.6	3.42	30	
Dibromochloromethane	355.4	8	26	400	0	88.8	60-115	347.8	2.16	30	
Dibromomethane	398.2	13	43	400	0	99.6	79-126	398.2	0	30	
Dichlorodifluoromethane	266	14	45	400	0	66.5	20-120	343.4	25.4	30	
Ethylbenzene	481.8	6.8	22	400	78.8	101	76-123	477.8	0.834	30	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 19051617  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: <b>R261663a</b>	Instrument ID <b>VMS8</b>			Method: <b>SW8260C</b>						
Hexachlorobutadiene	290.4	11	37	400	0	72.6	70-155	285.6	1.67	30
Isopropylbenzene	408.4	7	23	400	7	100	80-127	412	0.878	30
m,p-Xylene	933.8	16	54	800	127.2	101	75-130	928	0.623	30
Methyl tert-butyl ether	415.4	9	30	400	0	104	80-130	437.6	5.21	30
Methylene chloride	338.2	17	58	400	0	84.6	72-125	356.8	5.35	30
Naphthalene	388.2	15	51	400	0	97	55-160	372.8	4.05	30
n-Butylbenzene	392.4	6.8	22	400	0	98.1	75-145	398.6	1.57	30
n-Propylbenzene	353.6	9.6	32	400	0	88.4	83-135	347.6	1.71	30
o-Xylene	461.6	6.2	21	400	45.2	104	80-125	457.8	0.827	30
p-Isopropyltoluene	409.6	5.2	18	400	0	102	61-164	429	4.63	30
sec-Butylbenzene	387.8	6	20	400	0	97	80-134	391	0.822	30
Styrene	466.6	6.6	22	400	0	117	83-137	462.8	0.818	30
tert-Butylbenzene	361.8	7.8	26	400	0	90.4	70-130	370.4	2.35	30
Tetrachloroethene	387.8	7.8	26	400	0	97	68-166	387	0.207	30
Toluene	405.4	9	30	400	0	101	76-125	407.8	0.59	30
trans-1,2-Dichloroethene	398.8	9.6	32	400	0	99.7	80-140	429	7.3	30
trans-1,3-Dichloropropene	325.2	7.6	55	400	0	81.3	56-132	322.4	0.865	30
Trichloroethene	370.4	8.6	29	400	18.2	88	77-125	374.2	1.02	30
Trichlorofluoromethane	399	10	34	400	0	99.8	60-140	404	1.25	30
Vinyl chloride	389.4	11	35	400	0	97.4	50-136	406.2	4.22	30
Xylenes, Total	1395	16	89	1200	172.4	102	80-126	1386	0.69	30
<i>Surr: 1,2-Dichloroethane-d4</i>	407	0	0	400	0	102	75-120	403	0.988	30
<i>Surr: 4-Bromofluorobenzene</i>	388.6	0	0	400	0	97.2	80-110	377.2	2.98	30
<i>Surr: Dibromofluoromethane</i>	412.2	0	0	400	0	103	85-115	411.4	0.194	30
<i>Surr: Toluene-d8</i>	402.2	0	0	400	0	101	85-110	391.8	2.62	30

The following samples were analyzed in this batch:

19051617-19A	19051617-41A	19051617-42A
19051617-43A	19051617-44A	19051617-45A
19051617-46A	19051617-48A	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 19051617  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: **R261701** Instrument ID **VMS8** Method: **SW8260C**

MBLK		Sample ID: <b>VBLKW3-190531-R261701</b>			Units: <b>µg/L</b>		Analysis Date: <b>5/31/2019 03:37 PM</b>				
Client ID:		Run ID: <b>VMS8_190531A</b>			SeqNo: <b>5689838</b>		Prep Date:		DF: <b>1</b>		
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	U	0.38	1.3								
1,1,1-Trichloroethane	U	0.46	1.5								
1,1,2,2-Tetrachloroethane	U	0.4	1.3								
1,1,2-Trichloroethane	U	0.46	1.5								
1,1-Dichloroethane	U	0.44	1.5								
1,1-Dichloroethene	U	0.4	1.4								
1,1-Dichloropropene	U	0.37	1.2								
1,2,3-Trichlorobenzene	U	0.42	1.4								
1,2,3-Trichloropropane	U	0.4	1.3								
1,2,4-Trichlorobenzene	U	0.45	1.5								
1,2,4-Trimethylbenzene	U	0.45	1.5								
1,2-Dibromo-3-chloropropane	U	0.43	1.4								
1,2-Dibromoethane	U	0.41	1.4								
1,2-Dichlorobenzene	U	0.32	1.1								
1,2-Dichloroethane	U	0.44	1.4								
1,2-Dichloropropane	U	0.48	1.6								
1,3,5-Trimethylbenzene	U	0.65	2.2								
1,3-Dichlorobenzene	U	0.33	1.1								
1,3-Dichloropropane	U	0.4	1.3								
1,4-Dichlorobenzene	U	0.35	1.2								
2,2-Dichloropropane	U	0.52	1.7								
2-Butanone	U	0.52	1.7								
2-Chlorotoluene	U	0.36	1.2								
2-Propanol	U	33	110								
4-Chlorotoluene	U	0.31	1.0								
4-Methyl-2-pentanone	U	0.52	1.7								
Acetone	U	1.1	3.6								
Benzene	U	0.46	1.5								
Bromobenzene	U	0.38	1.3								
Bromochloromethane	U	0.45	1.5								
Bromodichloromethane	U	0.49	1.6								
Bromoform	U	0.56	1.9								
Bromomethane	U	0.9	3.0								
Carbon tetrachloride	U	0.4	1.4								
Chlorobenzene	U	0.4	1.3								
Chloroethane	U	0.68	2.3								
Chloroform	U	0.46	1.5								
Chloromethane	U	0.83	2.8								
cis-1,2-Dichloroethene	U	0.42	1.4								
cis-1,3-Dichloropropene	U	0.57	1.9								
Dibromochloromethane	U	0.4	1.3								
Dibromomethane	U	0.65	2.2								
Dichlorodifluoromethane	U	0.68	2.3								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 19051617  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: <b>R261701</b>	Instrument ID <b>VMS8</b>	Method: <b>SW8260C</b>						
Diisopropyl ether	U	0.41	1.4					
Ethylbenzene	U	0.34	1.1					
Hexachlorobutadiene	U	0.56	1.9					
Isopropylbenzene	U	0.35	1.2					
m,p-Xylene	U	0.81	2.7					
Methyl tert-butyl ether	U	0.45	1.5					
Methylene chloride	U	0.86	2.9					
Naphthalene	U	0.77	2.6					
n-Butylbenzene	U	0.34	1.1					
n-Propylbenzene	U	0.48	1.6					
o-Xylene	U	0.31	1.0					
p-Isopropyltoluene	U	0.26	0.88					
sec-Butylbenzene	U	0.3	1.0					
Styrene	U	0.33	1.1					
tert-Butylbenzene	U	0.39	1.3					
Tetrachloroethene	U	0.39	1.3					
Toluene	U	0.45	1.5					
trans-1,2-Dichloroethene	U	0.48	1.6					
trans-1,3-Dichloropropene	U	0.38	2.7					
Trichloroethene	U	0.43	1.4					
Trichlorofluoromethane	U	0.52	1.7					
Vinyl chloride	U	0.53	1.8					
Xylenes, Total	U	0.81	4.4					
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>20.7</i>	<i>0</i>	<i>0</i>	<i>20</i>	<i>0</i>	<i>104</i>	<i>75-120</i>	<i>0</i>
<i>Surr: 4-Bromofluorobenzene</i>	<i>18.64</i>	<i>0</i>	<i>0</i>	<i>20</i>	<i>0</i>	<i>93.2</i>	<i>80-110</i>	<i>0</i>
<i>Surr: Dibromofluoromethane</i>	<i>21.24</i>	<i>0</i>	<i>0</i>	<i>20</i>	<i>0</i>	<i>106</i>	<i>85-115</i>	<i>0</i>
<i>Surr: Toluene-d8</i>	<i>20.1</i>	<i>0</i>	<i>0</i>	<i>20</i>	<i>0</i>	<i>100</i>	<i>85-110</i>	<i>0</i>

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 19051617  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: **R261701** Instrument ID **VMS8** Method: **SW8260C**

LCS		Sample ID: <b>VLCSW1-190531-R261701</b>				Units: <b>µg/L</b>		Analysis Date: <b>5/31/2019 02:47 PM</b>			
Client ID:		Run ID: <b>VMS8_190531A</b>				SeqNo: <b>5689837</b>		Prep Date:		DF: <b>1</b>	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	20.2	0.38	1.3	20	0	101	73-114	0			
1,1,1-Trichloroethane	21.56	0.46	1.5	20	0	108	75-130	0			
1,1,2,2-Tetrachloroethane	21.48	0.4	1.3	20	0	107	75-130	0			
1,1,2-Trichloroethane	21.55	0.46	1.5	20	0	108	75-125	0			
1,1-Dichloroethane	20.84	0.44	1.5	20	0	104	75-133	0			
1,1-Dichloroethene	21.21	0.4	1.4	20	0	106	70-145	0			
1,1-Dichloropropene	19.03	0.37	1.2	20	0	95.2	75-135	0			
1,2,3-Trichlorobenzene	21.67	0.42	1.4	20	0	108	70-140	0			
1,2,3-Trichloropropane	18.76	0.4	1.3	20	0	93.8	75-125	0			
1,2,4-Trichlorobenzene	22.39	0.45	1.5	20	0	112	70-135	0			
1,2,4-Trimethylbenzene	20.95	0.45	1.5	20	0	105	75-130	0			
1,2-Dibromo-3-chloropropane	21.96	0.43	1.4	20	0	110	60-130	0			
1,2-Dibromoethane	24.16	0.41	1.4	20	0	121	90-195	0			
1,2-Dichlorobenzene	22.71	0.32	1.1	20	0	114	70-130	0			
1,2-Dichloroethane	20.91	0.44	1.4	20	0	105	78-125	0			
1,2-Dichloropropane	20.25	0.48	1.6	20	0	101	75-125	0			
1,3,5-Trimethylbenzene	21.87	0.65	2.2	20	0	109	75-130	0			
1,3-Dichlorobenzene	22.81	0.33	1.1	20	0	114	75-130	0			
1,3-Dichloropropane	20.35	0.4	1.3	20	0	102	75-125	0			
1,4-Dichlorobenzene	22.58	0.35	1.2	20	0	113	75-130	0			
2,2-Dichloropropane	21.08	0.52	1.7	20	0	105	43-150	0			
2-Butanone	21.75	0.52	1.7	20	0	109	55-150	0			
2-Chlorotoluene	20.91	0.36	1.2	20	0	105	76-117	0			
4-Chlorotoluene	20.59	0.31	1.0	20	0	103	80-125	0			
4-Methyl-2-pentanone	30.43	0.52	1.7	20	0	152	77-178	0			
Acetone	21.1	1.1	3.6	20	0	106	60-160	0			
Benzene	20.66	0.46	1.5	20	0	103	85-125	0			
Bromobenzene	19.59	0.38	1.3	20	0	98	80-125	0			
Bromochloromethane	24.26	0.45	1.5	20	0	121	72-141	0			
Bromodichloromethane	20.1	0.49	1.6	20	0	100	75-125	0			
Bromoform	18.28	0.56	1.9	20	0	91.4	60-125	0			
Bromomethane	80.41	0.9	3.0	20	0	402	30-185	0			S
Carbon tetrachloride	17.64	0.4	1.4	20	0	88.2	65-140	0			
Chlorobenzene	20.75	0.4	1.3	20	0	104	80-120	0			
Chloroethane	20.35	0.68	2.3	20	0	102	31-172	0			
Chloroform	19.76	0.46	1.5	20	0	98.8	80-130	0			
Chloromethane	14.8	0.83	2.8	20	0	74	46-148	0			
cis-1,2-Dichloroethene	21.27	0.42	1.4	20	0	106	75-134	0			
cis-1,3-Dichloropropene	20.29	0.57	1.9	20	0	101	70-130	0			
Dibromochloromethane	19.14	0.4	1.3	20	0	95.7	60-115	0			
Dibromomethane	20.44	0.65	2.2	20	0	102	79-126	0			
Dichlorodifluoromethane	14.11	0.68	2.3	20	0	70.6	20-120	0			
Ethylbenzene	21.53	0.34	1.1	20	0	108	76-123	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** Gannett Fleming, Inc.  
**Work Order:** 19051617  
**Project:** WRR (55929.005)

## QC BATCH REPORT

Batch ID: <b>R261701</b>	Instrument ID <b>VMS8</b>		Method: <b>SW8260C</b>						
Hexachlorobutadiene	23.69	0.56	1.9	20	0	118	70-155	0	
Isopropylbenzene	22.16	0.35	1.2	20	0	111	80-127	0	
m,p-Xylene	42.96	0.81	2.7	40	0	107	75-130	0	
Methyl tert-butyl ether	22.68	0.45	1.5	20	0	113	80-130	0	
Methylene chloride	19.99	0.86	2.9	20	0	100	72-125	0	
Naphthalene	20.01	0.77	2.6	20	0	100	55-160	0	
n-Butylbenzene	24.25	0.34	1.1	20	0	121	75-145	0	
n-Propylbenzene	19.59	0.48	1.6	20	0	98	83-135	0	
o-Xylene	21.82	0.31	1.0	20	0	109	80-125	0	
p-Isopropyltoluene	24.23	0.26	0.88	20	0	121	61-164	0	
sec-Butylbenzene	21.77	0.3	1.0	20	0	109	80-134	0	
Styrene	24.54	0.33	1.1	20	0	123	83-137	0	
tert-Butylbenzene	20.05	0.39	1.3	20	0	100	70-130	0	
Tetrachloroethene	20.31	0.39	1.3	20	0	102	68-166	0	
Toluene	21.05	0.45	1.5	20	0	105	76-125	0	
trans-1,2-Dichloroethene	22.34	0.48	1.6	20	0	112	80-140	0	
trans-1,3-Dichloropropene	19.61	0.38	2.7	20	0	98	56-132	0	
Trichloroethene	20.25	0.43	1.4	20	0	101	77-125	0	
Trichlorofluoromethane	18.56	0.52	1.7	20	0	92.8	60-140	0	
Vinyl chloride	20.86	0.53	1.8	20	0	104	50-136	0	
Xylenes, Total	64.78	0.81	4.4	60	0	108	80-126	0	
<i>Surr: 1,2-Dichloroethane-d4</i>	20.58	0	0	20	0	103	75-120	0	
<i>Surr: 4-Bromofluorobenzene</i>	20.16	0	0	20	0	101	80-110	0	
<i>Surr: Dibromofluoromethane</i>	21.58	0	0	20	0	108	85-115	0	
<i>Surr: Toluene-d8</i>	20.03	0	0	20	0	100	85-110	0	

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 19051617  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: **R261701** Instrument ID **VMS8** Method: **SW8260C**

MS		Sample ID: 19051723-18A MS				Units: µg/L		Analysis Date: 5/31/2019 10:16 PM			
Client ID:		Run ID: VMS8_190531A				SeqNo: 5689859		Prep Date:		DF: 50	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	877	19	64	1000	0	87.7	73-114	0			
1,1,1-Trichloroethane	958	23	76	1000	0	95.8	75-130	0			
1,1,2,2-Tetrachloroethane	954.5	20	67	1000	0	95.4	75-130	0			
1,1,2-Trichloroethane	962	23	77	1000	0	96.2	75-125	0			
1,1-Dichloroethane	1011	22	74	1000	54	95.7	75-133	0			
1,1-Dichloroethene	1048	20	68	1000	0	105	70-145	0			
1,1-Dichloropropene	863.5	18	62	1000	0	86.4	75-135	0			
1,2,3-Trichlorobenzene	963	21	70	1000	0	96.3	70-140	0			
1,2,3-Trichloropropane	865	20	66	1000	0	86.5	75-125	0			
1,2,4-Trichlorobenzene	957	22	76	1000	0	95.7	70-135	0			
1,2,4-Trimethylbenzene	1580	22	75	1000	661	91.9	75-130	0			
1,2-Dibromo-3-chloropropane	1002	22	72	1000	0	100	60-130	0			
1,2-Dibromoethane	1122	20	68	1000	0	112	90-195	0			
1,2-Dichlorobenzene	998	16	54	1000	0	99.8	70-130	0			
1,2-Dichloroethane	927.5	22	72	1000	0	92.8	78-125	0			
1,2-Dichloropropane	908.5	24	80	1000	0	90.8	75-125	0			
1,3,5-Trimethylbenzene	1107	32	110	1000	142.5	96.4	75-130	0			
1,3-Dichlorobenzene	976	16	54	1000	0	97.6	75-130	0			
1,3-Dichloropropane	921.5	20	66	1000	0	92.2	75-125	0			
1,4-Dichlorobenzene	950	18	58	1000	0	95	75-130	0			
2,2-Dichloropropane	884.5	26	86	1000	0	88.4	43-150	0			
2-Butanone	1108	26	86	1000	0	111	55-150	0			
2-Chlorotoluene	935	18	60	1000	0	93.5	76-117	0			
4-Chlorotoluene	928	16	51	1000	0	92.8	80-125	0			
4-Methyl-2-pentanone	1420	26	86	1000	0	142	77-178	0			
Acetone	1054	54	180	1000	0	105	60-160	0			
Benzene	929.5	23	76	1000	0	93	85-125	0			
Bromobenzene	856.5	19	63	1000	0	85.6	80-125	0			
Bromochloromethane	1145	22	74	1000	0	114	72-141	0			
Bromodichloromethane	906	24	82	1000	0	90.6	75-125	0			
Bromoform	822	28	94	1000	0	82.2	60-125	0			
Bromomethane	1912	45	150	1000	0	191	30-185	0			S
Carbon tetrachloride	809	20	68	1000	0	80.9	65-140	0			
Chlorobenzene	927.5	20	67	1000	0	92.8	80-120	0			
Chloroethane	1042	34	110	1000	0	104	31-172	0			
Chloroform	943	23	76	1000	0	94.3	80-130	0			
Chloromethane	820.5	42	140	1000	0	82	46-148	0			
cis-1,2-Dichloroethene	997	21	69	1000	31.5	96.6	75-134	0			
cis-1,3-Dichloropropene	908.5	28	96	1000	0	90.8	70-130	0			
Dibromochloromethane	812	20	66	1000	0	81.2	60-115	0			
Dibromomethane	923	32	110	1000	0	92.3	79-126	0			
Dichlorodifluoromethane	736.5	34	110	1000	50	68.6	20-120	0			
Ethylbenzene	1768	17	56	1000	832.5	93.5	76-123	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** Gannett Fleming, Inc.  
**Work Order:** 19051617  
**Project:** WRR (55929.005)

## QC BATCH REPORT

Batch ID: <b>R261701</b>	Instrument ID <b>VMS8</b>	Method: <b>SW8260C</b>							
Hexachlorobutadiene	924	28	94	1000	0	92.4	70-155	0	
Isopropylbenzene	1032	18	58	1000	52.5	97.9	80-127	0	
m,p-Xylene	4394	40	140	2000	2614	89	75-130	0	
Methyl tert-butyl ether	1085	22	76	1000	0	108	80-130	0	
Methylene chloride	887	43	140	1000	0	88.7	72-125	0	
Naphthalene	961.5	38	130	1000	53	90.8	55-160	0	
n-Butylbenzene	1053	17	56	1000	0	105	75-145	0	
n-Propylbenzene	944.5	24	80	1000	100.5	84.4	83-135	0	
o-Xylene	1564	16	52	1000	622.5	94.1	80-125	0	
p-Isopropyltoluene	1045	13	44	1000	0	104	61-164	0	
sec-Butylbenzene	966	15	50	1000	0	96.6	80-134	0	
Styrene	1090	16	56	1000	0	109	83-137	0	
tert-Butylbenzene	962	20	66	1000	0	96.2	70-130	0	
Tetrachloroethene	884	20	66	1000	0	88.4	68-166	0	
Toluene	1188	22	76	1000	377.5	81.1	76-125	0	
trans-1,2-Dichloroethene	1056	24	80	1000	0	106	80-140	0	
trans-1,3-Dichloropropene	821.5	19	140	1000	0	82.2	56-132	0	
Trichloroethene	914.5	22	72	1000	0	91.4	77-125	0	
Trichlorofluoromethane	1011	26	86	1000	0	101	60-140	0	
Vinyl chloride	989.5	26	88	1000	0	99	50-136	0	
Xylenes, Total	5958	40	220	3000	3237	90.7	80-126	0	
<i>Surr: 1,2-Dichloroethane-d4</i>	981.5	0	0	1000	0	98.2	75-120	0	
<i>Surr: 4-Bromofluorobenzene</i>	962	0	0	1000	0	96.2	80-110	0	
<i>Surr: Dibromofluoromethane</i>	1034	0	0	1000	0	103	85-115	0	
<i>Surr: Toluene-d8</i>	1003	0	0	1000	0	100	85-110	0	

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.



Client: Gannett Fleming, Inc.  
 Work Order: 19051617  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: **R261701** Instrument ID **VMS8** Method: **SW8260C**

MSD		Sample ID: 19051723-18A MSD				Units: µg/L		Analysis Date: 5/31/2019 10:32 PM			
Client ID:		Run ID: VMS8_190531A				SeqNo: 5689860		Prep Date:		DF: 50	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	999	19	64	1000	0	99.9	73-114	877	13	30	
1,1,1-Trichloroethane	1110	23	76	1000	0	111	75-130	958	14.7	30	
1,1,2,2-Tetrachloroethane	1056	20	67	1000	0	106	75-130	954.5	10.1	30	
1,1,2-Trichloroethane	1055	23	77	1000	0	106	75-125	962	9.22	30	
1,1-Dichloroethane	1157	22	74	1000	54	110	75-133	1011	13.5	30	
1,1-Dichloroethene	1188	20	68	1000	0	119	70-145	1048	12.6	30	
1,1-Dichloropropene	1002	18	62	1000	0	100	75-135	863.5	14.9	30	
1,2,3-Trichlorobenzene	1002	21	70	1000	0	100	70-140	963	3.97	30	
1,2,3-Trichloropropane	947.5	20	66	1000	0	94.8	75-125	865	9.1	30	
1,2,4-Trichlorobenzene	1019	22	76	1000	0	102	70-135	957	6.28	30	
1,2,4-Trimethylbenzene	1740	22	75	1000	661	108	75-130	1580	9.64	30	
1,2-Dibromo-3-chloropropane	1022	22	72	1000	0	102	60-130	1002	2.03	30	
1,2-Dibromoethane	1194	20	68	1000	0	119	90-195	1122	6.18	30	
1,2-Dichlorobenzene	1078	16	54	1000	0	108	70-130	998	7.71	30	
1,2-Dichloroethane	1051	22	72	1000	0	105	78-125	927.5	12.5	30	
1,2-Dichloropropane	1062	24	80	1000	0	106	75-125	908.5	15.6	30	
1,3,5-Trimethylbenzene	1251	32	110	1000	142.5	111	75-130	1107	12.2	30	
1,3-Dichlorobenzene	1054	16	54	1000	0	105	75-130	976	7.64	30	
1,3-Dichloropropane	1002	20	66	1000	0	100	75-125	921.5	8.37	30	
1,4-Dichlorobenzene	1040	18	58	1000	0	104	75-130	950	9.05	30	
2,2-Dichloropropane	1026	26	86	1000	0	103	43-150	884.5	14.8	30	
2-Butanone	1136	26	86	1000	0	114	55-150	1108	2.54	30	
2-Chlorotoluene	1081	18	60	1000	0	108	76-117	935	14.5	30	
4-Chlorotoluene	1051	16	51	1000	0	105	80-125	928	12.4	30	
4-Methyl-2-pentanone	1521	26	86	1000	0	152	77-178	1420	6.83	30	
Acetone	1099	54	180	1000	0	110	60-160	1054	4.13	30	
Benzene	1078	23	76	1000	0	108	85-125	929.5	14.8	30	
Bromobenzene	979.5	19	63	1000	0	98	80-125	856.5	13.4	30	
Bromochloromethane	1271	22	74	1000	0	127	72-141	1145	10.4	30	
Bromodichloromethane	1012	24	82	1000	0	101	75-125	906	11.1	30	
Bromoform	901	28	94	1000	0	90.1	60-125	822	9.17	30	
Bromomethane	2209	45	150	1000	0	221	30-185	1912	14.4	30	S
Carbon tetrachloride	940.5	20	68	1000	0	94	65-140	809	15	30	
Chlorobenzene	1028	20	67	1000	0	103	80-120	927.5	10.2	30	
Chloroethane	995.5	34	110	1000	0	99.6	31-172	1042	4.61	30	
Chloroform	1074	23	76	1000	0	107	80-130	943	12.9	30	
Chloromethane	1016	42	140	1000	0	102	46-148	820.5	21.3	30	
cis-1,2-Dichloroethene	1132	21	69	1000	31.5	110	75-134	997	12.6	30	
cis-1,3-Dichloropropene	1016	28	96	1000	0	102	70-130	908.5	11.2	30	
Dibromochloromethane	906.5	20	66	1000	0	90.6	60-115	812	11	30	
Dibromomethane	1046	32	110	1000	0	105	79-126	923	12.5	30	
Dichlorodifluoromethane	785	34	110	1000	50	73.5	20-120	736.5	6.38	30	
Ethylbenzene	1921	17	56	1000	832.5	109	76-123	1768	8.32	30	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 19051617  
 Project: WRR (55929.005)

## QC BATCH REPORT

Batch ID: <b>R261701</b>	Instrument ID <b>VMS8</b>			Method: <b>SW8260C</b>							
Hexachlorobutadiene	1042	28	94	1000	0	104	70-155	924	12	30	
Isopropylbenzene	1166	18	58	1000	52.5	111	80-127	1032	12.2	30	
m,p-Xylene	4690	40	140	2000	2614	104	75-130	4394	6.52	30	
Methyl tert-butyl ether	1195	22	76	1000	0	120	80-130	1085	9.65	30	
Methylene chloride	962.5	43	140	1000	0	96.2	72-125	887	8.16	30	
Naphthalene	1000	38	130	1000	53	94.8	55-160	961.5	3.98	30	
n-Butylbenzene	1144	17	56	1000	0	114	75-145	1053	8.24	30	
n-Propylbenzene	1076	24	80	1000	100.5	97.6	83-135	944.5	13.1	30	
o-Xylene	1730	16	52	1000	622.5	111	80-125	1564	10.1	30	
p-Isopropyltoluene	1185	13	44	1000	0	118	61-164	1045	12.6	30	
sec-Butylbenzene	1107	15	50	1000	0	111	80-134	966	13.6	30	
Styrene	1242	16	56	1000	0	124	83-137	1090	13	30	
tert-Butylbenzene	1088	20	66	1000	0	109	70-130	962	12.3	30	
Tetrachloroethene	1026	20	66	1000	0	103	68-166	884	14.9	30	
Toluene	1295	22	76	1000	377.5	91.8	76-125	1188	8.58	30	
trans-1,2-Dichloroethene	1201	24	80	1000	0	120	80-140	1056	12.8	30	
trans-1,3-Dichloropropene	909.5	19	140	1000	0	91	56-132	821.5	10.2	30	
Trichloroethene	1030	22	72	1000	0	103	77-125	914.5	11.9	30	
Trichlorofluoromethane	1154	26	86	1000	0	115	60-140	1011	13.2	30	
Vinyl chloride	1063	26	88	1000	0	106	50-136	989.5	7.16	30	
Xylenes, Total	6421	40	220	3000	3237	106	80-126	5958	7.48	30	
Surr: 1,2-Dichloroethane-d4	981.5	0	0	1000	0	98.2	75-120	981.5	0	30	
Surr: 4-Bromofluorobenzene	977.5	0	0	1000	0	97.8	80-110	962	1.6	30	
Surr: Dibromofluoromethane	1063	0	0	1000	0	106	85-115	1034	2.77	30	
Surr: Toluene-d8	996	0	0	1000	0	99.6	85-110	1003	0.7	30	

The following samples were analyzed in this batch:

19051617-21A	19051617-22A	19051617-26A
19051617-27A	19051617-37A	19051617-38A
19051617-47A		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 19051617  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: **R261838b** Instrument ID **VMS8** Method: **SW8260C**

MBLK		Sample ID: <b>VBLKW2-190603-R261838b</b>			Units: <b>µg/L</b>		Analysis Date: <b>6/3/2019 10:58 PM</b>				
Client ID:		Run ID: <b>VMS8_190603B</b>			SeqNo: <b>5693548</b>		Prep Date:		DF: <b>1</b>		
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	U	0.38	1.3								
1,1,1-Trichloroethane	U	0.46	1.5								
1,1,2,2-Tetrachloroethane	U	0.4	1.3								
1,1,2-Trichloroethane	U	0.46	1.5								
1,1-Dichloroethane	U	0.44	1.5								
1,1-Dichloroethene	U	0.4	1.4								
1,1-Dichloropropene	U	0.37	1.2								
1,2,3-Trichlorobenzene	U	0.42	1.4								
1,2,3-Trichloropropane	U	0.4	1.3								
1,2,4-Trichlorobenzene	U	0.45	1.5								
1,2,4-Trimethylbenzene	U	0.45	1.5								
1,2-Dibromo-3-chloropropane	U	0.43	1.4								
1,2-Dibromoethane	U	0.41	1.4								
1,2-Dichlorobenzene	U	0.32	1.1								
1,2-Dichloroethane	U	0.44	1.4								
1,2-Dichloropropane	U	0.48	1.6								
1,3,5-Trimethylbenzene	U	0.65	2.2								
1,3-Dichlorobenzene	U	0.33	1.1								
1,3-Dichloropropane	U	0.4	1.3								
1,4-Dichlorobenzene	U	0.35	1.2								
2,2-Dichloropropane	U	0.52	1.7								
2-Butanone	U	0.52	1.7								
2-Chlorotoluene	U	0.36	1.2								
2-Propanol	U	33	110								
4-Chlorotoluene	U	0.31	1.0								
4-Methyl-2-pentanone	U	0.52	1.7								
Benzene	U	0.46	1.5								
Bromobenzene	U	0.38	1.3								
Bromochloromethane	U	0.45	1.5								
Bromodichloromethane	U	0.49	1.6								
Bromoform	U	0.56	1.9								
Bromomethane	U	0.9	3.0								
Carbon tetrachloride	U	0.4	1.4								
Chlorobenzene	U	0.4	1.3								
Chloroethane	U	0.68	2.3								
Chloroform	U	0.46	1.5								
Chloromethane	U	0.83	2.8								
cis-1,2-Dichloroethene	U	0.42	1.4								
cis-1,3-Dichloropropene	U	0.57	1.9								
Dibromochloromethane	U	0.4	1.3								
Dibromomethane	U	0.65	2.2								
Dichlorodifluoromethane	U	0.68	2.3								
Diisopropyl ether	U	0.41	1.4								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** Gannett Fleming, Inc.  
**Work Order:** 19051617  
**Project:** WRR (55929.005)

## QC BATCH REPORT

Batch ID: <b>R261838b</b>	Instrument ID <b>VMS8</b>	Method: <b>SW8260C</b>						
Ethylbenzene	U	0.34	1.1					
Hexachlorobutadiene	U	0.56	1.9					
Isopropylbenzene	U	0.35	1.2					
m,p-Xylene	U	0.81	2.7					
Methyl tert-butyl ether	U	0.45	1.5					
Methylene chloride	U	0.86	2.9					
Naphthalene	U	0.77	2.6					
n-Butylbenzene	U	0.34	1.1					
n-Propylbenzene	U	0.48	1.6					
o-Xylene	U	0.31	1.0					
p-Isopropyltoluene	U	0.26	0.88					
sec-Butylbenzene	U	0.3	1.0					
Styrene	U	0.33	1.1					
tert-Butylbenzene	U	0.39	1.3					
Tetrachloroethene	U	0.39	1.3					
Toluene	U	0.45	1.5					
trans-1,2-Dichloroethene	U	0.48	1.6					
trans-1,3-Dichloropropene	U	0.38	2.7					
Trichloroethene	U	0.43	1.4					
Trichlorofluoromethane	U	0.52	1.7					
Vinyl chloride	U	0.53	1.8					
Xylenes, Total	U	0.81	4.4					
<i>Surr: 1,2-Dichloroethane-d4</i>	19.52	0	0	20	0	97.6	75-120	0
<i>Surr: 4-Bromofluorobenzene</i>	19.67	0	0	20	0	98.4	80-110	0
<i>Surr: Dibromofluoromethane</i>	20.09	0	0	20	0	100	85-115	0
<i>Surr: Toluene-d8</i>	19.34	0	0	20	0	96.7	85-110	0

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 19051617  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: **R261838b** Instrument ID **VMS8** Method: **SW8260C**

LCS		Sample ID: <b>VLCSW2-190603-R261838b</b>				Units: <b>µg/L</b>		Analysis Date: <b>6/3/2019 10:09 PM</b>			
Client ID:		Run ID: <b>VMS8_190603B</b>				SeqNo: <b>5693547</b>		Prep Date:		DF: <b>1</b>	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	20.85	0.38	1.3	20	0	104	73-114	0			
1,1,1-Trichloroethane	24.89	0.46	1.5	20	0	124	75-130	0			
1,1,2,2-Tetrachloroethane	22.98	0.4	1.3	20	0	115	75-130	0			
1,1,2-Trichloroethane	22.5	0.46	1.5	20	0	112	75-125	0			
1,1-Dichloroethane	27.03	0.44	1.5	20	0	135	75-133	0			S
1,1-Dichloroethene	24.46	0.4	1.4	20	0	122	70-145	0			
1,1-Dichloropropene	22.43	0.37	1.2	20	0	112	75-135	0			
1,2,3-Trichlorobenzene	21.49	0.42	1.4	20	0	107	70-140	0			
1,2,3-Trichloropropane	21.33	0.4	1.3	20	0	107	75-125	0			
1,2,4-Trichlorobenzene	21.74	0.45	1.5	20	0	109	70-135	0			
1,2,4-Trimethylbenzene	22.25	0.45	1.5	20	0	111	75-130	0			
1,2-Dibromo-3-chloropropane	19.96	0.43	1.4	20	0	99.8	60-130	0			
1,2-Dibromoethane	25.61	0.41	1.4	20	0	128	90-195	0			
1,2-Dichlorobenzene	22.44	0.32	1.1	20	0	112	70-130	0			
1,2-Dichloroethane	23.64	0.44	1.4	20	0	118	78-125	0			
1,2-Dichloropropane	23.91	0.48	1.6	20	0	120	75-125	0			
1,3,5-Trimethylbenzene	22.77	0.65	2.2	20	0	114	75-130	0			
1,3-Dichlorobenzene	22.33	0.33	1.1	20	0	112	75-130	0			
1,3-Dichloropropane	20.68	0.4	1.3	20	0	103	75-125	0			
1,4-Dichlorobenzene	21.9	0.35	1.2	20	0	110	75-130	0			
2,2-Dichloropropane	25.32	0.52	1.7	20	0	127	43-150	0			
2-Butanone	27.33	0.52	1.7	20	0	137	55-150	0			
2-Chlorotoluene	21.49	0.36	1.2	20	0	107	76-117	0			
4-Chlorotoluene	21.95	0.31	1.0	20	0	110	80-125	0			
4-Methyl-2-pentanone	29.38	0.52	1.7	20	0	147	77-178	0			
Benzene	24.14	0.46	1.5	20	0	121	85-125	0			
Bromobenzene	20.82	0.38	1.3	20	0	104	80-125	0			
Bromochloromethane	28.3	0.45	1.5	20	0	142	72-141	0			S
Bromodichloromethane	22.48	0.49	1.6	20	0	112	75-125	0			
Bromoform	18.67	0.56	1.9	20	0	93.4	60-125	0			
Bromomethane	56.41	0.9	3.0	20	0	282	30-185	0			S
Carbon tetrachloride	20.77	0.4	1.4	20	0	104	65-140	0			
Chlorobenzene	21.86	0.4	1.3	20	0	109	80-120	0			
Chloroethane	25.68	0.68	2.3	20	0	128	31-172	0			
Chloroform	26.23	0.46	1.5	20	0	131	80-130	0			S
Chloromethane	22.1	0.83	2.8	20	0	110	46-148	0			
cis-1,2-Dichloroethene	26.81	0.42	1.4	20	0	134	75-134	0			S
cis-1,3-Dichloropropene	22.87	0.57	1.9	20	0	114	70-130	0			
Dibromochloromethane	18.88	0.4	1.3	20	0	94.4	60-115	0			
Dibromomethane	23.64	0.65	2.2	20	0	118	79-126	0			
Dichlorodifluoromethane	22.25	0.68	2.3	20	0	111	20-120	0			
Ethylbenzene	22.83	0.34	1.1	20	0	114	76-123	0			
Hexachlorobutadiene	21.75	0.56	1.9	20	0	109	70-155	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 19051617  
 Project: WRR (55929.005)

## QC BATCH REPORT

Batch ID: <b>R261838b</b>	Instrument ID <b>VMS8</b>		Method: <b>SW8260C</b>						
Isopropylbenzene	23.1	0.35	1.2	20	0	116	80-127	0	
m,p-Xylene	45.15	0.81	2.7	40	0	113	75-130	0	
Methyl tert-butyl ether	28.36	0.45	1.5	20	0	142	80-130	0	S
Methylene chloride	23.62	0.86	2.9	20	0	118	72-125	0	
Naphthalene	18.83	0.77	2.6	20	0	94.2	55-160	0	
n-Butylbenzene	22.74	0.34	1.1	20	0	114	75-145	0	
n-Propylbenzene	20.42	0.48	1.6	20	0	102	83-135	0	
o-Xylene	22.95	0.31	1.0	20	0	115	80-125	0	
p-Isopropyltoluene	23.35	0.26	0.88	20	0	117	61-164	0	
sec-Butylbenzene	23.15	0.3	1.0	20	0	116	80-134	0	
Styrene	25.91	0.33	1.1	20	0	130	83-137	0	
tert-Butylbenzene	20.7	0.39	1.3	20	0	104	70-130	0	
Tetrachloroethene	21.94	0.39	1.3	20	0	110	68-166	0	
Toluene	22.31	0.45	1.5	20	0	112	76-125	0	
trans-1,2-Dichloroethene	28.77	0.48	1.6	20	0	144	80-140	0	S
trans-1,3-Dichloropropene	19.05	0.38	2.7	20	0	95.2	56-132	0	
Trichloroethene	22.79	0.43	1.4	20	0	114	77-125	0	
Trichlorofluoromethane	23.77	0.52	1.7	20	0	119	60-140	0	
Vinyl chloride	28.14	0.53	1.8	20	0	141	50-136	0	S
Xylenes, Total	68.1	0.81	4.4	60	0	114	80-126	0	
<i>Surr: 1,2-Dichloroethane-d4</i>	18.38	0	0	20	0	91.9	75-120	0	
<i>Surr: 4-Bromofluorobenzene</i>	20.25	0	0	20	0	101	80-110	0	
<i>Surr: Dibromofluoromethane</i>	21.2	0	0	20	0	106	85-115	0	
<i>Surr: Toluene-d8</i>	18.27	0	0	20	0	91.4	85-110	0	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 19051617  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: **R261838b** Instrument ID **VMS8** Method: **SW8260C**

MS		Sample ID: 19051835-06A MS				Units: µg/L		Analysis Date: 6/4/2019 04:43 AM			
Client ID:		Run ID: VMS8_190603B				SeqNo: 5693551		Prep Date:		DF: 1	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	18.79	0.38	1.3	20	0	94	73-114	0			
1,1,1-Trichloroethane	26.11	0.46	1.5	20	1.12	125	75-130	0			
1,1,2,2-Tetrachloroethane	20.39	0.4	1.3	20	0	102	75-130	0			
1,1,2-Trichloroethane	21.25	0.46	1.5	20	0	106	75-125	0			
1,1-Dichloroethane	26.92	0.44	1.5	20	0	135	75-133	0			S
1,1-Dichloroethene	29.41	0.4	1.4	20	0	147	70-145	0			S
1,1-Dichloropropene	22.03	0.37	1.2	20	0	110	75-135	0			
1,2,3-Trichlorobenzene	18.29	0.42	1.4	20	0	91.4	70-140	0			
1,2,3-Trichloropropane	18.95	0.4	1.3	20	0	94.8	75-125	0			
1,2,4-Trichlorobenzene	18.28	0.45	1.5	20	0	91.4	70-135	0			
1,2,4-Trimethylbenzene	20.11	0.45	1.5	20	0	101	75-130	0			
1,2-Dibromo-3-chloropropane	18.8	0.43	1.4	20	0	94	60-130	0			
1,2-Dibromoethane	23.1	0.41	1.4	20	0	116	90-195	0			
1,2-Dichlorobenzene	20.2	0.32	1.1	20	0	101	70-130	0			
1,2-Dichloroethane	22.8	0.44	1.4	20	0	114	78-125	0			
1,2-Dichloropropane	23.38	0.48	1.6	20	0	117	75-125	0			
1,3,5-Trimethylbenzene	20.93	0.65	2.2	20	0	105	75-130	0			
1,3-Dichlorobenzene	20.55	0.33	1.1	20	0	103	75-130	0			
1,3-Dichloropropane	19.63	0.4	1.3	20	0	98.2	75-125	0			
1,4-Dichlorobenzene	20.33	0.35	1.2	20	0	102	75-130	0			
2,2-Dichloropropane	21.89	0.52	1.7	20	0	109	43-150	0			
2-Butanone	26.45	0.52	1.7	20	0	132	55-150	0			
2-Chlorotoluene	20.68	0.36	1.2	20	0	103	76-117	0			
4-Chlorotoluene	19.74	0.31	1.0	20	0	98.7	80-125	0			
4-Methyl-2-pentanone	27.73	0.52	1.7	20	0	139	77-178	0			
Benzene	23.3	0.46	1.5	20	0	116	85-125	0			
Bromobenzene	19.07	0.38	1.3	20	0	95.4	80-125	0			
Bromochloromethane	29.74	0.45	1.5	20	0	149	72-141	0			S
Bromodichloromethane	21.25	0.49	1.6	20	0	106	75-125	0			
Bromoform	16.17	0.56	1.9	20	0	80.8	60-125	0			
Bromomethane	114.2	0.9	3.0	20	0	571	30-185	0			SE
Carbon tetrachloride	20.75	0.4	1.4	20	0	104	65-140	0			
Chlorobenzene	20.26	0.4	1.3	20	0	101	80-120	0			
Chloroethane	28.11	0.68	2.3	20	0	141	31-172	0			
Chloroform	25.44	0.46	1.5	20	0	127	80-130	0			
Chloromethane	19.8	0.83	2.8	20	0	99	46-148	0			
cis-1,2-Dichloroethene	26.77	0.42	1.4	20	0	134	75-134	0			
cis-1,3-Dichloropropene	22.11	0.57	1.9	20	0	111	70-130	0			
Dibromochloromethane	16.98	0.4	1.3	20	0	84.9	60-115	0			
Dibromomethane	23.84	0.65	2.2	20	0	119	79-126	0			
Dichlorodifluoromethane	21.4	0.68	2.3	20	0	107	20-120	0			
Ethylbenzene	21.28	0.34	1.1	20	0	106	76-123	0			
Hexachlorobutadiene	15.58	0.56	1.9	20	0	77.9	70-155	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 19051617  
 Project: WRR (55929.005)

## QC BATCH REPORT

Batch ID: <b>R261838b</b>	Instrument ID <b>VMS8</b>		Method: <b>SW8260C</b>						
Isopropylbenzene	21.47	0.35	1.2	20	0	107	80-127	0	
m,p-Xylene	42.34	0.81	2.7	40	0	106	75-130	0	
Methyl tert-butyl ether	27.5	0.45	1.5	20	0	138	80-130	0	S
Methylene chloride	23.45	0.86	2.9	20	0	117	72-125	0	
Naphthalene	17.91	0.77	2.6	20	0	89.6	55-160	0	
n-Butylbenzene	19.76	0.34	1.1	20	0	98.8	75-145	0	
n-Propylbenzene	18.74	0.48	1.6	20	0	93.7	83-135	0	
o-Xylene	21.13	0.31	1.0	20	0	106	80-125	0	
p-Isopropyltoluene	21.29	0.26	0.88	20	0	106	61-164	0	
sec-Butylbenzene	20.65	0.3	1.0	20	0	103	80-134	0	
Styrene	23.38	0.33	1.1	20	0	117	83-137	0	
tert-Butylbenzene	19.09	0.39	1.3	20	0	95.4	70-130	0	
Tetrachloroethene	19.49	0.39	1.3	20	0	97.4	68-166	0	
Toluene	21.37	0.45	1.5	20	0	107	76-125	0	
trans-1,2-Dichloroethene	28	0.48	1.6	20	0	140	80-140	0	
trans-1,3-Dichloropropene	17.34	0.38	2.7	20	0	86.7	56-132	0	
Trichloroethene	23.81	0.43	1.4	20	0	119	77-125	0	
Trichlorofluoromethane	28.68	0.52	1.7	20	0	143	60-140	0	S
Vinyl chloride	30.52	0.53	1.8	20	0	153	50-136	0	S
Xylenes, Total	63.47	0.81	4.4	60	0	106	80-126	0	
<i>Surr: 1,2-Dichloroethane-d4</i>	18.32	0	0	20	0	91.6	75-120	0	
<i>Surr: 4-Bromofluorobenzene</i>	19.9	0	0	20	0	99.5	80-110	0	
<i>Surr: Dibromofluoromethane</i>	20.86	0	0	20	0	104	85-115	0	
<i>Surr: Toluene-d8</i>	17.56	0	0	20	0	87.8	85-110	0	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.



