



2018 SECOND QUARTERLY GROUNDWATER MONITORING REPORT

**Former Hygrade Polishing and Plating Company
22-07 41st Avenue
Long Island City, NY 11101
BCP Site No. C241148**

October 22, 2018

Prepared for:

**Stalingrad Ventures, LLC
100 Field Street
West Babylon, NY 11704**

Prepared by:

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October 22, 2018

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New York State Department of Environmental Conservation
Division of Environmental Remediation
1 Hunter's Point Plaza
47-40 21st Street
Long Island City, NY 11101-5407

Attn: Wendi Zheng

**Re: 2018 Second Quarterly Groundwater Monitoring Report
Former Hygrade Polishing and Plating Co.
22-07 41st Avenue
Long Island City, NY 11101
BCP Site No.: C241148**

Dear Ms. Zheng:

Amec Environment & Engineering, PC is pleased to present this quarterly monitoring report for the first round of quarterly groundwater sampling at the above-referenced facility. The sampling occurred in July 2018. The following report details the field activities and results associated with this event.

If you have any questions, please do not hesitate to call our Office.

Respectfully,

Amec Environment & Engineering, PC

A handwritten signature in blue ink that reads "Jazmin Logan".

Jazmin Logan
Project Geologist

A handwritten signature in blue ink that reads "Eric A. Weinstock".

Eric A. Weinstock
Principal Scientist

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LIST OF ACRONYMS AND ABBREVIATIONS

Amec	Amec Environment & Engineering, PC
BCP	Brownfield Cleanup Program
BMW	Basement Monitoring Well
Cis 1,2-DCE	Cis 1,2-Dichloroethene
COC	Contaminants of Concern
DHC	Dehalococcoides
ft ²	square feet
Hygrade	Hygrade Polishing and Plating
IRM	Interim Remedial measure
NYS	New York State
NYCDEP	New York City Department of Environmental Protection
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
MW	Monitoring Well
PCB	Polychlorinated Biphenyls
PCE	Perchloroethene (a.k.a. Tetrachloroethene)
PFAS	Per and Polyfluoroalkyl Substances
SVOCs	Semi Volatile Organic Compound
TAL	Target Analyte List
TCE	Trichloroethene
TOGS	Technical & Operational Guidance Series
VOCs	Volatile Organic Compound

1.0 INTRODUCTION

Amec Environment & Engineering, PC (Amec) prepared this Quarterly Groundwater Monitoring Report on behalf of Stalingrad Ventures, LLC for the former Hygrade Polishing and Plating (Hygrade) property located in at 22-07 41st Avenue, Long Island City, NY (the Site). The site location is shown on Figure 1. This monitoring program was completed in accordance with an Interim Remedial Measures (IRM) Work Plan dated May 17, 2017 (Ref. 1) and approved by the New York State Department of Environmental Conservation (NYSDEC).

1.1 SITE DESCRIPTION

The Site currently encompasses a 100 foot by 25 foot property developed with a four-story office building and basement level that covers the entirety of the lot. The NYC Tax Map designates the Site as Queens County; Block: 409; Lot: 6. The neighborhood surrounding the subject property consists of a highly urbanized area of Long Island City with adjacent properties consisting of commercial and industrial land use.

1.2 BACKGROUND

The subject property was first developed with the current building circa 1920s. In 1962, Hygrade purchased the subject property to operate their metal polishing and electroplating facility. The operations consisted of plating finishes performed at the former Hygrade facility included chromium, brass (copper & zinc), nickel, and zinc. This process involved gathering parts placed in baskets or hung on racks. The parts would then be dipped in various baths containing alkaline, plating solutions, stripping solutions, and rinses. As a result of these processes, wastewater was generated. The wastewater was treated onsite using a wastewater treatment unit. The treated wastewater was then discharged to the New York City municipal sewer system.

Plating and polishing operations ceased around March 2013 when Stalingrad Ventures, LLC (the current owner) purchased the property. Upon purchase of the subject property, the current owner performed a cleanup of the Hygrade facility under a New York City Department of Environmental Protection (NYCDEP) Commissioner's Order that had been issued to the former owner.

Stalingrad Ventures, LLC continued cleaning up and restoring the building after the NYCDEP Commissioner's Order was satisfied. This included removing the concrete surfacing from the walls, washing and resurfacing the floors, removal of approximately 581 tons of soil from the

basement and replacing it with sand. In 2015, Stalingrad Ventures, LLC entered into a Brownfield Cleanup Agreement for the site.

A Remedial Investigation completed under this program revealed that elevated levels of chlorinated Volatile Organic Compounds (VOCs) and metals were present in the groundwater beneath the building and isolated to the shallow water table. Furthermore, previous investigations (by Amec and others) identified the northerly portion of the Site (in the area of wells of BMW-1 and BMW-2) as containing the highest concentration of metal contaminants and the southerly portion of the Site (in the area of wells of BMW-3 and BMW-4) as containing the highest concentration of VOCs contaminants. The remedial investigation established that the groundwater contamination decreased significantly in off-site groundwater wells collected on the northeast corner of 22nd Street and 41st Avenue.

In December 2017, as part of the NYSDEC-approved IRM, Amec treated the groundwater beneath the basement floor using in-situ injections. The injections consisted of two different bio-remediation products. In the northerly portion of the Site, where the metals were prevalent, Peroxychem Metafix® was applied as part of the injection program. In the southerly portion of the Site, where the VOCs were prevalent, Peroxychem EHC® was applied as part of the injection program. Details of the injection program are described in the IRM Construction Completion Report which is currently in preparation. As part of the injection program, wells BMW-1 through BMW-4 were abandoned to prevent any short circuiting of the injection products. These wells were re-installed after the completion of the injection program.

In April 2018, Amec completed the first Quarterly Groundwater Monitoring program at the Site. The laboratory analytical results collected from this first round of monitoring indicated that the December 2017 bio-remediation program was very effective in addressing the VOCs and Metal contamination at the subject property. The concentrations of both VOCs and Metals in the groundwater displayed a significant decrease since the products were injected.

1.3 CONTAMINANTS OF CONCERNS

The contaminants of concern (COCs) in the groundwater below the Site are the VOCs which are identified as tetrachloroethene (PCE), trichloroethene (TCE), cis-1,2 dichloroethene (cis 1,2-DCE), and vinyl chloride. With respect to metals, the COCs at the Site are identified as Cadmium,

Chromium, and to a lesser degree, Nickel. More recently, Per and Polyfluoroalkyl Substances (PFAS) compounds have also become a COC.

2.0 FIELD PROCEDURES

An Amec field crew mobilized to the Site on July 26 and 27, 2018 to complete this quarterly groundwater sampling event. The groundwater monitoring wells were sampled using low-flow sampling procedures. A Geotech™ brand peristaltic pump was used to evacuate the water from the wells. New high density polyethylene (HDPE) tubing was used for the collection of each sample. The wells were purged at a rate of 100 and 500 ml per minute. Temperature, specific conductance, pH, dissolved oxygen, turbidity and redox were recorded as the well was pumped. These readings were logged on field forms and are included in Appendix A. The purged water was contained in 5-gallon plastic pails and staged in the basement pending disposal.

Water level indicators were decontaminated with Alconox and laboratory-issued contaminant and PFAS-free certified water after use at each monitoring well location. All other downhole equipment/material were designated for each monitoring well location.

Groundwater samples collected from the on-site basement wells include BMW-1, BMW-2, BMW-3, and BMW-4. Groundwater collected from the downgradient off-site wells include MW-5, MW-6S, and MW-6D. Lastly, a groundwater sample was collected from the upgradient monitoring well MW-E. A sample location map depicting the locations of the groundwater monitoring wells is included in Figure 2.

3.0 LABORATORY ANALYTICAL DATA

Amec subcontracted analytical laboratory, Alpha Analytical of Westborough, MA (an ELAP-certified laboratory) for analysis of Volatile Organic Compounds (VOCs), TAL Metals (both dissolved and total) and PFAS (1,4 dioxane was included in a previous round of sampling and was not detected in the samples). For the purposes of tracking the progress of the December 2017 injection program, water samples were also collected for microbial and geochemical analysis. All groundwater samples remained in a cooler with ice until delivered to the laboratory.

The laboratory analytical results were tabulated and compared to the NYSDEC Technical Operational TOGS Ambient Water Quality Standards (NY TOGS standard) (if applicable). The following sections summarizes the results.

3.1 VOLATILE ORGANIC COMPOUNDS

Basement Sample Locations – The laboratory report indicates that the site-related VOCs contaminants are still present in the basement at low concentrations, similar to the previous Quarterly Sampling event conducted in April 2018. Using EPA method 8260C, TCE, cis 1,2-DCE and vinyl chloride were detected in the water samples collected from the four basement monitoring wells. However, the detections of PCE in all four wells were below NY TOGS groundwater standards. The remaining three VOC COCs were detected above the NY TOGS standards in three of the four basement monitoring wells. There were no exceedances of the TOGS Standards in two of the wells. The following summarizes the concentrations of VOC contaminants for the basement monitoring wells.

-) PCE was detected in water samples collected from wells BMW-1, BMW-2, and BMW-4 at concentrations below the NY TOGS standard of 5 ug/l. It was not detected in well BMW-3, the well that initially had the highest concentration of this compound. For comparison, the groundwater from basement monitoring well BMW-3 had a concentration of 20,700 ug/l of PCE on March 27, 2014 and on July 26, 2018 had a value of non-detect.
-) TCE was detected in all four basement wells with detections exceeding the NY TOGS standard of 5 ug/l only in the water sample collected from well BMW-3. For comparison, the groundwater from well BMW-3 had a concentration of 2,600 ug/l of TCE on February 19, 2014 and on July 26, 2018 had a value of 5.5 ug/l.
-) Cis 1,2-DCE was detected in water samples collected from all four basement monitoring wells with exceedances above the NY TOGS standard of 5 ug/l in the water samples collected at BMW-3 and BMW-4. For comparison, the groundwater from well BMW-3 had a cis 1,2-DCE concentration of 2,600 ug/l on February 19, 2014 and on July 26, 2018 had a value of 180 ug/l.
-) Vinyl Chloride was detected in water samples collected from all four basement monitoring wells with exceedances above the NY TOGS standard of 2 ug/l in the water samples collected at BMW-3 and BMW-4 at concentrations of 47 ug/l and 3.1 ug/l; respectively.. For comparison, the groundwater from well BMW-3 had a concentration of 1,070 ug/l of VC on February 19, 2014 and on July 26, 2018 had a value of 47 ug/l.
-) 2-Butanone (also known as Methyl Ethyl Ketone or MEK) was detected above the NY TOGS standards for water samples collected from BMW-3. However, this is believed to be

attributed to the PVC glue used to repair these wells after the EHC injection process was completed.

- J) Acetone was detected for samples collected at BMW-3 but this may be attributed to a laboratory cleaning agents or to the PVC glue used at the site.

Sidewalk Sample Locations – The site-related VOCs contaminants, PCE, TCE, and cis 1,2-DCE, were detected in the water samples from the downgradient monitoring wells located in the sidewalk at low concentrations and below the NY TOG Standards in wells MW-5 and MW-6D. Vinyl Chloride was detected in the water samples from the downgradient monitoring wells located in the sidewalk at low concentrations and below the NY TOG Standards in wells MW-6S and MW-6D. The VOCs PCE, TCE, and cis 1,2-DCE, were detected at concentrations exceeding the NY TOGS Standard for the sample collected from well MW-6S. Well MW-6S is a water table well located directly downgradient of basement monitoring well BMW-3, the well that has historically displayed the highest levels of VOC contamination. In addition, the VOC, acrylonitrile was detected at in the water sample from well MW-6S above the NY TOGS Standards. Acrylonitrile was not detected in the basement monitoring wells and has not been identified as a site-related VOC. There were no detections above the NY TOGS standards for the upgradient monitoring well, MW-E.

The laboratory results for VOCs are tabulated on Table 1.

3.2 TAL METALS

Basement Sample Locations – The laboratory data indicates site-related metal contaminants are still present in the basement at similar concentrations to the previous Quarterly Sampling event conducted in April 2018. Cadmium was only detected in excess of the NY TOGS standard of 5 ug/l in the water sample collected from well BMW-2. Nickel was only detected in excess of the NY TOGS standard of 100 ug/l in the water samples collected from BMW-2 and BMW-3. Chromium was not detected in excess of the NY TOGS of 50 ug/l in any of the water samples collected from the basement monitoring wells. For comparison, the groundwater from well BMW-2 had a Chromium concentration of 4,120 ug/l on March 27, 2014 and on July 27, 2018 had a value of 1.85 ug/l.

The naturally occurring metals iron, magnesium, manganese, and sodium were detected at concentrations in excess of the NY TOGS standards in the water samples collected from the basement monitoring wells. This is typical in urban areas like Queens.

Sidewalk Sample Locations – The same naturally occurring metals detected above NY TOGS standards in the water samples collected from the basement monitoring wells – iron, magnesium, manganese and sodium -- were also detected in the wells located in the sidewalk. The site-related metal contaminants, cadmium, chromium and nickel, were not detected above the NY TOGS standards in the samples collected from the downgradient and upgradient sidewalk wells.

The laboratory results for TAL metals are tabulated on Table 2.

3.3 PFAS

As of the date of this report, there are no applicable New York State standard in which to compare PFAS levels to. In May 2016, the United States Environmental Protection Agency (EPA) established drinking water health advisory of 0.07 ppb for the combined concentrations of Perfluorooctanoic Acid (PFOA) and Perfluorooctanesulfonic Acid (PFOS) and 400 ppb for Perfluorobutane Sulfonate (PFBS). The concentration of the combined value of PFOA and PFOS exceeded the EPA health advisory (HA) in water samples collected from all monitoring well locations including the upgradient well. The greatest concentrations were detected below the building in samples collected from basement monitoring wells BMW-3 and BMW-4, the wells that had historically displayed the highest VOC detections. None of the groundwater results exceed the EPA drinking water advisory for PFBS.

The laboratory results for PFAS are tabulated on Table 3.

3.4 BACTERIAL ANALYSIS

A water sample was collected from BMW-3 for the bacterial analysis of Dehalococcoides (DHC) and the associated functional genes (BVC, TCR, and VCR), bacteria that have been shown to degrade chlorinated solvents. The sample was submitted to Microbial Insights, Inc. of Knoxville, Tennessee. The aforementioned bacteria have the capability to reduce the concentration of various chlorinated VOCs such as PCE, TCE, and vinyl chloride through bacterial consumption.

The laboratory report indicated that the DHC and the corresponding functional genes were detected. DHC was detected at a level of 7.22×10^{-4} cells/mL. The corresponding functional genes were detected at concentrations between 3.75×10^{-3} cells/mL and 2.47×10^{-4} cells/mL. For comparison, the water sample collected from BMW-3 in November 2016, detected DHC and BVC at 0.3 cells/mL (TCR and VCR were non-detect). Subsequently, the water sample collected from BMW-3 during the April 2018 sampling event indicated that DHC and the associated functional were not detected at a detection level of 5.0×10^{-1} cell/mL. It is believed that the aquifer around this well were disturbed when the well was replaced during the EHC injection program. Since that time, the bacterial appear to be thriving.

3.5 GEOCHEMICAL ANALYSIS

Water samples were collected from BMW-2 and BMW-3 to evaluate the geochemistry of the groundwater and further assess the efficiency of the December 2017 injection program. A water sample collected from BMW-2 was collected and submitted for analysis of chloride, nitrogen / nitrate, sulfate, alkalinity, and hardness. A water sample collected from BMW-3 was collected and submitted for chloride, nitrogen / nitrate, sulfate, alkalinity, methane, ethene, ethane, total organic carbon, and dissolved organic carbon. The results of the geochemical parameters are tabulated in Table 4.

Ethene, and ethane are known degradation products of chlorinated solvents. In this case, a water sample collected from BMW-3 detected the presence of these compounds at concentrations ranging from 0.807 to 10.1 ug/l, indicating that completed degradation of the chlorinated solvents is occurring. Methane, a key indicator of bacterial activity was also detected at 788 ug/l. Chloride formation is a direct measurement of reductive dechlorination process provided there are no high background chloride concentrations nor the water used for injecting the substrate had high levels of chlorine in it. In this case, chloride was detected at a concentration of 442,000 ug/l and 190,000 ug/l for the water samples collected BMW-2 and BMW-3 respectively. Nitrate and sulfate are known to be key components of the dechlorination process indicating that reducing conditions are established in the reactive zone. In this case, the water samples collected from BMW-1 and BMW-3 indicated that these compounds are present in the groundwater, however, nitrate and sulfate concentrations need to display a reduction over time to indicate reductive zones are being established. Lastly, total organic carbon and dissolved organic carbon are known to provide substrate for microbes known to degrade chlorinated solvents. A concentration of 20,000 ug/l of total organic carbon in water is understood to support reductive dechlorination. In this case, a

water sample collected from BMW-2 indicated that total organic carbon and dissolved organic carbon are present concentrations of 5,000 ug/l indicating substrate for microbes is present in the water but not at concentrations to confirm reductive dechlorination.

4.0 DISCUSSION

VOCs and TAL Metals:

Tables 5 and 6 summarizes the concentration of site-related contaminants from previous groundwater investigations (by Amec and others) performed at the subject property. Figures 3 and 4 illustrates the concentration of site related VOCs and Metals over time for each well location.

The laboratory analytical results for the sampling conducted in April 2018 indicated that the December 2017 injection program was effective in reducing the concentration of contaminants significantly, many to concentrations of non-detect or below the NYTOGS standard. The water samples collected from BMW-3 and BMW-4 during the July 2018 event show a slight increase of cis-1,2-DCE and vinyl chloride from the previous round of sampling possibly indicating the breakdown of the parent products; PCE and TCE. Overall, the laboratory analytical results for the sampling conducted in July 2018 display similar concentrations to those seen in the previous sampling event. The detection of methane is an indication of bacterial activity. The detections of ethane and ethane indicate complete destruction of the chlorinated compounds is occurring.

PFAS

The groundwater beneath the site was first collected for PFAS analysis during the previous sampling event in April 2018. The laboratory analytical data revealed presence of PFAS above the EPA drinking water advisory. PFAS levels were highest underneath the basement and decreases in the direction of the downgradient wells. Based on the results from the April 2018 sampling event, the underlying groundwater will continue to be monitored for PFAS. As shown on Table 7, the laboratory analytical results for the sampling conducted in July 2018 display similar concentrations to those seen in the previous sampling event.

Bacteria and Geochemical Parameters

The laboratory analytical results from this sampling event showed that dechlorinating bacteria is present in the groundwater. In addition, geochemical data collected for the groundwater strongly suggests that degradation processes are occurring. The data of the bacterial analysis in

conjunction with the data of the geochemical parameters suggests that microbes in the groundwater are effective in the reductive dechlorination of contaminants at the site.

Direction of Ground Water Flow

Based on the elevation of the groundwater measured in the upgradient and downgradient monitoring wells, the direction of groundwater flow is to the west. The measured water table elevation are included on Table 8. A site-specific water table map is indicated on Figure 6.

5.0 CONCLUSION

Laboratory analytical results collected during this quarterly round of monitoring display similar concentrations of VOCs and metals to those detected in the previous sampling event conducted in April 2018. Since the previous event, the concentration of the breakdown products of site-related VOCs has slightly increased, the dechlorinating microbes are present in the groundwater, and the geochemistry of the groundwater suggests that the reductive dechlorination is occurring. Continued monitoring is recommend to confirm that these constituents continue to decrease in concentration over time.

PFAS constituents were detected at similar concentration to those detected during the previous sampling event conducted in April 2018. These detections exceed the EPA's health advisory for drinking water supplies. This area of Queens is serviced by reservoirs located in upstate New York and the basement is sealed with a new 8-inch thick concrete slab. Therefore, there are no current receptors affected by the presence of PFAS. At the request of the NYSDEC, an Alternatives Analysis for PFAS remediation is being performed.

REFERENCES

1. Amec (June 2018) 2018 First Quarterly Groundwater Monitoring Report, Former Hygrade Polishing and Plating Co., 22-07 41st Avenue, Long Island City, NY 11101
2. Amec (May 2017) Interim Remedial Measure Plan, Former Hygrade Polishing and Plating Co., 22-07 41st Avenue, Long Island City, NY 11101
3. CA RICH (June 2016) Remedial Investigation Work Plan, Former Hygrade Polishing and Plating Site, 22-07 41st Avenue, Long Island City, NY BCP Site No.: C241148.
4. Julian Soren (February 1978) Subsurface Geology and Paleogeography of Queens County, Long Island, NY USGS Water-Resources Investigation 77-34, Open-File Report.
5. NYSDEC (June 1998) Technical Operational TOGS Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations
6. US EPA (May 2016) Drinking Water Health Advisory for Perfluorooctane Sulfonate (PFOS)

FIGURES

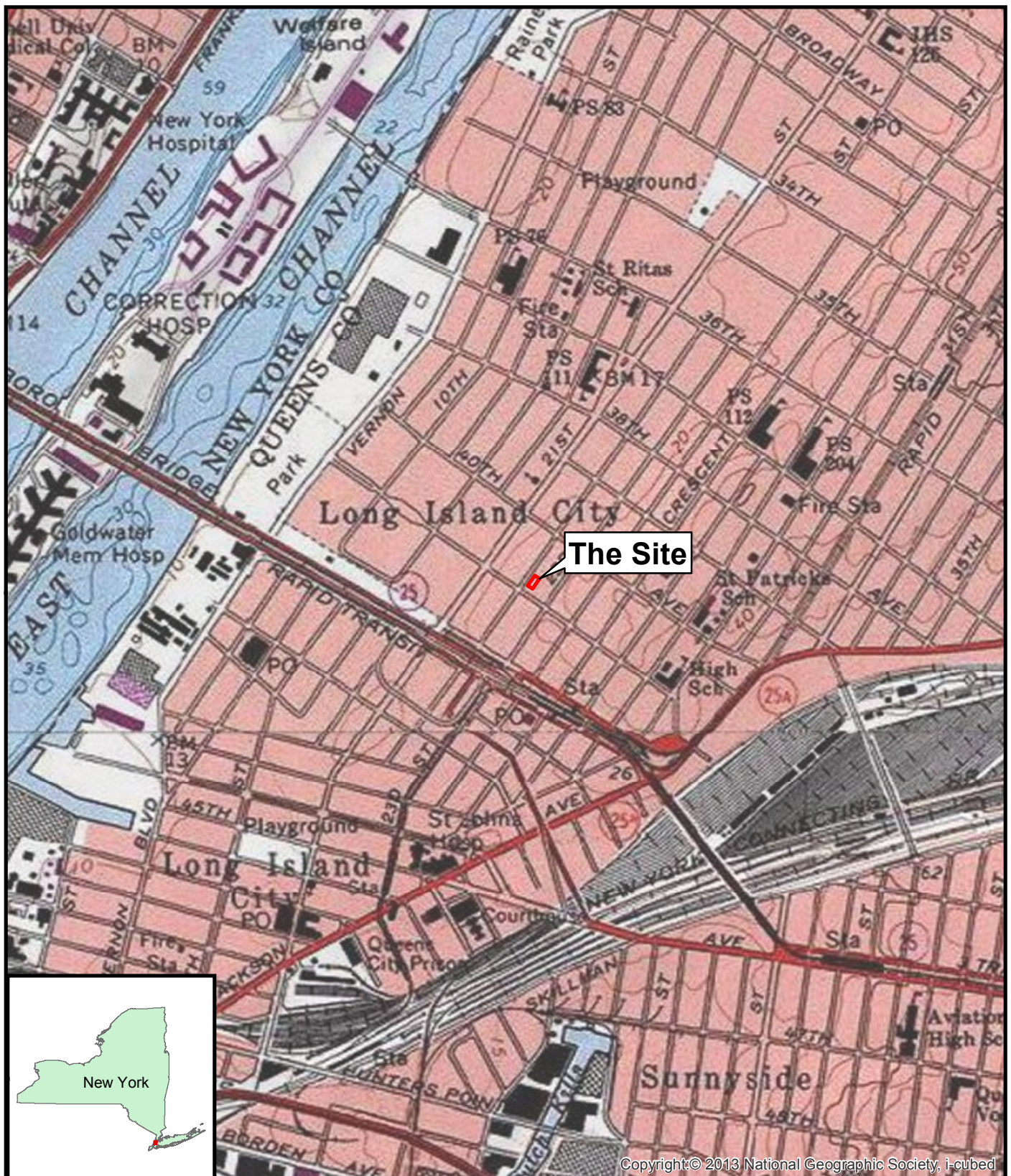


Figure 1
Site Location Map

22-07 41st Avenue
Long Island City, New York



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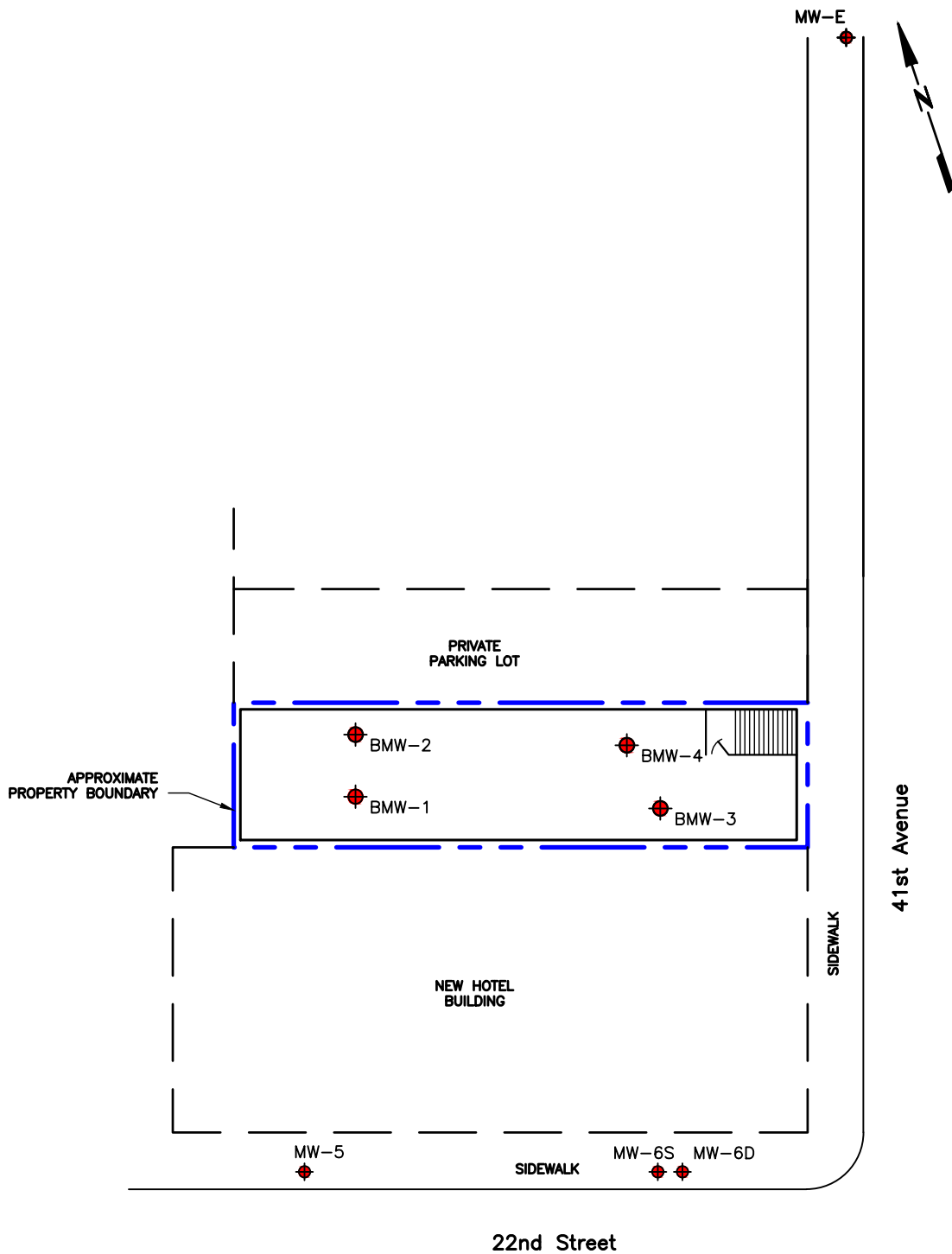