Client: Gannett Fleming, Inc.  
 Work Order: 19051617  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: **R261838b** Instrument ID **VMS8** Method: **SW8260C**

MSD		Sample ID: 19051835-06A MSD				Units: µg/L			Analysis Date: 6/4/2019 04:59 AM		
Client ID:		Run ID: VMS8_190603B				SeqNo: 5693552		Prep Date:		DF: 1	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	18.52	0.38	1.3	20	0	92.6	73-114	18.79	1.45	30	
1,1,1-Trichloroethane	25.85	0.46	1.5	20	1.12	124	75-130	26.11	1	30	
1,1,2,2-Tetrachloroethane	19.12	0.4	1.3	20	0	95.6	75-130	20.39	6.43	30	
1,1,2-Trichloroethane	20.73	0.46	1.5	20	0	104	75-125	21.25	2.48	30	
1,1-Dichloroethane	26.69	0.44	1.5	20	0	133	75-133	26.92	0.858	30	S
1,1-Dichloroethene	24.11	0.4	1.4	20	0	121	70-145	29.41	19.8	30	
1,1-Dichloropropene	22.44	0.37	1.2	20	0	112	75-135	22.03	1.84	30	
1,2,3-Trichlorobenzene	18	0.42	1.4	20	0	90	70-140	18.29	1.6	30	
1,2,3-Trichloropropane	17.64	0.4	1.3	20	0	88.2	75-125	18.95	7.16	30	
1,2,4-Trichlorobenzene	18.27	0.45	1.5	20	0	91.4	70-135	18.28	0.0547	30	
1,2,4-Trimethylbenzene	19.2	0.45	1.5	20	0	96	75-130	20.11	4.63	30	
1,2-Dibromo-3-chloropropane	19.88	0.43	1.4	20	0	99.4	60-130	18.8	5.58	30	
1,2-Dibromoethane	23.2	0.41	1.4	20	0	116	90-195	23.1	0.432	30	
1,2-Dichlorobenzene	20.31	0.32	1.1	20	0	102	70-130	20.2	0.543	30	
1,2-Dichloroethane	22.8	0.44	1.4	20	0	114	78-125	22.8	0	30	
1,2-Dichloropropane	23.86	0.48	1.6	20	0	119	75-125	23.38	2.03	30	
1,3,5-Trimethylbenzene	19.82	0.65	2.2	20	0	99.1	75-130	20.93	5.45	30	
1,3-Dichlorobenzene	19.97	0.33	1.1	20	0	99.8	75-130	20.55	2.86	30	
1,3-Dichloropropane	19.22	0.4	1.3	20	0	96.1	75-125	19.63	2.11	30	
1,4-Dichlorobenzene	19.53	0.35	1.2	20	0	97.6	75-130	20.33	4.01	30	
2,2-Dichloropropane	21.34	0.52	1.7	20	0	107	43-150	21.89	2.54	30	
2-Butanone	27.01	0.52	1.7	20	0	135	55-150	26.45	2.1	30	
2-Chlorotoluene	19.79	0.36	1.2	20	0	99	76-117	20.68	4.4	30	
4-Chlorotoluene	19.06	0.31	1.0	20	0	95.3	80-125	19.74	3.51	30	
4-Methyl-2-pentanone	27.66	0.52	1.7	20	0	138	77-178	27.73	0.253	30	
Benzene	23.61	0.46	1.5	20	0	118	85-125	23.3	1.32	30	
Bromobenzene	17.85	0.38	1.3	20	0	89.2	80-125	19.07	6.61	30	
Bromochloromethane	29.45	0.45	1.5	20	0	147	72-141	29.74	0.98	30	S
Bromodichloromethane	22.2	0.49	1.6	20	0	111	75-125	21.25	4.37	30	
Bromoform	15.98	0.56	1.9	20	0	79.9	60-125	16.17	1.18	30	
Bromomethane	110.6	0.9	3.0	20	0	553	30-185	114.2	3.26	30	SE
Carbon tetrachloride	20.32	0.4	1.4	20	0	102	65-140	20.75	2.09	30	
Chlorobenzene	19.6	0.4	1.3	20	0	98	80-120	20.26	3.31	30	
Chloroethane	28.21	0.68	2.3	20	0	141	31-172	28.11	0.355	30	
Chloroform	25.36	0.46	1.5	20	0	127	80-130	25.44	0.315	30	
Chloromethane	21.04	0.83	2.8	20	0	105	46-148	19.8	6.07	30	
cis-1,2-Dichloroethene	26.08	0.42	1.4	20	0	130	75-134	26.77	2.61	30	
cis-1,3-Dichloropropene	22.08	0.57	1.9	20	0	110	70-130	22.11	0.136	30	
Dibromochloromethane	16.64	0.4	1.3	20	0	83.2	60-115	16.98	2.02	30	
Dibromomethane	23.07	0.65	2.2	20	0	115	79-126	23.84	3.28	30	
Dichlorodifluoromethane	20.04	0.68	2.3	20	0	100	20-120	21.4	6.56	30	
Ethylbenzene	20.86	0.34	1.1	20	0	104	76-123	21.28	1.99	30	
Hexachlorobutadiene	14.67	0.56	1.9	20	0	73.4	70-155	15.58	6.02	30	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 19051617  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: <b>R261838b</b>	Instrument ID <b>VMS8</b>		Method: <b>SW8260C</b>							
Isopropylbenzene	21.25	0.35	1.2	20	0	106	80-127	21.47	1.03	30
m,p-Xylene	41.28	0.81	2.7	40	0	103	75-130	42.34	2.54	30
Methyl tert-butyl ether	25.43	0.45	1.5	20	0	127	80-130	27.5	7.82	30
Methylene chloride	17.02	0.86	2.9	20	0	85.1	72-125	23.45	31.8	30 R
Naphthalene	17.51	0.77	2.6	20	0	87.6	55-160	17.91	2.26	30
n-Butylbenzene	20.07	0.34	1.1	20	0	100	75-145	19.76	1.56	30
n-Propylbenzene	18.27	0.48	1.6	20	0	91.4	83-135	18.74	2.54	30
o-Xylene	21	0.31	1.0	20	0	105	80-125	21.13	0.617	30
p-Isopropyltoluene	20.52	0.26	0.88	20	0	103	61-164	21.29	3.68	30
sec-Butylbenzene	20.2	0.3	1.0	20	0	101	80-134	20.65	2.2	30
Styrene	22.63	0.33	1.1	20	0	113	83-137	23.38	3.26	30
tert-Butylbenzene	18.4	0.39	1.3	20	0	92	70-130	19.09	3.68	30
Tetrachloroethene	19.72	0.39	1.3	20	0	98.6	68-166	19.49	1.17	30
Toluene	20.8	0.45	1.5	20	0	104	76-125	21.37	2.7	30
trans-1,2-Dichloroethene	27.72	0.48	1.6	20	0	139	80-140	28	1.01	30
trans-1,3-Dichloropropene	17	0.38	2.7	20	0	85	56-132	17.34	1.98	30
Trichloroethene	22.92	0.43	1.4	20	0	115	77-125	23.81	3.81	30
Trichlorofluoromethane	27.98	0.52	1.7	20	0	140	60-140	28.68	2.47	30
Vinyl chloride	31.78	0.53	1.8	20	0	159	50-136	30.52	4.04	30 S
Xylenes, Total	62.28	0.81	4.4	60	0	104	80-126	63.47	1.89	30
<i>Surr: 1,2-Dichloroethane-d4</i>	19.04	0	0	20	0	95.2	75-120	18.32	3.85	30
<i>Surr: 4-Bromofluorobenzene</i>	19.66	0	0	20	0	98.3	80-110	19.9	1.21	30
<i>Surr: Dibromofluoromethane</i>	20.95	0	0	20	0	105	85-115	20.86	0.431	30
<i>Surr: Toluene-d8</i>	17.42	0	0	20	0	87.1	85-110	17.56	0.8	30

The following samples were analyzed in this batch:

19051617-41A	19051617-45A	19051617-48A
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Note: See Qualifiers Page for a list of Qualifiers and their explanation.



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COC ID: 189147

ALS Project Manager: EB

ALS Work Order #: 19051617

Customer Information		Project Information		Parameter/Method Request for Analysis												
Purchase Order	55929.005	Project Name	WRR	A	VOC											
Work Order		Project Number	55929.005	B												
Company Name	Gannett Fleming, Inc	Bill To Company	Gannett Fleming, Inc	C												
Send Report To	Anthony Miller	Invoice Attn	Accounts Payable	D												
Address	8025 Excelsior Dr.	Address	8025 Excelsior Dr.	E												
				F												
City/State/Zip	Madison, WI 53717	City/State/Zip	Madison, WI 53717	G												
Phone	(608) 336-1500	Phone	(608) 336-1500	H												
Fax		Fax		I												
e-Mail Address	awmiller@gfnet.com	e-Mail Address		J												

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	W-2A	5/22	12:55	GW	HCl	3	*										
2	W-2B	"	13:05														
3	W-3A	5/22	12:30														
4	W-3B	5/22	12:35														
5	W-7	5/22	13:10														
6	W-7A	"	13:05														
7	W-17	5/22	10:30														
8	W-17A	"	9:45														
9	<del>W-17B</del>																
10	W-17B	5/22	9:40														

Sampler(s) Please Print & Sign <u>Chelsea Payne</u>		Shipment Method <u>FedEx</u>		Required Turnaround Time: (Check Box) <input checked="" type="checkbox"/> 10 WK Days <input type="checkbox"/> 5 WK Days <input type="checkbox"/> Other <input type="checkbox"/> 2 WK Days <input type="checkbox"/> 24 Hour				Results Due Date:			
Relinquished by: <u>CP</u>	Date: 5/24/19	Time: 18:00	Received by: <u>FE</u>	Notes:							
Relinquished by: <u>FE</u>	Date: 5/23/19	Time: 0930	Received by (Laboratory): <u>[Signature]</u>	Cooler ID	Cooler Temp.	QC Package: (Check One Box Below)					
Logged by (Laboratory): <u>KW</u>	Date: 5/23/19	Time: 1450	Checked by (Laboratory): <u>EB</u>	<u>522</u>	<u>3.0°</u>	<input type="checkbox"/> Level II Std QC	<input type="checkbox"/> TPRP Check/Std				
Preservative Key: 1-HCl 2-HNO <sub>3</sub> 3-H <sub>2</sub> SO <sub>4</sub> 4-NaOH 5-Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> 6-NaHSO <sub>4</sub> 7-Other 8-4°C 9-5035				<input type="checkbox"/> Level III Std GC/Raw Data	<input type="checkbox"/> TPRP Level IV						
				<input type="checkbox"/> Level IV SW/846/CLP							
				<input type="checkbox"/> Other							

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COC ID: 189146

ALS Project Manager: EB

ALS Work Order #: 19051617

Customer Information		Project Information		Parameter/Method Request for Analysis											
Purchase Order	<u>55929.005</u>	Project Name	<u>WRR</u>	A	<u>VOC</u>										
Work Order		Project Number		B											
Company Name	<u>Gannett Fleming, Inc.</u>	Bill To Company	<u>Gannett Fleming, Inc.</u>	C											
Send Report To		Invoice Attn	<u>Accounts Payable</u>	D											
Address	<u>8025 Excelsior Dr.</u>	Address	<u>8025 Excelsior Dr.</u>	E											
				F											
City/State/Zip	<u>Madison, WI 53717</u>	City/State/Zip	<u>Madison, WI 53717</u>	G											
Phone	<u>(608) 836-1500</u>	Phone	<u>(608) 836-1500</u>	H											
Fax		Fax		I											
e-Mail Address		e-Mail Address		J											

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	<u>W-18</u>	<u>5/21</u>	<u>15:30</u>	<u>GW</u>	<u>HCl</u>	<u>3</u>	<u>X</u>										
2	<u>W-18A</u>	<u>"</u>	<u>15:50</u>														
3	<u>W-19R</u>	<u>5/21</u>	<u>16:35</u>														
4	<u>W-26</u>	<u>5/22</u>	<u>9:00</u>														
5	<u>W-27</u>	<u>5/21</u>	<u>14:05</u>														
6	<u>W-28</u>	<u>5/21</u>	<u>17:00</u>														
7	<u>W-29</u>	<u>5/22</u>	<u>9:25</u>														
8	<u>W-30A</u>	<u>↓</u>	<u>7:10</u>														
9	<u>W-30B</u>	<u>↓</u>	<u>7:00</u>														
10	<u>W-31A</u>	<u>5/22</u>	<u>13:40</u>														

Sampler(s) Please Print & Sign <u>[Signature]</u>		Shipment Method		Required Turnaround Time: (Check Box) <input checked="" type="checkbox"/> Std 10 WK Days <input type="checkbox"/> 5 WK Days <input type="checkbox"/> Other <input type="checkbox"/> 2 WK Days <input type="checkbox"/> 24 Hour				Results Due Date:			
Relinquished by: <u>[Signature]</u>	Date: <u>5/22/19</u>	Time: <u>18:00</u>	Received by: <u>FeoEx</u>		Notes:						
Relinquished by: <u>FeoEx</u>	Date: <u>5/23/19</u>	Time: <u>0930</u>	Received by (Laboratory):		Cooler ID	Cooler Temp.	QC Package: (Check One Box Below)				
Logged by (Laboratory):	Date: <u>5/23/19</u>	Time: <u>1450</u>	Checked by (Laboratory): <u>EB</u>				<input type="checkbox"/> Level II Std QC	<input type="checkbox"/> TRRP Check/Ret			
Preservative Key: 1-HCl 2-HNO <sub>3</sub> 3-H <sub>2</sub> SO <sub>4</sub> 4-NaOH 5-Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> 6-NaHSO <sub>4</sub> 7-Other 8-4°C 9-5035							<input type="checkbox"/> Level III Std QC/Raw Data	<input type="checkbox"/> TRRP Level IV			
							<input type="checkbox"/> Level IV 8W/846/CLP				
							<input type="checkbox"/> Other				

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ALS Project Manager: EB ALS Work Order #: 19051617

Customer Information		Project Information		Parameter/Method Request for Analysis																			
Purchase Order	<u>55929.005</u>	Project Name	<u>WRR</u>	A																			
Work Order		Project Number		B																			
Company Name	<u>Gannett Fleming, Inc</u>	Bill To Company	<u>Gannett Fleming, Inc</u>	C																			
Send Report To		Invoice Attn	<u>Accounts Payable</u>	D																			
Address	<u>8025 Excelsior Dr.</u>	Address	<u>8025 Excelsior Dr.</u>	E																			
City/State/Zip	<u>Madison, WI 53717</u>	City/State/Zip	<u>Madison, WI 53717</u>	F																			
Phone	<u>(608) 836-1500</u>	Phone	<u>(608) 836-1500</u>	G																			
Fax		Fax		H																			
e-Mail Address		e-Mail Address		I																			
				J																			

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	<u>W-31B</u>	<u>5/22</u>	<u>13:35</u>	<u>GW</u>	<u>HCl</u>	<u>3</u>	✓										
2	<u>W-32</u>	<u>5/22</u>	<u>14:10</u>	↓	↓	↓											
3	<u>W-35</u>	<u>5/22/19</u>	<u>14:35</u>	↓	↓	↓											
4	<u>MW-106</u>	<u>5/22</u>	<u>8:15</u>	↓	↓	↓											
5	<u>MW-106A</u>	<u>5/22</u>	<u>8:25</u>	↓	↓	↓											
6	<u>MW-111</u>	<u>5/21</u>	<u>12:35</u>	↓	↓	↓											
7	<u>MW-111A</u>	<u>5/21</u>	<u>12:45</u>	↓	↓	<u>3</u>											
8	<u>MW-111A dup</u>	<u>5/21</u>	<u>13:00</u>	↓	↓	<u>2</u>											
9	<u>MW-111B</u>	<u>"</u>	<u>12:50</u>	↓	↓	<u>3</u>											
10	<u>MW-112</u>	<u>5/22</u>	<u>9:00</u>	↓	↓	<u>3</u>	✓										

Sampler(s) Please Print & Sign <u>[Signature]</u>		Shipment Method		Required Turnaround Time: (Check Box)				Results Due Date:			
				<input type="checkbox"/> Std 10 WK Days <input type="checkbox"/> 5 WK Days <input type="checkbox"/> Other <input type="checkbox"/> 2 WK Days <input type="checkbox"/> 24 Hour							
Relinquished by: <u>[Signature]</u>	Date: <u>5/22/19</u>	Time: <u>18:00</u>	Received by: <u>FED Ex</u>	Notes:							
Relinquished by: <u>FED Ex</u>	Date: <u>5/23/19</u>	Time: <u>0930</u>	Received by (Laboratory): <u>[Signature]</u>	Cooler ID	Cooler Temp.	QC Package: (Check One Box Below)					
Logged by (Laboratory): <u>Ke</u>	Date: <u>5/23/19</u>	Time: <u>1450</u>	Checked by (Laboratory): <u>EB</u>			<input type="checkbox"/> Level II Std QC	<input type="checkbox"/> TRRP CheckList				
Preservative Key: 1-HCl 2-HNO <sub>3</sub> 3-H <sub>2</sub> SO <sub>4</sub> 4-NaOH 5-Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> 6-NaHSO <sub>4</sub> 7-Other 8-4°C 9-5035						<input type="checkbox"/> Level III Std QC/Raw Data	<input type="checkbox"/> TRRP Level IV				
						<input type="checkbox"/> Level IV SW/846/CLP					
						<input type="checkbox"/> Other					

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COC ID: 189144

ALS Project Manager: EB

ALS Work Order #: 9051617

Customer Information		Project Information		Parameter/Method Request for Analysis											
Purchase Order	<u>55929.005</u>	Project Name	<u>WRR</u>	A	<u>VOC</u>										
Work Order		Project Number		B											
Company Name	<u>Gannett Fleming, Inc.</u>	Bill To Company	<u>Gannett Fleming, Inc.</u>	C											
Send Report To		Invoice Attn	<u>Accounts Payable</u>	D											
Address	<u>8025 Excelsior Dr.</u>	Address	<u>8025 Excelsior Dr.</u>	E											
				F											
City/State/Zip	<u>Madison, WI 53717</u>	City/State/Zip	<u>Madison, WI 53717</u>	G											
Phone	<u>(608) 836-1500</u>	Phone	<u>(608) 836-1500</u>	H											
Fax		Fax		I											
e-Mail Address		e-Mail Address		J											

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	<u>MW-112A</u>	<u>5/21</u>	<u>14:25</u>	<u>GW</u>	<u>HCl</u>	<u>3</u>	<u>X</u>										
2	<u>MW-112B</u>	<u>5/21</u>	<u>14:15</u>														
3	<u>MW-113A</u>	<u>5/21</u>	<u>13:30</u>														
4	<u>MW-113B</u>	<u>"</u>	<u>13:40</u>														
5	<u>MW-114</u>	<u>5/22</u>	<u>10:05</u>														
6	<u>MW-114A</u>	<u>5/22</u>	<u>10:00</u>														
7	<u>MW-114B</u>	<u>5/22</u>	<u>9:50</u>														
8	<u>MW-115</u>	<u>5/22/19</u>	<u>11:05</u>	<u>↓</u>	<u>↓</u>	<u>↓</u>	<u>↓</u>										
9	<del><u>MW-115A</u></del>	<del><u>5/22/19</u></del>	<del><u>11:05</u></del>	<del><u>↓</u></del>	<del><u>↓</u></del>	<del><u>↓</u></del>	<del><u>↓</u></del>										
10	<u>MW-115A</u>	<u>5/22/19</u>	<u>11:15</u>	<u>GW</u>	<u>HCl</u>	<u>3</u>	<u>X</u>										

Sampler(s) Please Print & Sign: [Signature] Shipment Method: \_\_\_\_\_ Required Turnaround Time: (Check Box)  Std 10 WK Days  5 WK Days  Other  2 WK Days  24 Hour Results Due Date: \_\_\_\_\_

Relinquished by: [Signature] Date: 5/22/19 Time: 16:00 Received by: FedEx Notes: \_\_\_\_\_  
 Relinquished by: FedEx Date: 5/23/19 Time: 0930 Received by (Laboratory): \_\_\_\_\_ Cooler ID: \_\_\_\_\_ Cooler Temp.: \_\_\_\_\_ QC Package: (Check One Box Below)  
 Logged by (Laboratory): Fe Date: 5/23/19 Time: 1450 Checked by (Laboratory): EB  Level II Std QC  TRRP CheckList  
 Level III Std QC/Raw Data  TRRP Level IV  
 Level IV SW846/CLP  
 Other

Preservative Key: 1-HCl 2-HNO<sub>3</sub> 3-H<sub>2</sub>SO<sub>4</sub> 4-NaOH 5-Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub> 6-NaHSO<sub>4</sub> 7-Other 8-4°C 9-5035



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Fort Collins, CO  
+1 970 490 1511

Everett, WA  
+1 425 356 2600

Holland, MI  
+1 616 399 6070

# Chain of Custody Form

Houston, TX  
+1 281 530 5656

Spring City, PA  
+1 610 948 4903

Middletown, PA  
+1 717 944 5541

Salt Lake City, UT  
+1 801 266 7700

South Charleston, WV  
+1 304 356 3168

York, PA  
+1 717 505 5280

Page 5 of 5

COC ID: 189143

ALS Project Manager: EB

ALS Work Order #: 19051617

Customer Information		Project Information		Parameter/Method Request for Analysis											
Purchase Order	<u>55929.005</u>	Project Name	<u>WRR</u>	A	<u>VOC</u>										
Work Order		Project Number		B											
Company Name	<u>Gannett Fleming, Inc.</u>	Bill To Company	<u>Gannett Fleming, Inc.</u>	C											
Send Report To		Invoice Attn	<u>Accounts Payable</u>	D											
Address	<u>8025 Excelsior Dr.</u>	Address	<u>8025 Excelsior Dr.</u>	E											
				F											
City/State/Zip	<u>Madison, WI 53717</u>	City/State/Zip	<u>Madison, WI 53717</u>	G											
Phone	<u>(608) 836-1500</u>	Phone	<u>(608) 836-1500</u>	H											
Fax		Fax		I											
e-Mail Address		e-Mail Address		J											

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	<u>MW-115 B</u>	<u>5/22</u>	<u>11:00</u>	<u>GW</u>	<u>HCl</u>	<u>3</u>	<u>X</u>										
2	<u>MW-116</u>	<u>5/22</u>	<u>9:20</u>			<u>3</u>											
3	<u>Trip Blank</u>	<u>5/21</u>															
4	<u>MW-104</u>	<u>5/22</u>	<u>7:40</u>			<u>3</u>											
5	<u>MW-104A</u>	<u>"</u>	<u>8:05</u>														
6	<u>W-4</u>	<u>5/22</u>	<u>15:05</u>														
7	<u>MB</u>	<u>5/22</u>	<u>9:50</u>														
8	<u>Sep 2N</u>	<u>5/21</u>	<u>13:25</u>														
9	<u>Sep 7N</u>	<u>5/21</u>	<u>13:30</u>														
10	<u>FB</u>	<u>5/21</u>	<u>13:00</u>			<u>3</u>											

Sampler(s) Please Print & Sign <u>[Signature]</u>		Shipment Method		Required Turnaround Time: (Check Box)				Results Due Date:	
				<input type="checkbox"/> Std 10 WK Days <input type="checkbox"/> 5 WK Days <input type="checkbox"/> Other _____ <input type="checkbox"/> 2 WK Days <input type="checkbox"/> 24 Hour					
Relinquished by:	Date:	Time:	Received by:	Notes:					
<u>[Signature]</u>	<u>5/22/19</u>	<u>18:00</u>	<u>FedEx</u>						
Relinquished by:	Date:	Time:	Received by (Laboratory):	Cooler ID	Cooler Temp.	QC Package: (Check One Box Below)			
<u>FedEx</u>	<u>5/23/19</u>	<u>0930</u>	<u>[Signature]</u>			<input type="checkbox"/> Level II Std QC <input type="checkbox"/> TRRP CheckList <input type="checkbox"/> Level III Std QC/Raw Data <input type="checkbox"/> TRRP Level IV <input type="checkbox"/> Level IV SW846/CLP <input type="checkbox"/> Other			
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):						
<u>Kaw</u>	<u>5/23/19</u>	<u>1450</u>	<u>[Signature]</u>						
Preservative Key: 1-HCl 2-HNO <sub>3</sub> 3-H <sub>2</sub> SO <sub>4</sub> 4-NaOH 5-Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> 6-NaHSO <sub>4</sub> 7-Other 8-4°C 9-5035									

Sample Receipt Checklist

Client Name: **GANNETFLEMING - WI**

Date/Time Received: **23-May-19 09:30**

Work Order: **19051617**

Received by: **KRW**

Checklist completed by Keith Wierenga 23-May-19  
eSignature Date

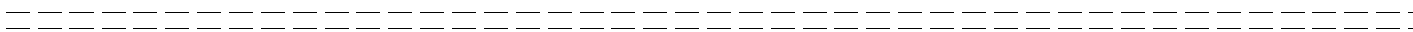
Reviewed by: Eheland Beaworth 23-May-19  
eSignature Date

Matrices: Water

Carrier name: FedEx

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on shipping container/cooler?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Custody seals intact on sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Container/Temp Blank temperature in compliance?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample(s) received on ice?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Temperature(s)/Thermometer(s):	<u>3.0/3.0 C</u>		<u>SR2</u>
Cooler(s)/Kit(s):	<u></u>		
Date/Time sample(s) sent to storage:	<u>5/23/2019 3:07:12 PM</u>		
Water - VOA vials have zero headspace?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	No VOA vials submitted <input type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>
pH adjusted?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	N/A <input type="checkbox"/>
pH adjusted by:	<u></u>		

Login Notes:



Client Contacted: \_\_\_\_\_ Date Contacted: \_\_\_\_\_ Person Contacted: \_\_\_\_\_

Contacted By: \_\_\_\_\_ Regarding: \_\_\_\_\_

Comments:

CorrectiveAction:





The analytical results and  
QA/QC data included with  
this report were reviewed by  
AWM on 06/05/19.

06-Jun-2019

Anthony Miller  
Gannett Fleming, Inc.  
8025 Excelsior Dr.  
Madison, WI 53717-1900

Re: **WRR (55929.005)**

Work Order: **19051723**

Dear Anthony,

ALS Environmental received 24 samples on 24-May-2019 for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental - Holland and for only the analyses requested.

Sample results are compliant with industry accepted practices and Quality Control results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 109.

If you have any questions regarding this report, please feel free to contact me:

ADDRESS: 3352 128th Avenue, Holland, MI, USA  
PHONE: +1 (616) 399-6070 FAX: +1 (616) 399-6185

Sincerely,

A handwritten signature in cursive script that reads "Ehrland Bosworth".

Electronically approved by: Ehrland Bosworth

Ehrland Bosworth  
Project Manager

## Report of Laboratory Analysis

Certificate No: MN 026-999-449

ALS GROUP USA, CORP Part of the ALS Laboratory Group A Campbell Brothers Limited Company

Environmental

[www.alsglobal.com](http://www.alsglobal.com)

RIGHT SOLUTIONS RIGHT PARTNER

**Client:** Gannett Fleming, Inc.  
**Project:** WRR (55929.005)  
**Work Order:** 19051723

**Work Order Sample Summary**

<u>Lab Samp ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Tag Number</u>	<u>Collection Date</u>	<u>Date Received</u>	<u>Hold</u>
19051723-01	W-6	Water		5/22/2019 17:00	5/24/2019 09:30	<input type="checkbox"/>
19051723-02	W-1	Water		5/23/2019 08:45	5/24/2019 09:30	<input type="checkbox"/>
19051723-03	W-1A	Water		5/23/2019 08:47	5/24/2019 09:30	<input type="checkbox"/>
19051723-04	W-1D	Water		5/23/2019 08:55	5/24/2019 09:30	<input type="checkbox"/>
19051723-05	W-2	Water		5/23/2019 11:30	5/24/2019 09:30	<input type="checkbox"/>
19051723-06	W-2 DUP	Water		5/23/2019 11:30	5/24/2019 09:30	<input type="checkbox"/>
19051723-07	W-3	Water		5/23/2019 13:10	5/24/2019 09:30	<input type="checkbox"/>
19051723-08	W-5	Water		5/23/2019 10:10	5/24/2019 09:30	<input type="checkbox"/>
19051723-09	W-17A DUP	Water		5/23/2019 07:50	5/24/2019 09:30	<input type="checkbox"/>
19051723-10	MW-115 DUP	Water		5/23/2019 07:40	5/24/2019 09:30	<input type="checkbox"/>
19051723-11	TW-1	Water		5/22/2019 16:05	5/24/2019 09:30	<input type="checkbox"/>
19051723-12	PW	Water		5/23/2019 12:50	5/24/2019 09:30	<input type="checkbox"/>
19051723-13	RW-2	Water		5/23/2019 09:50	5/24/2019 09:30	<input type="checkbox"/>
19051723-14	RW-5	Water		5/23/2019 11:05	5/24/2019 09:30	<input type="checkbox"/>
19051723-15	RW-8	Water		5/23/2019 14:50	5/24/2019 09:30	<input type="checkbox"/>
19051723-16	RW-9	Water		5/23/2019 14:55	5/24/2019 09:30	<input type="checkbox"/>
19051723-17	W-11	Water		5/22/2019 10:35	5/24/2019 09:30	<input type="checkbox"/>
19051723-18	TW-1 DUP	Water		5/23/2019 08:20	5/24/2019 09:30	<input type="checkbox"/>
19051723-19	MW-113	Water		5/22/2019 18:35	5/24/2019 09:30	<input type="checkbox"/>
19051723-20	W-1D DUP	Water		5/23/2019 09:15	5/24/2019 09:30	<input type="checkbox"/>
19051723-21	W-32	Water		5/23/2019 15:50	5/24/2019 09:30	<input type="checkbox"/>
19051723-22	W-34	Water		5/23/2019 13:55	5/24/2019 09:30	<input type="checkbox"/>
19051723-23	Trip Blank	Water		5/22/2019	5/24/2019 09:30	<input type="checkbox"/>
19051723-24	W-34	Water		5/23/2019 13:55	5/24/2019 09:30	<input type="checkbox"/>

**Client:** Gannett Fleming, Inc.  
**Project:** WRR (55929.005)  
**WorkOrder:** 19051723

**QUALIFIERS,  
ACRONYMS, UNITS**

<u>Qualifier</u>	<u>Description</u>
*	Value exceeds Regulatory Limit
**	Estimated Value
a	Analyte is non-accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
Hr	BOD/CBOD - Sample was reset outside Hold Time, value should be considered estimated.
J	Analyte is present at an estimated concentration between the MDL and Report Limit
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and Reporting Limit, sample results may exhibit background or reagent contamination at the observed level.

<u>Acronym</u>	<u>Description</u>
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCS D	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

<u>Units Reported</u>	<u>Description</u>
µg/L	Micrograms per Liter
mg/L	Milligrams per Liter

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**Client:** Gannett Fleming, Inc.  
**Project:** WRR (55929.005)  
**Work Order:** 19051723

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**Case Narrative**

Samples for the above noted Work Order were received on 05/24/19. The attached "Sample Receipt Checklist" documents the status of custody seals, container integrity, sample condition, preservation, and temperature compliance.

In order to ensure compliance with NR 149 criteria, please note the following report format:

- (1) The Limit of Detection (LOD) is reported as the MDL (Method Detection Limit)
- (2) The Limit of Quantitation (LOQ) is reported as the PQL (Practical Quantitation Limit)
- (3) All reported concentrations, including those for the LOD and LOQ, are adjusted for any required dilutions
- (4) All reported concentrations, including those for the LOD and LOQ, are adjusted for moisture content when samples are reported on a dry weight basis.

Samples were analyzed according to the analytical methodology previously documented in the "Work Order Acknowledgement". Methodologies are also documented in the "Analytical Result" section for each sample. Quality control results are listed in the "QC Report" section. Detail as to the associated samples can be found at the end of each batch summary. If applicable, results are appropriately qualified in the Analytical Result and QC Report sections. The "Qualifiers" section documents the various qualifiers, acronyms, and units utilized in reporting.

With the following exceptions, all sample analyses achieved analytical criteria.

**Volatile Organics:**

Batch R261663a, Method WI\_VOC\_8260\_W, Sample 19051723-03A MS and -03A MSD: The VOC MS and/or MSD recoveries were above the upper control limit. The corresponding result in the parent sample was non-detect, therefore no qualification is necessary for Bromomethane.

Batch R261663a, Method WI\_VOC\_8260\_W, Sample VLCSW3-190530: The VOC LCS recovery was above the upper control limit. All the sample results in the batch were non-detect. No qualification is necessary for Bromomethane.

Batch R261701, Method WI\_VOC\_8260\_W, Sample 19051723-18A MS and -18A MSD: The VOC MS and/or MSD recoveries were above the upper control limit. The corresponding result in the parent sample was non-detect, therefore no qualification is necessary for Bromomethane.

Batch R261701, Method WI\_VOC\_8260\_W, Sample VLCSW1-190531: The VOC LCS recovery was above the upper control limit. All the sample results in the batch were non-detect. No qualification is necessary for Bromomethane.

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**Client:** Gannett Fleming, Inc.  
**Project:** WRR (55929.005)  
**Work Order:** 19051723

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## Case Narrative

Batch R261745b, Method WI\_VOC\_8260\_W, Sample 19051723-20A MS and -20A MSD: The VOC MS and/or MSD recoveries were above the upper control limit. The corresponding result in the parent sample was non-detect, therefore no qualification is necessary for Bromomethane.

Batch R261787b, Method WI\_VOC\_8260\_W, Sample 19051723-09A: The VOC reporting limit is elevated due to dilution for high concentrations of non-target analytes.

Batch R261787b, Method WI\_VOC\_8260\_W, Sample 19051723-09A: The VOC Continuing Calibration Verification did not meet method acceptance criteria for the following analytes, result are to be considered estimated for Dichlorodifluoromethane.

Batch R261787b, Method WI\_VOC\_8260\_W, Sample 19051723-11A: The VOC Continuing Calibration Verification did not meet method acceptance criteria for the following analytes, result are to be considered estimated for Dichlorodifluoromethane.

Batch R261787b, Method WI\_VOC\_8260\_W, Sample 19051723-11A: The VOC reporting limit is elevated due to dilution for high concentrations of non-target analytes.

Batch R261787b, Method WI\_VOC\_8260\_W, Sample 19051723-15A MS and -15A MSD: The VOC MS and/or MSD recoveries were above the upper control limit. The corresponding result in the parent sample was non-detect, therefore no qualification is necessary for Bromomethane.

Batch R261787b, Method WI\_VOC\_8260\_W, Sample 19051723-15A MSD: The VOC MSD recovery was outside of the control limit. However, the MS recovery and the RPD between the MS and MSD was in control. No qualification is required for Chloroethane and Trichlorofluoromethane.

Batch R261787b, Method WI\_VOC\_8260\_W, Sample 19051723-17A: The VOC Continuing Calibration Verification did not meet method acceptance criteria for the following analytes, result are to be considered estimated for Dichlorodifluoromethane.

Batch R261787b, Method WI\_VOC\_8260\_W, Sample 19051723-18A: The VOC reporting limit is elevated due to dilution for high concentrations of non-target analytes.

Batch R261787b, Method WI\_VOC\_8260\_W, Sample 19051723-18A: The VOC Continuing Calibration Verification did not meet method acceptance criteria for the following analytes, result are to be considered estimated for Dichlorodifluoromethane.

Batch R261957b, Method WI\_VOC\_8260\_W, Sample 19051723-10A: The VOC Continuing

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**Client:** Gannett Fleming, Inc.  
**Project:** WRR (55929.005)  
**Work Order:** 19051723

**Case Narrative**

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Calibration Verification did not meet method acceptance criteria for the following analytes, result are to be considered estimated for Chloroethane.

Batch R261957b, Method WI\_VOC\_8260\_W, Sample 19051723-15A MS: The VOC MS recovery was outside of the control limit. However, the MSD recovery and the RPD between the MS and MSD were in control. No qualification is required for Acetone.

Batch R261957b, Method WI\_VOC\_8260\_W, Sample 19051723-15A MSD: The VOC RPD between the MS and MSD was outside the control limit. The corresponding result in the parent sample should be considered estimated for Bromomethane.

Batch R261957b, Method WI\_VOC\_8260\_W, Sample 19051723-16A: The VOC Continuing Calibration Verification did not meet method acceptance criteria for the following analytes, result are to be considered estimated for Vinyl Chloride.

Batch R261957b, Method WI\_VOC\_8260\_W, Sample 19051723-16A: The VOC reporting limit is elevated due to dilution for high concentrations of non-target analytes.

Batch R261957b, Method WI\_VOC\_8260\_W, Sample VLCSW1-190604: The VOC LCS recovery was above the upper control limit. All the sample results in the batch were non-detect. No qualification is necessary for Bromomethane.

Batch R262010b, Method WI\_VOC\_8260\_W, Sample VLCSW1-190605: The VOC LCS recovery was above the upper control limit. All the sample results in the batch were non-detect. No qualification is necessary for Bromomethane and Dichlorodifluoromethane.

**ALS Group, USA**

Date: 06-Jun-19

**Client:** Gannett Fleming, Inc.  
**Project:** WRR (55929.005)  
**Sample ID:** W-32  
**Collection Date:** 5/23/2019 03:50 PM

**Work Order:** 19051723  
**Lab ID:** 19051723-21  
**Matrix:** WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>GASES IN WATER</b>			Method: RSK-175			Analyst: DWJ	
Ethane	U		0.21	5.0	µg/L	1	5/28/2019 14:25
Ethene	U		0.41	5.0	µg/L	1	5/28/2019 14:25
Methane	U		0.64	5.0	µg/L	1	5/28/2019 14:25
<b>ALKALINITY</b>			Method: A2320 B-11			Analyst: DVD	
Alkalinity, Total (as CaCO3)	120		8.4	10	mg/L	1	5/29/2019 10:15
<b>ANIONS BY ION CHROMATOGRAPHY</b>			Method: SW9056A			Analyst: JDR	
Sulfate	65		0.57	10	mg/L	10	5/29/2019 13:05
<b>ORGANIC CARBON, TOTAL</b>			Method: SW9060A			Analyst: JZB	
Organic Carbon, Total	15		0.28	1.0	mg/L	2	6/3/2019 15:42

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

Client: Gannett Fleming, Inc.  
 Project: WRR (55929.005)  
 Sample ID: W-34  
 Collection Date: 5/23/2019 01:55 PM

Work Order: 19051723  
 Lab ID: 19051723-22  
 Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>VOLATILE ORGANIC COMPOUNDS</b>			Method: SW8260C			Analyst: WH	
1,1,1,2-Tetrachloroethane	U		3.8	13	µg/L	10	6/5/2019 18:22
<b>1,1,1-Trichloroethane</b>	<b>9,600</b>		<b>230</b>	<b>760</b>	<b>µg/L</b>	500	6/1/2019 02:04
1,1,2,2-Tetrachloroethane	U		4.0	13	µg/L	10	6/5/2019 18:22
<b>1,1,2-Trichloroethane</b>	<b>600</b>		<b>4.6</b>	<b>15</b>	<b>µg/L</b>	10	6/5/2019 18:22
<b>1,1-Dichloroethane</b>	<b>810</b>		<b>4.4</b>	<b>15</b>	<b>µg/L</b>	10	6/5/2019 18:22
<b>1,1-Dichloroethene</b>	<b>820</b>		<b>4.0</b>	<b>14</b>	<b>µg/L</b>	10	6/5/2019 18:22
1,1-Dichloropropene	U		3.7	12	µg/L	10	6/5/2019 18:22
1,2,3-Trichlorobenzene	U		4.2	14	µg/L	10	6/5/2019 18:22
1,2,3-Trichloropropane	U		4.0	13	µg/L	10	6/5/2019 18:22
1,2,4-Trichlorobenzene	U		4.5	15	µg/L	10	6/5/2019 18:22
1,2,4-Trimethylbenzene	U		4.5	15	µg/L	10	6/5/2019 18:22
1,2-Dibromo-3-chloropropane	U		4.3	14	µg/L	10	6/5/2019 18:22
1,2-Dibromoethane	U		4.1	14	µg/L	10	6/5/2019 18:22
<b>1,2-Dichlorobenzene</b>	<b>4.4</b>	J	<b>3.2</b>	<b>11</b>	<b>µg/L</b>	10	6/5/2019 18:22
<b>1,2-Dichloroethane</b>	<b>63</b>		<b>4.4</b>	<b>14</b>	<b>µg/L</b>	10	6/5/2019 18:22
<b>1,2-Dichloropropane</b>	<b>180</b>		<b>4.8</b>	<b>16</b>	<b>µg/L</b>	10	6/5/2019 18:22
1,3,5-Trimethylbenzene	U		6.5	22	µg/L	10	6/5/2019 18:22
1,3-Dichlorobenzene	U		3.3	11	µg/L	10	6/5/2019 18:22
1,3-Dichloropropane	U		4.0	13	µg/L	10	6/5/2019 18:22
1,4-Dichlorobenzene	U		3.5	12	µg/L	10	6/5/2019 18:22
2,2-Dichloropropane	U		5.2	17	µg/L	10	6/5/2019 18:22
2-Butanone	U		5.2	17	µg/L	10	6/5/2019 18:22
2-Chlorotoluene	U		3.6	12	µg/L	10	6/5/2019 18:22
2-Propanol	U		330	1,100	µg/L	10	6/5/2019 18:22
4-Chlorotoluene	U		3.1	10	µg/L	10	6/5/2019 18:22
<b>4-Methyl-2-pentanone</b>	<b>59</b>		<b>5.2</b>	<b>17</b>	<b>µg/L</b>	10	6/5/2019 18:22
Acetone	U		11	36	µg/L	10	6/5/2019 18:22
<b>Benzene</b>	<b>5.7</b>	J	<b>4.6</b>	<b>15</b>	<b>µg/L</b>	10	6/5/2019 18:22
Bromobenzene	U		3.8	13	µg/L	10	6/5/2019 18:22
Bromochloromethane	U		4.5	15	µg/L	10	6/5/2019 18:22
Bromodichloromethane	U		4.9	16	µg/L	10	6/5/2019 18:22
Bromoform	U		5.6	19	µg/L	10	6/5/2019 18:22
Bromomethane	U		9.0	30	µg/L	10	6/5/2019 18:22
Carbon tetrachloride	U		4.0	14	µg/L	10	6/5/2019 18:22
Chlorobenzene	U		4.0	13	µg/L	10	6/5/2019 18:22
<b>Chloroethane</b>	<b>6.9</b>	J	<b>6.8</b>	<b>23</b>	<b>µg/L</b>	10	6/5/2019 18:22
<b>Chloroform</b>	<b>43</b>		<b>4.6</b>	<b>15</b>	<b>µg/L</b>	10	6/5/2019 18:22
Chloromethane	U		8.3	28	µg/L	10	6/5/2019 18:22

Note: See Qualifiers page for a list of qualifiers and their definitions.