0 500 1,000
Feet

Prepared/Date: JCL 12/05/16

Checked/Date: EAW 12/05/16

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LEGEND

 MONITORING WELL
MW-5 WELL ID

Prepared/Date: BJH 05/21/2018
Checked/Date: EAW 05/21/2018

Former Hygrade Plating
22-07 41st Ave
Long Island City, NY

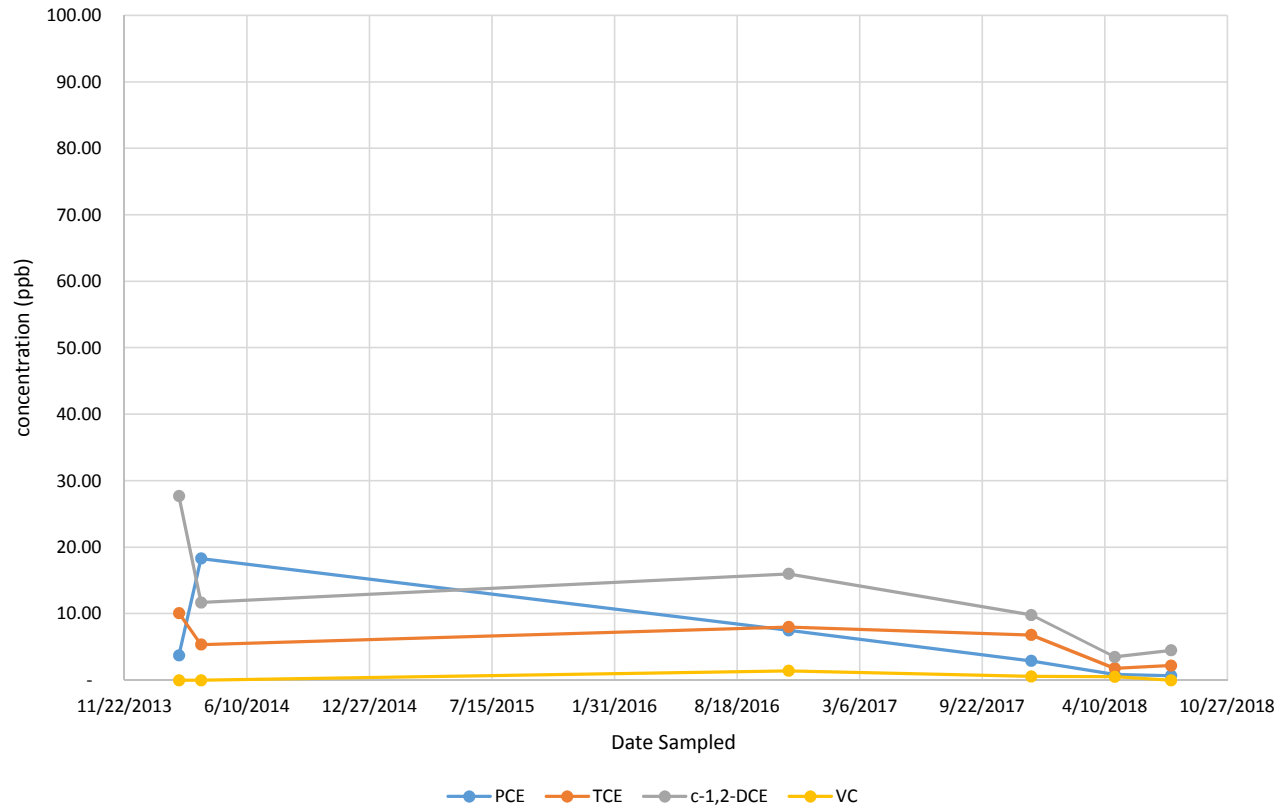
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(347) 836-4343



Groundwater Monitoring Well
Locations Map
Project 3612-162-331
Figure 2

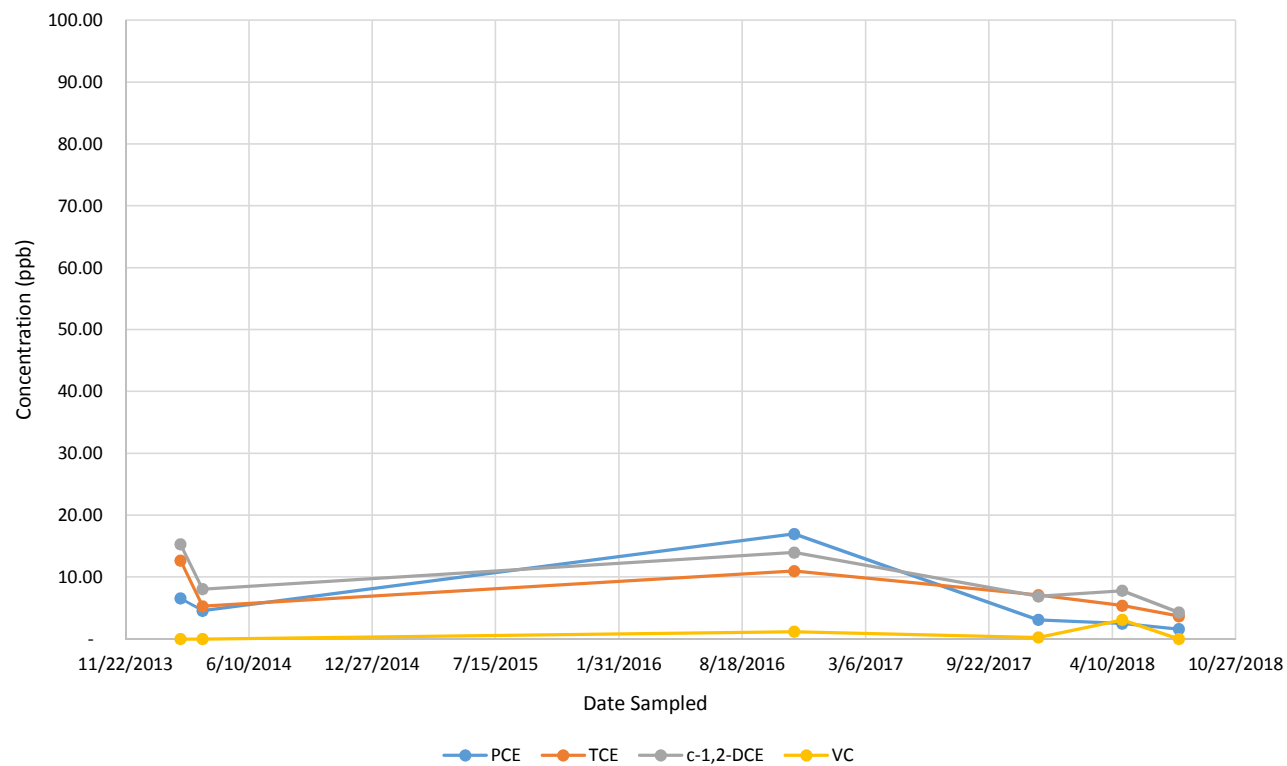
Former Hygrade Plating, Long Island City, NY - Figure 3A

BMW-1 VOC CoC Concentrations Vs. Time



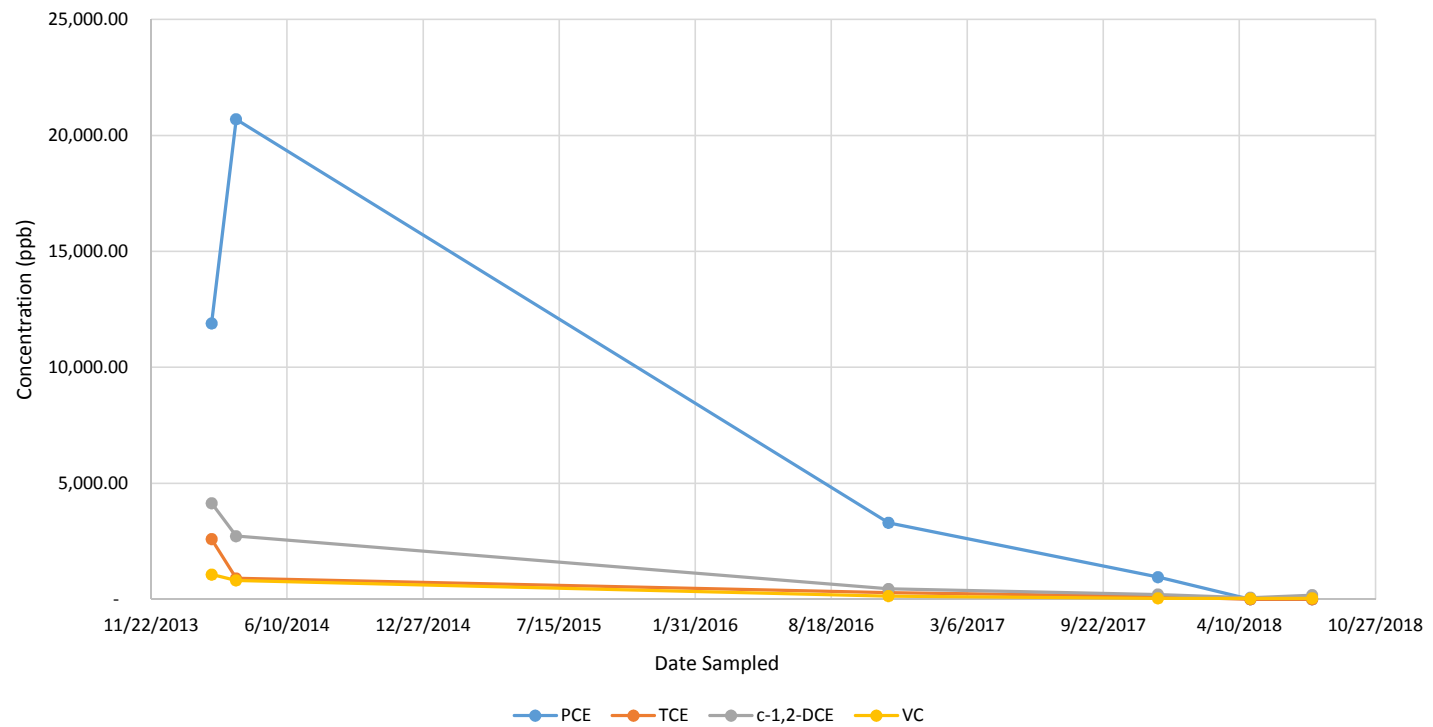
Former Hygrade Plating, Long Island City, NY - Figure 3B

BMW-2 VOC CoC Concentrations Vs. Time



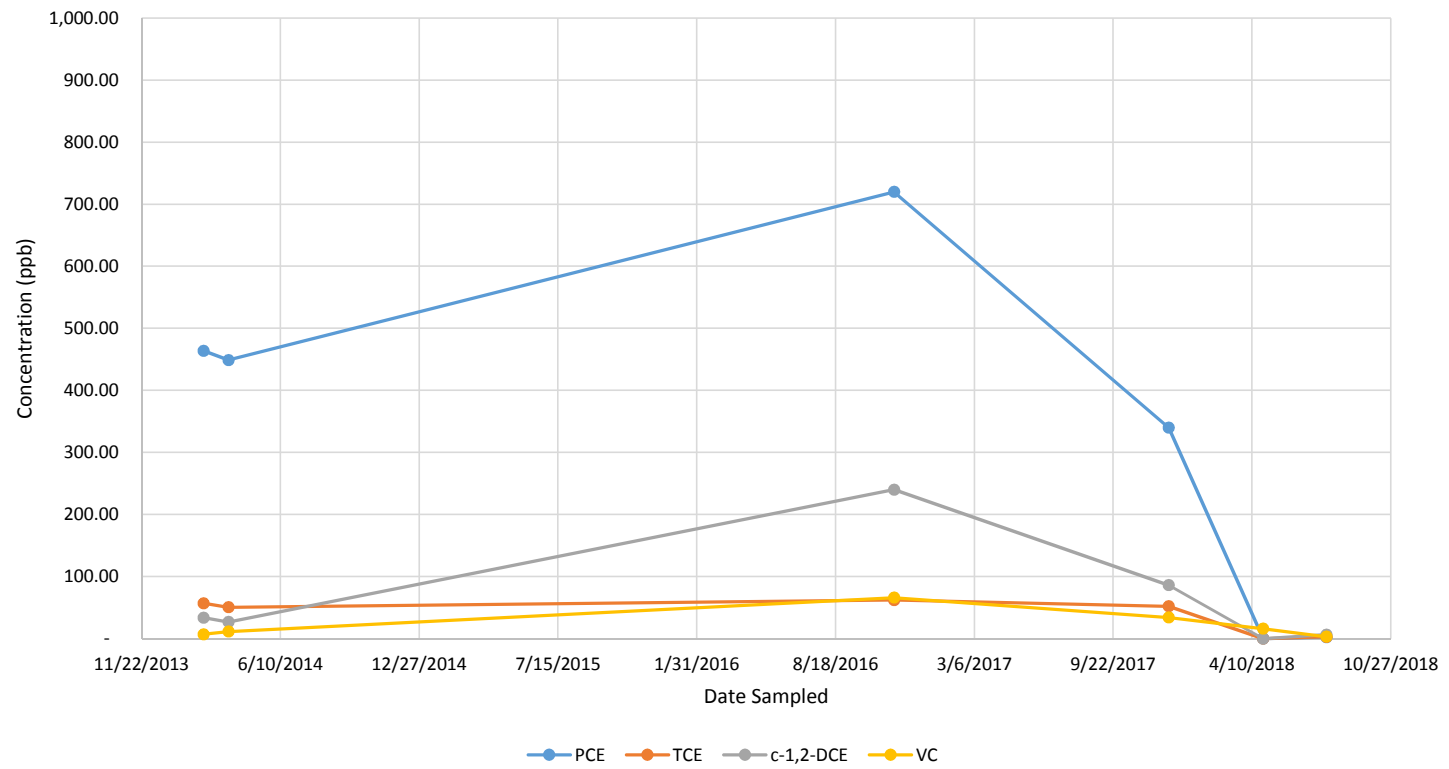
Former Hygrade Plating, Long Island City, NY - Figure 3C

BMW-3 VOC CoC Concentrations Vs. Time



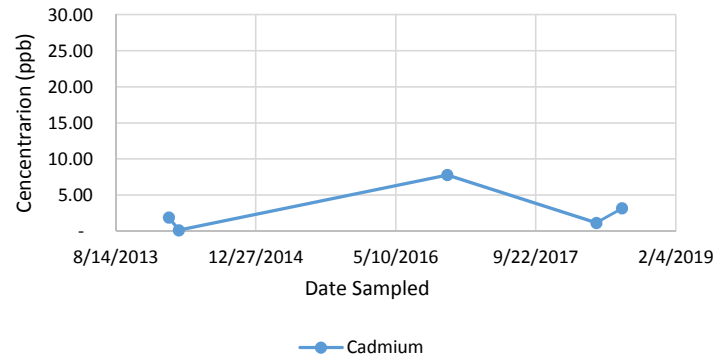
Former Hygrade Plating, Long Island City, NY - Figure 3D

BMW-4 VOC CoC Concentrations Vs. Time

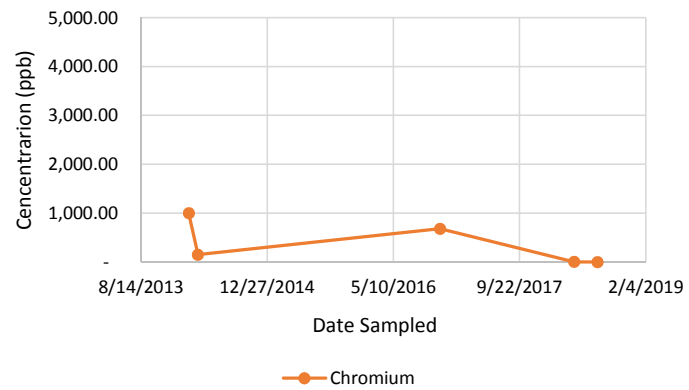


Former Hygrade Plating, Long Island City, NY - Figure 4A

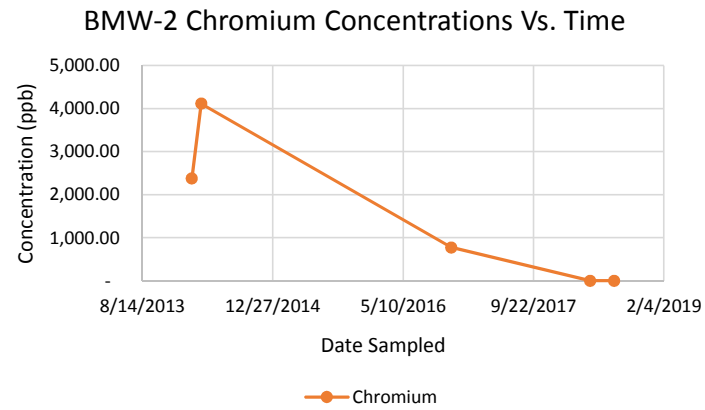
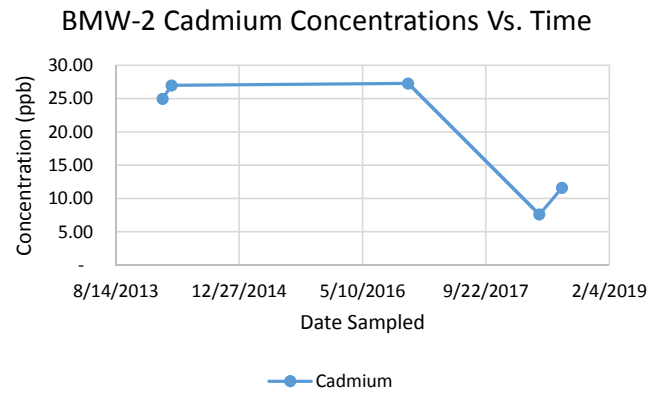
BMW-1 Cadmium Concentrations Vs. Time



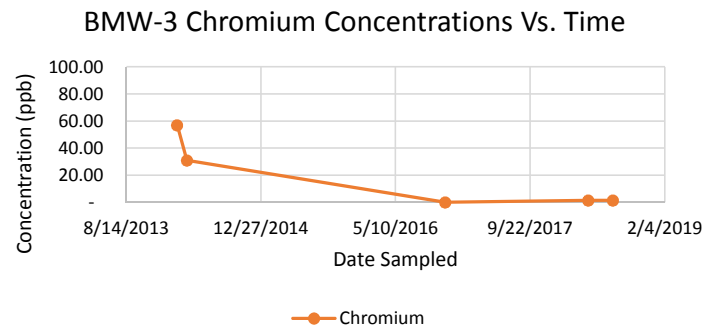
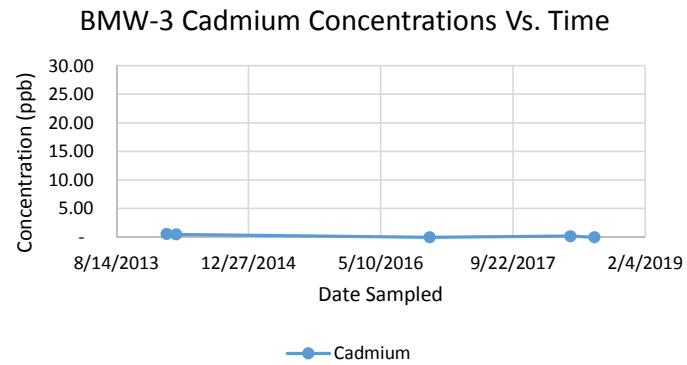
BMW-1 Chromium Concentrations Vs. Time



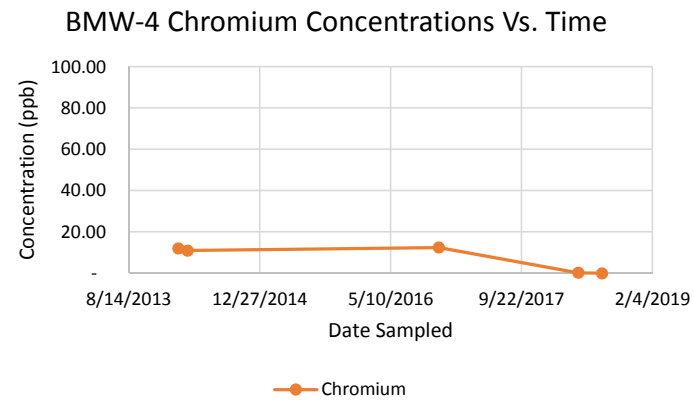
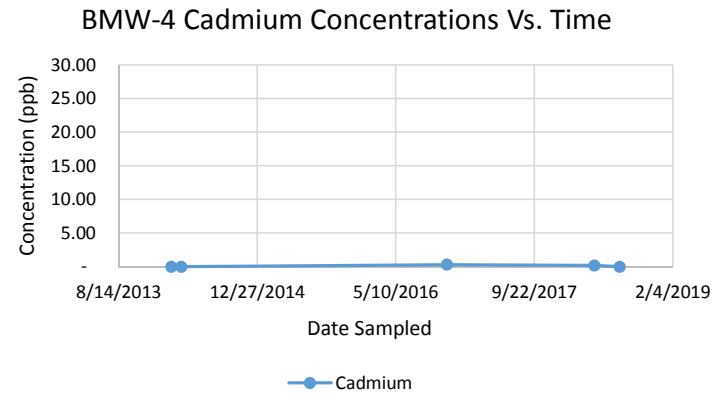
Former Hygrade Plating, Long Island City, NY - Figure 4B



Former Hygrade Plating, Long Island City, NY - Figure 4C

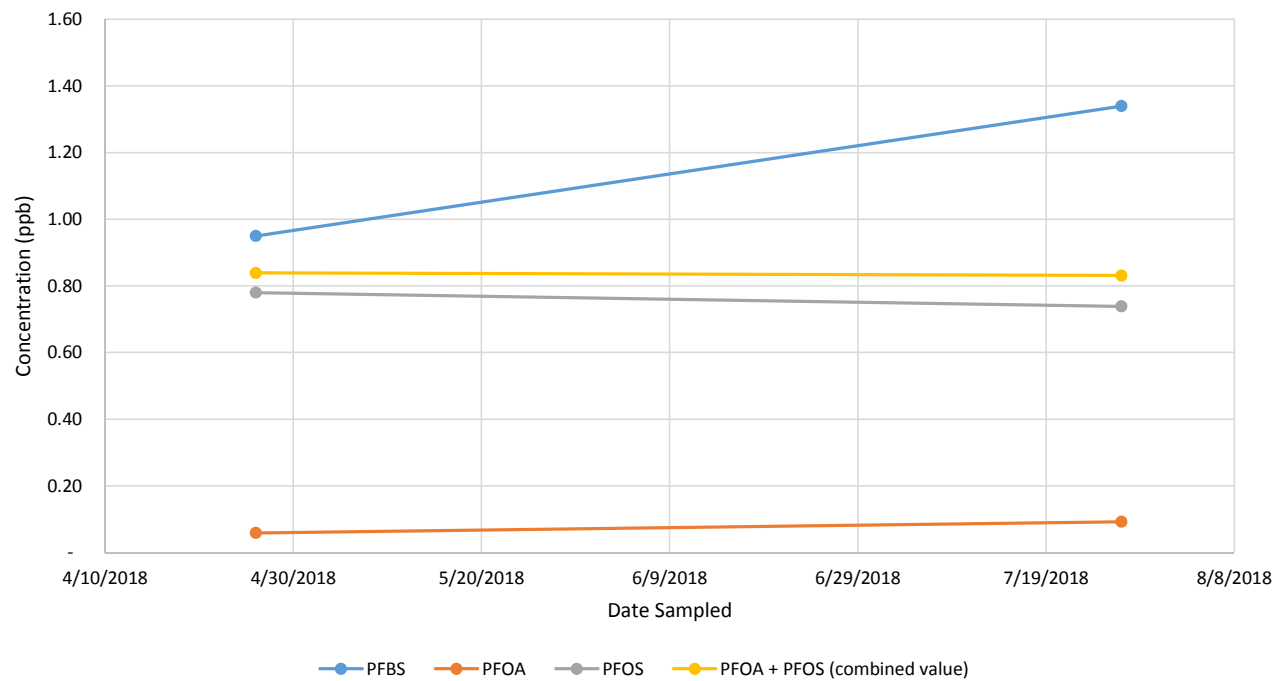


Former Hygrade Plating, Long Island City, NY - Figure 4D



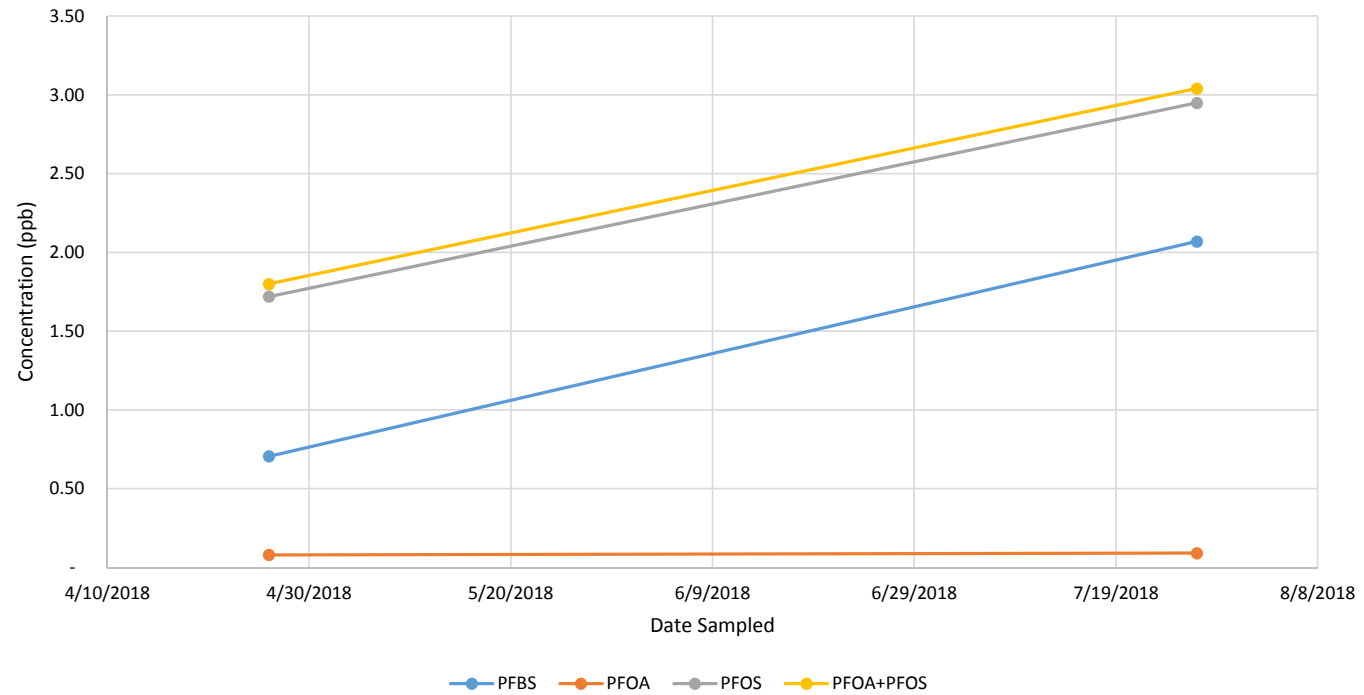
Former Hygrade Plating, Long Island City, NY - Figure 5A