# ALS Group, USA

Date: 06-Jun-19

**Client:** Gannett Fleming, Inc.  
**Project:** WRR (55929.005)  
**Sample ID:** W-34  
**Collection Date:** 5/23/2019 01:55 PM

**Work Order:** 19051723  
**Lab ID:** 19051723-22  
**Matrix:** WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>cis-1,2-Dichloroethene</b>	<b>27,000</b>		<b>210</b>	<b>690</b>	<b>µg/L</b>	500	6/1/2019 02:04
cis-1,3-Dichloropropene	U		5.7	19	µg/L	10	6/5/2019 18:22
Dibromochloromethane	U		4.0	13	µg/L	10	6/5/2019 18:22
Dibromomethane	U		6.5	22	µg/L	10	6/5/2019 18:22
Dichlorodifluoromethane	U		6.8	23	µg/L	10	6/5/2019 18:22
Diisopropyl ether	U		4.1	14	µg/L	10	6/5/2019 18:22
<b>Ethylbenzene</b>	<b>68</b>		<b>3.4</b>	<b>11</b>	<b>µg/L</b>	10	6/5/2019 18:22
Hexachlorobutadiene	U		5.6	19	µg/L	10	6/5/2019 18:22
Isopropylbenzene	U		3.5	12	µg/L	10	6/5/2019 18:22
<b>m,p-Xylene</b>	<b>190</b>		<b>8.1</b>	<b>27</b>	<b>µg/L</b>	10	6/5/2019 18:22
Methyl tert-butyl ether	U		4.5	15	µg/L	10	6/5/2019 18:22
<b>Methylene chloride</b>	<b>230</b>		<b>8.6</b>	<b>29</b>	<b>µg/L</b>	10	6/5/2019 18:22
Naphthalene	U		7.7	26	µg/L	10	6/5/2019 18:22
n-Butylbenzene	U		3.4	11	µg/L	10	6/5/2019 18:22
n-Propylbenzene	U		4.8	16	µg/L	10	6/5/2019 18:22
<b>o-Xylene</b>	<b>93</b>		<b>3.1</b>	<b>10</b>	<b>µg/L</b>	10	6/5/2019 18:22
p-Isopropyltoluene	U		2.6	8.8	µg/L	10	6/5/2019 18:22
sec-Butylbenzene	U		3.0	10	µg/L	10	6/5/2019 18:22
Styrene	U		3.3	11	µg/L	10	6/5/2019 18:22
tert-Butylbenzene	U		3.9	13	µg/L	10	6/5/2019 18:22
<b>Tetrachloroethene</b>	<b>520</b>		<b>3.9</b>	<b>13</b>	<b>µg/L</b>	10	6/5/2019 18:22
<b>Toluene</b>	<b>32</b>		<b>4.5</b>	<b>15</b>	<b>µg/L</b>	10	6/5/2019 18:22
<b>trans-1,2-Dichloroethene</b>	<b>310</b>		<b>4.8</b>	<b>16</b>	<b>µg/L</b>	10	6/5/2019 18:22
trans-1,3-Dichloropropene	U		3.8	27	µg/L	10	6/5/2019 18:22
<b>Trichloroethene</b>	<b>800</b>		<b>4.3</b>	<b>14</b>	<b>µg/L</b>	10	6/5/2019 18:22
Trichlorofluoromethane	U		5.2	17	µg/L	10	6/5/2019 18:22
<b>Vinyl chloride</b>	<b>3,800</b>		<b>260</b>	<b>880</b>	<b>µg/L</b>	500	6/1/2019 02:04
<b>Xylenes, Total</b>	<b>290</b>		<b>8.1</b>	<b>44</b>	<b>µg/L</b>	10	6/5/2019 18:22
Surr: 1,2-Dichloroethane-d4	102			75-120	%REC	500	6/1/2019 02:04
Surr: 1,2-Dichloroethane-d4	94.9			75-120	%REC	10	6/5/2019 18:22
Surr: 4-Bromofluorobenzene	94.4			80-110	%REC	500	6/1/2019 02:04
Surr: 4-Bromofluorobenzene	96.0			80-110	%REC	10	6/5/2019 18:22
Surr: Dibromofluoromethane	100			85-115	%REC	500	6/1/2019 02:04
Surr: Dibromofluoromethane	101			85-115	%REC	10	6/5/2019 18:22
Surr: Toluene-d8	100			85-110	%REC	500	6/1/2019 02:04
Surr: Toluene-d8	91.4			85-110	%REC	10	6/5/2019 18:22

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

**ALS Group, USA**

Date: 06-Jun-19

**Client:** Gannett Fleming, Inc.  
**Project:** WRR (55929.005)  
**Sample ID:** Trip Blank  
**Collection Date:** 5/22/2019

**Work Order:** 19051723  
**Lab ID:** 19051723-23  
**Matrix:** WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>VOLATILE ORGANIC COMPOUNDS</b>			Method: SW8260C		Analyst: WH		
1,1,1,2-Tetrachloroethane	U		0.38	1.3	µg/L	1	6/1/2019 01:15
1,1,1-Trichloroethane	U		0.46	1.5	µg/L	1	6/1/2019 01:15
1,1,2,2-Tetrachloroethane	U		0.40	1.3	µg/L	1	6/1/2019 01:15
1,1,2-Trichloroethane	U		0.46	1.5	µg/L	1	6/1/2019 01:15
1,1-Dichloroethane	U		0.44	1.5	µg/L	1	6/1/2019 01:15
1,1-Dichloroethene	U		0.40	1.4	µg/L	1	6/1/2019 01:15
1,1-Dichloropropene	U		0.37	1.2	µg/L	1	6/1/2019 01:15
1,2,3-Trichlorobenzene	U		0.42	1.4	µg/L	1	6/1/2019 01:15
1,2,3-Trichloropropane	U		0.40	1.3	µg/L	1	6/1/2019 01:15
1,2,4-Trichlorobenzene	U		0.45	1.5	µg/L	1	6/1/2019 01:15
1,2,4-Trimethylbenzene	U		0.45	1.5	µg/L	1	6/1/2019 01:15
1,2-Dibromo-3-chloropropane	U		0.43	1.4	µg/L	1	6/1/2019 01:15
1,2-Dibromoethane	U		0.41	1.4	µg/L	1	6/1/2019 01:15
1,2-Dichlorobenzene	U		0.32	1.1	µg/L	1	6/1/2019 01:15
1,2-Dichloroethane	U		0.44	1.4	µg/L	1	6/1/2019 01:15
1,2-Dichloropropane	U		0.48	1.6	µg/L	1	6/1/2019 01:15
1,3,5-Trimethylbenzene	U		0.65	2.2	µg/L	1	6/1/2019 01:15
1,3-Dichlorobenzene	U		0.33	1.1	µg/L	1	6/1/2019 01:15
1,3-Dichloropropane	U		0.40	1.3	µg/L	1	6/1/2019 01:15
1,4-Dichlorobenzene	U		0.35	1.2	µg/L	1	6/1/2019 01:15
2,2-Dichloropropane	U		0.52	1.7	µg/L	1	6/1/2019 01:15
2-Butanone	U		0.52	1.7	µg/L	1	6/1/2019 01:15
2-Chlorotoluene	U		0.36	1.2	µg/L	1	6/1/2019 01:15
2-Propanol	U		66	110	µg/L	1	6/1/2019 01:15
4-Chlorotoluene	U		0.31	1.0	µg/L	1	6/1/2019 01:15
4-Methyl-2-pentanone	U		0.52	1.7	µg/L	1	6/1/2019 01:15
Acetone	U		4.4	3.6	µg/L	1	6/1/2019 01:15
Benzene	U		0.46	1.5	µg/L	1	6/1/2019 01:15
Bromobenzene	U		0.38	1.3	µg/L	1	6/1/2019 01:15
Bromochloromethane	U		0.45	1.5	µg/L	1	6/1/2019 01:15
Bromodichloromethane	U		0.49	1.6	µg/L	1	6/1/2019 01:15
Bromoform	U		0.56	1.9	µg/L	1	6/1/2019 01:15
Bromomethane	U		0.90	3.0	µg/L	1	6/1/2019 01:15
Carbon tetrachloride	U		0.40	1.4	µg/L	1	6/1/2019 01:15
Chlorobenzene	U		0.40	1.3	µg/L	1	6/1/2019 01:15
Chloroethane	U		0.68	2.3	µg/L	1	6/1/2019 01:15
Chloroform	U		0.69	1.5	µg/L	1	6/1/2019 01:15
Chloromethane	U		0.83	2.8	µg/L	1	6/1/2019 01:15

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group, USA

Date: 06-Jun-19

**Client:** Gannett Fleming, Inc.  
**Project:** WRR (55929.005)  
**Sample ID:** Trip Blank  
**Collection Date:** 5/22/2019

**Work Order:** 19051723  
**Lab ID:** 19051723-23  
**Matrix:** WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
cis-1,2-Dichloroethene	U		0.42	1.4	µg/L	1	6/1/2019 01:15
cis-1,3-Dichloropropene	U		0.57	1.9	µg/L	1	6/1/2019 01:15
Dibromochloromethane	U		0.40	1.3	µg/L	1	6/1/2019 01:15
Dibromomethane	U		0.65	2.2	µg/L	1	6/1/2019 01:15
Dichlorodifluoromethane	U		0.68	2.3	µg/L	1	6/1/2019 01:15
Diisopropyl ether	U		0.41	1.4	µg/L	1	6/1/2019 01:15
Ethylbenzene	U		0.34	1.1	µg/L	1	6/1/2019 01:15
Hexachlorobutadiene	U		0.56	1.9	µg/L	1	6/1/2019 01:15
Isopropylbenzene	U		0.35	1.2	µg/L	1	6/1/2019 01:15
m,p-Xylene	U		0.81	2.7	µg/L	1	6/1/2019 01:15
Methyl tert-butyl ether	U		0.45	1.5	µg/L	1	6/1/2019 01:15
Methylene chloride	U		0.86	2.9	µg/L	1	6/1/2019 01:15
Naphthalene	U		0.77	2.6	µg/L	1	6/1/2019 01:15
n-Butylbenzene	U		0.34	1.1	µg/L	1	6/1/2019 01:15
n-Propylbenzene	U		0.48	1.6	µg/L	1	6/1/2019 01:15
o-Xylene	U		0.31	1.0	µg/L	1	6/1/2019 01:15
p-Isopropyltoluene	U		0.26	0.88	µg/L	1	6/1/2019 01:15
sec-Butylbenzene	U		0.30	1.0	µg/L	1	6/1/2019 01:15
Styrene	U		0.33	1.1	µg/L	1	6/1/2019 01:15
tert-Butylbenzene	U		0.39	1.3	µg/L	1	6/1/2019 01:15
Tetrachloroethene	U		0.39	1.3	µg/L	1	6/1/2019 01:15
Toluene	U		0.45	1.5	µg/L	1	6/1/2019 01:15
trans-1,2-Dichloroethene	U		0.48	1.6	µg/L	1	6/1/2019 01:15
trans-1,3-Dichloropropene	U		0.38	2.7	µg/L	1	6/1/2019 01:15
Trichloroethene	U		0.43	1.4	µg/L	1	6/1/2019 01:15
Trichlorofluoromethane	U		0.52	1.7	µg/L	1	6/1/2019 01:15
Vinyl chloride	U		0.53	1.8	µg/L	1	6/1/2019 01:15
Xylenes, Total	U		0.81	4.4	µg/L	1	6/1/2019 01:15
Surr: 1,2-Dichloroethane-d4	102			75-120	%REC	1	6/1/2019 01:15
Surr: 4-Bromofluorobenzene	95.8			80-110	%REC	1	6/1/2019 01:15
Surr: Dibromofluoromethane	101			85-115	%REC	1	6/1/2019 01:15
Surr: Toluene-d8	103			85-110	%REC	1	6/1/2019 01:15

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group, USA

Date: 06-Jun-19

**Client:** Gannett Fleming, Inc.  
**Project:** WRR (55929.005)  
**Sample ID:** W-34  
**Collection Date:** 5/23/2019 01:55 PM

**Work Order:** 19051723  
**Lab ID:** 19051723-24  
**Matrix:** WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>GASES IN WATER</b>			Method: RSK-175				Analyst: DWJ
Ethane	52		0.21	5.0	µg/L	1	5/28/2019 14:30
Ethene	270		10	120	µg/L	25	5/28/2019 16:11
Methane	6.4		0.64	5.0	µg/L	1	5/28/2019 14:30
<b>ALKALINITY</b>			Method: A2320 B-11				Analyst: DVD
Alkalinity, Total (as CaCO3)	91		8.4	10	mg/L	1	5/29/2019 10:15
<b>ANIONS BY ION CHROMATOGRAPHY</b>			Method: SW9056A				Analyst: JDR
Sulfate	23		0.28	5.0	mg/L	5	5/28/2019 23:56
<b>ORGANIC CARBON, TOTAL</b>			Method: SW9060A				Analyst: JZB
Organic Carbon, Total	37		0.56	2.0	mg/L	4	6/3/2019 15:42

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

**Client:** Gannett Fleming, Inc.  
**Work Order:** 19051723  
**Project:** WRR (55929.005)

**QC BATCH REPORT**

Batch ID: **R261392** Instrument ID **GC10** Method: **RSK-175**

MBLK		Sample ID: <b>MBLK-190528-R261392</b>				Units: <b>µg/L</b>		Analysis Date: <b>5/28/2019 02:12 PM</b>			
Client ID:		Run ID: <b>GC10_190528A</b>				SeqNo: <b>5681822</b>		Prep Date:		DF: <b>1</b>	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ethane	U	0.21	5.0								
Ethene	U	0.41	5.0								
Methane	U	0.64	5.0								

LCS		Sample ID: <b>LCS-190528-R261392</b>				Units: <b>µg/L</b>		Analysis Date: <b>5/28/2019 02:08 PM</b>			
Client ID:		Run ID: <b>GC10_190528A</b>				SeqNo: <b>5681821</b>		Prep Date:		DF: <b>1</b>	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ethane	41.95	0.21	5.0	36.1	0	116	75-125	0			
Ethene	39.32	0.41	5.0	33.7	0	117	75-125	0			
Methane	20.08	0.64	5.0	19.2	0	105	75-125	0			

MS		Sample ID: <b>19051723-21A MS</b>				Units: <b>µg/L</b>		Analysis Date: <b>5/28/2019 03:46 PM</b>			
Client ID: <b>W-32</b>		Run ID: <b>GC10_190528A</b>				SeqNo: <b>5681832</b>		Prep Date:		DF: <b>1</b>	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ethane	42.17	0.21	5.0	36.1	0	117	70-130	0			
Ethene	42.25	0.41	5.0	33.7	0	125	70-130	0			
Methane	24.8	0.64	5.0	19.2	0	129	70-130	0			

MSD		Sample ID: <b>19051723-21A MSD</b>				Units: <b>µg/L</b>		Analysis Date: <b>5/28/2019 03:48 PM</b>			
Client ID: <b>W-32</b>		Run ID: <b>GC10_190528A</b>				SeqNo: <b>5681833</b>		Prep Date:		DF: <b>1</b>	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ethane	40.11	0.21	5.0	36.1	0	111	70-130	42.17	5.01	30	
Ethene	39.5	0.41	5.0	33.7	0	117	70-130	42.25	6.73	30	
Methane	22.83	0.64	5.0	19.2	0	119	70-130	24.8	8.27	30	

The following samples were analyzed in this batch:

19051723-21A	19051723-24A
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Client: Gannett Fleming, Inc.  
 Work Order: 19051723  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: **R261663a** Instrument ID **VMS8** Method: **SW8260C**

MBLK		Sample ID: <b>VBLKW5-190530-R261663a</b>			Units: <b>µg/L</b>		Analysis Date: <b>5/31/2019 06:15 AM</b>				
Client ID:		Run ID: <b>VMS8_190530B</b>			SeqNo: <b>5688285</b>		Prep Date:		DF: <b>1</b>		
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	U	0.38	1.3								
1,1,1-Trichloroethane	U	0.46	1.5								
1,1,2,2-Tetrachloroethane	U	0.4	1.3								
1,1,2-Trichloroethane	U	0.46	1.5								
1,1-Dichloroethane	U	0.44	1.5								
1,1-Dichloroethene	U	0.4	1.4								
1,1-Dichloropropene	U	0.37	1.2								
1,2,3-Trichlorobenzene	U	0.42	1.4								
1,2,3-Trichloropropane	U	0.4	1.3								
1,2,4-Trichlorobenzene	U	0.45	1.5								
1,2,4-Trimethylbenzene	U	0.45	1.5								
1,2-Dibromo-3-chloropropane	U	0.43	1.4								
1,2-Dibromoethane	U	0.41	1.4								
1,2-Dichlorobenzene	U	0.32	1.1								
1,2-Dichloroethane	U	0.44	1.4								
1,2-Dichloropropane	U	0.48	1.6								
1,3,5-Trimethylbenzene	U	0.65	2.2								
1,3-Dichlorobenzene	U	0.33	1.1								
1,3-Dichloropropane	U	0.4	1.3								
1,4-Dichlorobenzene	U	0.35	1.2								
2,2-Dichloropropane	U	0.52	1.7								
2-Butanone	U	0.52	1.7								
2-Chlorotoluene	U	0.36	1.2								
2-Propanol	U	33	110								
4-Chlorotoluene	U	0.31	1.0								
4-Methyl-2-pentanone	U	0.52	1.7								
Acetone	U	1.1	3.6								
Benzene	U	0.46	1.5								
Bromobenzene	U	0.38	1.3								
Bromochloromethane	U	0.45	1.5								
Bromodichloromethane	U	0.49	1.6								
Bromoform	U	0.56	1.9								
Bromomethane	U	0.9	3.0								
Carbon tetrachloride	U	0.4	1.4								
Chlorobenzene	U	0.4	1.3								
Chloroethane	U	0.68	2.3								
Chloroform	U	0.46	1.5								
Chloromethane	U	0.83	2.8								
cis-1,2-Dichloroethene	U	0.42	1.4								
cis-1,3-Dichloropropene	U	0.57	1.9								
Dibromochloromethane	U	0.4	1.3								
Dibromomethane	U	0.65	2.2								
Dichlorodifluoromethane	U	0.68	2.3								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 19051723  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: <b>R261663a</b>	Instrument ID <b>VMS8</b>	Method: <b>SW8260C</b>						
Diisopropyl ether	U	0.41	1.4					
Ethylbenzene	U	0.34	1.1					
Hexachlorobutadiene	U	0.56	1.9					
Isopropylbenzene	U	0.35	1.2					
m,p-Xylene	U	0.81	2.7					
Methyl tert-butyl ether	U	0.45	1.5					
Methylene chloride	U	0.86	2.9					
Naphthalene	U	0.77	2.6					
n-Butylbenzene	U	0.34	1.1					
n-Propylbenzene	U	0.48	1.6					
o-Xylene	U	0.31	1.0					
p-Isopropyltoluene	U	0.26	0.88					
sec-Butylbenzene	U	0.3	1.0					
Styrene	U	0.33	1.1					
tert-Butylbenzene	U	0.39	1.3					
Tetrachloroethene	U	0.39	1.3					
Toluene	U	0.45	1.5					
trans-1,2-Dichloroethene	U	0.48	1.6					
trans-1,3-Dichloropropene	U	0.38	2.7					
Trichloroethene	U	0.43	1.4					
Trichlorofluoromethane	U	0.52	1.7					
Vinyl chloride	U	0.53	1.8					
Xylenes, Total	U	0.81	4.4					
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>18.81</i>	<i>0</i>	<i>0</i>	<i>20</i>	<i>0</i>	<i>94</i>	<i>75-120</i>	<i>0</i>
<i>Surr: 4-Bromofluorobenzene</i>	<i>18.56</i>	<i>0</i>	<i>0</i>	<i>20</i>	<i>0</i>	<i>92.8</i>	<i>80-110</i>	<i>0</i>
<i>Surr: Dibromofluoromethane</i>	<i>19.56</i>	<i>0</i>	<i>0</i>	<i>20</i>	<i>0</i>	<i>97.8</i>	<i>85-115</i>	<i>0</i>
<i>Surr: Toluene-d8</i>	<i>20.09</i>	<i>0</i>	<i>0</i>	<i>20</i>	<i>0</i>	<i>100</i>	<i>85-110</i>	<i>0</i>

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 19051723  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: **R261663a** Instrument ID **VMS8** Method: **SW8260C**

LCS		Sample ID: <b>VLCSW3-190530-R261663a</b>				Units: <b>µg/L</b>		Analysis Date: <b>5/31/2019 05:42 AM</b>			
Client ID:		Run ID: <b>VMS8_190530B</b>				SeqNo: <b>5688284</b>		Prep Date:		DF: <b>1</b>	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	20.95	0.38	1.3	20	0	105	73-114	0			
1,1,1-Trichloroethane	21.52	0.46	1.5	20	0	108	75-130	0			
1,1,2,2-Tetrachloroethane	23.16	0.4	1.3	20	0	116	75-130	0			
1,1,2-Trichloroethane	22.1	0.46	1.5	20	0	110	75-125	0			
1,1-Dichloroethane	21.38	0.44	1.5	20	0	107	75-133	0			
1,1-Dichloroethene	21.75	0.4	1.4	20	0	109	70-145	0			
1,1-Dichloropropene	19.9	0.37	1.2	20	0	99.5	75-135	0			
1,2,3-Trichlorobenzene	21.39	0.42	1.4	20	0	107	70-140	0			
1,2,3-Trichloropropane	21.5	0.4	1.3	20	0	108	75-125	0			
1,2,4-Trichlorobenzene	21.58	0.45	1.5	20	0	108	70-135	0			
1,2,4-Trimethylbenzene	22.66	0.45	1.5	20	0	113	75-130	0			
1,2-Dibromo-3-chloropropane	21.47	0.43	1.4	20	0	107	60-130	0			
1,2-Dibromoethane	24.59	0.41	1.4	20	0	123	90-195	0			
1,2-Dichlorobenzene	22.35	0.32	1.1	20	0	112	70-130	0			
1,2-Dichloroethane	21.59	0.44	1.4	20	0	108	78-125	0			
1,2-Dichloropropane	21	0.48	1.6	20	0	105	75-125	0			
1,3,5-Trimethylbenzene	23.36	0.65	2.2	20	0	117	75-130	0			
1,3-Dichlorobenzene	22.12	0.33	1.1	20	0	111	75-130	0			
1,3-Dichloropropane	20.88	0.4	1.3	20	0	104	75-125	0			
1,4-Dichlorobenzene	22.12	0.35	1.2	20	0	111	75-130	0			
2,2-Dichloropropane	16.52	0.52	1.7	20	0	82.6	43-150	0			
2-Butanone	24.1	0.52	1.7	20	0	120	55-150	0			
2-Chlorotoluene	22.06	0.36	1.2	20	0	110	76-117	0			
4-Chlorotoluene	22.16	0.31	1.0	20	0	111	80-125	0			
4-Methyl-2-pentanone	32.21	0.52	1.7	20	0	161	77-178	0			
Acetone	24.02	1.1	3.6	20	0	120	60-160	0			
Benzene	21.01	0.46	1.5	20	0	105	85-125	0			
Bromobenzene	21.04	0.38	1.3	20	0	105	80-125	0			
Bromochloromethane	22.9	0.45	1.5	20	0	114	72-141	0			
Bromodichloromethane	20.41	0.49	1.6	20	0	102	75-125	0			
Bromoform	19.7	0.56	1.9	20	0	98.5	60-125	0			
Bromomethane	47.1	0.9	3.0	20	0	236	30-185	0			S
Carbon tetrachloride	18.23	0.4	1.4	20	0	91.2	65-140	0			
Chlorobenzene	21.07	0.4	1.3	20	0	105	80-120	0			
Chloroethane	20.94	0.68	2.3	20	0	105	31-172	0			
Chloroform	20.53	0.46	1.5	20	0	103	80-130	0			
Chloromethane	15.57	0.83	2.8	20	0	77.8	46-148	0			
cis-1,2-Dichloroethene	20.78	0.42	1.4	20	0	104	75-134	0			
cis-1,3-Dichloropropene	19.68	0.57	1.9	20	0	98.4	70-130	0			
Dibromochloromethane	19.37	0.4	1.3	20	0	96.8	60-115	0			
Dibromomethane	21.34	0.65	2.2	20	0	107	79-126	0			
Dichlorodifluoromethane	16.03	0.68	2.3	20	0	80.2	20-120	0			
Ethylbenzene	22.23	0.34	1.1	20	0	111	76-123	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.



**Client:** Gannett Fleming, Inc.  
**Work Order:** 19051723  
**Project:** WRR (55929.005)

## QC BATCH REPORT

Batch ID: <b>R261663a</b>	Instrument ID <b>VMS8</b>		Method: <b>SW8260C</b>						
Hexachlorobutadiene	21.42	0.56	1.9	20	0	107	70-155	0	
Isopropylbenzene	22.97	0.35	1.2	20	0	115	80-127	0	
m,p-Xylene	44.52	0.81	2.7	40	0	111	75-130	0	
Methyl tert-butyl ether	23.15	0.45	1.5	20	0	116	80-130	0	
Methylene chloride	19.34	0.86	2.9	20	0	96.7	72-125	0	
Naphthalene	20.29	0.77	2.6	20	0	101	55-160	0	
n-Butylbenzene	23.44	0.34	1.1	20	0	117	75-145	0	
n-Propylbenzene	20.32	0.48	1.6	20	0	102	83-135	0	
o-Xylene	22.93	0.31	1.0	20	0	115	80-125	0	
p-Isopropyltoluene	23.75	0.26	0.88	20	0	119	61-164	0	
sec-Butylbenzene	23.56	0.3	1.0	20	0	118	80-134	0	
Styrene	25.56	0.33	1.1	20	0	128	83-137	0	
tert-Butylbenzene	21.21	0.39	1.3	20	0	106	70-130	0	
Tetrachloroethene	20.98	0.39	1.3	20	0	105	68-166	0	
Toluene	21.98	0.45	1.5	20	0	110	76-125	0	
trans-1,2-Dichloroethene	22.39	0.48	1.6	20	0	112	80-140	0	
trans-1,3-Dichloropropene	18.93	0.38	2.7	20	0	94.6	56-132	0	
Trichloroethene	20.27	0.43	1.4	20	0	101	77-125	0	
Trichlorofluoromethane	18.01	0.52	1.7	20	0	90	60-140	0	
Vinyl chloride	20.79	0.53	1.8	20	0	104	50-136	0	
Xylenes, Total	67.45	0.81	4.4	60	0	112	80-126	0	
<i>Surr: 1,2-Dichloroethane-d4</i>	20.23	0	0	20	0	101	75-120	0	
<i>Surr: 4-Bromofluorobenzene</i>	20.38	0	0	20	0	102	80-110	0	
<i>Surr: Dibromofluoromethane</i>	20.69	0	0	20	0	103	85-115	0	
<i>Surr: Toluene-d8</i>	20.06	0	0	20	0	100	85-110	0	

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 19051723  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: **R261663a** Instrument ID **VMS8** Method: **SW8260C**

MS		Sample ID: 19051723-03A MS				Units: µg/L		Analysis Date: 5/31/2019 12:17 PM			
Client ID: W-1A		Run ID: VMS8_190530B				SeqNo: 5688306		Prep Date:		DF: 20	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	380	7.6	26	400	0	95	73-114	0			
1,1,1-Trichloroethane	410.8	9.2	30	400	0	103	75-130	0			
1,1,2,2-Tetrachloroethane	408.6	8	27	400	0	102	75-130	0			
1,1,2-Trichloroethane	412.4	9.2	31	400	0	103	75-125	0			
1,1-Dichloroethane	402.8	8.8	29	400	0	101	75-133	0			
1,1-Dichloroethene	425.2	8	27	400	0	106	70-145	0			
1,1-Dichloropropene	363.8	7.4	25	400	0	91	75-135	0			
1,2,3-Trichlorobenzene	400.6	8.4	28	400	0	100	70-140	0			
1,2,3-Trichloropropane	363.4	8	26	400	0	90.8	75-125	0			
1,2,4-Trichlorobenzene	381.6	9	30	400	0	95.4	70-135	0			
1,2,4-Trimethylbenzene	386.8	9	30	400	0	96.7	75-130	0			
1,2-Dibromo-3-chloropropane	406.2	8.6	29	400	0	102	60-130	0			
1,2-Dibromoethane	461.8	8.2	27	400	0	115	90-195	0			
1,2-Dichlorobenzene	407.4	6.4	21	400	0	102	70-130	0			
1,2-Dichloroethane	392.4	8.8	29	400	0	98.1	78-125	0			
1,2-Dichloropropane	393	9.6	32	400	0	98.2	75-125	0			
1,3,5-Trimethylbenzene	397.8	13	43	400	0	99.4	75-130	0			
1,3-Dichlorobenzene	407.2	6.6	22	400	0	102	75-130	0			
1,3-Dichloropropane	376.6	8	26	400	0	94.2	75-125	0			
1,4-Dichlorobenzene	405.8	7	23	400	0	101	75-130	0			
2,2-Dichloropropane	253.2	10	34	400	0	63.3	43-150	0			
2-Butanone	438.8	10	35	400	0	110	55-150	0			
2-Chlorotoluene	380.4	7.2	24	400	0	95.1	76-117	0			
4-Chlorotoluene	389.2	6.2	20	400	0	97.3	80-125	0			
4-Methyl-2-pentanone	583.4	10	35	400	0	146	77-178	0			
Acetone	467.8	22	72	400	7.8	115	60-160	0			
Benzene	388.8	9.2	30	400	0	97.2	85-125	0			
Bromobenzene	364.8	7.6	25	400	0	91.2	80-125	0			
Bromochloromethane	484.2	9	30	400	0	121	72-141	0			
Bromodichloromethane	380.4	9.8	33	400	0	95.1	75-125	0			
Bromoform	341.4	11	37	400	0	85.4	60-125	0			
Bromomethane	1606	18	60	400	0	402	30-185	0			S
Carbon tetrachloride	332.8	8	27	400	0	83.2	65-140	0			
Chlorobenzene	394	8	27	400	0	98.5	80-120	0			
Chloroethane	392	14	45	400	0	98	31-172	0			
Chloroform	395.6	9.2	31	400	0	98.9	80-130	0			
Chloromethane	221.8	17	55	400	0	55.4	46-148	0			
cis-1,2-Dichloroethene	389.2	8.4	28	400	7.2	95.5	75-134	0			
cis-1,3-Dichloropropene	362.6	11	38	400	0	90.6	70-130	0			
Dibromochloromethane	347.8	8	26	400	0	87	60-115	0			
Dibromomethane	398.2	13	43	400	0	99.6	79-126	0			
Dichlorodifluoromethane	343.4	14	45	400	0	85.8	20-120	0			
Ethylbenzene	477.8	6.8	22	400	78.8	99.8	76-123	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 19051723  
 Project: WRR (55929.005)

## QC BATCH REPORT

Batch ID: <b>R261663a</b>	Instrument ID <b>VMS8</b>		Method: <b>SW8260C</b>						
Hexachlorobutadiene	285.6	11	37	400	0	71.4	70-155	0	
Isopropylbenzene	412	7	23	400	7	101	80-127	0	
m,p-Xylene	928	16	54	800	127.2	100	75-130	0	
Methyl tert-butyl ether	437.6	9	30	400	0	109	80-130	0	
Methylene chloride	356.8	17	58	400	0	89.2	72-125	0	
Naphthalene	372.8	15	51	400	0	93.2	55-160	0	
n-Butylbenzene	398.6	6.8	22	400	0	99.6	75-145	0	
n-Propylbenzene	347.6	9.6	32	400	0	86.9	83-135	0	
o-Xylene	457.8	6.2	21	400	45.2	103	80-125	0	
p-Isopropyltoluene	429	5.2	18	400	0	107	61-164	0	
sec-Butylbenzene	391	6	20	400	0	97.8	80-134	0	
Styrene	462.8	6.6	22	400	0	116	83-137	0	
tert-Butylbenzene	370.4	7.8	26	400	0	92.6	70-130	0	
Tetrachloroethene	387	7.8	26	400	0	96.8	68-166	0	
Toluene	407.8	9	30	400	0	102	76-125	0	
trans-1,2-Dichloroethene	429	9.6	32	400	0	107	80-140	0	
trans-1,3-Dichloropropene	322.4	7.6	55	400	0	80.6	56-132	0	
Trichloroethene	374.2	8.6	29	400	18.2	89	77-125	0	
Trichlorofluoromethane	404	10	34	400	0	101	60-140	0	
Vinyl chloride	406.2	11	35	400	0	102	50-136	0	
Xylenes, Total	1386	16	89	1200	172.4	101	80-126	0	
<i>Surr: 1,2-Dichloroethane-d4</i>	403	0	0	400	0	101	75-120	0	
<i>Surr: 4-Bromofluorobenzene</i>	377.2	0	0	400	0	94.3	80-110	0	
<i>Surr: Dibromofluoromethane</i>	411.4	0	0	400	0	103	85-115	0	
<i>Surr: Toluene-d8</i>	391.8	0	0	400	0	98	85-110	0	

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Client: Gannett Fleming, Inc.  
 Work Order: 19051723  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: **R261663a** Instrument ID **VMS8** Method: **SW8260C**

MSD		Sample ID: 19051723-03A MSD				Units: µg/L			Analysis Date: 5/31/2019 12:34 PM		
Client ID: W-1A		Run ID: VMS8_190530B				SeqNo: 5688307		Prep Date:		DF: 20	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	371.6	7.6	26	400	0	92.9	73-114	380	2.24	30	
1,1,1-Trichloroethane	397.8	9.2	30	400	0	99.4	75-130	410.8	3.22	30	
1,1,2,2-Tetrachloroethane	404.4	8	27	400	0	101	75-130	408.6	1.03	30	
1,1,2-Trichloroethane	412.4	9.2	31	400	0	103	75-125	412.4	0	30	
1,1-Dichloroethane	388.4	8.8	29	400	0	97.1	75-133	402.8	3.64	30	
1,1-Dichloroethene	403.4	8	27	400	0	101	70-145	425.2	5.26	30	
1,1-Dichloropropene	354.8	7.4	25	400	0	88.7	75-135	363.8	2.5	30	
1,2,3-Trichlorobenzene	410.2	8.4	28	400	0	103	70-140	400.6	2.37	30	
1,2,3-Trichloropropane	367.8	8	26	400	0	92	75-125	363.4	1.2	30	
1,2,4-Trichlorobenzene	387.2	9	30	400	0	96.8	70-135	381.6	1.46	30	
1,2,4-Trimethylbenzene	388.2	9	30	400	0	97	75-130	386.8	0.361	30	
1,2-Dibromo-3-chloropropane	402.6	8.6	29	400	0	101	60-130	406.2	0.89	30	
1,2-Dibromoethane	458.2	8.2	27	400	0	115	90-195	461.8	0.783	30	
1,2-Dichlorobenzene	420.2	6.4	21	400	0	105	70-130	407.4	3.09	30	
1,2-Dichloroethane	392.8	8.8	29	400	0	98.2	78-125	392.4	0.102	30	
1,2-Dichloropropane	380.4	9.6	32	400	0	95.1	75-125	393	3.26	30	
1,3,5-Trimethylbenzene	390.6	13	43	400	0	97.6	75-130	397.8	1.83	30	
1,3-Dichlorobenzene	418.2	6.6	22	400	0	105	75-130	407.2	2.67	30	
1,3-Dichloropropane	385	8	26	400	0	96.2	75-125	376.6	2.21	30	
1,4-Dichlorobenzene	404.8	7	23	400	0	101	75-130	405.8	0.247	30	
2,2-Dichloropropane	252.6	10	34	400	0	63.2	43-150	253.2	0.237	30	
2-Butanone	436.6	10	35	400	0	109	55-150	438.8	0.503	30	
2-Chlorotoluene	384.4	7.2	24	400	0	96.1	76-117	380.4	1.05	30	
4-Chlorotoluene	386	6.2	20	400	0	96.5	80-125	389.2	0.826	30	
4-Methyl-2-pentanone	556.6	10	35	400	0	139	77-178	583.4	4.7	30	
Acetone	434.8	22	72	400	7.8	107	60-160	467.8	7.31	30	
Benzene	388.8	9.2	30	400	0	97.2	85-125	388.8	0	30	
Bromobenzene	370.2	7.6	25	400	0	92.6	80-125	364.8	1.47	30	
Bromochloromethane	462.6	9	30	400	0	116	72-141	484.2	4.56	30	
Bromodichloromethane	381.4	9.8	33	400	0	95.4	75-125	380.4	0.263	30	
Bromoform	345	11	37	400	0	86.2	60-125	341.4	1.05	30	
Bromomethane	1533	18	60	400	0	383	30-185	1606	4.68	30	S
Carbon tetrachloride	327.8	8	27	400	0	82	65-140	332.8	1.51	30	
Chlorobenzene	391	8	27	400	0	97.8	80-120	394	0.764	30	
Chloroethane	340.4	14	45	400	0	85.1	31-172	392	14.1	30	
Chloroform	380.8	9.2	31	400	0	95.2	80-130	395.6	3.81	30	
Chloromethane	201.2	17	55	400	0	50.3	46-148	221.8	9.74	30	
cis-1,2-Dichloroethene	376	8.4	28	400	7.2	92.2	75-134	389.2	3.45	30	
cis-1,3-Dichloropropene	350.4	11	38	400	0	87.6	70-130	362.6	3.42	30	
Dibromochloromethane	355.4	8	26	400	0	88.8	60-115	347.8	2.16	30	
Dibromomethane	398.2	13	43	400	0	99.6	79-126	398.2	0	30	
Dichlorodifluoromethane	266	14	45	400	0	66.5	20-120	343.4	25.4	30	
Ethylbenzene	481.8	6.8	22	400	78.8	101	76-123	477.8	0.834	30	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 19051723  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: <b>R261663a</b>	Instrument ID <b>VMS8</b>			Method: <b>SW8260C</b>							
Hexachlorobutadiene	290.4	11	37	400	0	72.6	70-155	285.6	1.67	30	
Isopropylbenzene	408.4	7	23	400	7	100	80-127	412	0.878	30	
m,p-Xylene	933.8	16	54	800	127.2	101	75-130	928	0.623	30	
Methyl tert-butyl ether	415.4	9	30	400	0	104	80-130	437.6	5.21	30	
Methylene chloride	338.2	17	58	400	0	84.6	72-125	356.8	5.35	30	
Naphthalene	388.2	15	51	400	0	97	55-160	372.8	4.05	30	
n-Butylbenzene	392.4	6.8	22	400	0	98.1	75-145	398.6	1.57	30	
n-Propylbenzene	353.6	9.6	32	400	0	88.4	83-135	347.6	1.71	30	
o-Xylene	461.6	6.2	21	400	45.2	104	80-125	457.8	0.827	30	
p-Isopropyltoluene	409.6	5.2	18	400	0	102	61-164	429	4.63	30	
sec-Butylbenzene	387.8	6	20	400	0	97	80-134	391	0.822	30	
Styrene	466.6	6.6	22	400	0	117	83-137	462.8	0.818	30	
tert-Butylbenzene	361.8	7.8	26	400	0	90.4	70-130	370.4	2.35	30	
Tetrachloroethene	387.8	7.8	26	400	0	97	68-166	387	0.207	30	
Toluene	405.4	9	30	400	0	101	76-125	407.8	0.59	30	
trans-1,2-Dichloroethene	398.8	9.6	32	400	0	99.7	80-140	429	7.3	30	
trans-1,3-Dichloropropene	325.2	7.6	55	400	0	81.3	56-132	322.4	0.865	30	
Trichloroethene	370.4	8.6	29	400	18.2	88	77-125	374.2	1.02	30	
Trichlorofluoromethane	399	10	34	400	0	99.8	60-140	404	1.25	30	
Vinyl chloride	389.4	11	35	400	0	97.4	50-136	406.2	4.22	30	
Xylenes, Total	1395	16	89	1200	172.4	102	80-126	1386	0.69	30	
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>407</i>	<i>0</i>	<i>0</i>	<i>400</i>	<i>0</i>	<i>102</i>	<i>75-120</i>	<i>403</i>	<i>0.988</i>	<i>30</i>	
<i>Surr: 4-Bromofluorobenzene</i>	<i>388.6</i>	<i>0</i>	<i>0</i>	<i>400</i>	<i>0</i>	<i>97.2</i>	<i>80-110</i>	<i>377.2</i>	<i>2.98</i>	<i>30</i>	
<i>Surr: Dibromofluoromethane</i>	<i>412.2</i>	<i>0</i>	<i>0</i>	<i>400</i>	<i>0</i>	<i>103</i>	<i>85-115</i>	<i>411.4</i>	<i>0.194</i>	<i>30</i>	
<i>Surr: Toluene-d8</i>	<i>402.2</i>	<i>0</i>	<i>0</i>	<i>400</i>	<i>0</i>	<i>101</i>	<i>85-110</i>	<i>391.8</i>	<i>2.62</i>	<i>30</i>	

The following samples were analyzed in this batch:

19051723-01A	19051723-02A	19051723-03A
19051723-04A	19051723-05A	19051723-06A
19051723-07A		

Client: Gannett Fleming, Inc.  
 Work Order: 19051723  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: **R261701** Instrument ID **VMS8** Method: **SW8260C**

MBLK		Sample ID: <b>VLKW3-190531-R261701</b>			Units: <b>µg/L</b>		Analysis Date: <b>5/31/2019 03:37 PM</b>				
Client ID:		Run ID: <b>VMS8_190531A</b>			SeqNo: <b>5689838</b>		Prep Date:		DF: <b>1</b>		
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	U	0.38	1.3								
1,1,1-Trichloroethane	U	0.46	1.5								
1,1,2,2-Tetrachloroethane	U	0.4	1.3								
1,1,2-Trichloroethane	U	0.46	1.5								
1,1-Dichloroethane	U	0.44	1.5								
1,1-Dichloroethene	U	0.4	1.4								
1,1-Dichloropropene	U	0.37	1.2								
1,2,3-Trichlorobenzene	U	0.42	1.4								
1,2,3-Trichloropropane	U	0.4	1.3								
1,2,4-Trichlorobenzene	U	0.45	1.5								
1,2,4-Trimethylbenzene	U	0.45	1.5								
1,2-Dibromo-3-chloropropane	U	0.43	1.4								
1,2-Dibromoethane	U	0.41	1.4								
1,2-Dichlorobenzene	U	0.32	1.1								
1,2-Dichloroethane	U	0.44	1.4								
1,2-Dichloropropane	U	0.48	1.6								
1,3,5-Trimethylbenzene	U	0.65	2.2								
1,3-Dichlorobenzene	U	0.33	1.1								
1,3-Dichloropropane	U	0.4	1.3								
1,4-Dichlorobenzene	U	0.35	1.2								
2,2-Dichloropropane	U	0.52	1.7								
2-Butanone	U	0.52	1.7								
2-Chlorotoluene	U	0.36	1.2								
2-Propanol	U	33	110								
4-Chlorotoluene	U	0.31	1.0								
4-Methyl-2-pentanone	U	0.52	1.7								
Acetone	U	1.1	3.6								
Benzene	U	0.46	1.5								
Bromobenzene	U	0.38	1.3								
Bromochloromethane	U	0.45	1.5								
Bromodichloromethane	U	0.49	1.6								
Bromoform	U	0.56	1.9								
Bromomethane	U	0.9	3.0								
Carbon tetrachloride	U	0.4	1.4								
Chlorobenzene	U	0.4	1.3								
Chloroethane	U	0.68	2.3								
Chloroform	U	0.46	1.5								
Chloromethane	U	0.83	2.8								
cis-1,2-Dichloroethene	U	0.42	1.4								
cis-1,3-Dichloropropene	U	0.57	1.9								
Dibromochloromethane	U	0.4	1.3								
Dibromomethane	U	0.65	2.2								
Dichlorodifluoromethane	U	0.68	2.3								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** Gannett Fleming, Inc.  
**Work Order:** 19051723  
**Project:** WRR (55929.005)

## QC BATCH REPORT

Batch ID: <b>R261701</b>	Instrument ID <b>VMS8</b>	Method: <b>SW8260C</b>						
Diisopropyl ether	U	0.41	1.4					
Ethylbenzene	U	0.34	1.1					
Hexachlorobutadiene	U	0.56	1.9					
Isopropylbenzene	U	0.35	1.2					
m,p-Xylene	U	0.81	2.7					
Methyl tert-butyl ether	U	0.45	1.5					
Methylene chloride	U	0.86	2.9					
Naphthalene	U	0.77	2.6					
n-Butylbenzene	U	0.34	1.1					
n-Propylbenzene	U	0.48	1.6					
o-Xylene	U	0.31	1.0					
p-Isopropyltoluene	U	0.26	0.88					
sec-Butylbenzene	U	0.3	1.0					
Styrene	U	0.33	1.1					
tert-Butylbenzene	U	0.39	1.3					
Tetrachloroethene	U	0.39	1.3					
Toluene	U	0.45	1.5					
trans-1,2-Dichloroethene	U	0.48	1.6					
trans-1,3-Dichloropropene	U	0.38	2.7					
Trichloroethene	U	0.43	1.4					
Trichlorofluoromethane	U	0.52	1.7					
Vinyl chloride	U	0.53	1.8					
Xylenes, Total	U	0.81	4.4					
<i>Surr: 1,2-Dichloroethane-d4</i>	20.7	0	0	20	0	104	75-120	0
<i>Surr: 4-Bromofluorobenzene</i>	18.64	0	0	20	0	93.2	80-110	0
<i>Surr: Dibromofluoromethane</i>	21.24	0	0	20	0	106	85-115	0
<i>Surr: Toluene-d8</i>	20.1	0	0	20	0	100	85-110	0

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 19051723  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: **R261701** Instrument ID **VMS8** Method: **SW8260C**

LCS		Sample ID: <b>VLCSW1-190531-R261701</b>				Units: <b>µg/L</b>		Analysis Date: <b>5/31/2019 02:47 PM</b>			
Client ID:		Run ID: <b>VMS8_190531A</b>				SeqNo: <b>5689837</b>		Prep Date:		DF: <b>1</b>	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	20.2	0.38	1.3	20	0	101	73-114	0			
1,1,1-Trichloroethane	21.56	0.46	1.5	20	0	108	75-130	0			
1,1,2,2-Tetrachloroethane	21.48	0.4	1.3	20	0	107	75-130	0			
1,1,2-Trichloroethane	21.55	0.46	1.5	20	0	108	75-125	0			
1,1-Dichloroethane	20.84	0.44	1.5	20	0	104	75-133	0			
1,1-Dichloroethene	21.21	0.4	1.4	20	0	106	70-145	0			
1,1-Dichloropropene	19.03	0.37	1.2	20	0	95.2	75-135	0			
1,2,3-Trichlorobenzene	21.67	0.42	1.4	20	0	108	70-140	0			
1,2,3-Trichloropropane	18.76	0.4	1.3	20	0	93.8	75-125	0			
1,2,4-Trichlorobenzene	22.39	0.45	1.5	20	0	112	70-135	0			
1,2,4-Trimethylbenzene	20.95	0.45	1.5	20	0	105	75-130	0			
1,2-Dibromo-3-chloropropane	21.96	0.43	1.4	20	0	110	60-130	0			
1,2-Dibromoethane	24.16	0.41	1.4	20	0	121	90-195	0			
1,2-Dichlorobenzene	22.71	0.32	1.1	20	0	114	70-130	0			
1,2-Dichloroethane	20.91	0.44	1.4	20	0	105	78-125	0			
1,2-Dichloropropane	20.25	0.48	1.6	20	0	101	75-125	0			
1,3,5-Trimethylbenzene	21.87	0.65	2.2	20	0	109	75-130	0			
1,3-Dichlorobenzene	22.81	0.33	1.1	20	0	114	75-130	0			
1,3-Dichloropropane	20.35	0.4	1.3	20	0	102	75-125	0			
1,4-Dichlorobenzene	22.58	0.35	1.2	20	0	113	75-130	0			
2,2-Dichloropropane	21.08	0.52	1.7	20	0	105	43-150	0			
2-Butanone	21.75	0.52	1.7	20	0	109	55-150	0			
2-Chlorotoluene	20.91	0.36	1.2	20	0	105	76-117	0			
4-Chlorotoluene	20.59	0.31	1.0	20	0	103	80-125	0			
4-Methyl-2-pentanone	30.43	0.52	1.7	20	0	152	77-178	0			
Acetone	21.1	1.1	3.6	20	0	106	60-160	0			
Benzene	20.66	0.46	1.5	20	0	103	85-125	0			
Bromobenzene	19.59	0.38	1.3	20	0	98	80-125	0			
Bromochloromethane	24.26	0.45	1.5	20	0	121	72-141	0			
Bromodichloromethane	20.1	0.49	1.6	20	0	100	75-125	0			
Bromoform	18.28	0.56	1.9	20	0	91.4	60-125	0			
Bromomethane	80.41	0.9	3.0	20	0	402	30-185	0			S
Carbon tetrachloride	17.64	0.4	1.4	20	0	88.2	65-140	0			
Chlorobenzene	20.75	0.4	1.3	20	0	104	80-120	0			
Chloroethane	20.35	0.68	2.3	20	0	102	31-172	0			
Chloroform	19.76	0.46	1.5	20	0	98.8	80-130	0			
Chloromethane	14.8	0.83	2.8	20	0	74	46-148	0			
cis-1,2-Dichloroethene	21.27	0.42	1.4	20	0	106	75-134	0			
cis-1,3-Dichloropropene	20.29	0.57	1.9	20	0	101	70-130	0			
Dibromochloromethane	19.14	0.4	1.3	20	0	95.7	60-115	0			
Dibromomethane	20.44	0.65	2.2	20	0	102	79-126	0			
Dichlorodifluoromethane	14.11	0.68	2.3	20	0	70.6	20-120	0			
Ethylbenzene	21.53	0.34	1.1	20	0	108	76-123	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.