BMW-1 PFAS Concentration vs Time



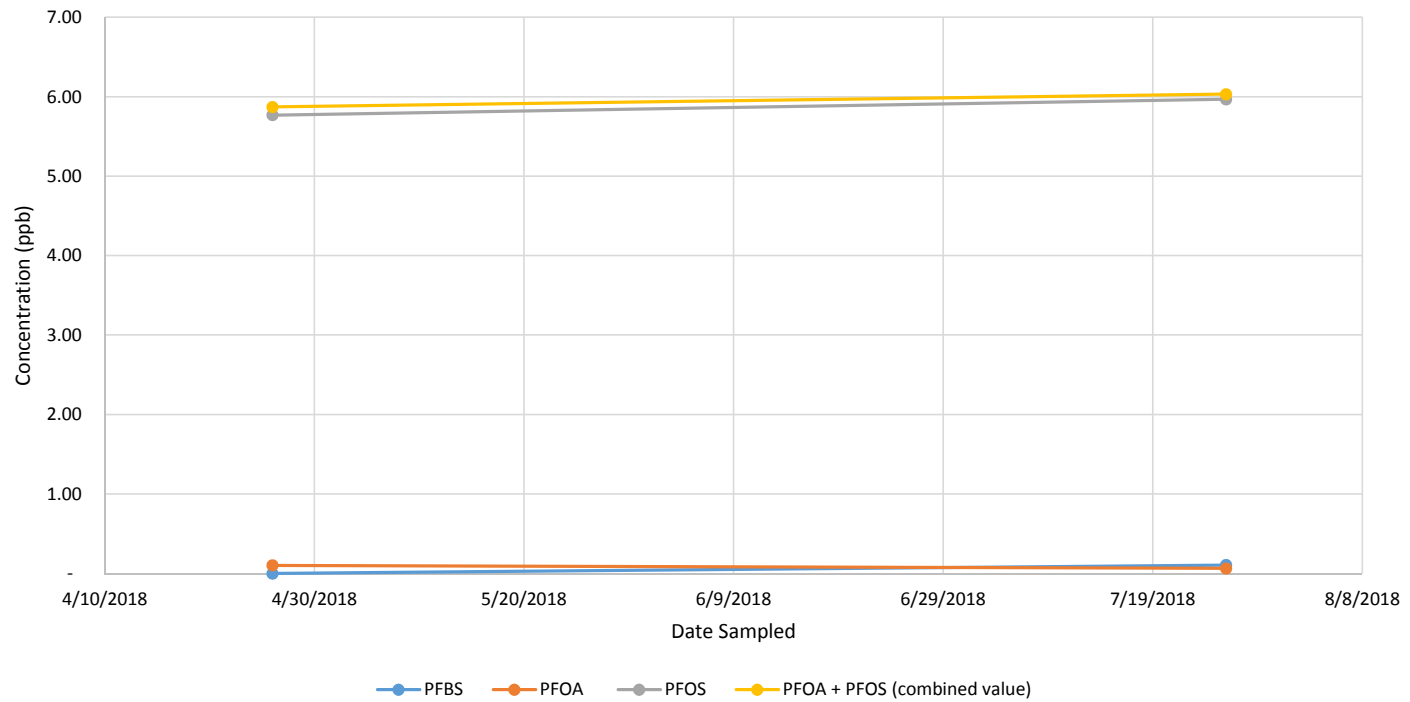
Former Hygrade Plating, Long Island City, NY – Figure 5B

BMW-2 PFAS Concentration vs. Time



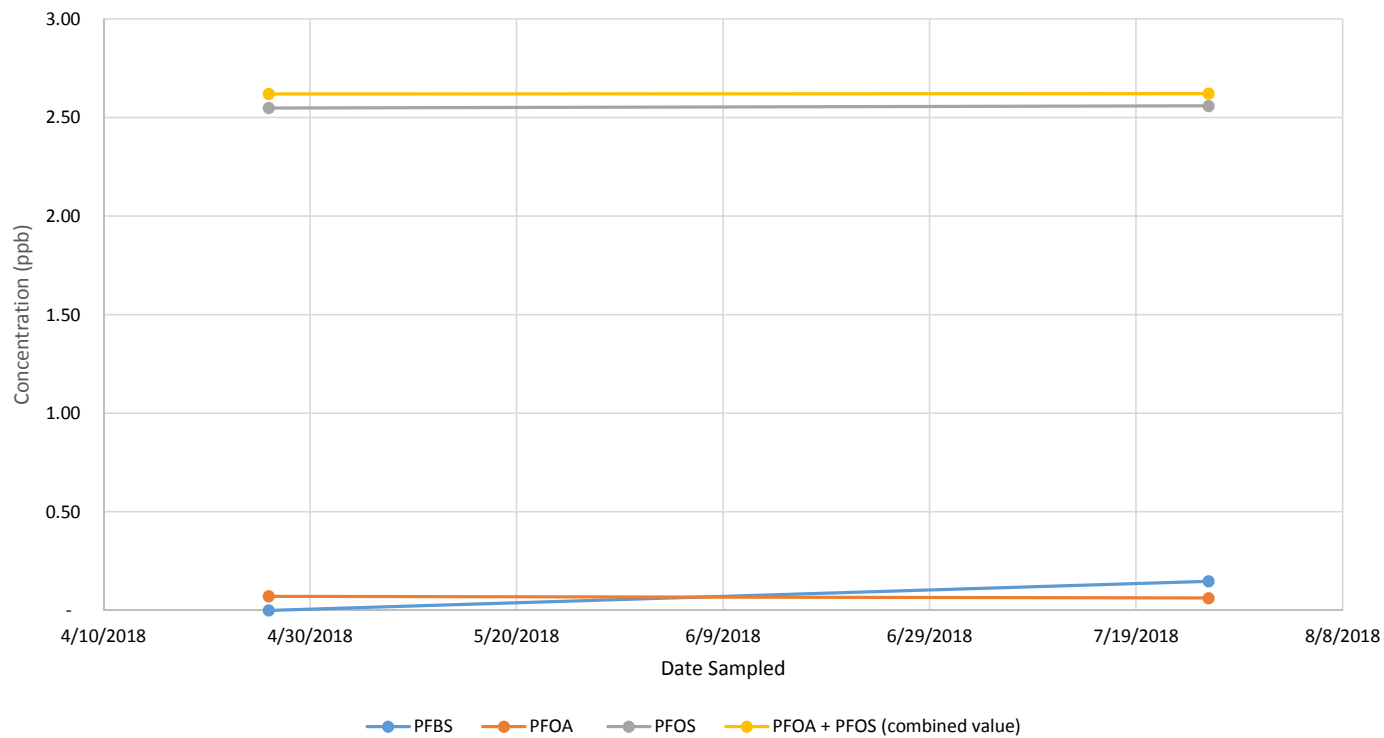
Former Hygrade Plating, Long Island City, NY – Figure 5C

BMW-3 PFAS Concentration vs. Time



Former Hygrade Plating, Long Island City, NY – Figure 5D

BMW-4 PFAS Concentration Vs. Time



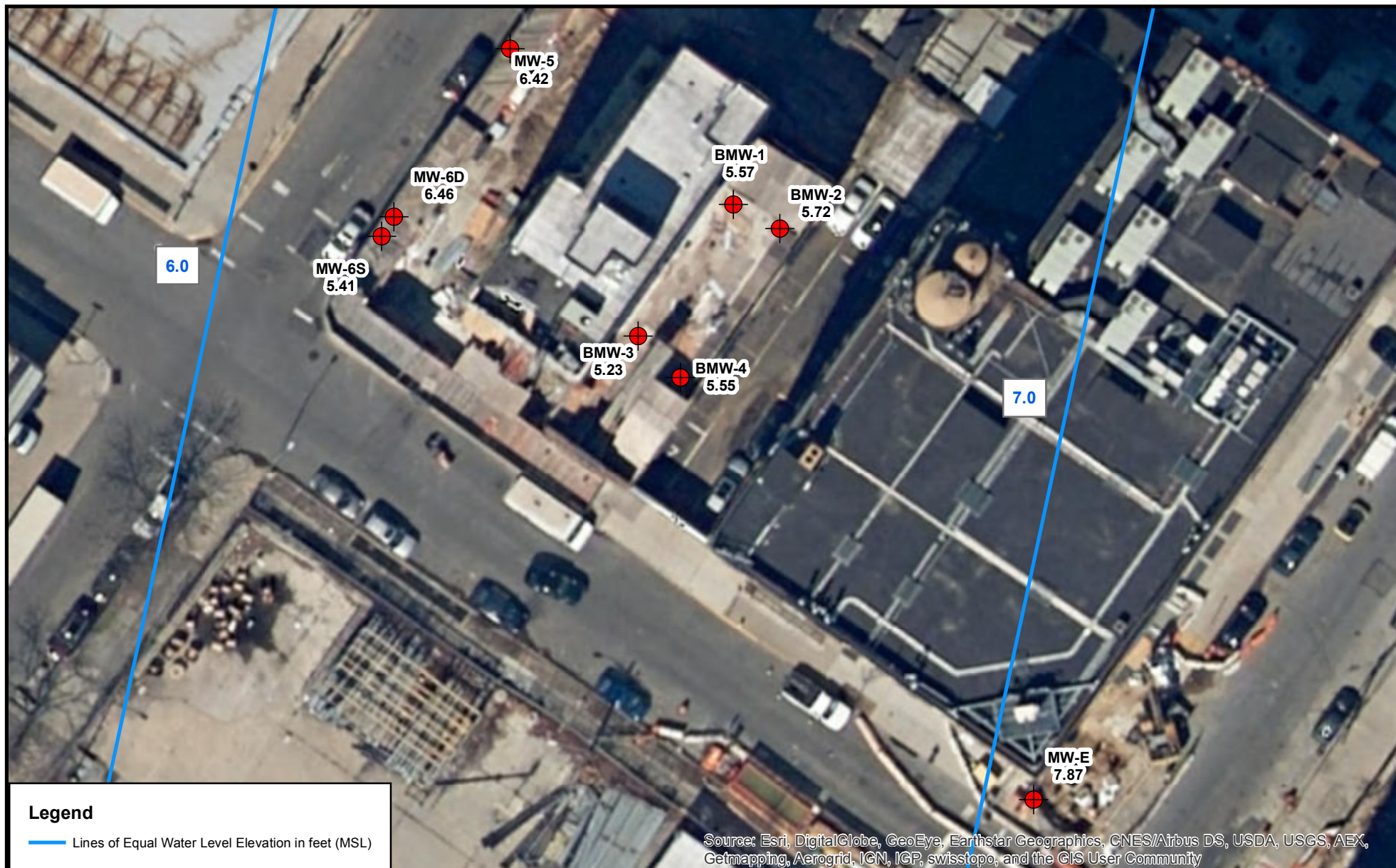


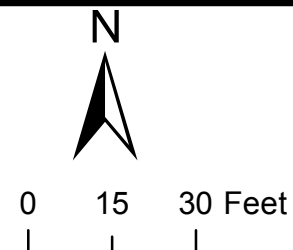
Figure 6
Site-Specific Water Table Map

22-07 41st Avenue
Long Island City, New York



Prepared By: JCL 10/01/18

Checked By: EAW 10/01/18



TABLES

TABLE 1: GROUNDWATER VOCs ANALYTICAL RESULTS
22-07 41st Avenue, Long Island City, NY

PAGE 1 OF 2

SAMPLE ID: COLLECTION DATE: LOCATION: DEPTH (ft): SAMPLE MATRIX:	NY-AWQS	BMW-1 7/27/2018 BASEMENT 1-6 GROUNDWATER		BMW-2 7/27/2018 BASEMENT 2.5-7.5 GROUNDWATER		BMW-3 7/26/2018 BASEMENT 3.5-8.5 GROUNDWATER		BMW-4 7/26/2018 BASEMENT 3.5-8.5 GROUNDWATER		MW-5 7/26/2018 22ND STREET 8-18 GROUNDWATER		MW-6S 7/26/2018 22ND STREET 8-18 GROUNDWATER		MW-6D 7/26/2018 22ND STREET 26-31 GROUNDWATER		MW-E 7/26/2018 41ST AVENUE 8-18 GROUNDWATER		DUPLICATE 7/26/2018 BASEMENT 3.5-8.5 GROUNDWATER	
		Conc	Qual	Conc	Qual	Conc	Qual	Conc	Qual	Conc	Qual	Conc	Qual	Conc	Qual	Conc	Qual	Conc	Qual
		ANALYTE (ppb)																	
		Volatile Organics by GC/MS-8260																	
Methylene chloride	5	2.5	U	2.5	U	5	U	2.5	U	2.5	U	12	U	2.5	U	2.5	U	2.5	U
1,1-Dichloroethane	5	2.5	U	2.5	U	5	U	2.5	U	2.5	U	12	U	2.5	U	2.5	U	2.5	U
Chloroform	7	2.5	U	2.5	U	5	U	2.5	U	2.5	U	12	U	2.5	U	2.5	U	2.5	U
Carbon tetrachloride	5	0.5	U	0.5	U	1	U	0.5	U	0.5	U	2.5	U	0.5	U	0.5	U	0.5	U
1,2-Dichloropropane	1	1	U	1	U	2	U	1	U	1	U	5	U	1	U	1	U	1	U
Dibromochloromethane	50	0.5	U	0.5	U	1	U	0.5	U	0.5	U	2.5	U	0.5	U	0.5	U	0.5	U
1,1,2-Trichloroethane	1	1.5	U	1.5	U	3	U	1.5	U	1.5	U	7.5	U	1.5	U	1.5	U	1.5	U
Tetrachloroethene	5	0.7		1.6		1	U	2.2		0.57		13		0.49	J	0.5	U	2.4	
Chlorobenzene	5	2.5	U	2.5	U	5	U	2.5	U	2.5	U	12	U	2.5	U	2.5	U	2.5	U
Trichlorofluoromethane	5	2.5	U	2.5	U	5	U	2.5	U	2.5	U	12	U	2.5	U	2.5	U	2.5	U
1,2-Dichloroethane	0.6	0.5	U	0.5	U	1	U	0.14	J	0.5	U	0.82	J	0.5	U	0.5	U	0.5	U
1,1,1-Trichloroethane	5	2.5	U	2.5	U	5	U	2.5	U	2.5	U	12	U	2.5	U	2.5	U	2.5	U
Bromodichloromethane	50	0.5	U	0.5	U	1	U	0.5	U	0.5	U	2.5	U	0.5	U	0.5	U	0.5	U
trans-1,3-Dichloropropene	0.4	0.5	U	0.5	U	1	U	0.5	U	0.5	U	2.5	U	0.5	U	0.5	U	0.5	U
cis-1,3-Dichloropropene	0.4	0.5	U	0.5	U	1	U	0.5	U	0.5	U	2.5	U	0.5	U	0.5	U	0.5	U
1,3-Dichloropropene, Total	NS	0.5	U	0.5	U	1	U	0.5	U	0.5	U	2.5	U	0.5	U	0.5	U	0.5	U
1,1-Dichloropropene	5	2.5	U	2.5	U	5	U	2.5	U	2.5	U	12	U	2.5	U	2.5	U	2.5	U
Bromoform	50	2	U	2	U	4	U	2	U	2	U	10	U	2	U	2	U	2	U
1,1,2,2-Tetrachloroethane	5	0.5	U	0.5	U	1	U	0.5	U	0.5	U	2.5	U	0.5	U	0.5	U	0.5	U
Benzene	1	0.5	U	0.16	J	5.6		3.9		0.5	U	2.5	U	0.5	U	0.5	U	3.9	
Toluene	5	2.5	U	2.5	U	5	U	8.2		2.5	U	12	U	2.5	U	2.5	U	8.4	
Ethylbenzene	5	2.5	U	2.5	U	5	U	2.5	U	2.5	U	12	U	2.5	U	2.5	U	2.5	U
Chloromethane	NS	2.5	U	2.5	U	5	U	2.5	U	2.5	U	12	U	2.5	U	2.5	U	2.5	U
Bromomethane	5	2.5	U	2.5	U	5	U	2.5	U	2.5	U	12	U	2.5	U	2.5	U	2.5	U
Vinyl chloride	2	0.22	J+	0.3	J	47		3.1		1	U	1.2	J	0.08	J	1	U	3	
Chloroethane	5	2.5	U	2.5	U	5	U	2.5	U	2.5	U	12	U	2.5	U	2.5	U	2.5	U
1,1-Dichloroethene	5	0.5	U	0.5	U	0.35	J	0.5	U	0.5	U	2.5	U	0.5	U	0.5	U	0.5	U
trans-1,2-Dichloroethene	5	2.5	U	2.5	U	5.3		4.8		2.5	U	12	U	2.5	U	2.5	U	5.1	
Trichloroethene	5	2.2		3.7		5.5		2.7		4.6		6.4		1.1		0.5	U	2.9	
1,2-Dichlorobenzene	3	2.5	U	2.5	U	5	U	2.5	U	2.5	U	12	U	2.5	U	2.5	U	2.5	U
1,3-Dichlorobenzene	3	2.5	U	2.5	U	5	U	2.5	U	2.5	U	12	U	2.5	U	2.5	U	2.5	U
1,4-Dichlorobenzene	3	2.5	U	2.5	U	5	U	2.5	U	2.5	U	12	U	2.5	U	2.5	U	2.5	U
Methyl tert butyl ether	10	2.5	U	2.5	U	5	U	1.6	J	2.5	U	1000		2.5	U	2.5	U	1.6	J
p/m-Xylene	5	2.5	U	2.5	U	5	U	2.5	U	2.5	U	12	U	2.5	U	2.5	U	2.5	U
o-Xylene	5	2.5	U	2.5	U	5	U	0.76	J	2.5	U	12	U	2.5	U	2.5	U	0.76	J
Xylenes, Total	NS	2.5	U	2.5	U	5	U	0.76	J	2.5	U	12	U	2.5	U	2.5	U	0.76	J
cis-1,2-Dichloroethene	5	4.5		4.3		180		6.3		2.5	U	33		2.5	U	2.5	U	6.4	
1,2-Dichloroethene, Total	NS	4.5		4.3		190		11		2.5	U	33		2.5	U	2.5	U	12	
Notes:																			
ppb		parts per billions																	
Bold		Analyte detected for sample																	
NS		No Standard																	
J		indicates estimated value; concentration is below the reporting limit but above the minimum detection limit																	
NY-AWQS		New York Ambient Water Quality Standards																	
*		Duplicate was collected with the BMW-4 sample																	
															Prepared By: JCL		Checked By: EAW		

TABLE 1: GROUNDWATER VOCs ANALYTICAL RESULTS
22-07 41st Avenue, Long Island City, NY

PAGE 2 OF 2

SAMPLE ID: COLLECTION DATE: LOCATION: DEPTH (ft): SAMPLE MATRIX:	ANALYTE (ppb) NY-AWQS	BMW-1 7/27/2018 BASEMENT 1-6 GROUNDWATER		BMW-2 7/27/2018 BASEMENT 2.5-7.5 GROUNDWATER		BMW-3 7/26/2018 BASEMENT 3.5-8.5 GROUNDWATER		BMW-4 7/26/2018 BASEMENT 3.5-8.5 GROUNDWATER		MW-5 7/26/2018 22ND STREET 8-18 GROUNDWATER		MW-6S 7/26/2018 22ND STREET 8-18 GROUNDWATER		MW-6D 7/26/2018 22ND STREET 26-31 GROUNDWATER		MW-E 7/26/2018 41ST AVENUE 8-18 GROUNDWATER		DUPLICATE* 7/26/2018 BASEMENT 3.5-8.5 GROUNDWATER	
		Conc	Qual	Conc	Qual	Conc	Qual	Conc	Qual	Conc	Qual	Conc	Qual	Conc	Qual	Conc	Qual	Conc	Qual
		Volatile Organics by GC/MS-8260																	
		Dibromomethane	5	5	U	5	U	10	U	5	U	5	U	25	U	5	U	5	U
		1,2,3-Trichloropropane	0.04	2.5	U	2.5	U	5	U	2.5	U	2.5	U	12	U	2.5	U	2.5	U
		Acrylonitrile	5	5	U	5	U	10	U	5	U	5	U	82		5	U	5	U
		Styrene	5	2.5	U	2.5	U	5	U	2.5	U	2.5	U	12	U	2.5	U	2.5	U
		Dichlorodifluoromethane	5	5	U	5	U	10	U	5	U	5	U	25	U	5	U	5	U
		Acetone	50	5	U	5	U	200		2.7	J	2.3	J	9.7	J	2.2	J	3	J
		Carbon disulfide	60	5	U	5	U	10	U	5	U	5	U	25	U	5	U	5	U
		2-Butanone	50	5	U	5	U	180		5	U	5	U	25	U	5	U	5	U
		Vinyl acetate	NS	5	U	5	U	10	U	5	U	5	U	25	U	5	U	5	U
		4-Methyl-2-pentanone	NS	5	U	5	U	10	U	5	U	5	U	25	U	5	U	5	U
		2-Hexanone	50	5	U	5	U	10	U	5	U	5	U	25	U	5	U	5	U
		Bromochloromethane	5	2.5	U	2.5	U	5	U	2.5	U	2.5	U	12	U	2.5	U	2.5	U
		2,2-Dichloropropane	5	2.5	U	2.5	U	5	U	2.5	U	2.5	U	12	U	2.5	U	2.5	U
		1,2-Dibromoethane	0.0006	2	U	2	U	4	U	2	U	2	U	10	U	2	U	2	U
		1,3-Dichloropropane	5	2.5	U	2.5	U	5	U	2.5	U	2.5	U	12	U	2.5	U	2.5	U
		1,1,1,2-Tetrachloroethane	5	2.5	U	2.5	U	5	U	2.5	U	2.5	U	12	U	2.5	U	2.5	U
		Bromobenzene	5	2.5	U	2.5	U	5	U	2.5	U	2.5	U	12	U	2.5	U	2.5	U
		n-Butylbenzene	5	2.5	U	2.5	U	5	U	2.5	U	2.5	U	12	U	2.5	U	2.5	U
		sec-Butylbenzene	5	2.5	U	2.5	U	5	U	2.5	U	2.5	U	12	U	2.5	U	2.5	U
		tert-Butylbenzene	5	2.5	U	2.5	U	5	U	2.5	U	2.5	U	12	U	2.5	U	2.5	U
		o-Chlorotoluene	5	2.5	U	2.5	U	5	U	2.5	U	2.5	U	12	U	2.5	U	2.5	U
		p-Chlorotoluene	5	2.5	U	2.5	U	5	U	2.5	U	2.5	U	12	U	2.5	U	2.5	U
		1,2-Dibromo-3-chloropropane	0.04	2.5	U	2.5	U	5	U	2.5	U	2.5	U	12	U	2.5	U	2.5	U
		Hexachlorobutadiene	0.5	2.5	U	2.5	U	5	U	2.5	U	2.5	U	12	U	2.5	U	2.5	U
		Isopropylbenzene	5	2.5	U	2.5	U	5	U	2.5	U	2.5	U	12	U	2.5	U	2.5	U
		p-Isopropyltoluene	5	2.5	U	2.5	U	5	U	2.5	U	2.5	U	12	U	2.5	U	2.5	U
		Naphthalene	10	2.5	U	2.5	U	5	U	2.5	U	2.5	U	12	U	2.5	U	2.5	U
		n-Propylbenzene	5	2.5	U	2.5	U	5	U	2.5	U	2.5	U	12	U	2.5	U	2.5	U
		1,2,3-Trichlorobenzene	5	2.5	U	2.5	U	5	U	2.5	U	2.5	U	12	U	2.5	U	2.5	U
		1,2,4-Trichlorobenzene	5	2.5	U	2.5	U	5	U	2.5	U	2.5	U	12	U	2.5	U	2.5	U
		1,3,5-Trimethylbenzene	5	2.5	U	2.5	U	5	U	2.5	U	2.5	U	12	U	2.5	U	2.5	U
		1,2,4-Trimethylbenzene	5	2.5	U	2.5	U	5	U	2.5	U	2.5	U	12	U	2.5	U	2.5	U
		1,4-Dioxane	0.035	250	U	250	U	500	U	250	U	250	U	1200	U	250	U	250	U
		p-Diethylbenzene	NS	2	U	2	U	4	U	2	U	2	U	10	U	2	U	2	U
		p-Ethyltoluene	NS	2	U	2	U	4	U	2	U	2	U	10	U	2	U	2	U
		1,2,4,5-Tetramethylbenzene	5	2	U	2	U	4	U	2	U	2	U	10	U	2	U	2	U
		Ethyl ether	NS	2.5	U	2.5	U	5	U	2.5	U	2.5	U	12	U	2.5	U	2.5	U
		trans-1,4-Dichloro-2-butene	5	2.5	U	2.5	U	5	U	2.5	U	2.5	U	12	U	2.5	U	2.5	U
Notes: ppb parts per billions Bold Analyte detected for sample NS No Standard J indicates estimated value; concentration is below the reporting limit but above the minimum detection limit NY-AWQS New York Ambient Water Quality Standards * Duplicate was collected with the BMW-4-0418 sample																			
																Prepared By: JCL		Checked By: EAW	

TABLE 2: GROUNDWATER METALS ANALYTICAL RESULTS
22-07 41st Avenue, Long Island City, NY

PAGE 1 OF 2

SAMPLE ID: COLLECTION DATE: LOCATION: DEPTH (ft): SAMPLE MATRIX:	NY-AWQS	BMW-1 7/27/2018 BASEMENT 1-6 GROUNDWATER		BMW-2 7/27/2018 BASEMENT 2.5-7.5 GROUNDWATER		BMW-3 7/26/2018 BASEMENT 3.5-8.5 GROUNDWATER		BMW-4 7/26/2018 BASEMENT 3.5-8.5 GROUNDWATER		MW-5 7/26/2018 22ND STREET 8-18 GROUNDWATER		MW-6S 7/26/2018 22ND STREET 8-18 GROUNDWATER		MW-6D 7/26/2018 22ND STREET 26-31 GROUNDWATER		MW-E 7/26/2018 41ST AVENUE 8-18 GROUNDWATER		DUPLICATE* 7/26/2018 BASEMENT 3.5-8.5 GROUNDWATER	
		Conc	Qual	Conc	Qual	Conc	Qual	Conc	Qual	Conc	Qual	Conc	Qual	Conc	Qual	Conc	Qual	Conc	Qual
		ANALYTE (ppb)		Conc		Qual		Conc		Qual		Conc		Qual		Conc		Qual	
		Dissolved Metals																	
Aluminum, Dissolved	NS	10	U	10	U	10	U	10	U	10	U	10	U	10.3	J	10	U	10	U
Antimony, Dissolved	3	4	U	1.3	J	4	U	4	U	4	U	4	U	4	U	4	U	4	U
Arsenic, Dissolved	25	0.91		0.65		7.14		11.75		0.17	J	1.3		0.25	J	0.57		10.95	
Barium, Dissolved	1000	112.8		108.6		201.9		140.4		87.23		114.6		98.88		85.79		146	
Beryllium, Dissolved	3	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Cadmium, Dissolved	5	3.19		11.61		0.2	U	0.2	U	0.1	J	0.2	U	0.11	J	0.2	U	0.2	U
Calcium, Dissolved	NS	280000		266000		241000		203000		176000		302000		142000		81800		207000	
Chromium, Dissolved	50	0.95	J	1.85		1.38		0.72	J	5.67		0.18	J	0.71	J	1.07		0.7	J
Cobalt, Dissolved	NS	10.66		13.31		16.29		13.4		0.6		3.29		0.35	J	0.5	U	13.36	
Copper, Dissolved	200	3.89	J	4.41	J	1	U	1	U	1.01	J	1	U	2.58	J	1.12	J	1	U
Iron, Dissolved	300	66	J	61.1	J	274	J+	8460		58.5	J	80.7	J	64.6	J	50	U	7230	
Lead, Dissolved	25	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Magnesium, Dissolved	35000	39100	J+	35900		48000		31700		12600		113000		12200		11400		31300	
Manganese, Dissolved	300	8269		7002		3668		3037		21.58		3922		182.5		57.28		2989	
Mercury, Dissolved	0.7	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Nickel, Dissolved	100	91.46		172.7		489.9		90.69		3.82	J	29.47		2.68	J	2	U	93.11	
Potassium, Dissolved	NS	26500		34900		33400	J+	53200		24200		15900		24300		21300		53200	
Selenium, Dissolved	10	5	U	5	U	5	U	5	U	7.26		5	U	5.2		3.76	J	5	U
Silver, Dissolved	50	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U
Sodium, Dissolved	20000	219000		213000		266000		199000		118000		160000		159000		123000		199000	
Thallium, Dissolved	0.5	0.62		0.18	J	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Vanadium, Dissolved	NS	5	U	5	U	5	U	5	U	5	U	5	U	2.6	J	5	U	5	U
Zinc, Dissolved	2000	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Notes:																			
ppb		parts per billions																	
Bold		Analyte detected for sample																	
NS		No Standard																	
J		indicates estimated value; concentration is below the reporting limit but above the minimum detection limit																	
J+		indicates estimated value and potentially biased high; concentration is below the reporting limit but above the minimum detection limit																	
NY-AWQS		New York Ambient Water Quality Standards																	
*		Duplicate was collected with the BMW-4 sample																	
																Prepared By: JCL		Checked By: EAW	

TABLE 2: GROUNDWATER METALS ANALYTICAL RESULTS
22-07 41st Avenue, Long Island City, NY