**Client:** Gannett Fleming, Inc.  
**Work Order:** 19051723  
**Project:** WRR (55929.005)

## QC BATCH REPORT

Batch ID: <b>R261701</b>	Instrument ID <b>VMS8</b>		Method: <b>SW8260C</b>						
Hexachlorobutadiene	23.69	0.56	1.9	20	0	118	70-155	0	
Isopropylbenzene	22.16	0.35	1.2	20	0	111	80-127	0	
m,p-Xylene	42.96	0.81	2.7	40	0	107	75-130	0	
Methyl tert-butyl ether	22.68	0.45	1.5	20	0	113	80-130	0	
Methylene chloride	19.99	0.86	2.9	20	0	100	72-125	0	
Naphthalene	20.01	0.77	2.6	20	0	100	55-160	0	
n-Butylbenzene	24.25	0.34	1.1	20	0	121	75-145	0	
n-Propylbenzene	19.59	0.48	1.6	20	0	98	83-135	0	
o-Xylene	21.82	0.31	1.0	20	0	109	80-125	0	
p-Isopropyltoluene	24.23	0.26	0.88	20	0	121	61-164	0	
sec-Butylbenzene	21.77	0.3	1.0	20	0	109	80-134	0	
Styrene	24.54	0.33	1.1	20	0	123	83-137	0	
tert-Butylbenzene	20.05	0.39	1.3	20	0	100	70-130	0	
Tetrachloroethene	20.31	0.39	1.3	20	0	102	68-166	0	
Toluene	21.05	0.45	1.5	20	0	105	76-125	0	
trans-1,2-Dichloroethene	22.34	0.48	1.6	20	0	112	80-140	0	
trans-1,3-Dichloropropene	19.61	0.38	2.7	20	0	98	56-132	0	
Trichloroethene	20.25	0.43	1.4	20	0	101	77-125	0	
Trichlorofluoromethane	18.56	0.52	1.7	20	0	92.8	60-140	0	
Vinyl chloride	20.86	0.53	1.8	20	0	104	50-136	0	
Xylenes, Total	64.78	0.81	4.4	60	0	108	80-126	0	
<i>Surr: 1,2-Dichloroethane-d4</i>	20.58	0	0	20	0	103	75-120	0	
<i>Surr: 4-Bromofluorobenzene</i>	20.16	0	0	20	0	101	80-110	0	
<i>Surr: Dibromofluoromethane</i>	21.58	0	0	20	0	108	85-115	0	
<i>Surr: Toluene-d8</i>	20.03	0	0	20	0	100	85-110	0	

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 19051723  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: **R261701** Instrument ID **VMS8** Method: **SW8260C**

MS		Sample ID: 19051723-18A MS				Units: µg/L		Analysis Date: 5/31/2019 10:16 PM			
Client ID: TW-1 DUP		Run ID: VMS8_190531A				SeqNo: 5689859		Prep Date:		DF: 50	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	877	19	64	1000	0	87.7	73-114	0			
1,1,1-Trichloroethane	958	23	76	1000	0	95.8	75-130	0			
1,1,2,2-Tetrachloroethane	954.5	20	67	1000	0	95.4	75-130	0			
1,1,2-Trichloroethane	962	23	77	1000	0	96.2	75-125	0			
1,1-Dichloroethane	1011	22	74	1000	54	95.7	75-133	0			
1,1-Dichloroethene	1048	20	68	1000	0	105	70-145	0			
1,1-Dichloropropene	863.5	18	62	1000	0	86.4	75-135	0			
1,2,3-Trichlorobenzene	963	21	70	1000	0	96.3	70-140	0			
1,2,3-Trichloropropane	865	20	66	1000	0	86.5	75-125	0			
1,2,4-Trichlorobenzene	957	22	76	1000	0	95.7	70-135	0			
1,2,4-Trimethylbenzene	1580	22	75	1000	661	91.9	75-130	0			
1,2-Dibromo-3-chloropropane	1002	22	72	1000	0	100	60-130	0			
1,2-Dibromoethane	1122	20	68	1000	0	112	90-195	0			
1,2-Dichlorobenzene	998	16	54	1000	0	99.8	70-130	0			
1,2-Dichloroethane	927.5	22	72	1000	0	92.8	78-125	0			
1,2-Dichloropropane	908.5	24	80	1000	0	90.8	75-125	0			
1,3,5-Trimethylbenzene	1107	32	110	1000	142.5	96.4	75-130	0			
1,3-Dichlorobenzene	976	16	54	1000	0	97.6	75-130	0			
1,3-Dichloropropane	921.5	20	66	1000	0	92.2	75-125	0			
1,4-Dichlorobenzene	950	18	58	1000	0	95	75-130	0			
2,2-Dichloropropane	884.5	26	86	1000	0	88.4	43-150	0			
2-Butanone	1108	26	86	1000	0	111	55-150	0			
2-Chlorotoluene	935	18	60	1000	0	93.5	76-117	0			
4-Chlorotoluene	928	16	51	1000	0	92.8	80-125	0			
4-Methyl-2-pentanone	1420	26	86	1000	0	142	77-178	0			
Acetone	1054	54	180	1000	0	105	60-160	0			
Benzene	929.5	23	76	1000	0	93	85-125	0			
Bromobenzene	856.5	19	63	1000	0	85.6	80-125	0			
Bromochloromethane	1145	22	74	1000	0	114	72-141	0			
Bromodichloromethane	906	24	82	1000	0	90.6	75-125	0			
Bromoform	822	28	94	1000	0	82.2	60-125	0			
Bromomethane	1912	45	150	1000	0	191	30-185	0			S
Carbon tetrachloride	809	20	68	1000	0	80.9	65-140	0			
Chlorobenzene	927.5	20	67	1000	0	92.8	80-120	0			
Chloroethane	1042	34	110	1000	0	104	31-172	0			
Chloroform	943	23	76	1000	0	94.3	80-130	0			
Chloromethane	820.5	42	140	1000	0	82	46-148	0			
cis-1,2-Dichloroethene	997	21	69	1000	31.5	96.6	75-134	0			
cis-1,3-Dichloropropene	908.5	28	96	1000	0	90.8	70-130	0			
Dibromochloromethane	812	20	66	1000	0	81.2	60-115	0			
Dibromomethane	923	32	110	1000	0	92.3	79-126	0			
Dichlorodifluoromethane	736.5	34	110	1000	50	68.6	20-120	0			
Ethylbenzene	1768	17	56	1000	832.5	93.5	76-123	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** Gannett Fleming, Inc.  
**Work Order:** 19051723  
**Project:** WRR (55929.005)

## QC BATCH REPORT

Batch ID: <b>R261701</b>	Instrument ID <b>VMS8</b>			Method: <b>SW8260C</b>					
Hexachlorobutadiene	924	28	94	1000	0	92.4	70-155	0	
Isopropylbenzene	1032	18	58	1000	52.5	97.9	80-127	0	
m,p-Xylene	4394	40	140	2000	2614	89	75-130	0	
Methyl tert-butyl ether	1085	22	76	1000	0	108	80-130	0	
Methylene chloride	887	43	140	1000	0	88.7	72-125	0	
Naphthalene	961.5	38	130	1000	53	90.8	55-160	0	
n-Butylbenzene	1053	17	56	1000	0	105	75-145	0	
n-Propylbenzene	944.5	24	80	1000	100.5	84.4	83-135	0	
o-Xylene	1564	16	52	1000	622.5	94.1	80-125	0	
p-Isopropyltoluene	1045	13	44	1000	0	104	61-164	0	
sec-Butylbenzene	966	15	50	1000	0	96.6	80-134	0	
Styrene	1090	16	56	1000	0	109	83-137	0	
tert-Butylbenzene	962	20	66	1000	0	96.2	70-130	0	
Tetrachloroethene	884	20	66	1000	0	88.4	68-166	0	
Toluene	1188	22	76	1000	377.5	81.1	76-125	0	
trans-1,2-Dichloroethene	1056	24	80	1000	0	106	80-140	0	
trans-1,3-Dichloropropene	821.5	19	140	1000	0	82.2	56-132	0	
Trichloroethene	914.5	22	72	1000	0	91.4	77-125	0	
Trichlorofluoromethane	1011	26	86	1000	0	101	60-140	0	
Vinyl chloride	989.5	26	88	1000	0	99	50-136	0	
Xylenes, Total	5958	40	220	3000	3237	90.7	80-126	0	
<i>Surr: 1,2-Dichloroethane-d4</i>	981.5	0	0	1000	0	98.2	75-120	0	
<i>Surr: 4-Bromofluorobenzene</i>	962	0	0	1000	0	96.2	80-110	0	
<i>Surr: Dibromofluoromethane</i>	1034	0	0	1000	0	103	85-115	0	
<i>Surr: Toluene-d8</i>	1003	0	0	1000	0	100	85-110	0	

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 19051723  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: **R261701** Instrument ID **VMS8** Method: **SW8260C**

MSD		Sample ID: 19051723-18A MSD				Units: µg/L		Analysis Date: 5/31/2019 10:32 PM			
Client ID: TW-1 DUP		Run ID: VMS8_190531A				SeqNo: 5689860		Prep Date:		DF: 50	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	999	19	64	1000	0	99.9	73-114	877	13	30	
1,1,1-Trichloroethane	1110	23	76	1000	0	111	75-130	958	14.7	30	
1,1,2,2-Tetrachloroethane	1056	20	67	1000	0	106	75-130	954.5	10.1	30	
1,1,2-Trichloroethane	1055	23	77	1000	0	106	75-125	962	9.22	30	
1,1-Dichloroethane	1157	22	74	1000	54	110	75-133	1011	13.5	30	
1,1-Dichloroethene	1188	20	68	1000	0	119	70-145	1048	12.6	30	
1,1-Dichloropropene	1002	18	62	1000	0	100	75-135	863.5	14.9	30	
1,2,3-Trichlorobenzene	1002	21	70	1000	0	100	70-140	963	3.97	30	
1,2,3-Trichloropropane	947.5	20	66	1000	0	94.8	75-125	865	9.1	30	
1,2,4-Trichlorobenzene	1019	22	76	1000	0	102	70-135	957	6.28	30	
1,2,4-Trimethylbenzene	1740	22	75	1000	661	108	75-130	1580	9.64	30	
1,2-Dibromo-3-chloropropane	1022	22	72	1000	0	102	60-130	1002	2.03	30	
1,2-Dibromoethane	1194	20	68	1000	0	119	90-195	1122	6.18	30	
1,2-Dichlorobenzene	1078	16	54	1000	0	108	70-130	998	7.71	30	
1,2-Dichloroethane	1051	22	72	1000	0	105	78-125	927.5	12.5	30	
1,2-Dichloropropane	1062	24	80	1000	0	106	75-125	908.5	15.6	30	
1,3,5-Trimethylbenzene	1251	32	110	1000	142.5	111	75-130	1107	12.2	30	
1,3-Dichlorobenzene	1054	16	54	1000	0	105	75-130	976	7.64	30	
1,3-Dichloropropane	1002	20	66	1000	0	100	75-125	921.5	8.37	30	
1,4-Dichlorobenzene	1040	18	58	1000	0	104	75-130	950	9.05	30	
2,2-Dichloropropane	1026	26	86	1000	0	103	43-150	884.5	14.8	30	
2-Butanone	1136	26	86	1000	0	114	55-150	1108	2.54	30	
2-Chlorotoluene	1081	18	60	1000	0	108	76-117	935	14.5	30	
4-Chlorotoluene	1051	16	51	1000	0	105	80-125	928	12.4	30	
4-Methyl-2-pentanone	1521	26	86	1000	0	152	77-178	1420	6.83	30	
Acetone	1099	54	180	1000	0	110	60-160	1054	4.13	30	
Benzene	1078	23	76	1000	0	108	85-125	929.5	14.8	30	
Bromobenzene	979.5	19	63	1000	0	98	80-125	856.5	13.4	30	
Bromochloromethane	1271	22	74	1000	0	127	72-141	1145	10.4	30	
Bromodichloromethane	1012	24	82	1000	0	101	75-125	906	11.1	30	
Bromoform	901	28	94	1000	0	90.1	60-125	822	9.17	30	
Bromomethane	2209	45	150	1000	0	221	30-185	1912	14.4	30	S
Carbon tetrachloride	940.5	20	68	1000	0	94	65-140	809	15	30	
Chlorobenzene	1028	20	67	1000	0	103	80-120	927.5	10.2	30	
Chloroethane	995.5	34	110	1000	0	99.6	31-172	1042	4.61	30	
Chloroform	1074	23	76	1000	0	107	80-130	943	12.9	30	
Chloromethane	1016	42	140	1000	0	102	46-148	820.5	21.3	30	
cis-1,2-Dichloroethene	1132	21	69	1000	31.5	110	75-134	997	12.6	30	
cis-1,3-Dichloropropene	1016	28	96	1000	0	102	70-130	908.5	11.2	30	
Dibromochloromethane	906.5	20	66	1000	0	90.6	60-115	812	11	30	
Dibromomethane	1046	32	110	1000	0	105	79-126	923	12.5	30	
Dichlorodifluoromethane	785	34	110	1000	50	73.5	20-120	736.5	6.38	30	
Ethylbenzene	1921	17	56	1000	832.5	109	76-123	1768	8.32	30	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 19051723  
 Project: WRR (55929.005)

## QC BATCH REPORT

Batch ID: <b>R261701</b>	Instrument ID <b>VMS8</b>	Method: <b>SW8260C</b>								
Hexachlorobutadiene	1042	28	94	1000	0	104	70-155	924	12	30
Isopropylbenzene	1166	18	58	1000	52.5	111	80-127	1032	12.2	30
m,p-Xylene	4690	40	140	2000	2614	104	75-130	4394	6.52	30
Methyl tert-butyl ether	1195	22	76	1000	0	120	80-130	1085	9.65	30
Methylene chloride	962.5	43	140	1000	0	96.2	72-125	887	8.16	30
Naphthalene	1000	38	130	1000	53	94.8	55-160	961.5	3.98	30
n-Butylbenzene	1144	17	56	1000	0	114	75-145	1053	8.24	30
n-Propylbenzene	1076	24	80	1000	100.5	97.6	83-135	944.5	13.1	30
o-Xylene	1730	16	52	1000	622.5	111	80-125	1564	10.1	30
p-Isopropyltoluene	1185	13	44	1000	0	118	61-164	1045	12.6	30
sec-Butylbenzene	1107	15	50	1000	0	111	80-134	966	13.6	30
Styrene	1242	16	56	1000	0	124	83-137	1090	13	30
tert-Butylbenzene	1088	20	66	1000	0	109	70-130	962	12.3	30
Tetrachloroethene	1026	20	66	1000	0	103	68-166	884	14.9	30
Toluene	1295	22	76	1000	377.5	91.8	76-125	1188	8.58	30
trans-1,2-Dichloroethene	1201	24	80	1000	0	120	80-140	1056	12.8	30
trans-1,3-Dichloropropene	909.5	19	140	1000	0	91	56-132	821.5	10.2	30
Trichloroethene	1030	22	72	1000	0	103	77-125	914.5	11.9	30
Trichlorofluoromethane	1154	26	86	1000	0	115	60-140	1011	13.2	30
Vinyl chloride	1063	26	88	1000	0	106	50-136	989.5	7.16	30
Xylenes, Total	6421	40	220	3000	3237	106	80-126	5958	7.48	30
<i>Surr: 1,2-Dichloroethane-d4</i>	981.5	0	0	1000	0	98.2	75-120	981.5	0	30
<i>Surr: 4-Bromofluorobenzene</i>	977.5	0	0	1000	0	97.8	80-110	962	1.6	30
<i>Surr: Dibromofluoromethane</i>	1063	0	0	1000	0	106	85-115	1034	2.77	30
<i>Surr: Toluene-d8</i>	996	0	0	1000	0	99.6	85-110	1003	0.7	30

The following samples were analyzed in this batch:

19051723-01A	19051723-03A	19051723-08A
19051723-09A	19051723-10A	19051723-11A
19051723-12A	19051723-13A	19051723-14A
19051723-15A	19051723-17A	19051723-18A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 19051723  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: **R261745b** Instrument ID **VMS8** Method: **SW8260C**

MBLK		Sample ID: <b>VBLKW2-190531-R261745b</b>			Units: <b>µg/L</b>		Analysis Date: <b>6/1/2019 12:42 PM</b>				
Client ID:		Run ID: <b>VMS8_190531B</b>			SeqNo: <b>5690304</b>		Prep Date:		DF: <b>1</b>		
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	U	0.38	1.3								
1,1,1-Trichloroethane	U	0.46	1.5								
1,1,2,2-Tetrachloroethane	U	0.4	1.3								
1,1,2-Trichloroethane	U	0.46	1.5								
1,1-Dichloroethane	U	0.44	1.5								
1,1-Dichloroethene	U	0.4	1.4								
1,1-Dichloropropene	U	0.37	1.2								
1,2,3-Trichlorobenzene	U	0.42	1.4								
1,2,3-Trichloropropane	U	0.4	1.3								
1,2,4-Trichlorobenzene	U	0.45	1.5								
1,2,4-Trimethylbenzene	U	0.45	1.5								
1,2-Dibromo-3-chloropropane	U	0.43	1.4								
1,2-Dibromoethane	U	0.41	1.4								
1,2-Dichlorobenzene	U	0.32	1.1								
1,2-Dichloroethane	U	0.44	1.4								
1,2-Dichloropropane	U	0.48	1.6								
1,3,5-Trimethylbenzene	U	0.65	2.2								
1,3-Dichlorobenzene	U	0.33	1.1								
1,3-Dichloropropane	U	0.4	1.3								
1,4-Dichlorobenzene	U	0.35	1.2								
2,2-Dichloropropane	U	0.52	1.7								
2-Butanone	U	0.52	1.7								
2-Chlorotoluene	U	0.36	1.2								
2-Propanol	U	33	110								
4-Chlorotoluene	U	0.31	1.0								
4-Methyl-2-pentanone	U	0.52	1.7								
Acetone	U	1.1	3.6								
Benzene	U	0.46	1.5								
Bromobenzene	U	0.38	1.3								
Bromochloromethane	U	0.45	1.5								
Bromodichloromethane	U	0.49	1.6								
Bromoform	U	0.56	1.9								
Bromomethane	U	0.9	3.0								
Carbon tetrachloride	U	0.4	1.4								
Chlorobenzene	U	0.4	1.3								
Chloroethane	U	0.68	2.3								
Chloroform	U	0.46	1.5								
Chloromethane	U	0.83	2.8								
cis-1,2-Dichloroethene	U	0.42	1.4								
cis-1,3-Dichloropropene	U	0.57	1.9								
Dibromochloromethane	U	0.4	1.3								
Dibromomethane	U	0.65	2.2								
Dichlorodifluoromethane	U	0.68	2.3								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** Gannett Fleming, Inc.  
**Work Order:** 19051723  
**Project:** WRR (55929.005)

## QC BATCH REPORT

Batch ID: <b>R261745b</b>	Instrument ID <b>VMS8</b>	Method: <b>SW8260C</b>						
Diisopropyl ether	U	0.41	1.4					
Ethylbenzene	U	0.34	1.1					
Hexachlorobutadiene	U	0.56	1.9					
Isopropylbenzene	U	0.35	1.2					
m,p-Xylene	U	0.81	2.7					
Methyl tert-butyl ether	U	0.45	1.5					
Methylene chloride	U	0.86	2.9					
Naphthalene	U	0.77	2.6					
n-Butylbenzene	U	0.34	1.1					
n-Propylbenzene	U	0.48	1.6					
o-Xylene	U	0.31	1.0					
p-Isopropyltoluene	U	0.26	0.88					
sec-Butylbenzene	U	0.3	1.0					
Styrene	U	0.33	1.1					
tert-Butylbenzene	U	0.39	1.3					
Tetrachloroethene	U	0.39	1.3					
Toluene	U	0.45	1.5					
trans-1,2-Dichloroethene	U	0.48	1.6					
trans-1,3-Dichloropropene	U	0.38	2.7					
Trichloroethene	U	0.43	1.4					
Trichlorofluoromethane	U	0.52	1.7					
Vinyl chloride	U	0.53	1.8					
Xylenes, Total	U	0.81	4.4					
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>20.46</i>	<i>0</i>	<i>0</i>	<i>20</i>	<i>0</i>	<i>102</i>	<i>75-120</i>	<i>0</i>
<i>Surr: 4-Bromofluorobenzene</i>	<i>18.55</i>	<i>0</i>	<i>0</i>	<i>20</i>	<i>0</i>	<i>92.8</i>	<i>80-110</i>	<i>0</i>
<i>Surr: Dibromofluoromethane</i>	<i>20.31</i>	<i>0</i>	<i>0</i>	<i>20</i>	<i>0</i>	<i>102</i>	<i>85-115</i>	<i>0</i>
<i>Surr: Toluene-d8</i>	<i>19.59</i>	<i>0</i>	<i>0</i>	<i>20</i>	<i>0</i>	<i>98</i>	<i>85-110</i>	<i>0</i>

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 19051723  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: **R261745b** Instrument ID **VMS8** Method: **SW8260C**

LCS		Sample ID: <b>VLCSW2-190531-R261745b</b>				Units: <b>µg/L</b>		Analysis Date: <b>5/31/2019 11:53 PM</b>			
Client ID:		Run ID: <b>VMS8_190531B</b>				SeqNo: <b>5690297</b>		Prep Date:		DF: <b>1</b>	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	19.27	0.38	1.3	20	0	96.4	73-114	0			
1,1,1-Trichloroethane	21.11	0.46	1.5	20	0	106	75-130	0			
1,1,2,2-Tetrachloroethane	21.28	0.4	1.3	20	0	106	75-130	0			
1,1,2-Trichloroethane	19.88	0.46	1.5	20	0	99.4	75-125	0			
1,1-Dichloroethane	21.07	0.44	1.5	20	0	105	75-133	0			
1,1-Dichloroethene	21.91	0.4	1.4	20	0	110	70-145	0			
1,1-Dichloropropene	18.77	0.37	1.2	20	0	93.8	75-135	0			
1,2,3-Trichlorobenzene	19.37	0.42	1.4	20	0	96.8	70-140	0			
1,2,3-Trichloropropane	19.16	0.4	1.3	20	0	95.8	75-125	0			
1,2,4-Trichlorobenzene	20.05	0.45	1.5	20	0	100	70-135	0			
1,2,4-Trimethylbenzene	20.21	0.45	1.5	20	0	101	75-130	0			
1,2-Dibromo-3-chloropropane	18.98	0.43	1.4	20	0	94.9	60-130	0			
1,2-Dibromoethane	22.62	0.41	1.4	20	0	113	90-195	0			
1,2-Dichlorobenzene	20.86	0.32	1.1	20	0	104	70-130	0			
1,2-Dichloroethane	20.42	0.44	1.4	20	0	102	78-125	0			
1,2-Dichloropropane	20.27	0.48	1.6	20	0	101	75-125	0			
1,3,5-Trimethylbenzene	20.93	0.65	2.2	20	0	105	75-130	0			
1,3-Dichlorobenzene	20.93	0.33	1.1	20	0	105	75-130	0			
1,3-Dichloropropane	19.02	0.4	1.3	20	0	95.1	75-125	0			
1,4-Dichlorobenzene	21.12	0.35	1.2	20	0	106	75-130	0			
2,2-Dichloropropane	19.38	0.52	1.7	20	0	96.9	43-150	0			
2-Butanone	21.67	0.52	1.7	20	0	108	55-150	0			
2-Chlorotoluene	19.95	0.36	1.2	20	0	99.8	76-117	0			
4-Chlorotoluene	19.81	0.31	1.0	20	0	99	80-125	0			
4-Methyl-2-pentanone	28.66	0.52	1.7	20	0	143	77-178	0			
Acetone	22.8	1.1	3.6	20	0	114	60-160	0			
Benzene	20.03	0.46	1.5	20	0	100	85-125	0			
Bromobenzene	19.22	0.38	1.3	20	0	96.1	80-125	0			
Bromochloromethane	22.11	0.45	1.5	20	0	111	72-141	0			
Bromodichloromethane	19.08	0.49	1.6	20	0	95.4	75-125	0			
Bromoform	17.18	0.56	1.9	20	0	85.9	60-125	0			
Bromomethane	30.16	0.9	3.0	20	0	151	30-185	0			
Carbon tetrachloride	17.32	0.4	1.4	20	0	86.6	65-140	0			
Chlorobenzene	19.75	0.4	1.3	20	0	98.8	80-120	0			
Chloroethane	21.84	0.68	2.3	20	0	109	31-172	0			
Chloroform	20.35	0.46	1.5	20	0	102	80-130	0			
Chloromethane	21.39	0.83	2.8	20	0	107	46-148	0			
cis-1,2-Dichloroethene	20.98	0.42	1.4	20	0	105	75-134	0			
cis-1,3-Dichloropropene	19.43	0.57	1.9	20	0	97.2	70-130	0			
Dibromochloromethane	16.71	0.4	1.3	20	0	83.6	60-115	0			
Dibromomethane	19.96	0.65	2.2	20	0	99.8	79-126	0			
Dichlorodifluoromethane	14.29	0.68	2.3	20	0	71.4	20-120	0			
Ethylbenzene	20.65	0.34	1.1	20	0	103	76-123	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.



**Client:** Gannett Fleming, Inc.  
**Work Order:** 19051723  
**Project:** WRR (55929.005)

## QC BATCH REPORT

Batch ID: <b>R261745b</b>	Instrument ID <b>VMS8</b>		Method: <b>SW8260C</b>					
Hexachlorobutadiene	19.7	0.56	1.9	20	0	98.5	70-155	0
Isopropylbenzene	21.02	0.35	1.2	20	0	105	80-127	0
m,p-Xylene	41.13	0.81	2.7	40	0	103	75-130	0
Methyl tert-butyl ether	23.08	0.45	1.5	20	0	115	80-130	0
Methylene chloride	19.31	0.86	2.9	20	0	96.6	72-125	0
Naphthalene	17.73	0.77	2.6	20	0	88.6	55-160	0
n-Butylbenzene	21.64	0.34	1.1	20	0	108	75-145	0
n-Propylbenzene	18.57	0.48	1.6	20	0	92.8	83-135	0
o-Xylene	20.9	0.31	1.0	20	0	104	80-125	0
p-Isopropyltoluene	21.87	0.26	0.88	20	0	109	61-164	0
sec-Butylbenzene	20.94	0.3	1.0	20	0	105	80-134	0
Styrene	23.16	0.33	1.1	20	0	116	83-137	0
tert-Butylbenzene	19.14	0.39	1.3	20	0	95.7	70-130	0
Tetrachloroethene	18.61	0.39	1.3	20	0	93	68-166	0
Toluene	21.2	0.45	1.5	20	0	106	76-125	0
trans-1,2-Dichloroethene	22.18	0.48	1.6	20	0	111	80-140	0
trans-1,3-Dichloropropene	17.73	0.38	2.7	20	0	88.6	56-132	0
Trichloroethene	19.75	0.43	1.4	20	0	98.8	77-125	0
Trichlorofluoromethane	20.31	0.52	1.7	20	0	102	60-140	0
Vinyl chloride	22.15	0.53	1.8	20	0	111	50-136	0
Xylenes, Total	62.03	0.81	4.4	60	0	103	80-126	0
<i>Surr: 1,2-Dichloroethane-d4</i>	19.56	0	0	20	0	97.8	75-120	0
<i>Surr: 4-Bromofluorobenzene</i>	19.07	0	0	20	0	95.4	80-110	0
<i>Surr: Dibromofluoromethane</i>	20.7	0	0	20	0	104	85-115	0
<i>Surr: Toluene-d8</i>	19.28	0	0	20	0	96.4	85-110	0

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 19051723  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: **R261745b** Instrument ID **VMS8** Method: **SW8260C**

MS		Sample ID: 19051723-20A MS				Units: µg/L		Analysis Date: 6/1/2019 07:17 AM			
Client ID: W-1D DUP		Run ID: VMS8_190531B				SeqNo: 5690302		Prep Date:		DF: 500	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	9340	190	640	10000	0	93.4	73-114	0			
1,1,1-Trichloroethane	10980	230	760	10000	0	110	75-130	0			
1,1,2,2-Tetrachloroethane	9705	200	670	10000	0	97	75-130	0			
1,1,2-Trichloroethane	10130	230	770	10000	0	101	75-125	0			
1,1-Dichloroethane	11150	220	740	10000	0	112	75-133	0			
1,1-Dichloroethene	11600	200	680	10000	0	116	70-145	0			
1,1-Dichloropropene	9275	180	620	10000	0	92.8	75-135	0			
1,2,3-Trichlorobenzene	9670	210	700	10000	0	96.7	70-140	0			
1,2,3-Trichloropropane	9050	200	660	10000	0	90.5	75-125	0			
1,2,4-Trichlorobenzene	9480	220	760	10000	0	94.8	70-135	0			
1,2,4-Trimethylbenzene	9925	220	750	10000	0	99.2	75-130	0			
1,2-Dibromo-3-chloropropane	10180	220	720	10000	0	102	60-130	0			
1,2-Dibromoethane	11360	200	680	10000	0	114	90-195	0			
1,2-Dichlorobenzene	10500	160	540	10000	0	105	70-130	0			
1,2-Dichloroethane	9890	220	720	10000	0	98.9	78-125	0			
1,2-Dichloropropane	10280	240	800	10000	0	103	75-125	0			
1,3,5-Trimethylbenzene	10500	320	1,100	10000	0	105	75-130	0			
1,3-Dichlorobenzene	10400	160	540	10000	0	104	75-130	0			
1,3-Dichloropropane	9240	200	660	10000	0	92.4	75-125	0			
1,4-Dichlorobenzene	10210	180	580	10000	0	102	75-130	0			
2,2-Dichloropropane	8285	260	860	10000	0	82.8	43-150	0			
2-Butanone	11780	260	860	10000	0	118	55-150	0			
2-Chlorotoluene	10040	180	600	10000	0	100	76-117	0			
4-Chlorotoluene	9720	160	510	10000	0	97.2	80-125	0			
4-Methyl-2-pentanone	14010	260	860	10000	0	140	77-178	0			
Acetone	11740	540	1,800	10000	255	115	60-160	0			
Benzene	10200	230	760	10000	0	102	85-125	0			
Bromobenzene	9100	190	630	10000	0	91	80-125	0			
Bromochloromethane	12740	220	740	10000	0	127	72-141	0			
Bromodichloromethane	9645	240	820	10000	0	96.4	75-125	0			
Bromoform	8135	280	940	10000	0	81.4	60-125	0			
Bromomethane	38030	450	1,500	10000	0	380	30-185	0			S
Carbon tetrachloride	9055	200	680	10000	0	90.6	65-140	0			
Chlorobenzene	10060	200	670	10000	0	101	80-120	0			
Chloroethane	10860	340	1,100	10000	0	109	31-172	0			
Chloroform	10620	230	760	10000	0	106	80-130	0			
Chloromethane	9405	420	1,400	10000	0	94	46-148	0			
cis-1,2-Dichloroethene	10590	210	690	10000	0	106	75-134	0			
cis-1,3-Dichloropropene	9400	280	960	10000	0	94	70-130	0			
Dibromochloromethane	8395	200	660	10000	0	84	60-115	0			
Dibromomethane	9700	320	1,100	10000	0	97	79-126	0			
Dichlorodifluoromethane	7570	340	1,100	10000	0	75.7	20-120	0			
Ethylbenzene	10520	170	560	10000	0	105	76-123	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** Gannett Fleming, Inc.  
**Work Order:** 19051723  
**Project:** WRR (55929.005)

## QC BATCH REPORT

Batch ID: <b>R261745b</b>	Instrument ID <b>VMS8</b>	Method: <b>SW8260C</b>						
Hexachlorobutadiene	9845	280	940	10000	0	98.4	70-155	0
Isopropylbenzene	10710	180	580	10000	0	107	80-127	0
m,p-Xylene	20720	400	1,400	20000	0	104	75-130	0
Methyl tert-butyl ether	11680	220	760	10000	0	117	80-130	0
Methylene chloride	9735	430	1,400	10000	0	97.4	72-125	0
Naphthalene	8570	380	1,300	10000	0	85.7	55-160	0
n-Butylbenzene	10780	170	560	10000	0	108	75-145	0
n-Propylbenzene	9230	240	800	10000	0	92.3	83-135	0
o-Xylene	10640	160	520	10000	0	106	80-125	0
p-Isopropyltoluene	11220	130	440	10000	0	112	61-164	0
sec-Butylbenzene	10340	150	500	10000	0	103	80-134	0
Styrene	11640	160	560	10000	0	116	83-137	0
tert-Butylbenzene	9605	200	660	10000	0	96	70-130	0
Tetrachloroethene	10020	200	660	10000	0	100	68-166	0
Toluene	10440	220	760	10000	0	104	76-125	0
trans-1,2-Dichloroethene	12040	240	800	10000	0	120	80-140	0
trans-1,3-Dichloropropene	8400	190	1,400	10000	0	84	56-132	0
Trichloroethene	10200	220	720	10000	0	102	77-125	0
Trichlorofluoromethane	11000	260	860	10000	0	110	60-140	0
Vinyl chloride	12110	260	880	10000	0	121	50-136	0
Xylenes, Total	31350	400	2,200	30000	0	104	80-126	0
<i>Surr: 1,2-Dichloroethane-d4</i>	9750	0	0	10000	0	97.5	75-120	0
<i>Surr: 4-Bromofluorobenzene</i>	9450	0	0	10000	0	94.5	80-110	0
<i>Surr: Dibromofluoromethane</i>	10160	0	0	10000	0	102	85-115	0
<i>Surr: Toluene-d8</i>	9750	0	0	10000	0	97.5	85-110	0

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 19051723  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: **R261745b** Instrument ID **VMS8** Method: **SW8260C**

MSD		Sample ID: 19051723-20A MSD				Units: µg/L			Analysis Date: 6/1/2019 07:34 AM		
Client ID: W-1D DUP		Run ID: VMS8_190531B				SeqNo: 5690303		Prep Date:		DF: 500	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	9610	190	640	10000	0	96.1	73-114	9340	2.85	30	
1,1,1-Trichloroethane	10760	230	760	10000	0	108	75-130	10980	2.12	30	
1,1,2,2-Tetrachloroethane	10120	200	670	10000	0	101	75-130	9705	4.19	30	
1,1,2-Trichloroethane	10060	230	770	10000	0	101	75-125	10130	0.693	30	
1,1-Dichloroethane	10930	220	740	10000	0	109	75-133	11150	1.99	30	
1,1-Dichloroethene	11380	200	680	10000	0	114	70-145	11600	2	30	
1,1-Dichloropropene	9635	180	620	10000	0	96.4	75-135	9275	3.81	30	
1,2,3-Trichlorobenzene	9480	210	700	10000	0	94.8	70-140	9670	1.98	30	
1,2,3-Trichloropropane	9065	200	660	10000	0	90.6	75-125	9050	0.166	30	
1,2,4-Trichlorobenzene	9360	220	760	10000	0	93.6	70-135	9480	1.27	30	
1,2,4-Trimethylbenzene	10300	220	750	10000	0	103	75-130	9925	3.76	30	
1,2-Dibromo-3-chloropropane	9755	220	720	10000	0	97.6	60-130	10180	4.31	30	
1,2-Dibromoethane	11640	200	680	10000	0	116	90-195	11360	2.39	30	
1,2-Dichlorobenzene	10580	160	540	10000	0	106	70-130	10500	0.807	30	
1,2-Dichloroethane	10100	220	720	10000	0	101	78-125	9890	2.15	30	
1,2-Dichloropropane	10300	240	800	10000	0	103	75-125	10280	0.194	30	
1,3,5-Trimethylbenzene	10640	320	1,100	10000	0	106	75-130	10500	1.37	30	
1,3-Dichlorobenzene	10520	160	540	10000	0	105	75-130	10400	1.1	30	
1,3-Dichloropropane	9535	200	660	10000	0	95.4	75-125	9240	3.14	30	
1,4-Dichlorobenzene	10200	180	580	10000	0	102	75-130	10210	0.049	30	
2,2-Dichloropropane	7920	260	860	10000	0	79.2	43-150	8285	4.5	30	
2-Butanone	11600	260	860	10000	0	116	55-150	11780	1.54	30	
2-Chlorotoluene	10200	180	600	10000	0	102	76-117	10040	1.53	30	
4-Chlorotoluene	10040	160	510	10000	0	100	80-125	9720	3.29	30	
4-Methyl-2-pentanone	14730	260	860	10000	0	147	77-178	14010	5.01	30	
Acetone	11540	540	1,800	10000	255	113	60-160	11740	1.72	30	
Benzene	10410	230	760	10000	0	104	85-125	10200	1.99	30	
Bromobenzene	9350	190	630	10000	0	93.5	80-125	9100	2.71	30	
Bromochloromethane	12020	220	740	10000	0	120	72-141	12740	5.82	30	
Bromodichloromethane	9595	240	820	10000	0	96	75-125	9645	0.52	30	
Bromoform	8420	280	940	10000	0	84.2	60-125	8135	3.44	30	
Bromomethane	37000	450	1,500	10000	0	370	30-185	38030	2.73	30	S
Carbon tetrachloride	9000	200	680	10000	0	90	65-140	9055	0.609	30	
Chlorobenzene	10150	200	670	10000	0	102	80-120	10060	0.891	30	
Chloroethane	8720	340	1,100	10000	0	87.2	31-172	10860	21.8	30	
Chloroform	10170	230	760	10000	0	102	80-130	10620	4.28	30	
Chloromethane	7580	420	1,400	10000	0	75.8	46-148	9405	21.5	30	
cis-1,2-Dichloroethene	10580	210	690	10000	0	106	75-134	10590	0.0945	30	
cis-1,3-Dichloropropene	9500	280	960	10000	0	95	70-130	9400	1.06	30	
Dibromochloromethane	8600	200	660	10000	0	86	60-115	8395	2.41	30	
Dibromomethane	10020	320	1,100	10000	0	100	79-126	9700	3.25	30	
Dichlorodifluoromethane	7060	340	1,100	10000	0	70.6	20-120	7570	6.97	30	
Ethylbenzene	10700	170	560	10000	0	107	76-123	10520	1.79	30	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 19051723  
 Project: WRR (55929.005)

## QC BATCH REPORT

Batch ID: <b>R261745b</b>	Instrument ID <b>VMS8</b>	Method: <b>SW8260C</b>									
Hexachlorobutadiene	9840	280	940	10000	0	98.4	70-155	9845	0.0508	30	
Isopropylbenzene	10890	180	580	10000	0	109	80-127	10710	1.67	30	
m,p-Xylene	21220	400	1,400	20000	0	106	75-130	20720	2.41	30	
Methyl tert-butyl ether	11510	220	760	10000	0	115	80-130	11680	1.47	30	
Methylene chloride	9655	430	1,400	10000	0	96.6	72-125	9735	0.825	30	
Naphthalene	8515	380	1,300	10000	0	85.2	55-160	8570	0.644	30	
n-Butylbenzene	10670	170	560	10000	0	107	75-145	10780	0.979	30	
n-Propylbenzene	9440	240	800	10000	0	94.4	83-135	9230	2.25	30	
o-Xylene	10740	160	520	10000	0	107	80-125	10640	1.03	30	
p-Isopropyltoluene	11310	130	440	10000	0	113	61-164	11220	0.799	30	
sec-Butylbenzene	10640	150	500	10000	0	106	80-134	10340	2.86	30	
Styrene	11820	160	560	10000	0	118	83-137	11640	1.54	30	
tert-Butylbenzene	9695	200	660	10000	0	97	70-130	9605	0.933	30	
Tetrachloroethene	10020	200	660	10000	0	100	68-166	10020	0.0499	30	
Toluene	10460	220	760	10000	0	105	76-125	10440	0.191	30	
trans-1,2-Dichloroethene	11720	240	800	10000	0	117	80-140	12040	2.65	30	
trans-1,3-Dichloropropene	8605	190	1,400	10000	0	86	56-132	8400	2.41	30	
Trichloroethene	9955	220	720	10000	0	99.6	77-125	10200	2.43	30	
Trichlorofluoromethane	10770	260	860	10000	0	108	60-140	11000	2.07	30	
Vinyl chloride	10290	260	880	10000	0	103	50-136	12110	16.2	30	
Xylenes, Total	31960	400	2,200	30000	0	107	80-126	31350	1.94	30	
<i>Surr: 1,2-Dichloroethane-d4</i>	9960	0	0	10000	0	99.6	75-120	9750	2.13	30	
<i>Surr: 4-Bromofluorobenzene</i>	9795	0	0	10000	0	98	80-110	9450	3.59	30	
<i>Surr: Dibromofluoromethane</i>	10320	0	0	10000	0	103	85-115	10160	1.61	30	
<i>Surr: Toluene-d8</i>	9945	0	0	10000	0	99.4	85-110	9750	1.98	30	

The following samples were analyzed in this batch:

19051723-19A	19051723-20A	19051723-22A
19051723-23A		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 19051723  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: **R261787b** Instrument ID **VMS8** Method: **SW8260C**

MBLK		Sample ID: <b>VLKW1-190603-R261787b</b>			Units: <b>µg/L</b>		Analysis Date: <b>6/3/2019 11:21 AM</b>				
Client ID:		Run ID: <b>VMS8_190603A</b>			SeqNo: <b>5693018</b>		Prep Date:		DF: <b>1</b>		
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	U	0.38	1.3								
1,1,1-Trichloroethane	U	0.46	1.5								
1,1,2,2-Tetrachloroethane	U	0.4	1.3								
1,1,2-Trichloroethane	U	0.46	1.5								
1,1-Dichloroethane	U	0.44	1.5								
1,1-Dichloroethene	U	0.4	1.4								
1,1-Dichloropropene	U	0.37	1.2								
1,2,3-Trichlorobenzene	U	0.42	1.4								
1,2,3-Trichloropropane	U	0.4	1.3								
1,2,4-Trichlorobenzene	U	0.45	1.5								
1,2,4-Trimethylbenzene	U	0.45	1.5								
1,2-Dibromo-3-chloropropane	U	0.43	1.4								
1,2-Dibromoethane	U	0.41	1.4								
1,2-Dichlorobenzene	U	0.32	1.1								
1,2-Dichloroethane	U	0.44	1.4								
1,2-Dichloropropane	U	0.48	1.6								
1,3,5-Trimethylbenzene	U	0.65	2.2								
1,3-Dichlorobenzene	U	0.33	1.1								
1,3-Dichloropropane	U	0.4	1.3								
1,4-Dichlorobenzene	U	0.35	1.2								
2,2-Dichloropropane	U	0.52	1.7								
2-Butanone	U	0.52	1.7								
2-Chlorotoluene	U	0.36	1.2								
2-Propanol	U	33	110								
4-Chlorotoluene	U	0.31	1.0								
4-Methyl-2-pentanone	U	0.52	1.7								
Acetone	U	1.1	3.6								
Benzene	U	0.46	1.5								
Bromobenzene	U	0.38	1.3								
Bromochloromethane	U	0.45	1.5								
Bromodichloromethane	U	0.49	1.6								
Bromoform	U	0.56	1.9								
Bromomethane	U	0.9	3.0								
Carbon tetrachloride	U	0.4	1.4								
Chlorobenzene	U	0.4	1.3								
Chloroethane	U	0.68	2.3								
Chloroform	U	0.46	1.5								
Chloromethane	U	0.83	2.8								
cis-1,2-Dichloroethene	U	0.42	1.4								
cis-1,3-Dichloropropene	U	0.57	1.9								
Dibromochloromethane	U	0.4	1.3								
Dibromomethane	U	0.65	2.2								
Dichlorodifluoromethane	U	0.68	2.3								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** Gannett Fleming, Inc.  
**Work Order:** 19051723  
**Project:** WRR (55929.005)

## QC BATCH REPORT

Batch ID: <b>R261787b</b>	Instrument ID <b>VMS8</b>	Method: <b>SW8260C</b>						
Diisopropyl ether	U	0.41	1.4					
Ethylbenzene	U	0.34	1.1					
Hexachlorobutadiene	U	0.56	1.9					
Isopropylbenzene	U	0.35	1.2					
m,p-Xylene	U	0.81	2.7					
Methyl tert-butyl ether	U	0.45	1.5					
Methylene chloride	U	0.86	2.9					
Naphthalene	U	0.77	2.6					
n-Butylbenzene	U	0.34	1.1					
n-Propylbenzene	U	0.48	1.6					
o-Xylene	U	0.31	1.0					
p-Isopropyltoluene	U	0.26	0.88					
sec-Butylbenzene	U	0.3	1.0					
Styrene	U	0.33	1.1					
tert-Butylbenzene	U	0.39	1.3					
Tetrachloroethene	U	0.39	1.3					
Toluene	U	0.45	1.5					
trans-1,2-Dichloroethene	U	0.48	1.6					
trans-1,3-Dichloropropene	U	0.38	2.7					
Trichloroethene	U	0.43	1.4					
Trichlorofluoromethane	U	0.52	1.7					
Vinyl chloride	U	0.53	1.8					
Xylenes, Total	U	0.81	4.4					
<i>Surr: 1,2-Dichloroethane-d4</i>	19.55	0	0	20	0	97.8	75-120	0
<i>Surr: 4-Bromofluorobenzene</i>	19	0	0	20	0	95	80-110	0
<i>Surr: Dibromofluoromethane</i>	20.59	0	0	20	0	103	85-115	0
<i>Surr: Toluene-d8</i>	18.94	0	0	20	0	94.7	85-110	0

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 19051723  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: **R261787b** Instrument ID **VMS8** Method: **SW8260C**

LCS		Sample ID: <b>VLCSW1-190603-R261787b</b>				Units: <b>µg/L</b>		Analysis Date: <b>6/3/2019 10:32 AM</b>			
Client ID:		Run ID: <b>VMS8_190603A</b>				SeqNo: <b>5693017</b>		Prep Date:		DF: <b>1</b>	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	19.21	0.38	1.3	20	0	96	73-114	0			
1,1,1-Trichloroethane	23.38	0.46	1.5	20	0	117	75-130	0			
1,1,2,2-Tetrachloroethane	20.85	0.4	1.3	20	0	104	75-130	0			
1,1,2-Trichloroethane	20.05	0.46	1.5	20	0	100	75-125	0			
1,1-Dichloroethane	23.08	0.44	1.5	20	0	115	75-133	0			
1,1-Dichloroethene	22.35	0.4	1.4	20	0	112	70-145	0			
1,1-Dichloropropene	20.16	0.37	1.2	20	0	101	75-135	0			
1,2,3-Trichlorobenzene	20.31	0.42	1.4	20	0	102	70-140	0			
1,2,3-Trichloropropane	18.77	0.4	1.3	20	0	93.8	75-125	0			
1,2,4-Trichlorobenzene	20.24	0.45	1.5	20	0	101	70-135	0			
1,2,4-Trimethylbenzene	20.33	0.45	1.5	20	0	102	75-130	0			
1,2-Dibromo-3-chloropropane	19.82	0.43	1.4	20	0	99.1	60-130	0			
1,2-Dibromoethane	22.66	0.41	1.4	20	0	113	90-195	0			
1,2-Dichlorobenzene	20.71	0.32	1.1	20	0	104	70-130	0			
1,2-Dichloroethane	21.72	0.44	1.4	20	0	109	78-125	0			
1,2-Dichloropropane	21.35	0.48	1.6	20	0	107	75-125	0			
1,3,5-Trimethylbenzene	21.08	0.65	2.2	20	0	105	75-130	0			
1,3-Dichlorobenzene	20.82	0.33	1.1	20	0	104	75-130	0			
1,3-Dichloropropane	19.01	0.4	1.3	20	0	95	75-125	0			
1,4-Dichlorobenzene	21.39	0.35	1.2	20	0	107	75-130	0			
2,2-Dichloropropane	24.09	0.52	1.7	20	0	120	43-150	0			
2-Butanone	24.29	0.52	1.7	20	0	121	55-150	0			
2-Chlorotoluene	20.2	0.36	1.2	20	0	101	76-117	0			
4-Chlorotoluene	20.39	0.31	1.0	20	0	102	80-125	0			
4-Methyl-2-pentanone	28.5	0.52	1.7	20	0	142	77-178	0			
Acetone	21.54	1.1	3.6	20	0	108	60-160	0			
Benzene	21.86	0.46	1.5	20	0	109	85-125	0			
Bromobenzene	18.87	0.38	1.3	20	0	94.4	80-125	0			
Bromochloromethane	24.3	0.45	1.5	20	0	122	72-141	0			
Bromodichloromethane	20.6	0.49	1.6	20	0	103	75-125	0			
Bromoform	17.8	0.56	1.9	20	0	89	60-125	0			
Bromomethane	52.25	0.9	3.0	20	0	261	30-185	0			S
Carbon tetrachloride	18.68	0.4	1.4	20	0	93.4	65-140	0			
Chlorobenzene	19.86	0.4	1.3	20	0	99.3	80-120	0			
Chloroethane	21.36	0.68	2.3	20	0	107	31-172	0			
Chloroform	22.39	0.46	1.5	20	0	112	80-130	0			
Chloromethane	18.62	0.83	2.8	20	0	93.1	46-148	0			
cis-1,2-Dichloroethene	23.41	0.42	1.4	20	0	117	75-134	0			
cis-1,3-Dichloropropene	21.37	0.57	1.9	20	0	107	70-130	0			
Dibromochloromethane	17.39	0.4	1.3	20	0	87	60-115	0			
Dibromomethane	20.99	0.65	2.2	20	0	105	79-126	0			
Dichlorodifluoromethane	16.92	0.68	2.3	20	0	84.6	20-120	0			
Ethylbenzene	20.54	0.34	1.1	20	0	103	76-123	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.



**Client:** Gannett Fleming, Inc.  
**Work Order:** 19051723  
**Project:** WRR (55929.005)

## QC BATCH REPORT

Batch ID: <b>R261787b</b>	Instrument ID <b>VMS8</b>		Method: <b>SW8260C</b>						
Hexachlorobutadiene	20.98	0.56	1.9	20	0	105	70-155	0	
Isopropylbenzene	21.24	0.35	1.2	20	0	106	80-127	0	
m,p-Xylene	41.45	0.81	2.7	40	0	104	75-130	0	
Methyl tert-butyl ether	25.17	0.45	1.5	20	0	126	80-130	0	
Methylene chloride	20.64	0.86	2.9	20	0	103	72-125	0	
Naphthalene	18.42	0.77	2.6	20	0	92.1	55-160	0	
n-Butylbenzene	21.98	0.34	1.1	20	0	110	75-145	0	
n-Propylbenzene	18.69	0.48	1.6	20	0	93.4	83-135	0	
o-Xylene	21	0.31	1.0	20	0	105	80-125	0	
p-Isopropyltoluene	22.37	0.26	0.88	20	0	112	61-164	0	
sec-Butylbenzene	20.78	0.3	1.0	20	0	104	80-134	0	
Styrene	23.58	0.33	1.1	20	0	118	83-137	0	
tert-Butylbenzene	19.07	0.39	1.3	20	0	95.4	70-130	0	
Tetrachloroethene	20.12	0.39	1.3	20	0	101	68-166	0	
Toluene	20.87	0.45	1.5	20	0	104	76-125	0	
trans-1,2-Dichloroethene	25.46	0.48	1.6	20	0	127	80-140	0	
trans-1,3-Dichloropropene	18.37	0.38	2.7	20	0	91.8	56-132	0	
Trichloroethene	21.84	0.43	1.4	20	0	109	77-125	0	
Trichlorofluoromethane	22.66	0.52	1.7	20	0	113	60-140	0	
Vinyl chloride	23.4	0.53	1.8	20	0	117	50-136	0	
Xylenes, Total	62.45	0.81	4.4	60	0	104	80-126	0	
<i>Surr: 1,2-Dichloroethane-d4</i>	19.49	0	0	20	0	97.4	75-120	0	
<i>Surr: 4-Bromofluorobenzene</i>	20.09	0	0	20	0	100	80-110	0	
<i>Surr: Dibromofluoromethane</i>	20.92	0	0	20	0	105	85-115	0	
<i>Surr: Toluene-d8</i>	18.52	0	0	20	0	92.6	85-110	0	

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 19051723  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: **R261787b** Instrument ID **VMS8** Method: **SW8260C**

MS		Sample ID: 19051723-15A MS				Units: µg/L		Analysis Date: 6/3/2019 08:32 PM			
Client ID: RW-8		Run ID: VMS8_190603A				SeqNo: 5693034		Prep Date:		DF: 100	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	1731	38	130	2000	0	86.6	73-114	0			
1,1,1-Trichloroethane	2018	46	150	2000	89	96.4	75-130	0			
1,1,2,2-Tetrachloroethane	1877	40	130	2000	0	93.8	75-130	0			
1,1,2-Trichloroethane	1815	46	150	2000	0	90.8	75-125	0			
1,1-Dichloroethane	2131	44	150	2000	86	102	75-133	0			
1,1-Dichloroethene	2036	40	140	2000	0	102	70-145	0			
1,1-Dichloropropene	1808	37	120	2000	0	90.4	75-135	0			
1,2,3-Trichlorobenzene	1720	42	140	2000	0	86	70-140	0			
1,2,3-Trichloropropane	1700	40	130	2000	0	85	75-125	0			
1,2,4-Trichlorobenzene	1762	45	150	2000	0	88.1	70-135	0			
1,2,4-Trimethylbenzene	1820	45	150	2000	0	91	75-130	0			
1,2-Dibromo-3-chloropropane	1746	43	140	2000	0	87.3	60-130	0			
1,2-Dibromoethane	2132	41	140	2000	0	107	90-195	0			
1,2-Dichlorobenzene	1808	32	110	2000	0	90.4	70-130	0			
1,2-Dichloroethane	1999	44	140	2000	0	100	78-125	0			
1,2-Dichloropropane	1886	48	160	2000	0	94.3	75-125	0			
1,3,5-Trimethylbenzene	1824	65	220	2000	0	91.2	75-130	0			
1,3-Dichlorobenzene	1818	33	110	2000	0	90.9	75-130	0			
1,3-Dichloropropane	1699	40	130	2000	0	85	75-125	0			
1,4-Dichlorobenzene	1792	35	120	2000	0	89.6	75-130	0			
2,2-Dichloropropane	2015	52	170	2000	0	101	43-150	0			
2-Butanone	3502	52	170	2000	1358	107	55-150	0			
2-Chlorotoluene	1785	36	120	2000	0	89.2	76-117	0			
4-Chlorotoluene	1766	31	100	2000	0	88.3	80-125	0			
4-Methyl-2-pentanone	3292	52	170	2000	861	122	77-178	0			
Acetone	5776	110	360	2000	3891	94.2	60-160	0			
Benzene	1929	46	150	2000	0	96.4	85-125	0			
Bromobenzene	1662	38	130	2000	0	83.1	80-125	0			
Bromochloromethane	2478	45	150	2000	0	124	72-141	0			
Bromodichloromethane	1785	49	160	2000	0	89.2	75-125	0			
Bromoform	1529	56	190	2000	0	76.4	60-125	0			
Bromomethane	7726	90	300	2000	0	386	30-185	0			S
Carbon tetrachloride	1625	40	140	2000	0	81.2	65-140	0			
Chlorobenzene	1761	40	130	2000	0	88	80-120	0			
Chloroethane	1669	68	230	2000	0	83.4	31-172	0			
Chloroform	1989	46	150	2000	0	99.4	80-130	0			
Chloromethane	1290	83	280	2000	0	64.5	46-148	0			
cis-1,2-Dichloroethene	2494	42	140	2000	458	102	75-134	0			
cis-1,3-Dichloropropene	1875	57	190	2000	0	93.8	70-130	0			
Dibromochloromethane	1540	40	130	2000	0	77	60-115	0			
Dibromomethane	1967	65	220	2000	0	98.4	79-126	0			
Dichlorodifluoromethane	1511	68	230	2000	0	75.6	20-120	0			
Ethylbenzene	1845	34	110	2000	0	92.2	76-123	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 19051723  
 Project: WRR (55929.005)

## QC BATCH REPORT

Batch ID: <b>R261787b</b>	Instrument ID <b>VMS8</b>		Method: <b>SW8260C</b>						
Hexachlorobutadiene	1570	56	190	2000	0	78.5	70-155	0	
Isopropylbenzene	1859	35	120	2000	0	93	80-127	0	
m,p-Xylene	3684	81	270	4000	105	89.5	75-130	0	
Methyl tert-butyl ether	2319	45	150	2000	0	116	80-130	0	
Methylene chloride	2013	86	290	2000	139	93.7	72-125	0	
Naphthalene	1537	77	260	2000	0	76.8	55-160	0	
n-Butylbenzene	1787	34	110	2000	0	89.4	75-145	0	
n-Propylbenzene	1636	48	160	2000	29	80.4	83-135	0	
o-Xylene	2089	31	100	2000	255	91.7	80-125	0	
p-Isopropyltoluene	1865	26	88	2000	0	93.2	61-164	0	
sec-Butylbenzene	1808	30	100	2000	0	90.4	80-134	0	
Styrene	2057	33	110	2000	0	103	83-137	0	
tert-Butylbenzene	1625	39	130	2000	0	81.2	70-130	0	
Tetrachloroethene	1861	39	130	2000	0	93	68-166	0	
Toluene	3914	45	150	2000	2353	78	76-125	0	
trans-1,2-Dichloroethene	2233	48	160	2000	0	112	80-140	0	
trans-1,3-Dichloropropene	1524	38	270	2000	0	76.2	56-132	0	
Trichloroethene	1944	43	140	2000	0	97.2	77-125	0	
Trichlorofluoromethane	1893	52	170	2000	0	94.6	60-140	0	
Vinyl chloride	2371	53	180	2000	0	119	50-136	0	
Xylenes, Total	5773	81	440	6000	360	90.2	80-126	0	
<i>Surr: 1,2-Dichloroethane-d4</i>	1882	0	0	2000	0	94.1	75-120	0	
<i>Surr: 4-Bromofluorobenzene</i>	2000	0	0	2000	0	100	80-110	0	
<i>Surr: Dibromofluoromethane</i>	2029	0	0	2000	0	101	85-115	0	
<i>Surr: Toluene-d8</i>	1824	0	0	2000	0	91.2	85-110	0	

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Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 19051723  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: **R261787b** Instrument ID **VMS8** Method: **SW8260C**

MSD		Sample ID: 19051723-15A MSD				Units: µg/L			Analysis Date: 6/3/2019 08:48 PM		
Client ID: RW-8		Run ID: VMS8_190603A				SeqNo: 5693035		Prep Date:		DF: 100	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	1882	38	130	2000	0	94.1	73-114	1731	8.36	30	
1,1,1-Trichloroethane	2488	46	150	2000	89	120	75-130	2018	20.9	30	
1,1,2,2-Tetrachloroethane	1928	40	130	2000	0	96.4	75-130	1877	2.68	30	
1,1,2-Trichloroethane	1988	46	150	2000	0	99.4	75-125	1815	9.1	30	
1,1-Dichloroethane	2462	44	150	2000	86	119	75-133	2131	14.4	30	
1,1-Dichloroethene	2377	40	140	2000	0	119	70-145	2036	15.5	30	
1,1-Dichloropropene	2120	37	120	2000	0	106	75-135	1808	15.9	30	
1,2,3-Trichlorobenzene	1912	42	140	2000	0	95.6	70-140	1720	10.6	30	
1,2,3-Trichloropropane	1749	40	130	2000	0	87.4	75-125	1700	2.84	30	
1,2,4-Trichlorobenzene	1890	45	150	2000	0	94.5	70-135	1762	7.01	30	
1,2,4-Trimethylbenzene	2014	45	150	2000	0	101	75-130	1820	10.1	30	
1,2-Dibromo-3-chloropropane	1829	43	140	2000	0	91.4	60-130	1746	4.64	30	
1,2-Dibromoethane	2273	41	140	2000	0	114	90-195	2132	6.4	30	
1,2-Dichlorobenzene	2017	32	110	2000	0	101	70-130	1808	10.9	30	
1,2-Dichloroethane	2163	44	140	2000	0	108	78-125	1999	7.88	30	
1,2-Dichloropropane	2159	48	160	2000	0	108	75-125	1886	13.5	30	
1,3,5-Trimethylbenzene	2122	65	220	2000	0	106	75-130	1824	15.1	30	
1,3-Dichlorobenzene	1978	33	110	2000	0	98.9	75-130	1818	8.43	30	
1,3-Dichloropropane	1818	40	130	2000	0	90.9	75-125	1699	6.77	30	
1,4-Dichlorobenzene	2009	35	120	2000	0	100	75-130	1792	11.4	30	
2,2-Dichloropropane	2401	52	170	2000	0	120	43-150	2015	17.5	30	
2-Butanone	3605	52	170	2000	1358	112	55-150	3502	2.9	30	
2-Chlorotoluene	1941	36	120	2000	0	97	76-117	1785	8.37	30	
4-Chlorotoluene	1960	31	100	2000	0	98	80-125	1766	10.4	30	
4-Methyl-2-pentanone	3356	52	170	2000	861	125	77-178	3292	1.93	30	
Acetone	5757	110	360	2000	3891	93.3	60-160	5776	0.329	30	
Benzene	2215	46	150	2000	0	111	85-125	1929	13.8	30	
Bromobenzene	1813	38	130	2000	0	90.6	80-125	1662	8.69	30	
Bromochloromethane	2730	45	150	2000	0	136	72-141	2478	9.68	30	
Bromodichloromethane	2033	49	160	2000	0	102	75-125	1785	13	30	
Bromoform	1589	56	190	2000	0	79.4	60-125	1529	3.85	30	
Bromomethane	9154	90	300	2000	0	458	30-185	7726	16.9	30	S
Carbon tetrachloride	1969	40	140	2000	0	98.4	65-140	1625	19.1	30	
Chlorobenzene	1941	40	130	2000	0	97	80-120	1761	9.72	30	
Chloroethane	2388	68	230	2000	0	119	31-172	1669	35.4	30	R
Chloroform	2341	46	150	2000	0	117	80-130	1989	16.3	30	
Chloromethane	1540	83	280	2000	0	77	46-148	1290	17.7	30	
cis-1,2-Dichloroethene	2764	42	140	2000	458	115	75-134	2494	10.3	30	
cis-1,3-Dichloropropene	2104	57	190	2000	0	105	70-130	1875	11.5	30	
Dibromochloromethane	1671	40	130	2000	0	83.6	60-115	1540	8.16	30	
Dibromomethane	2171	65	220	2000	0	109	79-126	1967	9.86	30	
Dichlorodifluoromethane	1953	68	230	2000	0	97.6	20-120	1511	25.5	30	
Ethylbenzene	2067	34	110	2000	0	103	76-123	1845	11.3	30	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 19051723  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: <b>R261787b</b>	Instrument ID <b>VMS8</b>	Method: <b>SW8260C</b>								
Hexachlorobutadiene	1913	56	190	2000	0	95.6	70-155	1570	19.7	30
Isopropylbenzene	2128	35	120	2000	0	106	80-127	1859	13.5	30
m,p-Xylene	4134	81	270	4000	105	101	75-130	3684	11.5	30
Methyl tert-butyl ether	2489	45	150	2000	0	124	80-130	2319	7.07	30
Methylene chloride	2210	86	290	2000	139	104	72-125	2013	9.33	30
Naphthalene	1675	77	260	2000	0	83.8	55-160	1537	8.59	30
n-Butylbenzene	2035	34	110	2000	0	102	75-145	1787	13	30
n-Propylbenzene	1839	48	160	2000	29	90.5	83-135	1636	11.7	30
o-Xylene	2294	31	100	2000	255	102	80-125	2089	9.35	30
p-Isopropyltoluene	2126	26	88	2000	0	106	61-164	1865	13.1	30
sec-Butylbenzene	2064	30	100	2000	0	103	80-134	1808	13.2	30
Styrene	2335	33	110	2000	0	117	83-137	2057	12.7	30
tert-Butylbenzene	1883	39	130	2000	0	94.2	70-130	1625	14.7	30
Tetrachloroethene	2158	39	130	2000	0	108	68-166	1861	14.8	30
Toluene	4077	45	150	2000	2353	86.2	76-125	3914	4.08	30
trans-1,2-Dichloroethene	2527	48	160	2000	0	126	80-140	2233	12.4	30
trans-1,3-Dichloropropene	1683	38	270	2000	0	84.2	56-132	1524	9.92	30
Trichloroethene	2304	43	140	2000	0	115	77-125	1944	16.9	30
Trichlorofluoromethane	2571	52	170	2000	0	129	60-140	1893	30.4	30 R
Vinyl chloride	2523	53	180	2000	0	126	50-136	2371	6.21	30
Xylenes, Total	6428	81	440	6000	360	101	80-126	5773	10.7	30
<i>Surr: 1,2-Dichloroethane-d4</i>	1898	0	0	2000	0	94.9	75-120	1882	0.847	30
<i>Surr: 4-Bromofluorobenzene</i>	1937	0	0	2000	0	96.8	80-110	2000	3.2	30
<i>Surr: Dibromofluoromethane</i>	2060	0	0	2000	0	103	85-115	2029	1.52	30
<i>Surr: Toluene-d8</i>	1832	0	0	2000	0	91.6	85-110	1824	0.438	30

The following samples were analyzed in this batch:

19051723-03A	19051723-09A	19051723-10A
19051723-11A	19051723-13A	19051723-15A
19051723-16A	19051723-17A	19051723-18A
19051723-20A		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 19051723  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: **R261957b** Instrument ID **VMS8** Method: **SW8260C**

MBLK		Sample ID: <b>VBLKW2-190604-R261957b</b>			Units: <b>µg/L</b>		Analysis Date: <b>6/4/2019 11:04 PM</b>				
Client ID:		Run ID: <b>VMS8_190604A</b>			SeqNo: <b>5695870</b>		Prep Date:		DF: <b>1</b>		
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	U	0.38	1.3								
1,1,1-Trichloroethane	U	0.46	1.5								
1,1,2,2-Tetrachloroethane	U	0.4	1.3								
1,1,2-Trichloroethane	U	0.46	1.5								
1,1-Dichloroethane	U	0.44	1.5								
1,1-Dichloroethene	U	0.4	1.4								
1,1-Dichloropropene	U	0.37	1.2								
1,2,3-Trichlorobenzene	U	0.42	1.4								
1,2,3-Trichloropropane	U	0.4	1.3								
1,2,4-Trichlorobenzene	U	0.45	1.5								
1,2,4-Trimethylbenzene	U	0.45	1.5								
1,2-Dibromo-3-chloropropane	U	0.43	1.4								
1,2-Dibromoethane	U	0.41	1.4								
1,2-Dichlorobenzene	U	0.32	1.1								
1,2-Dichloroethane	U	0.44	1.4								
1,2-Dichloropropane	U	0.48	1.6								
1,3,5-Trimethylbenzene	U	0.65	2.2								
1,3-Dichlorobenzene	U	0.33	1.1								
1,3-Dichloropropane	U	0.4	1.3								
1,4-Dichlorobenzene	U	0.35	1.2								
2,2-Dichloropropane	U	0.52	1.7								
2-Butanone	U	0.52	1.7								
2-Chlorotoluene	U	0.36	1.2								
2-Propanol	U	33	110								
4-Chlorotoluene	U	0.31	1.0								
4-Methyl-2-pentanone	U	0.52	1.7								
Acetone	U	1.1	3.6								
Benzene	U	0.46	1.5								
Bromobenzene	U	0.38	1.3								
Bromochloromethane	U	0.45	1.5								
Bromodichloromethane	U	0.49	1.6								
Bromoform	U	0.56	1.9								
Bromomethane	U	0.9	3.0								
Carbon tetrachloride	U	0.4	1.4								
Chlorobenzene	U	0.4	1.3								
Chloroethane	U	0.68	2.3								
Chloroform	U	0.46	1.5								
Chloromethane	U	0.83	2.8								
cis-1,2-Dichloroethene	U	0.42	1.4								
cis-1,3-Dichloropropene	U	0.57	1.9								
Dibromochloromethane	U	0.4	1.3								
Dibromomethane	U	0.65	2.2								
Dichlorodifluoromethane	U	0.68	2.3								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** Gannett Fleming, Inc.  
**Work Order:** 19051723  
**Project:** WRR (55929.005)

# QC BATCH REPORT

Batch ID: <b>R261957b</b>	Instrument ID <b>VMS8</b>	Method: <b>SW8260C</b>						
Diisopropyl ether	U	0.41	1.4					
Ethylbenzene	U	0.34	1.1					
Hexachlorobutadiene	U	0.56	1.9					
Isopropylbenzene	U	0.35	1.2					
m,p-Xylene	U	0.81	2.7					
Methyl tert-butyl ether	U	0.45	1.5					
Methylene chloride	U	0.86	2.9					
Naphthalene	U	0.77	2.6					
n-Butylbenzene	U	0.34	1.1					
n-Propylbenzene	U	0.48	1.6					
o-Xylene	U	0.31	1.0					
p-Isopropyltoluene	U	0.26	0.88					
sec-Butylbenzene	U	0.3	1.0					
Styrene	U	0.33	1.1					
tert-Butylbenzene	U	0.39	1.3					
Tetrachloroethene	U	0.39	1.3					
Toluene	U	0.45	1.5					
trans-1,2-Dichloroethene	U	0.48	1.6					
trans-1,3-Dichloropropene	U	0.38	2.7					
Trichloroethene	U	0.43	1.4					
Trichlorofluoromethane	U	0.52	1.7					
Vinyl chloride	U	0.53	1.8					
Xylenes, Total	U	0.81	4.4					
<i>Surr: 1,2-Dichloroethane-d4</i>	20.32	0	0	20	0	102	75-120	0
<i>Surr: 4-Bromofluorobenzene</i>	19.41	0	0	20	0	97	80-110	0
<i>Surr: Dibromofluoromethane</i>	18.97	0	0	20	0	94.8	85-115	0
<i>Surr: Toluene-d8</i>	20.4	0	0	20	0	102	85-110	0

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 19051723  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: **R261957b** Instrument ID **VMS8** Method: **SW8260C**

LCS		Sample ID: <b>VLCSW1-190604-R261957b</b>				Units: <b>µg/L</b>		Analysis Date: <b>6/4/2019 10:14 PM</b>			
Client ID:		Run ID: <b>VMS8_190604A</b>				SeqNo: <b>5695869</b>		Prep Date:		DF: <b>1</b>	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	19.43	0.38	1.3	20	0	97.2	73-114	0			
1,1,1-Trichloroethane	20.39	0.46	1.5	20	0	102	75-130	0			
1,1,2,2-Tetrachloroethane	21.77	0.4	1.3	20	0	109	75-130	0			
1,1,2-Trichloroethane	19.9	0.46	1.5	20	0	99.5	75-125	0			
1,1-Dichloroethane	19.33	0.44	1.5	20	0	96.6	75-133	0			
1,1-Dichloroethene	19.95	0.4	1.4	20	0	99.8	70-145	0			
1,1-Dichloropropene	17.52	0.37	1.2	20	0	87.6	75-135	0			
1,2,3-Trichlorobenzene	18.86	0.42	1.4	20	0	94.3	70-140	0			
1,2,3-Trichloropropane	19.67	0.4	1.3	20	0	98.4	75-125	0			
1,2,4-Trichlorobenzene	19.27	0.45	1.5	20	0	96.4	70-135	0			
1,2,4-Trimethylbenzene	20.54	0.45	1.5	20	0	103	75-130	0			
1,2-Dibromo-3-chloropropane	18.23	0.43	1.4	20	0	91.2	60-130	0			
1,2-Dibromoethane	19.67	0.41	1.4	20	0	98.4	90-195	0			
1,2-Dichlorobenzene	17.25	0.32	1.1	20	0	86.2	70-130	0			
1,2-Dichloroethane	18.32	0.44	1.4	20	0	91.6	78-125	0			
1,2-Dichloropropane	20.03	0.48	1.6	20	0	100	75-125	0			
1,3,5-Trimethylbenzene	18.92	0.65	2.2	20	0	94.6	75-130	0			
1,3-Dichlorobenzene	20.4	0.33	1.1	20	0	102	75-130	0			
1,3-Dichloropropane	18.94	0.4	1.3	20	0	94.7	75-125	0			
1,4-Dichlorobenzene	20.3	0.35	1.2	20	0	102	75-130	0			
2,2-Dichloropropane	18.07	0.52	1.7	20	0	90.4	43-150	0			
2-Butanone	19.53	0.52	1.7	20	0	97.6	55-150	0			
2-Chlorotoluene	20.69	0.36	1.2	20	0	103	76-117	0			
4-Chlorotoluene	20.42	0.31	1.0	20	0	102	80-125	0			
4-Methyl-2-pentanone	28.98	0.52	1.7	20	0	145	77-178	0			
Acetone	18.27	1.1	3.6	20	0	91.4	60-160	0			
Benzene	19.78	0.46	1.5	20	0	98.9	85-125	0			
Bromobenzene	19.4	0.38	1.3	20	0	97	80-125	0			
Bromochloromethane	19.31	0.45	1.5	20	0	96.6	72-141	0			
Bromodichloromethane	18.5	0.49	1.6	20	0	92.5	75-125	0			
Bromoform	17.16	0.56	1.9	20	0	85.8	60-125	0			
Bromomethane	39.14	0.9	3.0	20	0	196	30-185	0			S
Carbon tetrachloride	16.79	0.4	1.4	20	0	84	65-140	0			
Chlorobenzene	18.94	0.4	1.3	20	0	94.7	80-120	0			
Chloroethane	22.61	0.68	2.3	20	0	113	31-172	0			
Chloroform	18.95	0.46	1.5	20	0	94.8	80-130	0			
Chloromethane	12.76	0.83	2.8	20	0	63.8	46-148	0			
cis-1,2-Dichloroethene	19.22	0.42	1.4	20	0	96.1	75-134	0			
cis-1,3-Dichloropropene	18.63	0.57	1.9	20	0	93.2	70-130	0			
Dibromochloromethane	17.17	0.4	1.3	20	0	85.8	60-115	0			
Dibromomethane	18.96	0.65	2.2	20	0	94.8	79-126	0			
Dichlorodifluoromethane	23.48	0.68	2.3	20	0	117	20-120	0			
Ethylbenzene	18.79	0.34	1.1	20	0	94	76-123	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.



**Client:** Gannett Fleming, Inc.  
**Work Order:** 19051723  
**Project:** WRR (55929.005)

## QC BATCH REPORT

Batch ID: <b>R261957b</b>	Instrument ID <b>VMS8</b>		Method: <b>SW8260C</b>						
Hexachlorobutadiene	19.84	0.56	1.9	20	0	99.2	70-155	0	
Isopropylbenzene	18.33	0.35	1.2	20	0	91.6	80-127	0	
m,p-Xylene	36.98	0.81	2.7	40	0	92.4	75-130	0	
Methyl tert-butyl ether	19.47	0.45	1.5	20	0	97.4	80-130	0	
Methylene chloride	16.67	0.86	2.9	20	0	83.4	72-125	0	
Naphthalene	16.72	0.77	2.6	20	0	83.6	55-160	0	
n-Butylbenzene	17.89	0.34	1.1	20	0	89.4	75-145	0	
n-Propylbenzene	18.95	0.48	1.6	20	0	94.8	83-135	0	
o-Xylene	21.2	0.31	1.0	20	0	106	80-125	0	
p-Isopropyltoluene	21.53	0.26	0.88	20	0	108	61-164	0	
sec-Butylbenzene	21.67	0.3	1.0	20	0	108	80-134	0	
Styrene	20.18	0.33	1.1	20	0	101	83-137	0	
tert-Butylbenzene	19.53	0.39	1.3	20	0	97.6	70-130	0	
Tetrachloroethene	18.99	0.39	1.3	20	0	95	68-166	0	
Toluene	17.6	0.45	1.5	20	0	88	76-125	0	
trans-1,2-Dichloroethene	19.31	0.48	1.6	20	0	96.6	80-140	0	
trans-1,3-Dichloropropene	18.22	0.38	2.7	20	0	91.1	56-132	0	
Trichloroethene	18.93	0.43	1.4	20	0	94.6	77-125	0	
Trichlorofluoromethane	18.57	0.52	1.7	20	0	92.8	60-140	0	
Vinyl chloride	22.27	0.53	1.8	20	0	111	50-136	0	
Xylenes, Total	58.18	0.81	4.4	60	0	97	80-126	0	
<i>Surr: 1,2-Dichloroethane-d4</i>	20.89	0	0	20	0	104	75-120	0	
<i>Surr: 4-Bromofluorobenzene</i>	19.4	0	0	20	0	97	80-110	0	
<i>Surr: Dibromofluoromethane</i>	19.87	0	0	20	0	99.4	85-115	0	
<i>Surr: Toluene-d8</i>	20.25	0	0	20	0	101	85-110	0	

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 19051723  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: **R261957b** Instrument ID **VMS8** Method: **SW8260C**

MS		Sample ID: 19051723-15A MS				Units: µg/L		Analysis Date: 6/5/2019 05:05 AM			
Client ID: RW-8		Run ID: VMS8_190604A				SeqNo: 5695874		Prep Date:		DF: 100	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	1795	38	130	2000	0	89.8	73-114	0			
1,1,1-Trichloroethane	1913	46	150	2000	67	92.3	75-130	0			
1,1,2,2-Tetrachloroethane	1947	40	130	2000	0	97.4	75-130	0			
1,1,2-Trichloroethane	1981	46	150	2000	0	99	75-125	0			
1,1-Dichloroethane	1816	44	150	2000	58	87.9	75-133	0			
1,1-Dichloroethene	1526	40	140	2000	0	76.3	70-145	0			
1,1-Dichloropropene	1524	37	120	2000	0	76.2	75-135	0			
1,2,3-Trichlorobenzene	1743	42	140	2000	0	87.2	70-140	0			
1,2,3-Trichloropropane	1774	40	130	2000	0	88.7	75-125	0			
1,2,4-Trichlorobenzene	1792	45	150	2000	0	89.6	70-135	0			
1,2,4-Trimethylbenzene	1915	45	150	2000	0	95.8	75-130	0			
1,2-Dibromo-3-chloropropane	1823	43	140	2000	0	91.2	60-130	0			
1,2-Dibromoethane	1887	41	140	2000	0	94.4	90-195	0			
1,2-Dichlorobenzene	1645	32	110	2000	0	82.2	70-130	0			
1,2-Dichloroethane	1689	44	140	2000	0	84.4	78-125	0			
1,2-Dichloropropane	1784	48	160	2000	0	89.2	75-125	0			
1,3,5-Trimethylbenzene	1746	65	220	2000	0	87.3	75-130	0			
1,3-Dichlorobenzene	1934	33	110	2000	0	96.7	75-130	0			
1,3-Dichloropropane	1864	40	130	2000	0	93.2	75-125	0			
1,4-Dichlorobenzene	1875	35	120	2000	0	93.8	75-130	0			
2,2-Dichloropropane	1358	52	170	2000	0	67.9	43-150	0			
2-Butanone	2741	52	170	2000	969	88.6	55-150	0			
2-Chlorotoluene	1861	36	120	2000	0	93	76-117	0			
4-Chlorotoluene	1849	31	100	2000	0	92.4	80-125	0			
4-Methyl-2-pentanone	3521	52	170	2000	828	135	77-178	0			
Acetone	3825	110	360	2000	3286	27	60-160	0			S
Benzene	1832	46	150	2000	0	91.6	85-125	0			
Bromobenzene	1757	38	130	2000	0	87.8	80-125	0			
Bromochloromethane	1840	45	150	2000	0	92	72-141	0			
Bromodichloromethane	1635	49	160	2000	0	81.8	75-125	0			
Bromoform	1570	56	190	2000	0	78.5	60-125	0			
Bromomethane	3258	90	300	2000	0	163	30-185	0			
Carbon tetrachloride	1522	40	140	2000	0	76.1	65-140	0			
Chlorobenzene	1917	40	130	2000	0	95.8	80-120	0			
Chloroethane	2017	68	230	2000	0	101	31-172	0			
Chloroform	1719	46	150	2000	0	86	80-130	0			
Chloromethane	1055	83	280	2000	0	52.8	46-148	0			
cis-1,2-Dichloroethene	2057	42	140	2000	323	86.7	75-134	0			
cis-1,3-Dichloropropene	1632	57	190	2000	0	81.6	70-130	0			
Dibromochloromethane	1622	40	130	2000	0	81.1	60-115	0			
Dibromomethane	1741	65	220	2000	0	87	79-126	0			
Dichlorodifluoromethane	1836	68	230	2000	0	91.8	20-120	0			
Ethylbenzene	1769	34	110	2000	0	88.4	76-123	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** Gannett Fleming, Inc.  
**Work Order:** 19051723  
**Project:** WRR (55929.005)

## QC BATCH REPORT

Batch ID: <b>R261957b</b>	Instrument ID <b>VMS8</b>	Method: <b>SW8260C</b>							
Hexachlorobutadiene	1667	56	190	2000	0	83.4	70-155	0	
Isopropylbenzene	1733	35	120	2000	0	86.6	80-127	0	
m,p-Xylene	3467	81	270	4000	59	85.2	75-130	0	
Methyl tert-butyl ether	1877	45	150	2000	0	93.8	80-130	0	
Methylene chloride	1602	86	290	2000	53	77.4	72-125	0	
Naphthalene	1637	77	260	2000	0	81.8	55-160	0	
n-Butylbenzene	1571	34	110	2000	0	78.6	75-145	0	
n-Propylbenzene	1722	48	160	2000	0	86.1	83-135	0	
o-Xylene	2184	31	100	2000	237	97.4	80-125	0	
p-Isopropyltoluene	1973	26	88	2000	0	98.6	61-164	0	
sec-Butylbenzene	1976	30	100	2000	0	98.8	80-134	0	
Styrene	1958	33	110	2000	0	97.9	83-137	0	
tert-Butylbenzene	1761	39	130	2000	0	88	70-130	0	
Tetrachloroethene	1849	39	130	2000	0	92.4	68-166	0	
Toluene	3434	45	150	2000	1908	76.3	76-125	0	
trans-1,2-Dichloroethene	1745	48	160	2000	0	87.2	80-140	0	
trans-1,3-Dichloropropene	1639	38	270	2000	0	82	56-132	0	
Trichloroethene	1774	43	140	2000	0	88.7	77-125	0	
Trichlorofluoromethane	1610	52	170	2000	0	80.5	60-140	0	
Vinyl chloride	2070	53	180	2000	0	104	50-136	0	
Xylenes, Total	5651	81	440	6000	237	90.2	80-126	0	
<i>Surr: 1,2-Dichloroethane-d4</i>	1917	0	0	2000	0	95.8	75-120	0	
<i>Surr: 4-Bromofluorobenzene</i>	1966	0	0	2000	0	98.3	80-110	0	
<i>Surr: Dibromofluoromethane</i>	1957	0	0	2000	0	97.8	85-115	0	
<i>Surr: Toluene-d8</i>	2005	0	0	2000	0	100	85-110	0	