PAGE 2 OF 2

SAMPLE ID: COLLECTION DATE: LOCATION: DEPTH (ft): SAMPLE MATRIX:		BMW-1 7/27/2018 BASEMENT 1-6 GROUNDWATER		BMW-2 7/27/2018 BASEMENT 2.5-7.5 GROUNDWATER		BMW-3 7/26/2018 BASEMENT 3.5-8.5 GROUNDWATER		BMW-4 7/26/2018 BASEMENT 3.5-8.5 GROUNDWATER		MW-5 7/26/2018 22ND STREET 8-18 GROUNDWATER		MW-6S 7/26/2018 22ND STREET 8-18 GROUNDWATER		MW-6D 7/26/2018 22ND STREET 26-31 GROUNDWATER		MW-E 7/26/2018 41ST AVENUE 8-18 GROUNDWATER		DUPLICATE 7/26/2018 BASEMENT 3.5-8.5 GROUNDWATER	
		ANALYTE (ppb)	NY-AWQS	Conc	Qual	Conc	Qual	Conc	Qual	Conc	Qual	Conc	Qual	Conc	Qual	Conc	Qual	Conc	Qual
Total Metals																			
Aluminum, Total	NS	18.4	J	15.7	J	28		35.3		72.6		22.9		27.4		15100		10	U
Antimony, Total	3	4	U	4	U	4	U	4	U	4	U	4	U	4	U	4	U	4	U
Arsenic, Total	25	1		0.89		18.19		46.66		0.29	J	1.88		0.27	J	13.72		46.76	
Barium, Total	1000	111.5		109.6		270.6		264.9		92.78		135.3		102.9		260.8		257.6	
Beryllium, Total	3	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.82		0.5	U
Cadmium, Total	5	3.3		10.45		0.2	U	0.2	U	0.07	J	0.2	U	0.1	J	0.12	J	0.2	U
Calcium, Total	NS	283000		258000		257000		221000		163000		304000		139000		87900		215000	
Chromium, Total	50	2.1		2.44		2.7		1.88		6.77		10	U	10	U	45.1		1.76	
Cobalt, Total	NS	10.86		13.12		17.17		15.18		0.55		3.49		0.39	J	13.71		14.87	
Copper, Total	200	4.31		4.15		1.17		1	U	1.19		0.77	J	2.33		41.77		1	U
Iron, Total	300	340		824		18500		45700		232		1390		91	J	33500		44900	
Lead, Total	25	1	U	1	U	1	U	1	U	0.83	J	0.46	J	1	U	18.24		1	U
Magnesium, Total	35000	39200		33000		46600		34000		12400		119000		12400		21200		33200	
Manganese, Total	300	8499		7225		3724		3342		21.82		3799		185.8		1540		3306	
Mercury, Total	0.7	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Nickel, Total	100	93.34		159.3		465.4		96.6		3.45		30.5		2.8		34.69		96.03	
Potassium, Total	NS	26600		33400		35100		57300		23000		16200		24500		26800		56300	
Selenium, Total	10	5	U	5	U	5	U	5	U	6.8		5	U	5.28		7.35		5	U
Silver, Total	50	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U
Sodium, Total	20000	225000		206000		226000		183000		97900		143000		135000		104000		179000	
Thallium, Total	0.5	0.67	J	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.38	J	0.5	U
Vanadium, Total	NS	5	U	5	U	1.74	J	5	U	5	U	5	U	2.76	J	50.97		5	U
Zinc, Total	2000	9.14	J	6.27	J	10	U	10	U	10	U	4.4	J	10	U	95.05		10	U
Notes:																			
ppb	parts per billions																		
Bold	Analyte detected for sample																		
NS	No Standard																		
J	indicates estimated value; concentration is below the reporting limit but above the minimum detection limit																		
J+	indicates estimated value and potentially biased high; concentration is below the reporting limit but above the minimum detection limit																		
NY-AWQS	New York Ambient Water Quality Standards																		
*	Duplicate was collected with the BMW-4-0418 sample																		
																Prepared By: JCL		Checked By: EAW	

TABLE 3: GROUNDWATER PFOAS ANALYTICAL RESULTS
22-07 41st Avenue, Long Island City, NY

PAGE 1 OF 1

SAMPLE ID: COLLECTION DATE: LOCATION: DEPTH (ft): SAMPLE MATRIX:		BMW-1 7/27/2018 BASEMENT 1-6 GROUNDWATER		BMW-2 7/27/2018 BASEMENT 2.5-7.5 GROUNDWATER		BMW-3 7/26/2018 BASEMENT 3.5-8.5 GROUNDWATER		BMW-4 7/26/2018 BASEMENT 3.5-8.5 GROUNDWATER		MW-5 7/26/2018 22ND STREET 8-18 GROUNDWATER		MW-6S 7/26/2018 22ND STREET 8-18 GROUNDWATER		MW-6D 7/26/2018 22ND STREET 26-31 GROUNDWATER		MW-E 7/26/2018 41ST AVENUE 8-18 GROUNDWATER		DUPLICATE** 7/26/2018 BASEMENT 3.5-8.5 GROUNDWATER	
ANALYTE (ug/L)	EPA	Conc	Qual	Conc	Qual	Conc	Qual	Conc	Qual	Conc	Qual	Conc	Qual	Conc	Qual	Conc	Qual	Conc	Qual
Perfluorinated Alkyl Acids by Isotope Dilution																			
Perfluorobutanoic Acid (PFBA)	NSG	0.031		0.0286		0.0324		0.0235		0.00984		0.0148		0.0139		0.0333		0.0233	
Perfluoropentanoic Acid (PFPeA)	NSG	0.0596		0.0479		0.072		0.0719		0.0133		0.0108		0.012		0.0829		0.0723	
Perfluorobutanesulfonic Acid (PFBS)	400	1.34	**	2.07	**	0.106	J+	0.148		0.0214		0.0227		0.0275		0.0111		0.149	
Perfluorohexanoic Acid (PFHxA)	NSG	0.0612		0.0438		0.15		0.0989		0.011		0.00908		0.0121		0.102		0.0994	
Perfluoroheptanoic Acid (PFHpA)	NSG	0.0278		0.0215		0.0277		0.0211		0.00735		0.00688		0.00655		0.0186		0.0209	
Perfluorohexanesulfonic Acid (PFHxS)	NSG	0.211		0.464		0.0983	J+	0.0926		0.00394		0.0272		0.00241		0.00271		0.095	
Perfluorooctanoic Acid (PFOA)*	0.070	0.0926		0.0914		0.0643		0.0627		0.0305		0.0614		0.0246		0.0641		0.0668	
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	NSG	0.0152	U	0.0172	U	0.00257		0.00254		0.00467		0.00363		0.00185	U	0.14		0.00337	
Perfluoroheptanesulfonic Acid (PFHpS)	NSG	0.056		0.124		0.126		0.0621		0.00171	J	0.0111		0.000948	J	0.00192	UJ	0.0601	
Perfluorononanoic Acid (PFNA)	NSG	0.00617		0.00325		0.00331		0.00292		0.000818	J	0.00238		0.00168	J	0.00133	J	0.00265	
Perfluorooctanesulfonic Acid (PFOS)*	0.070	0.739	**	2.95	**	5.97	**	2.56	**	0.112		0.541	**	0.0608		0.00921		2.64	**
Perfluorodecanoic Acid (PFDA)	NSG	0.0024		0.00137	J	0.00192	U	0.00192	U	0.00178	U	0.002	U	0.00185	U	0.00657		0.000838	J
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	NSG	0.00185	U	0.00185	U	0.00192	U	0.00192	U	0.00178	U	0.002	U	0.00185	U	0.00192	U	0.00192	U
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	NSG	0.00185	U	0.00185	U	0.00192	U	0.00192	U	0.00178	U	0.002	U	0.00185	U	0.00192	U	0.00192	U
Perfluoroundecanoic Acid (PFUnA)	NSG	0.00185	U	0.00185	U	0.00192	U	0.00192	U	0.00178	U	0.002	U	0.00185	U	0.000442	J	0.00192	U
Perfluorodecanesulfonic Acid (PFDS)	NSG	0.00185	U	0.00185	U	0.00192	U	0.00192	U	0.00178	U	0.002	U	0.00185	U	0.00192	U	0.00192	U
Perfluorooctanesulfonamide (FOSA)	NSG	0.00185	U	0.00185	U	0.00192	U	0.00192	U	0.00178	U	0.002	U	0.00185	U	0.00192	U	0.00025	J
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	NSG	0.00185	U	0.00185	U	0.000612	J	0.00192	U	0.00178	U	0.002	U	0.00185	U	0.00192	U	0.00192	U
Perfluorododecanoic Acid (PFDoA)	NSG	0.00185	U	0.00185	U	0.00192	U	0.00192	U	0.00178	U	0.002	U	0.00185	U	0.00192	U	0.00192	U
Perfluorotridecanoic Acid (PFTriDA)	NSG	0.00185	U	0.00185	U	0.00192	U	0.00192	U	0.00178	U	0.002	U	0.00185	U	0.00192	U	0.00192	U
Perfluorotetradecanoic Acid (PFTA)	NSG	0.00185	U	0.00185	U	0.00192	U	0.00192	U	0.00178	U	0.002	U	0.00185	U	0.00192	U	0.00192	U
PFOA + PFOS (combined value)	0.070	0.8316		3.0414		6.0343		2.6227		0.1425		0.6024		0.0854		0.073		2.7068	
Notes:																			
Bold	Analyte detected for sample																		
E	Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.																		
NSG	No Standard Given																		
J	indicates estimated value; concentration is below the reporting limit but above the minimum detection limit																		
EPA	EPA drinking water guideline, May 2016																		
*	Guideline value for combined concentrations of PFOS and PFOA																		
**	Due to analyte exceedance above laboratory instrument, the tabulated value is from second laboratory run after a 1 to 10 dilution factor																		
***	Duplicate was collected with the BMW-4 sample																		
																Prepared By: JCL		Checked By: EAW	

Prepared By: JCL Checked By: EAW

TABLE 4: GROUNDWATER GEOCHEMICAL ANALYTICAL RESULTS
22-07 41st Avenue, Long Island City, NY

PAGE 1 OF 1

SAMPLE ID:		BMW-2		BMW-3	
COLLECTION DATE:		7/27/2018		7/26/2018	
LOCATION:		BASEMENT		BASEMENT	
DEPTH (ft):		2.5-7.5		3.5-8.5	
SAMPLE MATRIX:		GROUNDWATER		GROUNDWATER	
ANALYTE		Conc	Qual	Conc	Qual
Geochemical Parameters					
Chloride	ug/l	442000		190000	
Nitrogen, Nitrate	ug/l	1550		29	J
Sulfate	ug/l	597000		600000	
Alkalinity, Total	mg CaCO ₃	289		649	
Hardness	ug/l	864000		NA	
Methane	ug/l	NA		788	
Ethene	ug/l	NA		10.1	
Ethane	ug/l	NA		0.807	
Total Organic Carbon	ug/l	NA		50000	
Dissolved Organic Carbon	ug/l	NA		50000	
Notes:					
	Bold	Analyte detected for sample			
	NA	Not Analyzed			
	J	indicates estimated value; concentration is below the reporting limit but above the minimum detection limit			

TABLE 5: PREVIOUS INVESTIGATION RESULTS FOR CONTAMINANTS OF CONCERN - VOCs
22-07 41ST AVENUE, LONG ISLAND CITY, NY

Former Hygrade Plating GW Results in ug/l

VOCs in ug/l

BMW-1							
Date:	2/19/2014	3/27/2014	11/10/2016	12/11/2017	4/26/2018	7/27/2018	NY-AWQS
PCE in ug/l	3.74	18.30	7.50	2.90	0.86	0.7	5.00
TCE	10.10	5.37	8.00	6.80	1.80	2.2	5.00
c-1,2-DCE	27.70	11.70	16.00	9.80	3.50	4.5	5.00
VC	ND	ND	1.40	0.56	0.51 J	0.22 J	2.00

BMW-2							
Date:	2/19/2014	3/27/2014	11/10/2016	12/11/2017	4/26/2018	7/27/2018	NY-AWQS
PCE in ug/l	6.56	4.59	17.00	3.10	2.50	1.6	5.00
TCE	12.70	5.30	11.00	7.10	5.40	3.7	5.00
c-1,2-DCE	15.30	8.07	14.00	6.90	7.80	4.3	5.00
VC	ND	ND	1.20	0.26	3.10	0.3 J	2.00

BMW-3							
Date:	2/19/2014	3/27/2014	11/10/2016	12/11/2017	4/26/2018	7/26/2018	NY-AWQS
PCE in ug/l	11,900.00	20,700.00	3,300.00	960.00	ND	ND	5.00
TCE	2,600.00	910.00	290.00	130.00	ND	5.5	5.00
c-1,2-DCE	4,150.00	2,730.00	450.00	210.00	71.00	180	5.00
VC	1,070.00	818.00	140.00	46.00	34.00	47	2.00

BMW-4							
Date:	2/19/2014	3/27/2014	11/10/2016	12/11/2017	4/26/2018	7/26/2018	NY-AWQS
PCE in ug/l	464.00	449.00	720.00	340.00	ND	2.2	5.00
TCE	56.90	50.50	62.00	52.00	2.4 J	2.7	5.00
c-1,2-DCE	33.70	26.70	240.00	86.00	12 J	6.3	5.00
VC	6.96	11.20	66.00	34.00	16.00	3.1	2.00

MW-5				
Date:	5/4/2017	4/27/2018	7/26/2018	NY-AWQS
PCE in ug/l	0.53	0.57	0.57	5.00
TCE	2.70	3.40	4.6	5.00
c-1,2-DCE	ND	ND	ND	5.00
VC	ND	ND	ND	2.00

MW-6S				
Date:	5/4/2017	4/27/2018	7/26/2018	NY-AWQS
PCE in ug/l	0.46	37	13	5.00
TCE	0.75	10	6.4	5.00
c-1,2-DCE	ND	23	33	5.00
VC	ND	ND	1.2 J	2.00

MW-6D				
Date:	5/4/2017	4/27/2018	7/26/2018	NY-AWQS
PCE in ug/l	43	0.58	0.49 J	5.00
TCE	13	1.1	1.1	5.00
c-1,2-DCE	ND	ND	ND	5.00
VC	ND	ND	0.08 J	2.00

MW-E				
Date:	5/4/2017	4/27/2018	7/26/2018	NY-AWQS
PCE in ug/l	0.31	ND	ND	5.00
TCE	ND	ND	ND	5.00
c-1,2-DCE	ND	ND	ND	5.00
VC	ND	ND	ND	2.00

TABLE 6: PREVIOUS INVESTIGATION RESULTS FOR CONTAMINANTS OF CONCERN - METALS
22-07 41ST AVENUE, LONG ISLAND CITY, NY

Former Hygrade Plating GW Results in ug/l

Dissolved Metals in ug/l

BMW-1						
Date:	2/19/2014	3/27/2014	11/10/2016	4/26/2018	7/27/2018	NY-AWQS
Cadmium	1.90	0.15	7.80	1.17	3.19	5.00
Chromium	1,000.00	150.00	679.60	1.10	0.95 J	50.00
Hex Chromium	240.00	190.00	593.00			50.00