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 19051723  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: **R261957b** Instrument ID **VMS8** Method: **SW8260C**

MSD		Sample ID: 19051723-15A MSD				Units: µg/L			Analysis Date: 6/5/2019 05:21 AM		
Client ID: RW-8		Run ID: VMS8_190604A				SeqNo: 5695875		Prep Date:		DF: 100	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	1928	38	130	2000	0	96.4	73-114	1795	7.14	30	
1,1,1-Trichloroethane	2229	46	150	2000	67	108	75-130	1913	15.3	30	
1,1,2,2-Tetrachloroethane	1992	40	130	2000	0	99.6	75-130	1947	2.28	30	
1,1,2-Trichloroethane	2041	46	150	2000	0	102	75-125	1981	2.98	30	
1,1-Dichloroethane	1933	44	150	2000	58	93.8	75-133	1816	6.24	30	
1,1-Dichloroethene	2047	40	140	2000	0	102	70-145	1526	29.2	30	
1,1-Dichloropropene	1873	37	120	2000	0	93.6	75-135	1524	20.5	30	
1,2,3-Trichlorobenzene	1840	42	140	2000	0	92	70-140	1743	5.41	30	
1,2,3-Trichloropropane	1828	40	130	2000	0	91.4	75-125	1774	3	30	
1,2,4-Trichlorobenzene	1848	45	150	2000	0	92.4	70-135	1792	3.08	30	
1,2,4-Trimethylbenzene	2000	45	150	2000	0	100	75-130	1915	4.34	30	
1,2-Dibromo-3-chloropropane	1798	43	140	2000	0	89.9	60-130	1823	1.38	30	
1,2-Dibromoethane	1918	41	140	2000	0	95.9	90-195	1887	1.63	30	
1,2-Dichlorobenzene	1713	32	110	2000	0	85.6	70-130	1645	4.05	30	
1,2-Dichloroethane	1875	44	140	2000	0	93.8	78-125	1689	10.4	30	
1,2-Dichloropropane	2016	48	160	2000	0	101	75-125	1784	12.2	30	
1,3,5-Trimethylbenzene	1924	65	220	2000	0	96.2	75-130	1746	9.7	30	
1,3-Dichlorobenzene	1998	33	110	2000	0	99.9	75-130	1934	3.26	30	
1,3-Dichloropropane	1948	40	130	2000	0	97.4	75-125	1864	4.41	30	
1,4-Dichlorobenzene	1975	35	120	2000	0	98.8	75-130	1875	5.19	30	
2,2-Dichloropropane	1550	52	170	2000	0	77.5	43-150	1358	13.2	30	
2-Butanone	2883	52	170	2000	969	95.7	55-150	2741	5.05	30	
2-Chlorotoluene	2006	36	120	2000	0	100	76-117	1861	7.5	30	
4-Chlorotoluene	2035	31	100	2000	0	102	80-125	1849	9.58	30	
4-Methyl-2-pentanone	3653	52	170	2000	828	141	77-178	3521	3.68	30	
Acetone	5169	110	360	2000	3286	94.2	60-160	3825	29.9	30	
Benzene	1931	46	150	2000	0	96.6	85-125	1832	5.26	30	
Bromobenzene	1855	38	130	2000	0	92.8	80-125	1757	5.43	30	
Bromochloromethane	1952	45	150	2000	0	97.6	72-141	1840	5.91	30	
Bromodichloromethane	1910	49	160	2000	0	95.5	75-125	1635	15.5	30	
Bromoform	1559	56	190	2000	0	78	60-125	1570	0.703	30	
Bromomethane	3936	90	300	2000	0	197	30-185	3258	18.8	30	S
Carbon tetrachloride	1792	40	140	2000	0	89.6	65-140	1522	16.3	30	
Chlorobenzene	2017	40	130	2000	0	101	80-120	1917	5.08	30	
Chloroethane	2410	68	230	2000	0	120	31-172	2017	17.8	30	
Chloroform	1872	46	150	2000	0	93.6	80-130	1719	8.52	30	
Chloromethane	1131	83	280	2000	0	56.6	46-148	1055	6.95	30	
cis-1,2-Dichloroethene	2198	42	140	2000	323	93.8	75-134	2057	6.63	30	
cis-1,3-Dichloropropene	1882	57	190	2000	0	94.1	70-130	1632	14.2	30	
Dibromochloromethane	1685	40	130	2000	0	84.2	60-115	1622	3.81	30	
Dibromomethane	1925	65	220	2000	0	96.2	79-126	1741	10	30	
Dichlorodifluoromethane	2079	68	230	2000	0	104	20-120	1836	12.4	30	
Ethylbenzene	1924	34	110	2000	0	96.2	76-123	1769	8.39	30	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 19051723  
 Project: WRR (55929.005)

## QC BATCH REPORT

Batch ID: <b>R261957b</b>	Instrument ID <b>VMS8</b>			Method: <b>SW8260C</b>							
Hexachlorobutadiene	1838	56	190	2000	0	91.9	70-155	1667	9.76	30	
Isopropylbenzene	1916	35	120	2000	0	95.8	80-127	1733	10	30	
m,p-Xylene	3812	81	270	4000	59	93.8	75-130	3467	9.48	30	
Methyl tert-butyl ether	1912	45	150	2000	0	95.6	80-130	1877	1.85	30	
Methylene chloride	1630	86	290	2000	53	78.8	72-125	1602	1.73	30	
Naphthalene	1676	77	260	2000	0	83.8	55-160	1637	2.35	30	
n-Butylbenzene	1739	34	110	2000	0	87	75-145	1571	10.2	30	
n-Propylbenzene	1907	48	160	2000	0	95.4	83-135	1722	10.2	30	
o-Xylene	2417	31	100	2000	237	109	80-125	2184	10.1	30	
p-Isopropyltoluene	2151	26	88	2000	0	108	61-164	1973	8.63	30	
sec-Butylbenzene	2177	30	100	2000	0	109	80-134	1976	9.68	30	
Styrene	2034	33	110	2000	0	102	83-137	1958	3.81	30	
tert-Butylbenzene	1994	39	130	2000	0	99.7	70-130	1761	12.4	30	
Tetrachloroethene	2007	39	130	2000	0	100	68-166	1849	8.2	30	
Toluene	3756	45	150	2000	1908	92.4	76-125	3434	8.96	30	
trans-1,2-Dichloroethene	1951	48	160	2000	0	97.6	80-140	1745	11.1	30	
trans-1,3-Dichloropropene	1654	38	270	2000	0	82.7	56-132	1639	0.911	30	
Trichloroethene	2146	43	140	2000	0	107	77-125	1774	19	30	
Trichlorofluoromethane	1879	52	170	2000	0	94	60-140	1610	15.4	30	
Vinyl chloride	2345	53	180	2000	0	117	50-136	2070	12.5	30	
Xylenes, Total	6229	81	440	6000	237	99.9	80-126	5651	9.73	30	
<i>Surr: 1,2-Dichloroethane-d4</i>	1827	0	0	2000	0	91.4	75-120	1917	4.81	30	
<i>Surr: 4-Bromofluorobenzene</i>	1956	0	0	2000	0	97.8	80-110	1966	0.51	30	
<i>Surr: Dibromofluoromethane</i>	2075	0	0	2000	0	104	85-115	1957	5.85	30	
<i>Surr: Toluene-d8</i>	2010	0	0	2000	0	100	85-110	2005	0.249	30	

The following samples were analyzed in this batch:

19051723-03A	19051723-10A	19051723-15A
19051723-16A	19051723-20A	19051723-22A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 19051723  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: **R262010b** Instrument ID **VMS8** Method: **SW8260C**

MBLK		Sample ID: <b>VBLKW1-190605-R262010b</b>			Units: <b>µg/L</b>		Analysis Date: <b>6/5/2019 04:44 PM</b>				
Client ID:		Run ID: <b>VMS8_190605A</b>			SeqNo: <b>5698228</b>		Prep Date:		DF: <b>1</b>		
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	U	0.38	1.3								
1,1,2,2-Tetrachloroethane	U	0.4	1.3								
1,1,2-Trichloroethane	U	0.46	1.5								
1,1-Dichloroethane	U	0.44	1.5								
1,1-Dichloroethene	U	0.4	1.4								
1,1-Dichloropropene	U	0.37	1.2								
1,2,3-Trichlorobenzene	U	0.42	1.4								
1,2,3-Trichloropropane	U	0.4	1.3								
1,2,4-Trichlorobenzene	U	0.45	1.5								
1,2,4-Trimethylbenzene	U	0.45	1.5								
1,2-Dibromo-3-chloropropane	U	0.43	1.4								
1,2-Dibromoethane	U	0.41	1.4								
1,2-Dichlorobenzene	U	0.32	1.1								
1,2-Dichloroethane	U	0.44	1.4								
1,2-Dichloropropane	U	0.48	1.6								
1,3,5-Trimethylbenzene	U	0.65	2.2								
1,3-Dichlorobenzene	U	0.33	1.1								
1,3-Dichloropropane	U	0.4	1.3								
1,4-Dichlorobenzene	U	0.35	1.2								
2,2-Dichloropropane	U	0.52	1.7								
2-Butanone	U	0.52	1.7								
2-Chlorotoluene	U	0.36	1.2								
2-Propanol	U	33	110								
4-Chlorotoluene	U	0.31	1.0								
4-Methyl-2-pentanone	U	0.52	1.7								
Acetone	U	1.1	3.6								
Benzene	U	0.46	1.5								
Bromobenzene	U	0.38	1.3								
Bromochloromethane	U	0.45	1.5								
Bromodichloromethane	U	0.49	1.6								
Bromoform	U	0.56	1.9								
Bromomethane	U	0.9	3.0								
Carbon tetrachloride	U	0.4	1.4								
Chlorobenzene	U	0.4	1.3								
Chloroethane	U	0.68	2.3								
Chloroform	U	0.46	1.5								
Chloromethane	U	0.83	2.8								
cis-1,3-Dichloropropene	U	0.57	1.9								
Dibromochloromethane	U	0.4	1.3								
Dibromomethane	U	0.65	2.2								
Dichlorodifluoromethane	U	0.68	2.3								
Diisopropyl ether	U	0.41	1.4								
Ethylbenzene	U	0.34	1.1								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** Gannett Fleming, Inc.  
**Work Order:** 19051723  
**Project:** WRR (55929.005)

## QC BATCH REPORT

Batch ID: <b>R262010b</b>	Instrument ID <b>VMS8</b>	Method: <b>SW8260C</b>						
Hexachlorobutadiene	U	0.56	1.9					
Isopropylbenzene	U	0.35	1.2					
m,p-Xylene	U	0.81	2.7					
Methyl tert-butyl ether	U	0.45	1.5					
Methylene chloride	U	0.86	2.9					
Naphthalene	U	0.77	2.6					
n-Butylbenzene	U	0.34	1.1					
n-Propylbenzene	U	0.48	1.6					
o-Xylene	U	0.31	1.0					
p-Isopropyltoluene	U	0.26	0.88					
sec-Butylbenzene	U	0.3	1.0					
Styrene	U	0.33	1.1					
tert-Butylbenzene	U	0.39	1.3					
Tetrachloroethene	U	0.39	1.3					
Toluene	U	0.45	1.5					
trans-1,2-Dichloroethene	U	0.48	1.6					
trans-1,3-Dichloropropene	U	0.38	2.7					
Trichloroethene	U	0.43	1.4					
Trichlorofluoromethane	U	0.52	1.7					
Xylenes, Total	U	0.81	4.4					
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>19.38</i>	<i>0</i>	<i>0</i>	<i>20</i>	<i>0</i>	<i>96.9</i>	<i>75-120</i>	<i>0</i>
<i>Surr: 4-Bromofluorobenzene</i>	<i>19.55</i>	<i>0</i>	<i>0</i>	<i>20</i>	<i>0</i>	<i>97.8</i>	<i>80-110</i>	<i>0</i>
<i>Surr: Dibromofluoromethane</i>	<i>19.95</i>	<i>0</i>	<i>0</i>	<i>20</i>	<i>0</i>	<i>99.8</i>	<i>85-115</i>	<i>0</i>
<i>Surr: Toluene-d8</i>	<i>18.4</i>	<i>0</i>	<i>0</i>	<i>20</i>	<i>0</i>	<i>92</i>	<i>85-110</i>	<i>0</i>

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 19051723  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: **R262010b** Instrument ID **VMS8** Method: **SW8260C**

LCS		Sample ID: <b>VLCSW1-190605-R262010b</b>				Units: <b>µg/L</b>		Analysis Date: <b>6/5/2019 03:54 PM</b>			
Client ID:		Run ID: <b>VMS8_190605A</b>				SeqNo: <b>5698406</b>		Prep Date:		DF: <b>1</b>	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	19.55	0.38	1.3	20	0	97.8	73-114	0			
1,1,2,2-Tetrachloroethane	20.34	0.4	1.3	20	0	102	75-130	0			
1,1,2-Trichloroethane	20.67	0.46	1.5	20	0	103	75-125	0			
1,1-Dichloroethane	23.49	0.44	1.5	20	0	117	75-133	0			
1,1-Dichloroethene	23.65	0.4	1.4	20	0	118	70-145	0			
1,1-Dichloropropene	20.3	0.37	1.2	20	0	102	75-135	0			
1,2,3-Trichlorobenzene	22.39	0.42	1.4	20	0	112	70-140	0			
1,2,3-Trichloropropane	18.6	0.4	1.3	20	0	93	75-125	0			
1,2,4-Trichlorobenzene	21.86	0.45	1.5	20	0	109	70-135	0			
1,2,4-Trimethylbenzene	20.7	0.45	1.5	20	0	104	75-130	0			
1,2-Dibromo-3-chloropropane	18.9	0.43	1.4	20	0	94.5	60-130	0			
1,2-Dibromoethane	20.06	0.41	1.4	20	0	100	90-195	0			
1,2-Dichlorobenzene	18.99	0.32	1.1	20	0	95	70-130	0			
1,2-Dichloroethane	20.98	0.44	1.4	20	0	105	78-125	0			
1,2-Dichloropropane	22.35	0.48	1.6	20	0	112	75-125	0			
1,3,5-Trimethylbenzene	19.27	0.65	2.2	20	0	96.4	75-130	0			
1,3-Dichlorobenzene	21.71	0.33	1.1	20	0	109	75-130	0			
1,3-Dichloropropane	19.07	0.4	1.3	20	0	95.4	75-125	0			
1,4-Dichlorobenzene	21.53	0.35	1.2	20	0	108	75-130	0			
2,2-Dichloropropane	23.02	0.52	1.7	20	0	115	43-150	0			
2-Butanone	19.32	0.52	1.7	20	0	96.6	55-150	0			
2-Chlorotoluene	20.45	0.36	1.2	20	0	102	76-117	0			
4-Chlorotoluene	20.88	0.31	1.0	20	0	104	80-125	0			
4-Methyl-2-pentanone	27.44	0.52	1.7	20	0	137	77-178	0			
Acetone	18.47	1.1	3.6	20	0	92.4	60-160	0			
Benzene	23.23	0.46	1.5	20	0	116	85-125	0			
Bromobenzene	19.16	0.38	1.3	20	0	95.8	80-125	0			
Bromochloromethane	22.34	0.45	1.5	20	0	112	72-141	0			
Bromodichloromethane	20.34	0.49	1.6	20	0	102	75-125	0			
Bromoform	17.25	0.56	1.9	20	0	86.2	60-125	0			
Bromomethane	40.78	0.9	3.0	20	0	204	30-185	0			S
Carbon tetrachloride	19.45	0.4	1.4	20	0	97.2	65-140	0			
Chlorobenzene	20.24	0.4	1.3	20	0	101	80-120	0			
Chloroethane	25.46	0.68	2.3	20	0	127	31-172	0			
Chloroform	21.7	0.46	1.5	20	0	108	80-130	0			
Chloromethane	15.3	0.83	2.8	20	0	76.5	46-148	0			
cis-1,3-Dichloropropene	21.59	0.57	1.9	20	0	108	70-130	0			
Dibromochloromethane	17	0.4	1.3	20	0	85	60-115	0			
Dibromomethane	20.56	0.65	2.2	20	0	103	79-126	0			
Dichlorodifluoromethane	26.37	0.68	2.3	20	0	132	20-120	0			S
Ethylbenzene	19.2	0.34	1.1	20	0	96	76-123	0			
Hexachlorobutadiene	23.85	0.56	1.9	20	0	119	70-155	0			
Isopropylbenzene	19.04	0.35	1.2	20	0	95.2	80-127	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.



**Client:** Gannett Fleming, Inc.  
**Work Order:** 19051723  
**Project:** WRR (55929.005)

## QC BATCH REPORT

Batch ID: <b>R262010b</b>	Instrument ID <b>VMS8</b>		Method: <b>SW8260C</b>						
m,p-Xylene	38.48	0.81	2.7	40	0	96.2	75-130	0	
Methyl tert-butyl ether	23.23	0.45	1.5	20	0	116	80-130	0	
Methylene chloride	19.65	0.86	2.9	20	0	98.2	72-125	0	
Naphthalene	19.88	0.77	2.6	20	0	99.4	55-160	0	
n-Butylbenzene	19.75	0.34	1.1	20	0	98.8	75-145	0	
n-Propylbenzene	19.58	0.48	1.6	20	0	97.9	83-135	0	
o-Xylene	21.35	0.31	1.0	20	0	107	80-125	0	
p-Isopropyltoluene	23.36	0.26	0.88	20	0	117	61-164	0	
sec-Butylbenzene	22.21	0.3	1.0	20	0	111	80-134	0	
Styrene	21.18	0.33	1.1	20	0	106	83-137	0	
tert-Butylbenzene	19.66	0.39	1.3	20	0	98.3	70-130	0	
Tetrachloroethene	19.99	0.39	1.3	20	0	100	68-166	0	
Toluene	18.39	0.45	1.5	20	0	92	76-125	0	
trans-1,2-Dichloroethene	22.9	0.48	1.6	20	0	114	80-140	0	
trans-1,3-Dichloropropene	18.84	0.38	2.7	20	0	94.2	56-132	0	
Trichloroethene	22.62	0.43	1.4	20	0	113	77-125	0	
Trichlorofluoromethane	20.48	0.52	1.7	20	0	102	60-140	0	
Xylenes, Total	59.83	0.81	4.4	60	0	99.7	80-126	0	
<i>Surr: 1,2-Dichloroethane-d4</i>	19.76	0	0	20	0	98.8	75-120	0	
<i>Surr: 4-Bromofluorobenzene</i>	19.32	0	0	20	0	96.6	80-110	0	
<i>Surr: Dibromofluoromethane</i>	20.04	0	0	20	0	100	85-115	0	
<i>Surr: Toluene-d8</i>	18.27	0	0	20	0	91.4	85-110	0	

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 19051723  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: **R262010b** Instrument ID **VMS8** Method: **SW8260C**

MS		Sample ID: 19052055-08A MS				Units: µg/L		Analysis Date: 6/6/2019 12:00 PM			
Client ID:		Run ID: VMS8_190605A				SeqNo: 5698235		Prep Date:		DF: 10	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	196	3.8	13	200	0	98	73-114	0			
1,1,2,2-Tetrachloroethane	206.6	4	13	200	0	103	75-130	0			
1,1,2-Trichloroethane	206.3	4.6	15	200	0	103	75-125	0			
1,1-Dichloroethane	235.5	4.4	15	200	0	118	75-133	0			
1,1-Dichloroethene	238.2	4	14	200	0	119	70-145	0			
1,1-Dichloropropene	213.5	3.7	12	200	0	107	75-135	0			
1,2,3-Trichlorobenzene	205.5	4.2	14	200	0	103	70-140	0			
1,2,3-Trichloropropane	192.4	4	13	200	0	96.2	75-125	0			
1,2,4-Trichlorobenzene	203	4.5	15	200	0	102	70-135	0			
1,2,4-Trimethylbenzene	238.5	4.5	15	200	38.1	100	75-130	0			
1,2-Dibromo-3-chloropropane	188.3	4.3	14	200	0	94.2	60-130	0			
1,2-Dibromoethane	200.3	4.1	14	200	0	100	90-195	0			
1,2-Dichlorobenzene	174.8	3.2	11	200	0	87.4	70-130	0			
1,2-Dichloroethane	200.9	4.4	14	200	0	100	78-125	0			
1,2-Dichloropropane	222.7	4.8	16	200	0	111	75-125	0			
1,3,5-Trimethylbenzene	217.3	6.5	22	200	7.2	105	75-130	0			
1,3-Dichlorobenzene	207.1	3.3	11	200	0	104	75-130	0			
1,3-Dichloropropane	193.2	4	13	200	0	96.6	75-125	0			
1,4-Dichlorobenzene	205.5	3.5	12	200	0	103	75-130	0			
2,2-Dichloropropane	215.5	5.2	17	200	0	108	43-150	0			
2-Butanone	240.6	5.2	17	200	6.3	117	55-150	0			
2-Chlorotoluene	186	3.6	12	200	0	93	76-117	0			
4-Chlorotoluene	205.8	3.1	10	200	0	103	80-125	0			
4-Methyl-2-pentanone	301.5	5.2	17	200	0	151	77-178	0			
Acetone	191.1	11	36	200	13.8	88.6	60-160	0			
Benzene	3224	4.6	15	200	3208	7.95	85-125	0			SEO
Bromobenzene	190.9	3.8	13	200	0	95.4	80-125	0			
Bromochloromethane	231.5	4.5	15	200	0	116	72-141	0			
Bromodichloromethane	204.6	4.9	16	200	0	102	75-125	0			
Bromoform	166.2	5.6	19	200	0	83.1	60-125	0			
Bromomethane	829.9	9	30	200	0	415	30-185	0			S
Carbon tetrachloride	203.3	4	14	200	0	102	65-140	0			
Chlorobenzene	203	4	13	200	0	102	80-120	0			
Chloroethane	260.1	6.8	23	200	0	130	31-172	0			
Chloroform	226.1	4.6	15	200	0	113	80-130	0			
Chloromethane	168.8	8.3	28	200	0	84.4	46-148	0			
cis-1,3-Dichloropropene	207.1	5.7	19	200	0	104	70-130	0			
Dibromochloromethane	176	4	13	200	0	88	60-115	0			
Dibromomethane	218.7	6.5	22	200	0	109	79-126	0			
Dichlorodifluoromethane	322.6	6.8	23	200	0	161	20-120	0			S
Ethylbenzene	321.9	3.4	11	200	132.3	94.8	76-123	0			
Hexachlorobutadiene	199.3	5.6	19	200	0	99.6	70-155	0			
Isopropylbenzene	232.5	3.5	12	200	44.1	94.2	80-127	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** Gannett Fleming, Inc.  
**Work Order:** 19051723  
**Project:** WRR (55929.005)

## QC BATCH REPORT

Batch ID: <b>R262010b</b>	Instrument ID <b>VMS8</b>	Method: <b>SW8260C</b>							
m,p-Xylene	730.5	8.1	27	400	360.7	92.4	75-130	0	
Methyl tert-butyl ether	235.7	4.5	15	200	0	118	80-130	0	
Methylene chloride	200.1	8.6	29	200	0	100	72-125	0	
Naphthalene	599.6	7.7	26	200	422.7	88.4	55-160	0	
n-Butylbenzene	191.2	3.4	11	200	0	95.6	75-145	0	
n-Propylbenzene	315.3	4.8	16	200	140.4	87.4	83-135	0	
o-Xylene	238.4	3.1	10	200	19.6	109	80-125	0	
p-Isopropyltoluene	223.4	2.6	8.8	200	0	112	61-164	0	
sec-Butylbenzene	226.6	3	10	200	0	113	80-134	0	
Styrene	211.6	3.3	11	200	0	106	83-137	0	
tert-Butylbenzene	203.6	3.9	13	200	0	102	70-130	0	
Tetrachloroethene	209	3.9	13	200	0	104	68-166	0	
Toluene	262.6	4.5	15	200	80.5	91	76-125	0	
trans-1,2-Dichloroethene	240.9	4.8	16	200	0	120	80-140	0	
trans-1,3-Dichloropropene	187.6	3.8	27	200	0	93.8	56-132	0	
Trichloroethene	233.1	4.3	14	200	0	117	77-125	0	
Trichlorofluoromethane	226.9	5.2	17	200	0	113	60-140	0	
Xylenes, Total	968.9	8.1	44	600	380.3	98.1	80-126	0	
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>202</i>	<i>0</i>	<i>0</i>	<i>200</i>	<i>0</i>	<i>101</i>	<i>75-120</i>	<i>0</i>	
<i>Surr: 4-Bromofluorobenzene</i>	<i>201.1</i>	<i>0</i>	<i>0</i>	<i>200</i>	<i>0</i>	<i>101</i>	<i>80-110</i>	<i>0</i>	
<i>Surr: Dibromofluoromethane</i>	<i>202.3</i>	<i>0</i>	<i>0</i>	<i>200</i>	<i>0</i>	<i>101</i>	<i>85-115</i>	<i>0</i>	
<i>Surr: Toluene-d8</i>	<i>186</i>	<i>0</i>	<i>0</i>	<i>200</i>	<i>0</i>	<i>93</i>	<i>85-110</i>	<i>0</i>	

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 19051723  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: **R262010b** Instrument ID **VMS8** Method: **SW8260C**

MSD		Sample ID: 19052055-08A MSD				Units: µg/L			Analysis Date: 6/6/2019 12:16 PM		
Client ID:		Run ID: VMS8_190605A				SeqNo: 5698236		Prep Date:		DF: 10	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	198.5	3.8	13	200	0	99.2	73-114	196	1.27	30	
1,1,2,2-Tetrachloroethane	211.2	4	13	200	0	106	75-130	206.6	2.2	30	
1,1,2-Trichloroethane	213.3	4.6	15	200	0	107	75-125	206.3	3.34	30	
1,1-Dichloroethane	231.4	4.4	15	200	0	116	75-133	235.5	1.76	30	
1,1-Dichloroethene	226.3	4	14	200	0	113	70-145	238.2	5.12	30	
1,1-Dichloropropene	216.6	3.7	12	200	0	108	75-135	213.5	1.44	30	
1,2,3-Trichlorobenzene	209.5	4.2	14	200	0	105	70-140	205.5	1.93	30	
1,2,3-Trichloropropane	188.7	4	13	200	0	94.4	75-125	192.4	1.94	30	
1,2,4-Trichlorobenzene	209.9	4.5	15	200	0	105	70-135	203	3.34	30	
1,2,4-Trimethylbenzene	253.4	4.5	15	200	38.1	108	75-130	238.5	6.06	30	
1,2-Dibromo-3-chloropropane	200.2	4.3	14	200	0	100	60-130	188.3	6.13	30	
1,2-Dibromoethane	207.9	4.1	14	200	0	104	90-195	200.3	3.72	30	
1,2-Dichlorobenzene	179.2	3.2	11	200	0	89.6	70-130	174.8	2.49	30	
1,2-Dichloroethane	205.9	4.4	14	200	0	103	78-125	200.9	2.46	30	
1,2-Dichloropropane	224.9	4.8	16	200	0	112	75-125	222.7	0.983	30	
1,3,5-Trimethylbenzene	225.2	6.5	22	200	7.2	109	75-130	217.3	3.57	30	
1,3-Dichlorobenzene	210.4	3.3	11	200	0	105	75-130	207.1	1.58	30	
1,3-Dichloropropane	197.2	4	13	200	0	98.6	75-125	193.2	2.05	30	
1,4-Dichlorobenzene	209.4	3.5	12	200	0	105	75-130	205.5	1.88	30	
2,2-Dichloropropane	209.1	5.2	17	200	0	105	43-150	215.5	3.01	30	
2-Butanone	249.5	5.2	17	200	6.3	122	55-150	240.6	3.63	30	
2-Chlorotoluene	197.8	3.6	12	200	0	98.9	76-117	186	6.15	30	
4-Chlorotoluene	217.4	3.1	10	200	0	109	80-125	205.8	5.48	30	
4-Methyl-2-pentanone	309.9	5.2	17	200	0	155	77-178	301.5	2.75	30	
Acetone	184	11	36	200	13.8	85.1	60-160	191.1	3.79	30	
Benzene	3387	4.6	15	200	3208	89.4	85-125	3224	4.93	30	EO
Bromobenzene	202.4	3.8	13	200	0	101	80-125	190.9	5.85	30	
Bromochloromethane	233.3	4.5	15	200	0	117	72-141	231.5	0.775	30	
Bromodichloromethane	209.4	4.9	16	200	0	105	75-125	204.6	2.32	30	
Bromoform	166	5.6	19	200	0	83	60-125	166.2	0.12	30	
Bromomethane	733.7	9	30	200	0	367	30-185	829.9	12.3	30	S
Carbon tetrachloride	205.2	4	14	200	0	103	65-140	203.3	0.93	30	
Chlorobenzene	212.5	4	13	200	0	106	80-120	203	4.57	30	
Chloroethane	250.7	6.8	23	200	0	125	31-172	260.1	3.68	30	
Chloroform	218.7	4.6	15	200	0	109	80-130	226.1	3.33	30	
Chloromethane	167.4	8.3	28	200	0	83.7	46-148	168.8	0.833	30	
cis-1,3-Dichloropropene	208.8	5.7	19	200	0	104	70-130	207.1	0.818	30	
Dibromochloromethane	180.6	4	13	200	0	90.3	60-115	176	2.58	30	
Dibromomethane	215.4	6.5	22	200	0	108	79-126	218.7	1.52	30	
Dichlorodifluoromethane	315	6.8	23	200	0	158	20-120	322.6	2.38	30	S
Ethylbenzene	334.4	3.4	11	200	132.3	101	76-123	321.9	3.81	30	
Hexachlorobutadiene	196.4	5.6	19	200	0	98.2	70-155	199.3	1.47	30	
Isopropylbenzene	247.2	3.5	12	200	44.1	102	80-127	232.5	6.13	30	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 19051723  
 Project: WRR (55929.005)

## QC BATCH REPORT

Batch ID: <b>R262010b</b>	Instrument ID <b>VMS8</b>	Method: <b>SW8260C</b>								
m,p-Xylene	775.5	8.1	27	400	360.7	104	75-130	730.5	5.98	30
Methyl tert-butyl ether	179.7	4.5	15	200	0	89.8	80-130	235.7	27	30
Methylene chloride	146.4	8.6	29	200	0	73.2	72-125	200.1	31	30 R
Naphthalene	629.2	7.7	26	200	422.7	103	55-160	599.6	4.82	30
n-Butylbenzene	199.1	3.4	11	200	0	99.6	75-145	191.2	4.05	30
n-Propylbenzene	351.6	4.8	16	200	140.4	106	83-135	315.3	10.9	30
o-Xylene	250.4	3.1	10	200	19.6	115	80-125	238.4	4.91	30
p-Isopropyltoluene	226.5	2.6	8.8	200	0	113	61-164	223.4	1.38	30
sec-Butylbenzene	236.1	3	10	200	0	118	80-134	226.6	4.11	30
Styrene	221	3.3	11	200	0	110	83-137	211.6	4.35	30
tert-Butylbenzene	216.9	3.9	13	200	0	108	70-130	203.6	6.33	30
Tetrachloroethene	216.8	3.9	13	200	0	108	68-166	209	3.66	30
Toluene	274.5	4.5	15	200	80.5	97	76-125	262.6	4.43	30
trans-1,2-Dichloroethene	180.3	4.8	16	200	0	90.2	80-140	240.9	28.8	30
trans-1,3-Dichloropropene	183.8	3.8	27	200	0	91.9	56-132	187.6	2.05	30
Trichloroethene	233.1	4.3	14	200	0	117	77-125	233.1	0	30
Trichlorofluoromethane	231.1	5.2	17	200	0	116	60-140	226.9	1.83	30
Xylenes, Total	1026	8.1	44	600	380.3	108	80-126	968.9	5.71	30
<i>Surr: 1,2-Dichloroethane-d4</i>	197.5	0	0	200	0	98.8	75-120	202	2.25	30
<i>Surr: 4-Bromofluorobenzene</i>	202	0	0	200	0	101	80-110	201.1	0.447	30
<i>Surr: Dibromofluoromethane</i>	205.7	0	0	200	0	103	85-115	202.3	1.67	30
<i>Surr: Toluene-d8</i>	195.3	0	0	200	0	97.6	85-110	186	4.88	30

The following samples were analyzed in this batch:

19051723-16A	19051723-20A	19051723-22A
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Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 19051723  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: **R261410** Instrument ID **IC3** Method: **SW9056A**

<b>MBLK</b>		Sample ID: <b>CCB/MBLK-R261410</b>				Units: <b>mg/L</b>		Analysis Date: <b>5/28/2019 04:01 PM</b>			
Client ID:		Run ID: <b>IC3_190528B</b>				SeqNo: <b>5682304</b>		Prep Date:		DF: <b>1</b>	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	U	0.057	1.0								

<b>LCS</b>		Sample ID: <b>LCS-R261410</b>				Units: <b>mg/L</b>		Analysis Date: <b>5/28/2019 04:18 PM</b>			
Client ID:		Run ID: <b>IC3_190528B</b>				SeqNo: <b>5682305</b>		Prep Date:		DF: <b>1</b>	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	9.933	0.057	1.0	10	0	99.3	90-110	0			

<b>MS</b>		Sample ID: <b>19051258-04A MS</b>				Units: <b>mg/L</b>		Analysis Date: <b>5/29/2019 01:17 AM</b>			
Client ID:		Run ID: <b>IC3_190528B</b>				SeqNo: <b>5682337</b>		Prep Date:		DF: <b>25</b>	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	290.3	1.4	25	250	42.8	99	90-110	0			

<b>MSD</b>		Sample ID: <b>19051258-04A MSD</b>				Units: <b>mg/L</b>		Analysis Date: <b>5/29/2019 01:33 AM</b>			
Client ID:		Run ID: <b>IC3_190528B</b>				SeqNo: <b>5682338</b>		Prep Date:		DF: <b>25</b>	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	291.7	1.4	25	250	42.8	99.5	90-110	290.3	0.478	20	

The following samples were analyzed in this batch:

19051723-21B	19051723-24B
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Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 19051723  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: **R261430** Instrument ID **Titrator 1** Method: **A2320 B-11**

MBLK		Sample ID: <b>MB-R261430-R261430</b>				Units: <b>mg/L</b>		Analysis Date: <b>5/29/2019 10:15 AM</b>			
Client ID:		Run ID: <b>TITRATOR 1_190529A</b>				SeqNo: <b>5682741</b>		Prep Date:		DF: <b>1</b>	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Total (as CaCO3)	U	8.4	10								

LCS		Sample ID: <b>LCS-R261430-R261430</b>				Units: <b>mg/L</b>		Analysis Date: <b>5/29/2019 10:15 AM</b>			
Client ID:		Run ID: <b>TITRATOR 1_190529A</b>				SeqNo: <b>5682742</b>		Prep Date:		DF: <b>1</b>	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Total (as CaCO3)	939	8.4	10	1000	0	93.9	89-103	0			

DUP		Sample ID: <b>19051700-01B DUP</b>				Units: <b>mg/L</b>		Analysis Date: <b>5/29/2019 10:15 AM</b>			
Client ID:		Run ID: <b>TITRATOR 1_190529A</b>				SeqNo: <b>5682744</b>		Prep Date:		DF: <b>1</b>	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Total (as CaCO3)	475.3	8.4	10	0	0	0	0-0	472.5	0.589	10	

DUP		Sample ID: <b>19051700-10B DUP</b>				Units: <b>mg/L</b>		Analysis Date: <b>5/29/2019 10:15 AM</b>			
Client ID:		Run ID: <b>TITRATOR 1_190529A</b>				SeqNo: <b>5682754</b>		Prep Date:		DF: <b>1</b>	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Total (as CaCO3)	377	8.4	10	0	0	0	0-0	373.4	0.957	10	

The following samples were analyzed in this batch:

19051723-21B	19051723-24B
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Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Gannett Fleming, Inc.  
 Work Order: 19051723  
 Project: WRR (55929.005)

# QC BATCH REPORT

Batch ID: **R261516** Instrument ID **IC3** Method: **SW9056A**

MBLK		Sample ID: <b>CCB/MBLK-R261516</b>				Units: <b>mg/L</b>		Analysis Date: <b>5/29/2019 10:40 AM</b>			
Client ID:		Run ID: <b>IC3_190529A</b>				SeqNo: <b>5684945</b>		Prep Date:		DF: <b>1</b>	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	U	0.057	1.0								

LCS		Sample ID: <b>LCS-R261516</b>				Units: <b>mg/L</b>		Analysis Date: <b>5/29/2019 10:58 AM</b>			
Client ID:		Run ID: <b>IC3_190529A</b>				SeqNo: <b>5684946</b>		Prep Date:		DF: <b>1</b>	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	9.838	0.057	1.0	10	0	98.4	90-110	0			

MS		Sample ID: <b>19051258-13A MS</b>				Units: <b>mg/L</b>		Analysis Date: <b>5/29/2019 01:23 PM</b>			
Client ID:		Run ID: <b>IC3_190529A</b>				SeqNo: <b>5684954</b>		Prep Date:		DF: <b>50</b>	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	567.7	2.8	50	500	71.39	99.3	90-110	0			

MSD		Sample ID: <b>19051258-13A MSD</b>				Units: <b>mg/L</b>		Analysis Date: <b>5/29/2019 01:41 PM</b>			
Client ID:		Run ID: <b>IC3_190529A</b>				SeqNo: <b>5684955</b>		Prep Date:		DF: <b>50</b>	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	570.2	2.8	50	500	71.39	99.8	90-110	567.7	0.449	20	

The following samples were analyzed in this batch:

19051723-21B
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Note: See Qualifiers Page for a list of Qualifiers and their explanation.



**Client:** Gannett Fleming, Inc.  
**Work Order:** 19051723  
**Project:** WRR (55929.005)

# QC BATCH REPORT

Batch ID: **R261915a**      Instrument ID **TOC3**      Method: **SW9060A**

MBLK		Sample ID: <b>MBLK-R261915a</b>				Units: <b>mg/L</b>		Analysis Date: <b>6/3/2019 03:42 PM</b>			
Client ID:		Run ID: <b>TOC3_190603A</b>				SeqNo: <b>5694121</b>		Prep Date:		DF: <b>1</b>	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	0.186	0.14	0.50								J

LCS		Sample ID: <b>LCS-R261915a</b>				Units: <b>mg/L</b>		Analysis Date: <b>6/3/2019 03:42 PM</b>			
Client ID:		Run ID: <b>TOC3_190603A</b>				SeqNo: <b>5694122</b>		Prep Date:		DF: <b>1</b>	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	5.268	0.14	0.50	5	0	105	80-120	0			

MS		Sample ID: <b>19052004-01C MS</b>				Units: <b>mg/L</b>		Analysis Date: <b>6/3/2019 03:42 PM</b>			
Client ID:		Run ID: <b>TOC3_190603A</b>				SeqNo: <b>5694126</b>		Prep Date:		DF: <b>1</b>	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	13.72	0.14	0.50	5	9.009	94.3	70-130	0			E

MSD		Sample ID: <b>19052004-01C MSD</b>				Units: <b>mg/L</b>		Analysis Date: <b>6/3/2019 03:42 PM</b>			
Client ID:		Run ID: <b>TOC3_190603A</b>				SeqNo: <b>5694127</b>		Prep Date:		DF: <b>1</b>	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	13.78	0.14	0.50	5	9.009	95.4	70-130	13.72	0.414	20	E

**The following samples were analyzed in this batch:**

19051723-21C	19051723-24C
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**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.



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Page 1 of 3

COC ID: 189142

ALS Project Manager: **EB**

ALS Work Order #: **19051723**

Customer Information		Project Information		Parameter/Method Request for Analysis											
Purchase Order	55929.005	Project Name	WRR	A	VOCs										
Work Order		Project Number	55929.005	B											
Company Name	Gannett Fleming, Inc.	Bill To Company	Gannett Fleming, Inc.	C											
Send Report To	Anthony Miller	Invoice Attn	Accounts Payable	D											
Address	8025 Excelsior Dr.	Address	8025 Excelsior Dr.	E											
				F											
City/State/Zip	Madison, WI 53717	City/State/Zip	Madison, WI 53717	G											
Phone	(608) 836-1500	Phone	(608) 836-1500	H											
Fax		Fax		I											
e-Mail Address	awmiller@gannett.com	e-Mail Address		J											

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	W-6	5/22/19	17:00	GW	HCl	3	X										
2	W-1	5/23/19	8:45	↓	↓	↓	↓										
3	W-1A	"	8:47														
4	W-1D	"	8:55														
5	W-2	"	11:30														
6	W-2 dup	"	"														
7	W-3	"	13:10														
8	W-5	"	10:10														
9	W-17A dup	5/23/19	7:50														
10	MW-115 dup	"	7:40														

Sampler(s) Please Print & Sign <i>Chloe Payne</i>		Shipment Method FedEx		Required Turnaround Time: (Check Box) <input checked="" type="checkbox"/> Std. 10 WK Days <input type="checkbox"/> 5 WK Days <input type="checkbox"/> Other <input type="checkbox"/> 2 WK Days <input type="checkbox"/> 24 Hour				Results Due Date:	
Relinquished by: <i>Chloe Payne</i>	Date: 5/23/19	Time: 18:00	Received by: FED Ex	Notes:					
Relinquished by: FED Ex	Date: 5/24/19	Time: 0930	Received by (Laboratory): <i>[Signature]</i>	Cooler ID SRL	Cooler Temp. 2.4°	QC Package: (Check One Box Below)			
Logged by (Laboratory): Kev	Date: 5/24/19	Time: 1400	Checked by (Laboratory): <i>[Signature]</i>	<input type="checkbox"/> Level II Std QC <input type="checkbox"/> TRRP CheckList <input type="checkbox"/> Level III Std QC/Raw Data <input type="checkbox"/> TRRP Level IV <input type="checkbox"/> Level IV SW846/CLP <input type="checkbox"/> Other					
Preservative Key: 1-HCl 2-HNO <sub>3</sub> 3-H <sub>2</sub> SO <sub>4</sub> 4-NaOH 5-Na <sub>2</sub> S <sub>2</sub> O <sub>8</sub> 6-NaHSO <sub>4</sub> 7-Other 8-4°C 9-5035 <b>EB</b>									

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Page 2 of 3

COC ID: 189141

ALS Project Manager: EB

ALS Work Order #: 19051723

Customer Information		Project Information		Parameter/Method Request for Analysis												
Purchase Order	<u>55429.005</u>	Project Name	<u>WRR</u>	A	<u>VOCs</u>											
Work Order		Project Number		B												
Company Name	<u>Gannett Fleming, Inc.</u>	Bill To Company	<u>Gannett Fleming, Inc</u>	C												
Send Report To		Invoice Attn	<u>Accounts Payable</u>	D												
Address	<u>8025 Excelsior Dr.</u>	Address	<u>8025 Excelsior Dr.</u>	E												
				F												
City/State/Zip	<u>Madison, WI 53717</u>	City/State/Zip	<u>Madison, WI 53717</u>	G												
Phone	<u>(608) 836-1500</u>	Phone	<u>(608) 836-1500</u>	H												
Fax		Fax		I												
e-Mail Address		e-Mail Address		J												

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	<u>TW-1</u>	<u>5/22/19</u>	<u>16:05</u>	<u>GW</u>	<u>HCl</u>	<u>3</u>	<u>X</u>										
2	<u>DW</u>	<u>5/23/19</u>	<u>12:50</u>	<u>↓</u>	<u>↓</u>	<u>↓</u>	<u>↓</u>										
3	<u>RW-2</u>	<u>"</u>	<u>9:50</u>	<u>↓</u>	<u>↓</u>	<u>↓</u>	<u>↓</u>										
4	<del><u>RW-2</u></del>																
5	<u>RW-5</u>	<u>5/23/19</u>	<u>11:05</u>	<u>GW</u>	<u>HCl</u>	<u>3</u>	<u>X</u>										
6	<del><u>RW-5</u></del>																
7	<u>RW-8</u>	<u>5/23/19</u>	<u>14:50</u>	<u>GW</u>	<u>HCl</u>	<u>3</u>	<u>X</u>										
8	<u>RW-9</u>	<u>5/23/19</u>	<u>14:55</u>	<u>↓</u>	<u>↓</u>	<u>↓</u>	<u>X</u>										
9	<u>WF-11</u>	<u>5/22/19</u>	<u>10:35</u>	<u>↓</u>	<u>↓</u>	<u>↓</u>	<u>X</u>										
10	<u>TW-1 dup</u>	<u>5/23/19</u>	<u>8:20</u>	<u>↓</u>	<u>↓</u>	<u>↓</u>	<u>X</u>										

Sampler(s) Please Print & Sign <u>Car Page</u>		Shipment Method <u>FedEx</u>		Required Turnaround Time: (Check Box) <input type="checkbox"/> Std 10 WK Days <input type="checkbox"/> 5 WK Days <input checked="" type="checkbox"/> 2 WK Days <input type="checkbox"/> 24 Hour				Results Due Date:			
Relinquished by:	Date: <u>5/23/19</u>	Time: <u>18:00</u>	Received by:	Notes:							
Relinquished by:	Date: <u>5/24/19</u>	Time: <u>0930</u>	Received by (Laboratory):	Cooler ID	Cooler Temp.	QC Package: (Check One Box Below)					
Logged by (Laboratory):	Date: <u>5/24/19</u>	Time: <u>1400</u>	Checked by (Laboratory): <u>EB</u>			<input type="checkbox"/> Level II Std QC	<input type="checkbox"/> TRRP Check List				
Preservative Key: 1-HCl 2-HNO <sub>3</sub> 3-H <sub>2</sub> SO <sub>4</sub> 4-NaOH 5-Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> 6-NaHSO <sub>4</sub> 7-Other 8-4°C 9-5035						<input type="checkbox"/> Level III Std QC/Raw Data	<input type="checkbox"/> TRRP Level IV				
						<input type="checkbox"/> Level IV SW846/CLP					
						<input type="checkbox"/> Other					

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 2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.  
 3. The Chain of Custody is a legal document. All information must be completed accurately.



Cincinnati, OH  
+1 513 733 5336  
Everett, WA  
+1 425 356 2600

Fort Collins, CO  
+1 970 490 1511  
Holland, MI  
+1 616 399 6070

# Chain of Custody Form

Houston, TX  
+1 281 530 5656  
Middletown, PA  
+1 717 944 5541

Spring City, PA  
+1 610 948 4903  
Salt Lake City, UT  
+1 801 266 7700

South Charleston, WV  
+1 304 356 3168  
York, PA  
+1 717 505 5280

Page 3 of 3

COC ID: 189138

ALS Project Manager: EB

ALS Work Order #: 19051723

Customer Information		Project Information		Parameter/Method Request for Analysis												
Purchase Order	<u>55929.005</u>	Project Name	<u>WRR</u>	A	<u>VOCs</u>											
Work Order		Project Number		B	<u>MEE</u>											
Company Name	<u>Gannett Fleming, Inc.</u>	Bill To Company	<u>Gannett Fleming, Inc.</u>	C	<u>Sulfate, Alkalinity, TOC</u>											
Send Report To		Invoice Attn	<u>Accounts Payable</u>	D												
Address	<u>8025 Excelsior Dr.</u>	Address	<u>8025 Excelsior Dr.</u>	E												
				F												
City/State/Zip	<u>Madison, WI 53717</u>	City/State/Zip	<u>Madison, WI 53717</u>	G												
Phone	<u>(608) 836-1500</u>	Phone	<u>(608) 836-1500</u>	H												
Fax		Fax		I												
e-Mail Address		e-Mail Address		J												

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	<u>MW-113</u>	<u>5/22/19</u>	<u>18:35</u>	<u>GW</u>	<u>HCl</u>	<u>3</u>	<u>X</u>										
2	<u>W-1 D dup</u>	<u>5/23/19</u>	<u>9:15</u>	<u>"</u>	<u>"</u>	<u>"</u>	<u>X</u>										
3	<u>W-32</u>	<u>"</u>	<u>15:50</u>	<u>GW</u>	<u>HCl, none</u>	<u>5</u>	<u>X</u>	<u>X</u>									
4	<u>W-34</u>	<u>"</u>	<u>13:55</u>	<u>↓</u>	<u>"</u>	<u>3</u>	<u>X</u>										<u>HOLD</u>
5	<u>Trip Blank</u>	<u>5/22/19</u>		<u>↓</u>	<u>HCl</u>	<u>2</u>	<u>X</u>										
6	<u>W-34</u>	<u>5/23/19</u>	<u>13:55</u>	<u>GW</u>	<u>HCl, none</u>	<u>5</u>		<u>X</u>	<u>X</u>								
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign <u>Chelsea Page</u>		Shipment Method <u>FedEx</u>		Required Turnaround Time: (Check Box) <input checked="" type="checkbox"/> Std 10 WK Days <input type="checkbox"/> 5 WK Days <input type="checkbox"/> Other <input type="checkbox"/> 2 WK Days <input type="checkbox"/> 24 Hour				Results Due Date:				
Relinquished by: <u>CP</u>	Date: <u>5/23/19</u>	Time: <u>18:00</u>	Received by:		Notes:							
Relinquished by: <u>FeoEx</u>	Date: <u>5/24/19</u>	Time: <u>0930</u>	Received by (Laboratory): <u>[Signature]</u>		Cooler ID	Cooler Temp.	QC Package: (Check One Box Below)					
Logged by (Laboratory): <u>Ken</u>	Date: <u>5/24/19</u>	Time: <u>1400</u>	Checked by (Laboratory): <u>EB</u>				<input type="checkbox"/> Level II Std QC	<input type="checkbox"/> TRRP Check/Ret				
Preservative Key: 1-HCl 2-HNO <sub>3</sub> 3-H <sub>2</sub> SO <sub>4</sub> 4-NaOH 5-Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> 6-NaHSO <sub>4</sub> 7-Other 8-4°C 9-5035							<input type="checkbox"/> Level III Std QC/Raw Data	<input type="checkbox"/> TRRP Level IV				
							<input type="checkbox"/> Level IV SW846/CLP					
							<input type="checkbox"/> Other					

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.  
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.  
3. The Chain of Custody is a legal document. All information must be completed accurately.

Sample Receipt Checklist

Client Name: **GANNETT FLEMING - WI**

Date/Time Received: **24-May-19 09:30**

Work Order: **19051723**

Received by: **KRW**

Checklist completed by Keith Wierenga 24-May-19  
eSignature Date

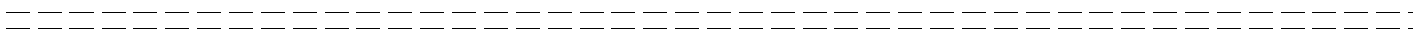
Reviewed by: Eheland Beaworth 24-May-19  
eSignature Date

Matrices: Water

Carrier name: FedEx

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on shipping container/cooler?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Container/Temp Blank temperature in compliance?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample(s) received on ice?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Temperature(s)/Thermometer(s):	<u>2.4/2.4 C</u>		<u>SR2</u>
Cooler(s)/Kit(s):	<u></u>		
Date/Time sample(s) sent to storage:	<u>5/24/2019 2:08:58 PM</u>		
Water - VOA vials have zero headspace?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	No VOA vials submitted <input type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>
pH adjusted?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	N/A <input type="checkbox"/>
pH adjusted by:	<u></u>		

Login Notes:



Client Contacted: \_\_\_\_\_ Date Contacted: \_\_\_\_\_ Person Contacted: \_\_\_\_\_

Contacted By: \_\_\_\_\_ Regarding: \_\_\_\_\_

Comments:

CorrectiveAction:

The analytical results and  
QA/QC data included with  
this report were reviewed by  
AWM on 06/03/19.



10515 Research Drive  
Knoxville, TN 37932  
Phone: (865) 573-8188  
Fax: (865) 573-8133

**Client:** Anthony Miller  
Gannett Fleming  
8025 Excelsior Drive  
Madison, WI 53717

**Phone:** 608.836.1500

**Fax:** 608.831.3337

**Identifier:** 082QE

**Date Rec:** 05/24/2019

**Report Date:** 05/31/2019

**Client Project #:** 55929.005

**Client Project Name:** WRR

**Purchase Order #:** 55929.005

**Analysis Requested:** CENSUS

**Reviewed By:**

A handwritten signature in black ink that reads 'Cary Brown'.

NOTICE: This report is intended only for the addressee shown above and may contain confidential or privileged information. If the recipient of this material is not the intended recipient or if you have received this in error, please notify Microbial Insights, Inc. immediately. The data and other information in this report represent only the sample(s) analyzed and are rendered upon condition that it is not to be reproduced without approval from Microbial Insights, Inc. Thank you for your cooperation.

EXHIBIT B

LABORATORY'S QUALITY VERIFICATION STATEMENT

Laboratory must provide a signed copy of this form with each deliverable specified in the Work Order or the deliverable will not be accepted. Laboratory must provide Gannett Fleming with a true copy of its internal QA/QC review and approval forms related to the deliverable.

This form must be signed by the Laboratory's Quality Control/Quality Assurance Officer

Project Name: WRR

Gannett Fleming Project Number: 55429.005

Deliverable Description: EDD, CENSUS Report 082QE

I, Karen Hebbard, warrant and represent that the project deliverable described above and attached to this form was developed in accordance with the project scope of work and that all elements relating to the quality of the deliverable were verified in accordance with the requirements of my firm's internal quality management/quality assurance system. This deliverable satisfies all requirements of our Contract with Gannett Fleming.

Signature: \_\_\_\_\_

(by Laboratory's QC/QA Officer)

Date: \_\_\_\_\_

5/31/19

Laboratory: Microbial Insights

**'Deliverable' shall mean all aspects of design including, without limitation, drawings, calculations, maps, materials and specifications, reports, data bases, logs and other information developed from wells, borings and cores, laboratory data, materials schedules, instrument calibration data and all other items developed, prepared and delivered to Gannett Fleming by Contractor as specified in the Scope of Work in any media.**

**Client:** Gannett Fleming  
**Project:** WRR

**MI Project Number:** 082QE  
**Date Received:** 05/24/2019

**Sample Information**

Client Sample ID:	W-32	W-34
Sample Date:	05/23/2019	05/23/2019
Units:	cells/mL	cells/mL
Analyst/Reviewer:	CB	CB

**Dechlorinating Bacteria**

<i>Dehalococcoides</i>	DHC	3.00E-01 (J)	2.69E+06
tceA Reductase	TCE	1.00E-01 (J)	3.17E+05
BAV1 Vinyl Chloride Reductase	BVC	<5.00E-01	1.06E+05
Vinyl Chloride Reductase	VCR	1.00E-01 (J)	3.13E+05
<i>Dehalobacter spp.</i>	DHBt	<5.00E+00	8.96E+04

**Legend:**

NA = Not Analyzed    NS = Not Sampled    J = Estimated gene copies below PQL but above LQL    I = Inhibited  
 < = Result not detected



### Quality Assurance/Quality Control Data

Samples Received 5/24/2019

Component	Date Prepared	Date Analyzed	Arrival Temperature	Positive Control	Extraction Blank	Negative Control
BVC	05/24/2019	05/31/2019	0 °C	102%	non-detect	non-detect
DHBt	05/24/2019	05/31/2019	0 °C	99%	non-detect	non-detect
TCE	05/24/2019	05/31/2019	0 °C	104%	non-detect	non-detect
VCR	05/24/2019	05/31/2019	0 °C	101%	non-detect	non-detect
DHC	05/24/2019	05/31/2019	0 °C	100%	non-detect	non-detect

**REPORT TO:**

Name: Anthony Miller  
 Company: Gannett Fleming  
 Address: 8025 Excelsior Dr.  
Madison, WI 53717  
 email: awmiller@gfnet.com  
 Phone: 608-836-1500  
 Fax:

Project Manager: Anthony Miller  
 Project Name: WRR  
 Project No.: 55929.005

**INVOICE TO:** (For Invoices paid by a third party it is imperative that all information be provided)

Name:  
 Company:  
 Address:  
 email:  
 Phone:  
 Fax:

Purchase Order No. 55929.005  
 Subcontract No.  
 MI Quote No. Q20181129.0002



10515 Research Dr  
 Knoxville, TN 37932  
 865-573-8188

www.microbe.com

**Please Check One:**

- More samples to follow  
 No Additional Samples

Report Type:  Standard (default)     Microbial Insights Level III raw data (15% surcharge)     Microbial Insights Level IV (25% surcharge)     Comprehensive Interpretive (15%)     Historical Interpretive (35%)  
 EDD type:  Microbial Insights Standard (default)     All other available EDDs (5% surcharge)    Specify EDD Type: \_\_\_\_\_

Please contact us with any questions about the analyses or filling out the COC at (865) 573-8188 (9:00 am to 5:00 pm EST, M-F). After hours email: customerservice@microbe.com

Sample Information						Analyses				GENSUS: Please select the target organism/gene																														
MI ID (Laboratory Use Only)	Sample Name	Date Sampled	Time Sampled	Matrix	Total Number of Containers	PLFA	NGS	QuantArray Chlor	QuantArray Petro	DHC (Dehalococcoides)	DHC Functional genes (bvc, bce, vcr)	DHB (Dehalobacter)	DHG (Dehalogenimonas)	DSM (Desulfuromonas)	DSB (Desulfobacterium)	EBAC (Total)	SRB	Sulfate Reducing Bacteria (APS)	MGN (Methanogens)	MOB (Methanotrophi)	SMMO	DNF (Denitrifiers-nitS and nitK)	AMO	ammonia oxidizing bacteria)	PM1 (MTBE aerobic)	PMO (Toluene Monooxygenase)	RDEG (Toluene Monooxygenase)	PHE (Phenol Hydroxylase)	NAH (Naphthalene-aerobic)	BSSA	(Toluene/Xylene-Anaerobic)	add. qPCR:	RNA	(Expression Option)*	Other:	Other:	Other:			
082QE1	W-32	5/23/19	15:50	GW	1					X	X	X																												
2	W-34	"	13:55	"	1					X	A	X																												

Relinquished by: Chelsea Payne Date: 5/23/19 Received by: [Signature] Date: 5/24/19

It is vital that chain of custody is filled out correctly & that all relative information is provided.  
 Failure to provide sufficient and/or correct information regarding reporting, invoicing & analyses requested information may result in delays for which MI will not be liable.



10515 Research Drive  
Knoxville, TN 37932  
Phone: (865) 573-8188  
Fax: (865) 573-8133

The analytical results and  
QA/QC data included with  
this report were reviewed by  
AWM on 07/09/19.

**Client:** Anthony Miller  
Gannett Fleming  
8040 Excelsior Drive  
Suite 303  
Madison, WI 53717

**Phone:** 608-836-1500

**Fax:** 608.831.3337

**Identifier:** 007QG

**Date Rec:** 07/03/2019

**Report Date:** 07/09/2019

**Client Project #:** 55929.005

**Client Project Name:** WRR

**Purchase Order #:** 55929.005

**Analysis Requested:** CENSUS

**Reviewed By:**

NOTICE: This report is intended only for the addressee shown above and may contain confidential or privileged information. If the recipient of this material is not the intended recipient or if you have received this in error, please notify Microbial Insights, Inc. immediately. The data and other information in this report represent only the sample(s) analyzed and are rendered upon condition that it is not to be reproduced without approval from Microbial Insights, Inc. Thank you for your cooperation.

**Client:** Gannett Fleming  
**Project:** WRR

**MI Project Number:** 007QG  
**Date Received:** 07/03/2019

**Sample Information**

---

<b>Client Sample ID:</b>	<b>SVE-4</b>
Sample Date:	07/02/2019
Units:	cells/mL
Analyst/Reviewer:	HT

---

**Dechlorinating Bacteria**

---

<i>Dehalococcoides</i>	<i>DHC</i>	<b>7.62E+05</b>
tceA Reductase	TCE	<b>2.95E+02</b>
BAV1 Vinyl Chloride Reductase	BVC	<b>7.12E+03</b>
Vinyl Chloride Reductase	VCR	<b>7.32E+04</b>
<i>Dehalobacter spp.</i>	<i>DHBt</i>	<b>3.09E+04</b>

**Legend:**

NA = Not Analyzed    NS = Not Sampled    J = Estimated gene copies below PQL but above LQL    I = Inhibited  
< = Result not detected

Quality Assurance/Quality Control Data

Samples Received 7/3/2019

Component	Date Prepared	Date Analyzed	Arrival Temperature	Positive Control	Extraction Blank	Negative Control
BVC	07/03/2019	07/09/2019	1 °C	103%	non-detect	non-detect
DHBt	07/03/2019	07/09/2019	1 °C	107%	non-detect	non-detect
DHC	07/03/2019	07/09/2019	1 °C	89%	non-detect	non-detect
TCE	07/03/2019	07/09/2019	1 °C	102%	non-detect	non-detect
VCR	07/03/2019	07/09/2019	1 °C	103%	non-detect	non-detect

EXHIBIT B

LABORATORY'S QUALITY VERIFICATION STATEMENT

Laboratory must provide a signed copy of this form with each deliverable specified in the Work Order or the deliverable will not be accepted. Laboratory must provide Gannett Fleming with a true copy of its internal QA/QC review and approval forms related to the deliverable.

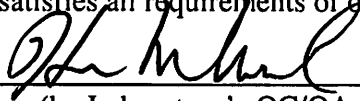
This form must be signed by the Laboratory's Quality Control/Quality Assurance Officer

Project Name: WRR

Gannett Fleming Project Number: 55929.005

Deliverable Description: CENSUS Report 007QG, EDD

I, Loren Hebbard, warrant and represent that the project deliverable described above and attached to this form was developed in accordance with the project scope of work and that all elements relating to the quality of the deliverable were verified in accordance with the requirements of my firm's internal quality management/quality assurance system. This deliverable satisfies all requirements of our Contract with Gannett Fleming.

Signature:   
(by Laboratory's QC/QA Officer)

Date: 7/9/19

Laboratory: Microbial Insights

**'Deliverable' shall mean all aspects of design including, without limitation, drawings, calculations, maps, materials and specifications, reports, data bases, logs and other information developed from wells, borings and cores, laboratory data, materials schedules, instrument calibration data and all other items developed, prepared and delivered to Gannett Fleming by Contractor as specified in the Scope of Work in any media.**

**REPORT TO:**

Name: Anthony Miller  
 Company: Gannett Fleming, Inc.  
 Address: 8040 Excelsior Dr Suite 303  
Madison, WI 53717-1338  
 email: awmiller@gfnet.com  
 Phone: 608/826-5150 x6716  
 Fax: \_\_\_\_\_

Project Manager: Anthony Miller  
 Project Name: WRR  
 Project No.: 55929.005

**INVOICE TO:** (For Invoices paid by a third party it is imperative that all information be provided)

Name: \_\_\_\_\_  
 Company: \_\_\_\_\_  
 Address: \_\_\_\_\_  
 email: \_\_\_\_\_  
 Phone: \_\_\_\_\_  
 Fax: \_\_\_\_\_

*See REPORT TO*

Purchase Order No. 55929.005  
 Subcontract No. \_\_\_\_\_  
 MI Quote No. Q20181129.002



10515 Research Dr  
 Knoxville, TN 37932  
 865-573-8188

www.microbe.com

**Please Check One:**

- More samples to follow
- No Additional Samples

Report Type:  Standard (default)     Microbial Insights Level III raw data(15% surcharge)     Microbial Insights Level IV (25% surcharge)     Comprehensive Interpretive(15%)     Historical Interpretive (35%)  
 EDD type:  Microbial Insights Standard (default)     All other available EDDs (5% surcharge)    Specify EDD Type: \_\_\_\_\_

Please contact us with any questions about the analyses or filling out the COC at (865) 573-8188 (9:00 am to 5:00 pm EST, M-F). After hours email: customerservice@microbe.com

Sample Information							Analyses		CENSUS: Please select the target organism/gene																											
MI ID <small>(Laboratory Use Only)</small>	Sample Name	Date Sampled	Time Sampled	Matrix	Total Number of Containers	PLFA <small>No PLFA analyses CW</small>	NGS	QuantArray Chlor	QuantArray Petro	DHC (Dehalococcoides)	DHC Functional genes <small>(bvc, tcb, vcr)</small>	DHB (Dehalobacter)	DHG (Dehalogenimonas)	DSM (Desulfuromonas)	DSB (Desulfotobacterium)	EBAC (Total)	SRB <small>(Sulfate Reducing Bacteria-APS)</small>	MGN (Methanogens)	MOB (Methanotrophi)	SI-MMO	DNF (Denitrifiers-nirS and nirK)	AMO <small>(ammonia oxidizing bacteria)</small>	PM1 (MTBE aerobic)	RMO (Toluene Monooxygenase)	RDEG (Toluene Monooxygenase)	PHE (Phenol Hydroxylase)	NAH (Naphthalene-aerobic)	BSSA <small>(Toluene/Xylene-Anaerobic)</small>	add. qPCR:	RNA <small>(Expression Option)*</small>	Other:	Other:	Other:			
007QG1	SVE-4	7/2/19	10:00	GW	2	<del>100</del>																														

Relinquished by: CW Date: 7.2.19 Received by: JFA Date: 7/3/19

It is vital that chain of custody is filled out correctly & that all relative information is provided.  
 Failure to provide sufficient and/or correct information regarding reporting, invoicing & analyses requested information may result in delays for which MI will not be liable.  
*No PLFA analyses requested; I accidentally marked that column above. CW*

July 18, 2019

**The analytical results and  
QA/QC data included with  
this report were reviewed by  
AWM on 07/18/19.**

Tony Miller  
Gannett Fleming  
8040 Excelsior Drive, Ste 303  
Madison, WI 53717

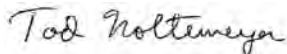
RE: Project: 55929.005 WRR  
Pace Project No.: 40190640

Dear Tony Miller:

Enclosed are the analytical results for sample(s) received by the laboratory between July 03, 2019 and July 05, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Tod Noltemeyer for  
Dan Milewsky  
dan.milewsky@pacelabs.com  
(920)469-2436  
Project Manager

Enclosures

cc: Chelsea Payne, Gannett Fleming Inc.



## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.



## CERTIFICATIONS

Project: 55929.005 WRR

Pace Project No.: 40190640

---

### Green Bay Certification IDs

1241 Bellevue Street, Green Bay, WI 54302

Florida/NELAP Certification #: E87948

Illinois Certification #: 200050

Kentucky UST Certification #: 82

Louisiana Certification #: 04168

Minnesota Certification #: 055-999-334

New York Certification #: 12064

North Dakota Certification #: R-150

Virginia VELAP ID: 460263

South Carolina Certification #: 83006001

Texas Certification #: T104704529-14-1

Wisconsin Certification #: 405132750

Wisconsin DATCP Certification #: 105-444

USDA Soil Permit #: P330-16-00157

Federal Fish & Wildlife Permit #: LE51774A-0

---

## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: 55929.005 WRR

Pace Project No.: 40190640

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40190640001	SVE-4	Water	07/02/19 10:15	07/03/19 09:15
40190640002	RW-8	Water	07/02/19 11:55	07/03/19 09:15
40190640003	TRIP BLANK	Water		07/05/19 13:58

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

### SAMPLE ANALYTE COUNT

Project: 55929.005 WRR

Pace Project No.: 40190640

Lab ID	Sample ID	Method	Analysts	Analytes Reported
40190640001	SVE-4	EPA 8015B Modified	ALD	3
		EPA 6010	TXW	2
		EPA 8260	HNW	69
		EPA 300.0	HMB	1
		EPA 310.2	DAW	1
		SM 5310C	TJJ	1
40190640002	RW-8	EPA 8260	HNW	68
40190640003	TRIP BLANK	EPA 8260	SMT	69

### REPORT OF LABORATORY ANALYSIS

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without the written consent of Pace Analytical Services, LLC.

### SUMMARY OF DETECTION

Project: 55929.005 WRR  
Pace Project No.: 40190640

Lab Sample ID Method	Client Sample ID Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
<b>40190640001</b>	<b>SVE-4</b>					
EPA 8015B Modified	Ethane	10.2	ug/L	5.6	07/11/19 10:30	
EPA 8015B Modified	Ethene	75.8	ug/L	5.0	07/11/19 10:30	
EPA 8015B Modified	Methane	47.6	ug/L	2.8	07/11/19 10:30	
EPA 6010	Iron, Dissolved	14300	ug/L	118	07/11/19 08:52	
EPA 6010	Manganese, Dissolved	1510	ug/L	5.0	07/11/19 08:52	
EPA 8260	1,1,1-Trichloroethane	1360	ug/L	100	07/09/19 13:38	
EPA 8260	1,1,2-Trichloroethane	1140	ug/L	500	07/09/19 13:38	
EPA 8260	1,1-Dichloroethane	227	ug/L	100	07/09/19 13:38	
EPA 8260	Tetrachloroethene	810	ug/L	109	07/09/19 13:38	
EPA 8260	Trichloroethene	1830	ug/L	100	07/09/19 13:38	
EPA 8260	Vinyl chloride	246	ug/L	100	07/09/19 13:38	
EPA 8260	cis-1,2-Dichloroethene	4580	ug/L	100	07/09/19 13:38	
EPA 300.0	Sulfate	7.3J	mg/L	15.0	07/09/19 19:09	D3
EPA 310.2	Alkalinity, Total as CaCO3	140	mg/L	117	07/09/19 10:58	
SM 5310C	Total Organic Carbon	64.8	mg/L	25.2	07/18/19 08:27	
<b>40190640002</b>	<b>RW-8</b>					
EPA 8260	1,1,1-Trichloroethane	0.49J	ug/L	1.0	07/09/19 09:10	
EPA 8260	1,1-Dichloroethane	0.37J	ug/L	1.0	07/09/19 09:10	
EPA 8260	Acetone	4.5J	ug/L	20.0	07/09/19 09:10	
EPA 8260	Toluene	1.8J	ug/L	5.0	07/09/19 09:10	
EPA 8260	cis-1,2-Dichloroethene	0.83J	ug/L	1.0	07/09/19 09:10	

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## ANALYTICAL RESULTS

Project: 55929.005 WRR

Pace Project No.: 40190640

**Sample: SVE-4**      **Lab ID: 40190640001**      Collected: 07/02/19 10:15      Received: 07/03/19 09:15      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>Methane, Ethane, Ethene GCV</b>		Analytical Method: EPA 8015B Modified							
Ethane	10.2	ug/L	5.6	0.58	1		07/11/19 10:30	74-84-0	
Ethene	75.8	ug/L	5.0	0.52	1		07/11/19 10:30	74-85-1	
Methane	47.6	ug/L	2.8	1.4	1		07/11/19 10:30	74-82-8	
<b>6010 MET ICP, Dissolved</b>		Analytical Method: EPA 6010							
Iron, Dissolved	14300	ug/L	118	35.4	1		07/11/19 08:52	7439-89-6	
Manganese, Dissolved	1510	ug/L	5.0	1.1	1		07/11/19 08:52	7439-96-5	
<b>8260 MSV Oxygenates</b>		Analytical Method: EPA 8260							
1,1,1,2-Tetrachloroethane	<26.9	ug/L	100	26.9	100		07/09/19 13:38	630-20-6	
1,1,1-Trichloroethane	1360	ug/L	100	24.5	100		07/09/19 13:38	71-55-6	
1,1,2,2-Tetrachloroethane	<27.5	ug/L	100	27.5	100		07/09/19 13:38	79-34-5	
1,1,2-Trichloroethane	1140	ug/L	500	55.2	100		07/09/19 13:38	79-00-5	
1,1-Dichloroethane	227	ug/L	100	27.3	100		07/09/19 13:38	75-34-3	
1,1-Dichloroethene	<24.5	ug/L	100	24.5	100		07/09/19 13:38	75-35-4	
1,1-Dichloropropene	<54.0	ug/L	180	54.0	100		07/09/19 13:38	563-58-6	
1,2,3-Trichlorobenzene	<62.6	ug/L	500	62.6	100		07/09/19 13:38	87-61-6	
1,2,3-Trichloropropane	<59.1	ug/L	500	59.1	100		07/09/19 13:38	96-18-4	
1,2,4-Trichlorobenzene	<95.1	ug/L	500	95.1	100		07/09/19 13:38	120-82-1	
1,2,4-Trimethylbenzene	<84.1	ug/L	280	84.1	100		07/09/19 13:38	95-63-6	
1,2-Dibromo-3-chloropropane	<176	ug/L	588	176	100		07/09/19 13:38	96-12-8	
1,2-Dibromoethane (EDB)	<82.9	ug/L	276	82.9	100		07/09/19 13:38	106-93-4	
1,2-Dichlorobenzene	<70.5	ug/L	235	70.5	100		07/09/19 13:38	95-50-1	
1,2-Dichloroethane	<28.0	ug/L	100	28.0	100		07/09/19 13:38	107-06-2	
1,2-Dichloropropane	<28.3	ug/L	100	28.3	100		07/09/19 13:38	78-87-5	
1,3,5-Trimethylbenzene	<87.3	ug/L	291	87.3	100		07/09/19 13:38	108-67-8	
1,3-Dichlorobenzene	<62.8	ug/L	209	62.8	100		07/09/19 13:38	541-73-1	
1,3-Dichloropropane	<82.6	ug/L	275	82.6	100		07/09/19 13:38	142-28-9	
1,4-Dichlorobenzene	<94.4	ug/L	315	94.4	100		07/09/19 13:38	106-46-7	
2,2-Dichloropropane	<227	ug/L	755	227	100		07/09/19 13:38	594-20-7	
2-Butanone (MEK)	<294	ug/L	2000	294	100		07/09/19 13:38	78-93-3	
2-Chlorotoluene	<92.6	ug/L	500	92.6	100		07/09/19 13:38	95-49-8	
2-Propanol	<2890	ug/L	25000	2890	100		07/09/19 13:38	67-63-0	
4-Chlorotoluene	<75.6	ug/L	252	75.6	100		07/09/19 13:38	106-43-4	
4-Methyl-2-pentanone (MIBK)	<153	ug/L	510	153	100		07/09/19 13:38	108-10-1	
Acetone	<274	ug/L	2000	274	100		07/09/19 13:38	67-64-1	
Benzene	<24.6	ug/L	100	24.6	100		07/09/19 13:38	71-43-2	
Bromobenzene	<24.1	ug/L	100	24.1	100		07/09/19 13:38	108-86-1	
Bromochloromethane	<36.2	ug/L	500	36.2	100		07/09/19 13:38	74-97-5	
Bromodichloromethane	<36.4	ug/L	121	36.4	100		07/09/19 13:38	75-27-4	
Bromoform	<397	ug/L	1320	397	100		07/09/19 13:38	75-25-2	
Bromomethane	<97.1	ug/L	500	97.1	100		07/09/19 13:38	74-83-9	
Carbon tetrachloride	<16.6	ug/L	100	16.6	100		07/09/19 13:38	56-23-5	
Chlorobenzene	<71.1	ug/L	237	71.1	100		07/09/19 13:38	108-90-7	
Chloroethane	<134	ug/L	500	134	100		07/09/19 13:38	75-00-3	
Chloroform	<127	ug/L	500	127	100		07/09/19 13:38	67-66-3	

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## ANALYTICAL RESULTS

Project: 55929.005 WRR

Pace Project No.: 40190640

**Sample: SVE-4**      **Lab ID: 40190640001**      Collected: 07/02/19 10:15      Received: 07/03/19 09:15      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Oxygenates</b>		Analytical Method: EPA 8260							
Chloromethane	<219	ug/L	730	219	100		07/09/19 13:38	74-87-3	
Dibromochloromethane	<260	ug/L	867	260	100		07/09/19 13:38	124-48-1	
Dibromomethane	<93.7	ug/L	312	93.7	100		07/09/19 13:38	74-95-3	
Dichlorodifluoromethane	<50.0	ug/L	500	50.0	100		07/09/19 13:38	75-71-8	
Diisopropyl ether	<189	ug/L	629	189	100		07/09/19 13:38	108-20-3	
Ethylbenzene	<21.8	ug/L	100	21.8	100		07/09/19 13:38	100-41-4	
Hexachloro-1,3-butadiene	<118	ug/L	500	118	100		07/09/19 13:38	87-68-3	
Isopropylbenzene (Cumene)	<39.3	ug/L	500	39.3	100		07/09/19 13:38	98-82-8	
Methyl-tert-butyl ether	<125	ug/L	415	125	100		07/09/19 13:38	1634-04-4	
Methylene Chloride	<58.1	ug/L	500	58.1	100		07/09/19 13:38	75-09-2	
Naphthalene	<118	ug/L	500	118	100		07/09/19 13:38	91-20-3	
Styrene	<46.5	ug/L	155	46.5	100		07/09/19 13:38	100-42-5	
Tetrachloroethene	810	ug/L	109	32.6	100		07/09/19 13:38	127-18-4	
Toluene	<17.2	ug/L	500	17.2	100		07/09/19 13:38	108-88-3	
Trichloroethene	1830	ug/L	100	25.5	100		07/09/19 13:38	79-01-6	
Trichlorofluoromethane	<21.5	ug/L	100	21.5	100		07/09/19 13:38	75-69-4	
Vinyl chloride	246	ug/L	100	17.5	100		07/09/19 13:38	75-01-4	
Xylene (Total)	<150	ug/L	300	150	100		07/09/19 13:38	1330-20-7	
cis-1,2-Dichloroethene	4580	ug/L	100	27.1	100		07/09/19 13:38	156-59-2	
cis-1,3-Dichloropropene	<363	ug/L	1210	363	100		07/09/19 13:38	10061-01-5	
m&p-Xylene	<46.5	ug/L	200	46.5	100		07/09/19 13:38	179601-23-1	
n-Butylbenzene	<70.8	ug/L	236	70.8	100		07/09/19 13:38	104-51-8	
n-Propylbenzene	<81.1	ug/L	500	81.1	100		07/09/19 13:38	103-65-1	
o-Xylene	<26.2	ug/L	100	26.2	100		07/09/19 13:38	95-47-6	
p-Isopropyltoluene	<80.0	ug/L	267	80.0	100		07/09/19 13:38	99-87-6	
sec-Butylbenzene	<84.9	ug/L	500	84.9	100		07/09/19 13:38	135-98-8	
tert-Butylbenzene	<30.4	ug/L	101	30.4	100		07/09/19 13:38	98-06-6	
trans-1,2-Dichloroethene	<109	ug/L	364	109	100		07/09/19 13:38	156-60-5	
trans-1,3-Dichloropropene	<437	ug/L	1460	437	100		07/09/19 13:38	10061-02-6	
<b>Surrogates</b>									
Dibromofluoromethane (S)	102	%	70-130		100		07/09/19 13:38	1868-53-7	
Toluene-d8 (S)	101	%	70-130		100		07/09/19 13:38	2037-26-5	
4-Bromofluorobenzene (S)	96	%	70-130		100		07/09/19 13:38	460-00-4	
<b>300.0 IC Anions</b>		Analytical Method: EPA 300.0							
Sulfate	7.3J	mg/L	15.0	5.0	5		07/09/19 19:09	14808-79-8	D3
<b>310.2 Alkalinity</b>		Analytical Method: EPA 310.2							
Alkalinity, Total as CaCO3	140	mg/L	117	35.2	5		07/09/19 10:58		
<b>5310C TOC</b>		Analytical Method: SM 5310C							
Total Organic Carbon	64.8	mg/L	25.2	7.6	30		07/18/19 08:27	7440-44-0	

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## ANALYTICAL RESULTS

Project: 55929.005 WRR

Pace Project No.: 40190640

**Sample: RW-8**      **Lab ID: 40190640002**      Collected: 07/02/19 11:55      Received: 07/03/19 09:15      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Oxygenates</b>		Analytical Method: EPA 8260							
1,1,1,2-Tetrachloroethane	<0.27	ug/L	1.0	0.27	1		07/09/19 09:10	630-20-6	
1,1,1-Trichloroethane	0.49J	ug/L	1.0	0.24	1		07/09/19 09:10	71-55-6	
1,1,2,2-Tetrachloroethane	<0.28	ug/L	1.0	0.28	1		07/09/19 09:10	79-34-5	
1,1,2-Trichloroethane	<0.55	ug/L	5.0	0.55	1		07/09/19 09:10	79-00-5	
1,1-Dichloroethane	0.37J	ug/L	1.0	0.27	1		07/09/19 09:10	75-34-3	
1,1-Dichloroethene	<0.24	ug/L	1.0	0.24	1		07/09/19 09:10	75-35-4	
1,1-Dichloropropene	<0.54	ug/L	1.8	0.54	1		07/09/19 09:10	563-58-6	
1,2,3-Trichlorobenzene	<0.63	ug/L	5.0	0.63	1		07/09/19 09:10	87-61-6	
1,2,3-Trichloropropane	<0.59	ug/L	5.0	0.59	1		07/09/19 09:10	96-18-4	
1,2,4-Trichlorobenzene	<0.95	ug/L	5.0	0.95	1		07/09/19 09:10	120-82-1	
1,2,4-Trimethylbenzene	<0.84	ug/L	2.8	0.84	1		07/09/19 09:10	95-63-6	
1,2-Dibromo-3-chloropropane	<1.8	ug/L	5.9	1.8	1		07/09/19 09:10	96-12-8	
1,2-Dibromoethane (EDB)	<0.83	ug/L	2.8	0.83	1		07/09/19 09:10	106-93-4	
1,2-Dichlorobenzene	<0.71	ug/L	2.4	0.71	1		07/09/19 09:10	95-50-1	
1,2-Dichloroethane	<0.28	ug/L	1.0	0.28	1		07/09/19 09:10	107-06-2	
1,2-Dichloropropane	<0.28	ug/L	1.0	0.28	1		07/09/19 09:10	78-87-5	
1,3,5-Trimethylbenzene	<0.87	ug/L	2.9	0.87	1		07/09/19 09:10	108-67-8	
1,3-Dichlorobenzene	<0.63	ug/L	2.1	0.63	1		07/09/19 09:10	541-73-1	
1,3-Dichloropropane	<0.83	ug/L	2.8	0.83	1		07/09/19 09:10	142-28-9	
1,4-Dichlorobenzene	<0.94	ug/L	3.1	0.94	1		07/09/19 09:10	106-46-7	
2,2-Dichloropropane	<2.3	ug/L	7.6	2.3	1		07/09/19 09:10	594-20-7	
2-Butanone (MEK)	<2.9	ug/L	20.0	2.9	1		07/09/19 09:10	78-93-3	
2-Chlorotoluene	<0.93	ug/L	5.0	0.93	1		07/09/19 09:10	95-49-8	
4-Chlorotoluene	<0.76	ug/L	2.5	0.76	1		07/09/19 09:10	106-43-4	
4-Methyl-2-pentanone (MIBK)	<1.5	ug/L	5.1	1.5	1		07/09/19 09:10	108-10-1	
Acetone	4.5J	ug/L	20.0	2.7	1		07/09/19 09:10	67-64-1	
Benzene	<0.25	ug/L	1.0	0.25	1		07/09/19 09:10	71-43-2	
Bromobenzene	<0.24	ug/L	1.0	0.24	1		07/09/19 09:10	108-86-1	
Bromochloromethane	<0.36	ug/L	5.0	0.36	1		07/09/19 09:10	74-97-5	
Bromodichloromethane	<0.36	ug/L	1.2	0.36	1		07/09/19 09:10	75-27-4	
Bromoform	<4.0	ug/L	13.2	4.0	1		07/09/19 09:10	75-25-2	
Bromomethane	<0.97	ug/L	5.0	0.97	1		07/09/19 09:10	74-83-9	
Carbon tetrachloride	<0.17	ug/L	1.0	0.17	1		07/09/19 09:10	56-23-5	
Chlorobenzene	<0.71	ug/L	2.4	0.71	1		07/09/19 09:10	108-90-7	
Chloroethane	<1.3	ug/L	5.0	1.3	1		07/09/19 09:10	75-00-3	
Chloroform	<1.3	ug/L	5.0	1.3	1		07/09/19 09:10	67-66-3	
Chloromethane	<2.2	ug/L	7.3	2.2	1		07/09/19 09:10	74-87-3	
Dibromochloromethane	<2.6	ug/L	8.7	2.6	1		07/09/19 09:10	124-48-1	
Dibromomethane	<0.94	ug/L	3.1	0.94	1		07/09/19 09:10	74-95-3	
Dichlorodifluoromethane	<0.50	ug/L	5.0	0.50	1		07/09/19 09:10	75-71-8	
Diisopropyl ether	<1.9	ug/L	6.3	1.9	1		07/09/19 09:10	108-20-3	
Ethylbenzene	<0.22	ug/L	1.0	0.22	1		07/09/19 09:10	100-41-4	
Hexachloro-1,3-butadiene	<1.2	ug/L	5.0	1.2	1		07/09/19 09:10	87-68-3	
Isopropylbenzene (Cumene)	<0.39	ug/L	5.0	0.39	1		07/09/19 09:10	98-82-8	
Methyl-tert-butyl ether	<1.2	ug/L	4.2	1.2	1		07/09/19 09:10	1634-04-4	
Methylene Chloride	<0.58	ug/L	5.0	0.58	1		07/09/19 09:10	75-09-2	

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## ANALYTICAL RESULTS

Project: 55929.005 WRR

Pace Project No.: 40190640

**Sample: RW-8**      **Lab ID: 40190640002**      Collected: 07/02/19 11:55      Received: 07/03/19 09:15      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Oxygenates</b>		Analytical Method: EPA 8260							
Naphthalene	<1.2	ug/L	5.0	1.2	1		07/09/19 09:10	91-20-3	
Styrene	<0.47	ug/L	1.6	0.47	1		07/09/19 09:10	100-42-5	
Tetrachloroethene	<0.33	ug/L	1.1	0.33	1		07/09/19 09:10	127-18-4	
Toluene	1.8J	ug/L	5.0	0.17	1		07/09/19 09:10	108-88-3	
Trichloroethene	<0.26	ug/L	1.0	0.26	1		07/09/19 09:10	79-01-6	
Trichlorofluoromethane	<0.21	ug/L	1.0	0.21	1		07/09/19 09:10	75-69-4	
Vinyl chloride	<0.17	ug/L	1.0	0.17	1		07/09/19 09:10	75-01-4	
Xylene (Total)	<1.5	ug/L	3.0	1.5	1		07/09/19 09:10	1330-20-7	
cis-1,2-Dichloroethene	0.83J	ug/L	1.0	0.27	1		07/09/19 09:10	156-59-2	
cis-1,3-Dichloropropene	<3.6	ug/L	12.1	3.6	1		07/09/19 09:10	10061-01-5	
m&p-Xylene	<0.47	ug/L	2.0	0.47	1		07/09/19 09:10	179601-23-1	
n-Butylbenzene	<0.71	ug/L	2.4	0.71	1		07/09/19 09:10	104-51-8	
n-Propylbenzene	<0.81	ug/L	5.0	0.81	1		07/09/19 09:10	103-65-1	
o-Xylene	<0.26	ug/L	1.0	0.26	1		07/09/19 09:10	95-47-6	
p-Isopropyltoluene	<0.80	ug/L	2.7	0.80	1		07/09/19 09:10	99-87-6	
sec-Butylbenzene	<0.85	ug/L	5.0	0.85	1		07/09/19 09:10	135-98-8	
tert-Butylbenzene	<0.30	ug/L	1.0	0.30	1		07/09/19 09:10	98-06-6	
trans-1,2-Dichloroethene	<1.1	ug/L	3.6	1.1	1		07/09/19 09:10	156-60-5	
trans-1,3-Dichloropropene	<4.4	ug/L	14.6	4.4	1		07/09/19 09:10	10061-02-6	
<b>Surrogates</b>									
Dibromofluoromethane (S)	99	%	70-130		1		07/09/19 09:10	1868-53-7	
Toluene-d8 (S)	101	%	70-130		1		07/09/19 09:10	2037-26-5	
4-Bromofluorobenzene (S)	96	%	70-130		1		07/09/19 09:10	460-00-4	

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## ANALYTICAL RESULTS

Project: 55929.005 WRR

Pace Project No.: 40190640

Sample: **TRIP BLANK** Lab ID: **40190640003** Collected: Received: 07/05/19 13:58 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Oxygenates</b>		Analytical Method: EPA 8260							
1,1,1,2-Tetrachloroethane	<0.27	ug/L	1.0	0.27	1		07/08/19 12:27	630-20-6	
1,1,1-Trichloroethane	<0.24	ug/L	1.0	0.24	1		07/08/19 12:27	71-55-6	
1,1,2,2-Tetrachloroethane	<0.28	ug/L	1.0	0.28	1		07/08/19 12:27	79-34-5	
1,1,2-Trichloroethane	<0.55	ug/L	5.0	0.55	1		07/08/19 12:27	79-00-5	
1,1-Dichloroethane	<0.27	ug/L	1.0	0.27	1		07/08/19 12:27	75-34-3	
1,1-Dichloroethene	<0.24	ug/L	1.0	0.24	1		07/08/19 12:27	75-35-4	
1,1-Dichloropropene	<0.54	ug/L	1.8	0.54	1		07/08/19 12:27	563-58-6	
1,2,3-Trichlorobenzene	<0.63	ug/L	5.0	0.63	1		07/08/19 12:27	87-61-6	
1,2,3-Trichloropropane	<0.59	ug/L	5.0	0.59	1		07/08/19 12:27	96-18-4	
1,2,4-Trichlorobenzene	<0.95	ug/L	5.0	0.95	1		07/08/19 12:27	120-82-1	
1,2,4-Trimethylbenzene	<0.84	ug/L	2.8	0.84	1		07/08/19 12:27	95-63-6	
1,2-Dibromo-3-chloropropane	<1.8	ug/L	5.9	1.8	1		07/08/19 12:27	96-12-8	
1,2-Dibromoethane (EDB)	<0.83	ug/L	2.8	0.83	1		07/08/19 12:27	106-93-4	
1,2-Dichlorobenzene	<0.71	ug/L	2.4	0.71	1		07/08/19 12:27	95-50-1	
1,2-Dichloroethane	<0.28	ug/L	1.0	0.28	1		07/08/19 12:27	107-06-2	
1,2-Dichloropropane	<0.28	ug/L	1.0	0.28	1		07/08/19 12:27	78-87-5	
1,3,5-Trimethylbenzene	<0.87	ug/L	2.9	0.87	1		07/08/19 12:27	108-67-8	
1,3-Dichlorobenzene	<0.63	ug/L	2.1	0.63	1		07/08/19 12:27	541-73-1	
1,3-Dichloropropane	<0.83	ug/L	2.8	0.83	1		07/08/19 12:27	142-28-9	
1,4-Dichlorobenzene	<0.94	ug/L	3.1	0.94	1		07/08/19 12:27	106-46-7	
2,2-Dichloropropane	<2.3	ug/L	7.6	2.3	1		07/08/19 12:27	594-20-7	
2-Butanone (MEK)	<2.9	ug/L	20.0	2.9	1		07/08/19 12:27	78-93-3	
2-Chlorotoluene	<0.93	ug/L	5.0	0.93	1		07/08/19 12:27	95-49-8	
2-Propanol	<28.9	ug/L	250	28.9	1		07/08/19 12:27	67-63-0	
4-Chlorotoluene	<0.76	ug/L	2.5	0.76	1		07/08/19 12:27	106-43-4	
4-Methyl-2-pentanone (MIBK)	<1.5	ug/L	5.1	1.5	1		07/08/19 12:27	108-10-1	
Acetone	<2.7	ug/L	20.0	2.7	1		07/08/19 12:27	67-64-1	
Benzene	<0.25	ug/L	1.0	0.25	1		07/08/19 12:27	71-43-2	
Bromobenzene	<0.24	ug/L	1.0	0.24	1		07/08/19 12:27	108-86-1	
Bromochloromethane	<0.36	ug/L	5.0	0.36	1		07/08/19 12:27	74-97-5	
Bromodichloromethane	<0.36	ug/L	1.2	0.36	1		07/08/19 12:27	75-27-4	
Bromoform	<4.0	ug/L	13.2	4.0	1		07/08/19 12:27	75-25-2	
Bromomethane	<0.97	ug/L	5.0	0.97	1		07/08/19 12:27	74-83-9	
Carbon tetrachloride	<0.17	ug/L	1.0	0.17	1		07/08/19 12:27	56-23-5	
Chlorobenzene	<0.71	ug/L	2.4	0.71	1		07/08/19 12:27	108-90-7	
Chloroethane	<1.3	ug/L	5.0	1.3	1		07/08/19 12:27	75-00-3	
Chloroform	<1.3	ug/L	5.0	1.3	1		07/08/19 12:27	67-66-3	
Chloromethane	<2.2	ug/L	7.3	2.2	1		07/08/19 12:27	74-87-3	
Dibromochloromethane	<2.6	ug/L	8.7	2.6	1		07/08/19 12:27	124-48-1	
Dibromomethane	<0.94	ug/L	3.1	0.94	1		07/08/19 12:27	74-95-3	
Dichlorodifluoromethane	<0.50	ug/L	5.0	0.50	1		07/08/19 12:27	75-71-8	
Diisopropyl ether	<1.9	ug/L	6.3	1.9	1		07/08/19 12:27	108-20-3	
Ethylbenzene	<0.22	ug/L	1.0	0.22	1		07/08/19 12:27	100-41-4	
Hexachloro-1,3-butadiene	<1.2	ug/L	5.0	1.2	1		07/08/19 12:27	87-68-3	
Isopropylbenzene (Cumene)	<0.39	ug/L	5.0	0.39	1		07/08/19 12:27	98-82-8	
Methyl-tert-butyl ether	<1.2	ug/L	4.2	1.2	1		07/08/19 12:27	1634-04-4	

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS

Project: 55929.005 WRR

Pace Project No.: 40190640

**Sample: TRIP BLANK**      **Lab ID: 40190640003**      Collected:      Received: 07/05/19 13:58      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Oxygenates</b>									
Analytical Method: EPA 8260									
Methylene Chloride	<0.58	ug/L	5.0	0.58	1		07/08/19 12:27	75-09-2	
Naphthalene	<1.2	ug/L	5.0	1.2	1		07/08/19 12:27	91-20-3	
Styrene	<0.47	ug/L	1.6	0.47	1		07/08/19 12:27	100-42-5	
Tetrachloroethene	<0.33	ug/L	1.1	0.33	1		07/08/19 12:27	127-18-4	
Toluene	<0.17	ug/L	5.0	0.17	1		07/08/19 12:27	108-88-3	
Trichloroethene	<0.26	ug/L	1.0	0.26	1		07/08/19 12:27	79-01-6	
Trichlorofluoromethane	<0.21	ug/L	1.0	0.21	1		07/08/19 12:27	75-69-4	
Vinyl chloride	<0.17	ug/L	1.0	0.17	1		07/08/19 12:27	75-01-4	
Xylene (Total)	<1.5	ug/L	3.0	1.5	1		07/08/19 12:27	1330-20-7	
cis-1,2-Dichloroethene	<0.27	ug/L	1.0	0.27	1		07/08/19 12:27	156-59-2	
cis-1,3-Dichloropropene	<3.6	ug/L	12.1	3.6	1		07/08/19 12:27	10061-01-5	
m&p-Xylene	<0.47	ug/L	2.0	0.47	1		07/08/19 12:27	179601-23-1	
n-Butylbenzene	<0.71	ug/L	2.4	0.71	1		07/08/19 12:27	104-51-8	
n-Propylbenzene	<0.81	ug/L	5.0	0.81	1		07/08/19 12:27	103-65-1	
o-Xylene	<0.26	ug/L	1.0	0.26	1		07/08/19 12:27	95-47-6	
p-Isopropyltoluene	<0.80	ug/L	2.7	0.80	1		07/08/19 12:27	99-87-6	
sec-Butylbenzene	<0.85	ug/L	5.0	0.85	1		07/08/19 12:27	135-98-8	
tert-Butylbenzene	<0.30	ug/L	1.0	0.30	1		07/08/19 12:27	98-06-6	
trans-1,2-Dichloroethene	<1.1	ug/L	3.6	1.1	1		07/08/19 12:27	156-60-5	
trans-1,3-Dichloropropene	<4.4	ug/L	14.6	4.4	1		07/08/19 12:27	10061-02-6	
<b>Surrogates</b>									
Dibromofluoromethane (S)	117	%	70-130		1		07/08/19 12:27	1868-53-7	
Toluene-d8 (S)	103	%	70-130		1		07/08/19 12:27	2037-26-5	
4-Bromofluorobenzene (S)	91	%	70-130		1		07/08/19 12:27	460-00-4	

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: 55929.005 WRR  
Pace Project No.: 40190640

QC Batch: 327174 Analysis Method: EPA 8015B Modified  
QC Batch Method: EPA 8015B Modified Analysis Description: Methane, Ethane, Ethene GCV  
Associated Lab Samples: 40190640001

METHOD BLANK: 1899503 Matrix: Water  
Associated Lab Samples: 40190640001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Ethane	ug/L	<0.58	5.6	07/11/19 09:10	
Ethene	ug/L	<0.52	5.0	07/11/19 09:10	
Methane	ug/L	<1.4	2.8	07/11/19 09:10	

LABORATORY CONTROL SAMPLE & LCSD: 1899504

Parameter	Units	1899505								Qualifiers
		Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	
Ethane	ug/L	53.6	52.9	53.6	99	100	80-120	1	20	
Ethene	ug/L	50	48.9	49.3	98	99	80-120	1	20	
Methane	ug/L	28.6	26.0	26.4	91	93	80-120	2	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1899899

Parameter	Units	1899900										
		40190640001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Ethane	ug/L	10.2	53.6	53.6	61.1	62.3	95	97	80-120	2	20	
Ethene	ug/L	75.8	50	50	129	132	106	112	80-120	3	20	
Methane	ug/L	47.6	28.6	28.6	79.0	80.5	110	115	77-122	2	20	

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### QUALITY CONTROL DATA

Project: 55929.005 WRR  
Pace Project No.: 40190640

QC Batch: 327185	Analysis Method: EPA 6010
QC Batch Method: EPA 6010	Analysis Description: ICP Metals, Trace, Dissolved
Associated Lab Samples: 40190640001	

METHOD BLANK: 1899541 Matrix: Water  
Associated Lab Samples: 40190640001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Iron, Dissolved	ug/L	<35.4	118	07/11/19 08:32	
Manganese, Dissolved	ug/L	<1.1	5.0	07/11/19 08:32	

LABORATORY CONTROL SAMPLE: 1899542

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Iron, Dissolved	ug/L	5000	4760	95	80-120	
Manganese, Dissolved	ug/L	500	467	93	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1899543 1899544

Parameter	Units	40190569001 Result	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	MS Result	Spike Conc.	MSD Result						
Iron, Dissolved	ug/L	<0.035 mg/L	5000	4780	5000	4720	95	94	75-125	1	20	
Manganese, Dissolved	ug/L	0.0054 mg/L	500	469	500	467	93	92	75-125	0	20	

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### QUALITY CONTROL DATA

Project: 55929.005 WRR  
Pace Project No.: 40190640

QC Batch: 326606 Analysis Method: EPA 8260  
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV Oxygenates  
Associated Lab Samples: 40190640001, 40190640002

METHOD BLANK: 1896700 Matrix: Water  
Associated Lab Samples: 40190640001, 40190640002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	<0.27	1.0	07/08/19 17:06	
1,1,1-Trichloroethane	ug/L	<0.24	1.0	07/08/19 17:06	
1,1,2,2-Tetrachloroethane	ug/L	<0.28	1.0	07/08/19 17:06	
1,1,2-Trichloroethane	ug/L	<0.55	5.0	07/08/19 17:06	
1,1-Dichloroethane	ug/L	<0.27	1.0	07/08/19 17:06	
1,1-Dichloroethene	ug/L	<0.24	1.0	07/08/19 17:06	
1,1-Dichloropropene	ug/L	<0.54	1.8	07/08/19 17:06	
1,2,3-Trichlorobenzene	ug/L	<0.63	5.0	07/08/19 17:06	
1,2,3-Trichloropropane	ug/L	<0.59	5.0	07/08/19 17:06	
1,2,4-Trichlorobenzene	ug/L	<0.95	5.0	07/08/19 17:06	
1,2,4-Trimethylbenzene	ug/L	<0.84	2.8	07/08/19 17:06	
1,2-Dibromo-3-chloropropane	ug/L	<1.8	5.9	07/08/19 17:06	
1,2-Dibromoethane (EDB)	ug/L	<0.83	2.8	07/08/19 17:06	
1,2-Dichlorobenzene	ug/L	<0.71	2.4	07/08/19 17:06	
1,2-Dichloroethane	ug/L	<0.28	1.0	07/08/19 17:06	
1,2-Dichloropropane	ug/L	<0.28	1.0	07/08/19 17:06	
1,3,5-Trimethylbenzene	ug/L	<0.87	2.9	07/08/19 17:06	
1,3-Dichlorobenzene	ug/L	<0.63	2.1	07/08/19 17:06	
1,3-Dichloropropane	ug/L	<0.83	2.8	07/08/19 17:06	
1,4-Dichlorobenzene	ug/L	<0.94	3.1	07/08/19 17:06	
2,2-Dichloropropane	ug/L	<2.3	7.6	07/08/19 17:06	
2-Butanone (MEK)	ug/L	<2.9	20.0	07/08/19 17:06	
2-Chlorotoluene	ug/L	<0.93	5.0	07/08/19 17:06	
2-Propanol	ug/L	<28.9	250	07/08/19 17:06	
4-Chlorotoluene	ug/L	<0.76	2.5	07/08/19 17:06	
4-Methyl-2-pentanone (MIBK)	ug/L	<1.5	5.1	07/08/19 17:06	
Acetone	ug/L	<2.7	20.0	07/08/19 17:06	
Benzene	ug/L	<0.25	1.0	07/08/19 17:06	
Bromobenzene	ug/L	<0.24	1.0	07/08/19 17:06	
Bromochloromethane	ug/L	<0.36	5.0	07/08/19 17:06	
Bromodichloromethane	ug/L	<0.36	1.2	07/08/19 17:06	
Bromoform	ug/L	<4.0	13.2	07/08/19 17:06	
Bromomethane	ug/L	<0.97	5.0	07/08/19 17:06	
Carbon tetrachloride	ug/L	<0.17	1.0	07/08/19 17:06	
Chlorobenzene	ug/L	<0.71	2.4	07/08/19 17:06	
Chloroethane	ug/L	<1.3	5.0	07/08/19 17:06	
Chloroform	ug/L	<1.3	5.0	07/08/19 17:06	
Chloromethane	ug/L	<2.2	7.3	07/08/19 17:06	
cis-1,2-Dichloroethene	ug/L	<0.27	1.0	07/08/19 17:06	
cis-1,3-Dichloropropene	ug/L	<3.6	12.1	07/08/19 17:06	
Dibromochloromethane	ug/L	<2.6	8.7	07/08/19 17:06	

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: 55929.005 WRR

Pace Project No.: 40190640

METHOD BLANK: 1896700

Matrix: Water

Associated Lab Samples: 40190640001, 40190640002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Dibromomethane	ug/L	<0.94	3.1	07/08/19 17:06	
Dichlorodifluoromethane	ug/L	<0.50	5.0	07/08/19 17:06	
Diisopropyl ether	ug/L	<1.9	6.3	07/08/19 17:06	
Ethylbenzene	ug/L	<0.22	1.0	07/08/19 17:06	
Hexachloro-1,3-butadiene	ug/L	1.3J	5.0	07/08/19 17:06	
Isopropylbenzene (Cumene)	ug/L	<0.39	5.0	07/08/19 17:06	
m&p-Xylene	ug/L	<0.47	2.0	07/08/19 17:06	
Methyl-tert-butyl ether	ug/L	<1.2	4.2	07/08/19 17:06	
Methylene Chloride	ug/L	<0.58	5.0	07/08/19 17:06	
n-Butylbenzene	ug/L	<0.71	2.4	07/08/19 17:06	
n-Propylbenzene	ug/L	<0.81	5.0	07/08/19 17:06	
Naphthalene	ug/L	<1.2	5.0	07/08/19 17:06	
o-Xylene	ug/L	<0.26	1.0	07/08/19 17:06	
p-Isopropyltoluene	ug/L	<0.80	2.7	07/08/19 17:06	
sec-Butylbenzene	ug/L	<0.85	5.0	07/08/19 17:06	
Styrene	ug/L	<0.47	1.6	07/08/19 17:06	
tert-Butylbenzene	ug/L	<0.30	1.0	07/08/19 17:06	
Tetrachloroethene	ug/L	<0.33	1.1	07/08/19 17:06	
Toluene	ug/L	<0.17	5.0	07/08/19 17:06	
trans-1,2-Dichloroethene	ug/L	<1.1	3.6	07/08/19 17:06	
trans-1,3-Dichloropropene	ug/L	<4.4	14.6	07/08/19 17:06	
Trichloroethene	ug/L	<0.26	1.0	07/08/19 17:06	
Trichlorofluoromethane	ug/L	<0.21	1.0	07/08/19 17:06	
Vinyl chloride	ug/L	<0.17	1.0	07/08/19 17:06	
Xylene (Total)	ug/L	<1.5	3.0	07/08/19 17:06	
4-Bromofluorobenzene (S)	%	97	70-130	07/08/19 17:06	
Dibromofluoromethane (S)	%	98	70-130	07/08/19 17:06	
Toluene-d8 (S)	%	102	70-130	07/08/19 17:06	

LABORATORY CONTROL SAMPLE: 1896701

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/L	50	48.3	97	70-130	
1,1,2,2-Tetrachloroethane	ug/L	50	46.3	93	70-130	
1,1,2-Trichloroethane	ug/L	50	54.4	109	70-130	
1,1-Dichloroethane	ug/L	50	46.2	92	73-150	
1,1-Dichloroethene	ug/L	50	46.1	92	73-138	
1,2,4-Trichlorobenzene	ug/L	50	45.0	90	70-130	
1,2-Dibromo-3-chloropropane	ug/L	50	35.3	71	64-129	
1,2-Dibromoethane (EDB)	ug/L	50	46.2	92	70-130	
1,2-Dichlorobenzene	ug/L	50	47.0	94	70-130	
1,2-Dichloroethane	ug/L	50	48.6	97	75-140	
1,2-Dichloropropane	ug/L	50	57.5	115	73-135	
1,3-Dichlorobenzene	ug/L	50	47.1	94	70-130	

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### QUALITY CONTROL DATA

Project: 55929.005 WRR

Pace Project No.: 40190640

LABORATORY CONTROL SAMPLE: 1896701

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,4-Dichlorobenzene	ug/L	50	48.3	97	70-130	
Benzene	ug/L	50	57.3	115	70-130	
Bromodichloromethane	ug/L	50	52.3	105	70-130	
Bromoform	ug/L	50	41.8	84	68-129	
Bromomethane	ug/L	50	38.0	76	18-159	
Carbon tetrachloride	ug/L	50	47.5	95	70-130	
Chlorobenzene	ug/L	50	51.9	104	70-130	
Chloroethane	ug/L	50	48.0	96	53-147	
Chloroform	ug/L	50	51.4	103	74-136	
Chloromethane	ug/L	50	31.6	63	29-115	
cis-1,2-Dichloroethene	ug/L	50	58.3	117	70-130	
cis-1,3-Dichloropropene	ug/L	50	48.1	96	70-130	
Dibromochloromethane	ug/L	50	44.4	89	70-130	
Dichlorodifluoromethane	ug/L	50	32.9	66	10-130	
Ethylbenzene	ug/L	50	56.6	113	80-124	
Isopropylbenzene (Cumene)	ug/L	50	52.7	105	70-130	
m&p-Xylene	ug/L	100	107	107	70-130	
Methyl-tert-butyl ether	ug/L	50	38.5	77	54-137	
Methylene Chloride	ug/L	50	47.8	96	73-138	
o-Xylene	ug/L	50	51.4	103	70-130	
Styrene	ug/L	50	54.0	108	70-130	
Tetrachloroethene	ug/L	50	55.4	111	70-130	
Toluene	ug/L	50	56.8	114	80-126	
trans-1,2-Dichloroethene	ug/L	50	45.1	90	73-145	
trans-1,3-Dichloropropene	ug/L	50	44.2	88	70-130	
Trichloroethene	ug/L	50	56.2	112	70-130	
Trichlorofluoromethane	ug/L	50	48.3	97	76-147	
Vinyl chloride	ug/L	50	42.4	85	51-120	
Xylene (Total)	ug/L	150	158	105	70-130	
4-Bromofluorobenzene (S)	%			103	70-130	
Dibromofluoromethane (S)	%			97	70-130	
Toluene-d8 (S)	%			103	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1897350 1897351

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40190640002	Spike Conc.	Spike Conc.	Result								
1,1,1-Trichloroethane	ug/L	0.49J	50	50	47.3	49.7	94	98	70-130	5	20		
1,1,2,2-Tetrachloroethane	ug/L	<0.28	50	50	47.1	48.0	94	96	70-130	2	20		
1,1,2-Trichloroethane	ug/L	<0.55	50	50	53.4	55.6	107	111	70-137	4	20		
1,1-Dichloroethane	ug/L	0.37J	50	50	44.9	46.7	89	93	73-153	4	20		
1,1-Dichloroethene	ug/L	<0.24	50	50	44.1	46.5	88	93	73-138	5	20		
1,2,4-Trichlorobenzene	ug/L	<0.95	50	50	45.7	47.7	91	95	70-130	4	20		
1,2-Dibromo-3-chloropropane	ug/L	<1.8	50	50	36.7	39.4	73	79	58-129	7	20		

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: 55929.005 WRR

Pace Project No.: 40190640

Parameter	Units	1897350		1897351		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
		40190640002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result							
1,2-Dibromoethane (EDB)	ug/L	<0.83	50	50	46.2	48.1	92	96	70-130	4	20	
1,2-Dichlorobenzene	ug/L	<0.71	50	50	45.6	47.8	91	96	70-130	5	20	
1,2-Dichloroethane	ug/L	<0.28	50	50	47.0	49.3	94	99	75-140	5	20	
1,2-Dichloropropane	ug/L	<0.28	50	50	55.2	57.3	110	115	71-138	4	20	
1,3-Dichlorobenzene	ug/L	<0.63	50	50	46.1	47.6	92	95	70-130	3	20	
1,4-Dichlorobenzene	ug/L	<0.94	50	50	47.2	49.3	94	99	70-130	4	20	
Benzene	ug/L	<0.25	50	50	55.6	58.1	111	116	70-130	4	20	
Bromodichloromethane	ug/L	<0.36	50	50	50.4	52.6	101	105	70-130	4	20	
Bromoform	ug/L	<4.0	50	50	41.9	43.1	84	86	68-129	3	20	
Bromomethane	ug/L	<0.97	50	50	40.3	41.6	81	83	15-170	3	20	
Carbon tetrachloride	ug/L	<0.17	50	50	46.0	48.3	92	97	70-130	5	20	
Chlorobenzene	ug/L	<0.71	50	50	50.6	52.3	101	105	70-130	3	20	
Chloroethane	ug/L	<1.3	50	50	45.6	45.5	91	91	51-148	0	20	
Chloroform	ug/L	<1.3	50	50	49.7	51.7	99	103	74-136	4	20	
Chloromethane	ug/L	<2.2	50	50	29.7	30.0	59	60	23-115	1	20	
cis-1,2-Dichloroethene	ug/L	0.83J	50	50	57.4	59.5	113	117	70-131	4	20	
cis-1,3-Dichloropropene	ug/L	<3.6	50	50	47.6	49.4	95	99	70-130	4	20	
Dibromochloromethane	ug/L	<2.6	50	50	43.8	45.2	88	90	70-130	3	20	
Dichlorodifluoromethane	ug/L	<0.50	50	50	27.6	30.1	55	60	10-132	9	20	
Ethylbenzene	ug/L	<0.22	50	50	55.4	57.4	110	115	80-125	4	20	
Isopropylbenzene (Cumene)	ug/L	<0.39	50	50	51.4	53.6	103	107	70-130	4	20	
m&p-Xylene	ug/L	<0.47	100	100	104	108	103	108	70-130	4	20	
Methyl-tert-butyl ether	ug/L	<1.2	50	50	38.6	40.1	77	80	51-145	4	20	
Methylene Chloride	ug/L	<0.58	50	50	46.2	48.3	92	96	73-140	4	20	
o-Xylene	ug/L	<0.26	50	50	50.1	52.2	100	104	70-130	4	20	
Styrene	ug/L	<0.47	50	50	52.2	54.8	104	110	70-130	5	20	
Tetrachloroethene	ug/L	<0.33	50	50	53.8	56.4	108	113	70-130	5	20	
Toluene	ug/L	1.8J	50	50	57.3	59.8	111	116	80-131	4	20	
trans-1,2-Dichloroethene	ug/L	<1.1	50	50	44.0	45.4	88	91	73-148	3	20	
trans-1,3-Dichloropropene	ug/L	<4.4	50	50	44.2	45.9	88	92	70-130	4	20	
Trichloroethene	ug/L	<0.26	50	50	53.8	55.7	107	111	70-130	4	20	
Trichlorofluoromethane	ug/L	<0.21	50	50	45.7	48.1	91	96	74-147	5	20	
Vinyl chloride	ug/L	<0.17	50	50	39.5	40.9	79	82	41-129	3	20	
Xylene (Total)	ug/L	<1.5	150	150	154	160	102	107	70-130	4	20	
4-Bromofluorobenzene (S)	%						102	102	70-130			
Dibromofluoromethane (S)	%						96	96	70-130			
Toluene-d8 (S)	%						103	102	70-130			

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### QUALITY CONTROL DATA

Project: 55929.005 WRR

Pace Project No.: 40190640

QC Batch: 326689

Analysis Method: EPA 8260

QC Batch Method: EPA 8260

Analysis Description: 8260 MSV Oxygenates

Associated Lab Samples: 40190640003

METHOD BLANK: 1897291

Matrix: Water

Associated Lab Samples: 40190640003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	<0.27	1.0	07/08/19 08:53	
1,1,1-Trichloroethane	ug/L	<0.24	1.0	07/08/19 08:53	
1,1,2,2-Tetrachloroethane	ug/L	<0.28	1.0	07/08/19 08:53	
1,1,2-Trichloroethane	ug/L	<0.55	5.0	07/08/19 08:53	
1,1-Dichloroethane	ug/L	<0.27	1.0	07/08/19 08:53	
1,1-Dichloroethene	ug/L	<0.24	1.0	07/08/19 08:53	
1,1-Dichloropropene	ug/L	<0.54	1.8	07/08/19 08:53	
1,2,3-Trichlorobenzene	ug/L	<0.63	5.0	07/08/19 08:53	
1,2,3-Trichloropropane	ug/L	<0.59	5.0	07/08/19 08:53	
1,2,4-Trichlorobenzene	ug/L	<0.95	5.0	07/08/19 08:53	
1,2,4-Trimethylbenzene	ug/L	<0.84	2.8	07/08/19 08:53	
1,2-Dibromo-3-chloropropane	ug/L	<1.8	5.9	07/08/19 08:53	
1,2-Dibromoethane (EDB)	ug/L	<0.83	2.8	07/08/19 08:53	
1,2-Dichlorobenzene	ug/L	<0.71	2.4	07/08/19 08:53	
1,2-Dichloroethane	ug/L	<0.28	1.0	07/08/19 08:53	
1,2-Dichloropropane	ug/L	<0.28	1.0	07/08/19 08:53	
1,3,5-Trimethylbenzene	ug/L	<0.87	2.9	07/08/19 08:53	
1,3-Dichlorobenzene	ug/L	<0.63	2.1	07/08/19 08:53	
1,3-Dichloropropane	ug/L	<0.83	2.8	07/08/19 08:53	
1,4-Dichlorobenzene	ug/L	<0.94	3.1	07/08/19 08:53	
2,2-Dichloropropane	ug/L	<2.3	7.6	07/08/19 08:53	
2-Butanone (MEK)	ug/L	<2.9	20.0	07/08/19 08:53	
2-Chlorotoluene	ug/L	<0.93	5.0	07/08/19 08:53	
2-Propanol	ug/L	<28.9	250	07/08/19 08:53	
4-Chlorotoluene	ug/L	<0.76	2.5	07/08/19 08:53	
4-Methyl-2-pentanone (MIBK)	ug/L	<1.5	5.1	07/08/19 08:53	
Acetone	ug/L	<2.7	20.0	07/08/19 08:53	
Benzene	ug/L	<0.25	1.0	07/08/19 08:53	
Bromobenzene	ug/L	<0.24	1.0	07/08/19 08:53	
Bromochloromethane	ug/L	<0.36	5.0	07/08/19 08:53	
Bromodichloromethane	ug/L	<0.36	1.2	07/08/19 08:53	
Bromoform	ug/L	<4.0	13.2	07/08/19 08:53	
Bromomethane	ug/L	<0.97	5.0	07/08/19 08:53	
Carbon tetrachloride	ug/L	<0.17	1.0	07/08/19 08:53	
Chlorobenzene	ug/L	<0.71	2.4	07/08/19 08:53	
Chloroethane	ug/L	<1.3	5.0	07/08/19 08:53	
Chloroform	ug/L	<1.3	5.0	07/08/19 08:53	
Chloromethane	ug/L	<2.2	7.3	07/08/19 08:53	
cis-1,2-Dichloroethene	ug/L	<0.27	1.0	07/08/19 08:53	
cis-1,3-Dichloropropene	ug/L	<3.6	12.1	07/08/19 08:53	
Dibromochloromethane	ug/L	<2.6	8.7	07/08/19 08:53	

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### QUALITY CONTROL DATA

Project: 55929.005 WRR

Pace Project No.: 40190640

METHOD BLANK: 1897291

Matrix: Water

Associated Lab Samples: 40190640003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Dibromomethane	ug/L	<0.94	3.1	07/08/19 08:53	
Dichlorodifluoromethane	ug/L	<0.50	5.0	07/08/19 08:53	
Diisopropyl ether	ug/L	<1.9	6.3	07/08/19 08:53	
Ethylbenzene	ug/L	<0.22	1.0	07/08/19 08:53	
Hexachloro-1,3-butadiene	ug/L	<1.2	5.0	07/08/19 08:53	
Isopropylbenzene (Cumene)	ug/L	<0.39	5.0	07/08/19 08:53	
m&p-Xylene	ug/L	<0.47	2.0	07/08/19 08:53	
Methyl-tert-butyl ether	ug/L	<1.2	4.2	07/08/19 08:53	
Methylene Chloride	ug/L	<0.58	5.0	07/08/19 08:53	
n-Butylbenzene	ug/L	<0.71	2.4	07/08/19 08:53	
n-Propylbenzene	ug/L	<0.81	5.0	07/08/19 08:53	
Naphthalene	ug/L	<1.2	5.0	07/08/19 08:53	
o-Xylene	ug/L	<0.26	1.0	07/08/19 08:53	
p-Isopropyltoluene	ug/L	<0.80	2.7	07/08/19 08:53	
sec-Butylbenzene	ug/L	<0.85	5.0	07/08/19 08:53	
Styrene	ug/L	<0.47	1.6	07/08/19 08:53	
tert-Butylbenzene	ug/L	<0.30	1.0	07/08/19 08:53	
Tetrachloroethene	ug/L	<0.33	1.1	07/08/19 08:53	
Toluene	ug/L	<0.17	5.0	07/08/19 08:53	
trans-1,2-Dichloroethene	ug/L	<1.1	3.6	07/08/19 08:53	
trans-1,3-Dichloropropene	ug/L	<4.4	14.6	07/08/19 08:53	
Trichloroethene	ug/L	<0.26	1.0	07/08/19 08:53	
Trichlorofluoromethane	ug/L	<0.21	1.0	07/08/19 08:53	
Vinyl chloride	ug/L	<0.17	1.0	07/08/19 08:53	
Xylene (Total)	ug/L	<1.5	3.0	07/08/19 08:53	
4-Bromofluorobenzene (S)	%	93	70-130	07/08/19 08:53	
Dibromofluoromethane (S)	%	109	70-130	07/08/19 08:53	
Toluene-d8 (S)	%	106	70-130	07/08/19 08:53	

LABORATORY CONTROL SAMPLE: 1897292

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/L	50	53.5	107	70-130	
1,1,2,2-Tetrachloroethane	ug/L	50	51.1	102	70-130	
1,1,2-Trichloroethane	ug/L	50	50.8	102	70-130	
1,1-Dichloroethane	ug/L	50	52.3	105	73-150	
1,1-Dichloroethene	ug/L	50	65.3	131	73-138	
1,2,4-Trichlorobenzene	ug/L	50	45.3	91	70-130	
1,2-Dibromo-3-chloropropane	ug/L	50	41.7	83	64-129	
1,2-Dibromoethane (EDB)	ug/L	50	48.7	97	70-130	
1,2-Dichlorobenzene	ug/L	50	47.1	94	70-130	
1,2-Dichloroethane	ug/L	50	53.4	107	75-140	
1,2-Dichloropropane	ug/L	50	48.5	97	73-135	
1,3-Dichlorobenzene	ug/L	50	46.5	93	70-130	

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### QUALITY CONTROL DATA

Project: 55929.005 WRR

Pace Project No.: 40190640

LABORATORY CONTROL SAMPLE: 1897292

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,4-Dichlorobenzene	ug/L	50	47.1	94	70-130	
Benzene	ug/L	50	55.8	112	70-130	
Bromodichloromethane	ug/L	50	49.6	99	70-130	
Bromoform	ug/L	50	39.3	79	68-129	
Bromomethane	ug/L	50	48.5	97	18-159	
Carbon tetrachloride	ug/L	50	51.9	104	70-130	
Chlorobenzene	ug/L	50	50.0	100	70-130	
Chloroethane	ug/L	50	66.9	134	53-147	
Chloroform	ug/L	50	53.7	107	74-136	
Chloromethane	ug/L	50	46.9	94	29-115	
cis-1,2-Dichloroethene	ug/L	50	53.3	107	70-130	
cis-1,3-Dichloropropene	ug/L	50	45.6	91	70-130	
Dibromochloromethane	ug/L	50	43.6	87	70-130	
Dichlorodifluoromethane	ug/L	50	49.5	99	10-130	
Ethylbenzene	ug/L	50	52.0	104	80-124	
Isopropylbenzene (Cumene)	ug/L	50	53.7	107	70-130	
m&p-Xylene	ug/L	100	106	106	70-130	
Methyl-tert-butyl ether	ug/L	50	45.1	90	54-137	
Methylene Chloride	ug/L	50	53.5	107	73-138	
o-Xylene	ug/L	50	52.7	105	70-130	
Styrene	ug/L	50	53.4	107	70-130	
Tetrachloroethene	ug/L	50	53.3	107	70-130	
Toluene	ug/L	50	52.6	105	80-126	
trans-1,2-Dichloroethene	ug/L	50	57.5	115	73-145	
trans-1,3-Dichloropropene	ug/L	50	41.4	83	70-130	
Trichloroethene	ug/L	50	54.0	108	70-130	
Trichlorofluoromethane	ug/L	50	63.4	127	76-147	
Vinyl chloride	ug/L	50	60.0	120	51-120	
Xylene (Total)	ug/L	150	159	106	70-130	
4-Bromofluorobenzene (S)	%			106	70-130	
Dibromofluoromethane (S)	%			116	70-130	
Toluene-d8 (S)	%			107	70-130	

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### QUALITY CONTROL DATA

Project: 55929.005 WRR  
Pace Project No.: 40190640

QC Batch: 326817 Analysis Method: EPA 300.0  
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions  
Associated Lab Samples: 40190640001

METHOD BLANK: 1897713 Matrix: Water  
Associated Lab Samples: 40190640001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Sulfate	mg/L	<1.0	3.0	07/09/19 13:56	

LABORATORY CONTROL SAMPLE: 1897714

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	20	20.0	100	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1897715 1897716

Parameter	Units	40190628004 Result	MS	MSD	MS	MSD	MS	MSD	% Rec	Limits	RPD	Max RPD	Qual
			Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec					
Sulfate	mg/L	186	1000	1000	1260	1150	108	97	90-110	9	15		

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1897717 1897718

Parameter	Units	40190712001 Result	MS	MSD	MS	MSD	MS	MSD	% Rec	Limits	RPD	Max RPD	Qual
			Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec					
Sulfate	mg/L	250	200	200	428	430	89	90	90-110	0	15	M0	

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### QUALITY CONTROL DATA

Project: 55929.005 WRR  
Pace Project No.: 40190640

QC Batch: 326828 Analysis Method: EPA 310.2  
QC Batch Method: EPA 310.2 Analysis Description: 310.2 Alkalinity  
Associated Lab Samples: 40190640001

METHOD BLANK: 1897757 Matrix: Water  
Associated Lab Samples: 40190640001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Total as CaCO <sub>3</sub>	mg/L	<7.0	23.5	07/09/19 10:46	

LABORATORY CONTROL SAMPLE: 1897758

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO <sub>3</sub>	mg/L	100	98.1	98	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1897759 1897760

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40190197005 Result	Spike Conc.	Spike Conc.	Conc.								
Alkalinity, Total as CaCO <sub>3</sub>	mg/L	194	200	200	395	383	100	95	90-110	3	20		

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1897761 1897762

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40190640001 Result	Spike Conc.	Spike Conc.	Conc.								
Alkalinity, Total as CaCO <sub>3</sub>	mg/L	140	500	500	604	624	93	97	90-110	3	20		

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### QUALITY CONTROL DATA

Project: 55929.005 WRR

Pace Project No.: 40190640

QC Batch: 327714

Analysis Method: SM 5310C

QC Batch Method: SM 5310C

Analysis Description: 5310C Total Organic Carbon

Associated Lab Samples: 40190640001

METHOD BLANK: 1902918

Matrix: Water

Associated Lab Samples: 40190640001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Organic Carbon	mg/L	<0.25	0.84	07/18/19 07:23	

LABORATORY CONTROL SAMPLE: 1902919

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	2.5	2.5	99	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1902920 1902921

Parameter	Units	MS		MSD		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		Result	Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec					
Total Organic Carbon	mg/L	1.6	1	1	2.6	2.6	98	102	80-120	2	10		

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## QUALIFIERS

Project: 55929.005 WRR

Pace Project No.: 40190640

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### 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 LOD.

J - Estimated concentration at or above the LOD and below the LOQ.

LOD - Limit of Detection adjusted for dilution factor, percent moisture, initial weight and final volume.

LOQ - Limit of Quantitation adjusted for dilution factor, percent moisture, initial weight and final volume.

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 at or above the adjusted LOD.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

### ANALYTE QUALIFIERS

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

M0 Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 55929.005 WRR

Pace Project No.: 40190640

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40190640001	SVE-4	EPA 8015B Modified	327174		
40190640001	SVE-4	EPA 6010	327185		
40190640001	SVE-4	EPA 8260	326606		
40190640002	RW-8	EPA 8260	326606		
40190640003	TRIP BLANK	EPA 8260	326689		
40190640001	SVE-4	EPA 300.0	326817		
40190640001	SVE-4	EPA 310.2	326828		
40190640001	SVE-4	SM 5310C	327714		

### REPORT OF LABORATORY ANALYSIS

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without the written consent of Pace Analytical Services, LLC.



(Please Print Clearly)

UPPER MIDWEST REGION

MN: 612-607-1700 WI: 920-469-2436



### CHAIN OF CUSTODY

**\*Preservation Codes**  
 A=None B=HCL C=H2SO4 D=HNO3 E=DI Water F=Methanol G=NaOH  
 H=Sodium Bisulfate Solution I=Sodium Thiosulfate J=Other

FILTERED?  
(YES/NO)  
  
 PRESERVATION  
(CODE)\*

Y/N	N	N	N	X	N						
Pick Letter	B	A	B	D	C						
Analyses Requested	VOCs	Alkalinity/sulfate	methane, ethane, and ethene (MEB)	Metals dissolved Fe & Mn	TOC by 5310						

Company Name: Gannett Fleming, Inc  
 Branch/Location: Madison WI  
 Project Contact: Anthony Miller  
 Phone: 608/836-1500 x 6716  
 Project Number: 55929.005  
 Project Name: WRR  
 Project State: WI  
 Sampled By (Print): Cliff Wright  
 Sampled By (Sign): \_\_\_\_\_  
 PO #: \_\_\_\_\_ Regulatory Program: \_\_\_\_\_

**Data Package Options** (billable)  
 EPA Level III  
 EPA Level IV

**MS/MSD**  
 On your sample (billable)  
 NOT needed on your sample

**Matrix Codes**  
 A = Air W = Water  
 B = Biota DW = Drinking Water  
 C = Charcoal GW = Ground Water  
 O = Oil SW = Surface Water  
 S = Soil WW = Waste Water  
 SI = Sludge WP = Wipe

PACE LAB #	CLIENT FIELD ID	COLLECTION		MATRIX
		DATE	TIME	
001	SNE-4	7-2-19	10:15	GW
002	RW-90	"	11:55	M

Quote #: Pace 2019  
 Mail To Contact: Anthony Miller  
 Mail To Company: Gannett Fleming, Inc  
 Mail To Address: 8040 Excelsior Dr, #302  
Madison WI 53717-1338  
 Invoice To Contact: Same as "Mail To" above  
 Invoice To Company: \_\_\_\_\_  
 Invoice To Address: \_\_\_\_\_  
 Invoice To Phone: 608/836-1500 x 6716

CLIENT COMMENTS: \_\_\_\_\_  
 LAB COMMENTS (Lab Use Only): \_\_\_\_\_  
 Profile #: \_\_\_\_\_

Rush Turnaround Time Requested - Prelims  
 (Rush TAT subject to approval/surcharge)  
 Date Needed: \_\_\_\_\_  
 Transmit Prelim Rush Results by (complete what you want): \_\_\_\_\_  
 Email #1: \_\_\_\_\_  
 Email #2: \_\_\_\_\_  
 Telephone: \_\_\_\_\_  
 Fax: \_\_\_\_\_  
 Samples on HOLD are subject to special pricing and release of liability

Relinquished By: <u>CW</u> Date/Time: <u>7-2-19 12:45</u>	Received By: _____ Date/Time: _____
Relinquished By: <u>Fedex</u> Date/Time: <u>7/3/19 0915</u>	Received By: <u>Rose Vargas</u> Date/Time: <u>7/3/19 0915</u>
Relinquished By: _____ Date/Time: _____	Received By: _____ Date/Time: _____
Relinquished By: _____ Date/Time: _____	Received By: _____ Date/Time: _____

PACE Project No. 40190640  
 Receipt Temp = 20.2 °C  
 Sample Receipt pH (OK) Adjusted  
 Cooler Custody Seal (Present) Not Present Intact/ Not Intact

40190640





1241 Bellevue Street, Green Bay, WI 54302

Document Name:  
Sample Condition Upon Receipt (SCUR)

Document Revised: 25Apr2018

Document No.:  
F-GB-C-031-Rev.07

Issuing Authority:  
Pace Green Bay Quality Office

### Sample Condition Upon Receipt Form (SCUR)

Client Name: Garret Striag

Project #:

WO#: **40190640**

Courier:  CS Logistics  Fed Ex  Speedee  UPS  Waltco  
 Client  Pace Other: \_\_\_\_\_



Tracking #: 814690266826

Custody Seal on Cooler/Box Present:  yes  no Seals intact:  yes  no

Custody Seal on Samples Present:  yes  no Seals intact:  yes  no

Packing Material:  Bubble Wrap  Bubble Bags  None  Other

Thermometer Used SR - N/A Type of Ice: Wet Blue Dry None  Samples on ice, cooling process has begun

Cooler Temperature Uncorr: ROT /Corr: \_\_\_\_\_

Temp Blank Present:  yes  no

Biological Tissue is Frozen:  yes  no

Person examining contents:

Date: 7/3/2019

Initials: JU

Temp should be above freezing to 6°C.  
Biota Samples may be received at ≤ 0°C.

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5.
- VOA Samples frozen upon receipt	<input type="checkbox"/> Yes <input type="checkbox"/> No	Date/Time:
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	7.
Sufficient Volume:		8.
For Analysis: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No MS/MSD: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A		
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
-Pace Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	returned 11 unused vials 4 Trip blanks returned
-Pace IR Containers Used:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis Matrix: <u>W</u>		
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased):		

**Client Notification/ Resolution:**

If checked, see attached form for additional comments

Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Comments/ Resolution: \_\_\_\_\_

Project Manager Review: [Signature]

Date: 07/03/19