BMW-2						
Date:	2/19/2014	3/27/2014	11/10/2016	4/26/2018	7/27/2018	NY-AWQS
Cadmium	25.00	27.00	27.30	7.60	11.61	5.00
Chromium	2,380.00	4,120.00	775.10	2.03	1.85	50.00
Hex Chromium	2,410.00	2,630.00	81.00			50.00

BMW-3						
Date:	2/19/2014	3/27/2014	11/10/2016	4/26/2018	7/26/2018	NY-AWQS
Cadmium	0.60	0.50	ND	0.20	ND	5.00
Chromium	57.00	31.00	ND	1.40	1.38	50.00
Hex Chromium	ND	ND	ND			50.00

BMW-4						
Date:	2/19/2014	3/27/2014	11/10/2016	4/26/2018	7/26/2018	NY-AWQS
Cadmium	ND	ND	0.30	0.2	ND	5.00
Chromium	12.00	11.00	12.50	0.23	0.72 J	50.00
Hex Chromium	ND	ND	16.00			50.00

MW-5				
Date:	5/4/2017	4/27/2018	7/27/2018	NY-AWQS
Cadmium	0.11	ND	0.1 J	5.00
Chromium	ND	7.08	5.67	50.00
Hex Chromium	ND	NA		50.00

MW-6S				
Date:	5/4/2017	4/27/2018	7/27/2018	NY-AWQS
Cadmium	0.16	ND	ND	5.00
Chromium	ND	0.24	0.18 J	50.00
Hex Chromium	ND	NA		50.00

MW-6D				
Date:	5/4/2017	4/27/2018	7/27/2018	NY-AWQS
Cadmium	ND	0.09	0.11 J	5.00
Chromium	ND	2.24	0.71 J	50.00
Hex Chromium	ND	NA		50.00

MW-E				
Date:	5/4/2017	4/27/2018	7/27/2018	NY-AWQS
Cadmium	ND	ND	ND	5.00
Chromium	ND	0.43	1.07	50.00
Hex Chromium	ND	NA		50.00

TABLE 7: PREVIOUS INVESTIGATION RESULTS FOR CONTAMINANTS OF CONCERN - PFAS
22-07 41ST AVENUE, LONG ISLAND CITY, NY

Former Hygrade Plating GW Results in ug/l

VOCs in ug/l

BMW-1			
Date:	4/26/2018	7/27/2018	EPA
PFBS	0.95**	1.34**	400
PFOA	0.0591	0.0926	0.070
PFOS	0.78**	0.739**	0.070
PFOA + PFOS (combined value)	0.8391	0.8316	0.070

BMW-2			
Date:	4/26/2018	7/27/2018	EPA
PFBS	0.706**	2.07	400
PFOA	0.0797	0.0914	0.070
PFOS	1.72**	2.95**	0.070
PFOA + PFOS (combined value)	1.7997	3.0414	0.070

BMW-3			
Date:	4/26/2018	7/26/2018	EPA
PFBS	0.111 J	0.106	400
PFOA	0.102	0.0643	0.070
PFOS	5.77**	5.97**	0.070
PFOA + PFOS (combined value)	5.872	6.0343	0.070

BMW-4			
Date:	4/26/2018	7/26/2018	EPA
PFBS	0.248 J	0.148	400
PFOA	0.0712	0.0627	0.070
PFOS	2.55**	2.56**	0.070
PFOA + PFOS (combined value)	2.6212	2.6227	0.070

MW-5			
Date:	4/27/2018	7/26/2018	EPA
PFBS	0.0119	0.0214	400
PFOA	0.0182	0.0305	0.070
PFOS	0.0656	0.112	0.070
PFOA + PFOS (combined value)	0.0838	0.1425	0.070

MW-6S			
Date:	4/27/2018	7/26/2018	EPA
PFBS	0.0225	0.0227	400
PFOA	0.0487	0.614	0.070
PFOS	0.479	0.541**	0.070
PFOA + PFOS (combined value)	0.5277	1.155	0.070

MW-6D			
Date:	4/27/2018	7/26/2018	EPA
PFBS	0.0138	0.0275	400
PFOA	0.0174	0.0246	0.070
PFOS	0.0644	0.0608	0.070
PFOA + PFOS (combined value)	0.0818	0.0854	0.070

MW-E			
Date:	4/27/2018	7/26/2018	EPA
PFBS	0.00714	0.0111	400
PFOA	0.0292	0.0641	0.070
PFOS	0.00526	0.00921	0.070
PFOA + PFOS (combined value)	0.03446	0.07331	0.070

** Due to analyte exceedance above laboratory instrument, the tabulated value is from second laboratory run after a 1 to 10 dilution factor

TABLE 8: ELEVATIONS OF MONITORING WELLS AND WATER TABLE
FORMER HYGRADE
LONG ISLAND CITY, NEW YORK

Well ID Number	Elevation of Top of Casing (ft. MSL)	Depth to Water (ft.) in July 2018	Water Table Elevation (ft. MSL)	Depth to Top of Screen Interval (ft.)	Depth to Bottom of Screen Interval (ft.)	Elevation of Top of Screen (ft. MSL)	Elevation of Bottom of Screen Interval (ft. MSL)
MW-E	16.21	8.34	7.87	5	15	11.2	1.2
BMW-1	7.52	1.95	5.57	1	6	6.5	1.5
BMW-2	7.57	1.85	5.72	2.5	7.5	5.1	0.1
BMW-3	7.42	2.19	5.23	3.5	8.5	3.9	-1.1
BMW-4	7.40	1.85	5.55	4.6	9.6	2.8	-2.2
MW-5	14.50	8.08	6.42	8	18	6.5	-3.5
MW-6S	14.09	8.68	5.41	8.5	18.5	5.6	-4.4
MW-6D	14.18	7.72	6.46	26.5	31.5	-12.3	-17.3

APPENDIX A – FIELD FORMS

LOW FLOW GROUNDWATER SAMPLING RECORD

LOW FLOW GROUNDWATER SAMPLING RECORD

LOW FLOW GROUNDWATER SAMPLING RECORD

LOCATION ID BMW-2	DATE 7/27/18
START TIME 1000	END TIME 1100
SITE NAME/NUMBER Hygrade	PAGE 1 OF 1

WELL INTEGRITY			
	YES	NO	N/A
G	☒	☐	☐
D	☒	☐	☐
R	☒	☐	☐

INITIAL DTW (BMP)	1.85 FT	FINAL DTW (BMP)	2.02 FT	PROT. CASING STICKUP (AGS)	0 FT	TOC/TOR DIFFERENCE	
WELL DEPTH (BMP)	7.9 FT	SCREEN LENGTH	5 FT	PID AMBIENT AIR	PPM	REFILL TIMER SETTING	SEC
WATER COLUMN	6.05 FT	DRAWDOWN VOLUME (initial DTW- final DTW X well diam. squared X 0.041)	0.28 GAL	PID WELL MOUTH	PPM	DISCHARGE TIMER SETTING	SEC
CALCULATED GAL/VOL (column X well diameter squared X 0.041)	0.922 GAL	TOTAL VOL. PURGED (mL. per minute X total minutes X 0.00026 gal/mL)	1.94 GAL	DRAWDOWN/ TOTAL PURGED		PRESSURE TO PUMP	PSI

FIELD PARAMETERS WITH PROGRAM STABILIZATION CRITERIA (AS LISTED IN THE QAPP)

[illegible]**FINAL STABILIZED FIELD PARAMETERS (to appropriate significant figures[SF])**

TEMP.: nearest degree (ex. 10.1 = 10)
COND.: 3 SF max (ex. 3333 = 3330, 0.696 = 0.696)
pH: nearest tenth (ex. 5.53 = 5.5)
DO: nearest tenth (ex. 3.51 = 3.5)
TURB: 3 SF max, nearest tenth (6.19 = 6.2, 101 = 101)
ORP: 2 SF (44.1 = 44, 191 = 190)

EQUIPMENT DOCUMENTATION

TYPE OF PUMP		DECON FLUIDS USED		TUBING/PUMP/BLADDER MATERIALS		EQUIPMENT USED	
☐	PERISTALTIC	☐	LIQUINOX	☐	S. STEEL PUMP MATERIAL	☐	WL METER _____
☐	SUBMERSIBLE	☐	DEIONIZED WATER	☐	PVC PUMP MATERIAL	☐	PID _____
☐	BLADDER	☐	POTABLE WATER	☐	GEOPROBE SCREEN	☐	WQ METER _____
☐	_____	☐	NITRIC ACID	☐	TEFLON BLADDER	☐	TURB. METER _____
☐	WATTERA _____	☐	HEXANE	☐	OTHER _____	☐	PUMP _____
☐	OTHER _____	☐	METHANOL	☐	OTHER _____	☐	OTHER _____
☐	OTHER _____	☐	OTHER _____	☐	OTHER _____	☐	FILTERS _____ NO. _____ TYPE _____

ANALYTICAL PARAMETERS

[illegible]

PURGE OBSERVATIONS

PURGE WATER	YES	NO	NUMBER OF GALLONS
CONTAINERIZED	☐	☐	GENERATED _____
NO-PURGE METHOD	YES	NO	If yes, purged approximately 1 standing volume prior to sampling or _____ mL for this sample location.
UTILIZED	☐	☐	

SKETCH/NOTES

Date: _____



214-25 42nd Avenue, Bayside, NY 11361

LOW FLOW GROUNDWATER SAMPLING RECORD

LOW FLOW GROUNDWATER SAMPLING RECORD

PROJECT NAME <u>Former Hygrade</u>	
PROJECT NUMBER <u>362162331</u>	
SAMPLE ID <u>Bmw-3-072618</u>	SAMPLE TIME <u>1350</u>

LOCATION ID <u>Bmw-3</u>	DATE <u>7/26/18</u>
START TIME <u>1230</u>	END TIME <u>1400</u>
SITE NAME/NUMBER <u>Hygrade</u>	PAGE <u>1</u> OF <u>1</u>

WELL DIAMETER (INCHES) ☐ 1 ☒ 2 ☐ 4 ☐ 6 ☐ 8 ☐ OTHER _____

TUBING ID (INCHES) ☐ 1/8 ☒ 1/4 ☐ 3/8 ☐ 1/2 ☐ 5/8 ☐ OTHER _____

MEASUREMENT POINT (MP) ☐ TOP OF RISER (TOR) ☐ TOP OF CASING (TOC) ☐ OTHER _____

WELL INTEGRITY

YES	NO	N/A
☒	☐	☐
☒	☐	☐
☒	☐	☐
☒	☐	☐

INITIAL DTW (BMP) <u>2.19</u> FT	FINAL DTW (BMP) <u>6.70</u> FT	PROT. CASING STICKUP (AGS) <u>0</u> FT	TOC/TOR DIFFERENCE <u>0.5</u> FT
WELL DEPTH (BMP) <u>8.9</u> FT	SCREEN LENGTH <u>5</u> FT	PID AMBIENT AIR <u>-</u> PPM	REFILL TIMER SETTING SEC
WATER COLUMN <u>6.71</u> FT	DRAWDOWN VOLUME <u>0.74</u> GAL (initial DTW - final DTW X well diam. squared X 0.041)	PID WELL MOUTH <u>-</u> PPM	DISCHARGE TIMER SETTING SEC
CALCULATED GAL/VOL <u>1.10</u> GAL (column X well diameter squared X 0.041)	TOTAL VOL. PURGED <u>5.14</u> GAL (mL per minute X total minutes X 0.00026 gal/mL)	DRAWDOWN/ TOTAL PURGED <u>-</u>	PRESSURE TO PUMP PSI

FIELD PARAMETERS WITH PROGRAM STABILIZATION CRITERIA (AS LISTED IN THE QAPP)										
TIME 3-5 Minutes	DTW (FT) 0.0-0.33 ft Drawdown	PURGE RATE (mL/min)	TEMP. (°C) (+/- 3 degrees)	SP. CONDUCTANCE (mS/cm) (+/- 3%)	pH (units) (+/- 0.1 units)	DISS. O ₂ (mg/L) (+/- 10%)	TURBIDITY (ntu) (+/- 10% <10 ntu)	REDOX (mv) (+/- 10 mv)	PUMP INTAKE DEPTH (ft)	COMMENTS
1239	BEGIN PURGING									
1250	3.49	250	19.50	3.344	6.75	0.12	OR	136.3		
1255	3.46	250	19.71	3.288	6.75	0.09	OR	135.8		
1300	3.70	250	19.76	3.113	6.78	0.14	OR	120.4		
1305	3.55	250	19.70	3.125	6.85	0.46	OR	91.4		
1310	4.05	250	19.73	3.082	6.96	1.37	OR	92.3		aeration in tubing
1315	—	250								water very dark
1325	4.70	250	19.98	2.834	7.03	2.95	OR	77.4		
1330	5.50	250	19.98	2.749	7.01	4.89	OR	75.0		
1335	6.70	250	20.06	2.670	7.00	4.48	OR	75.1		
1340	6.70	250	20.00	2.645	7.00	5.12	OR	78.5		parameters do
1350	collect sample									not appear to be stabilizing
FINAL STABILIZED FIELD PARAMETERS (to appropriate significant figures(SF))								TEMP: nearest degree (ex. 10.1 = 10) COND: 3 SF max (ex. 3333 = 3330, 0.696 = 0.696) pH: nearest tenth (ex. 5.53 = 5.5) DO: nearest tenth (ex. 3.51 = 3.5) TURB: 3 SF max, nearest tenth (6.19 = 6.2, 101 = 101) ORP: 2 SE (44.1 = 44, 191 = 190)		
										if running dry

EQUIPMENT DOCUMENTATION		DECON FLUIDS USED		TUBING/PUMP/BLADDER MATERIALS		EQUIPMENT USED	
☒ PERISTALTIC	☐ SUBMERSIBLE	☐ LIQUINOX	☐ DEIONIZED WATER	☐ SILICON TUBING	☐ S. STEEL PUMP MATERIAL	☐ WL METER	☐ PID
☐ BLADDER	☐ WATER	☐ POTABLE WATER	☐ NITRIC ACID	☐ TEFLON TUBING	☐ PVC PUMP MATERIAL	☐ WQ METER	☐ TURB. METER
☐ WATERRA	☐ OTHER	☐ HEXANE	☐ METHANOL	☐ TEFLON LINED TUBING	☐ GEOPROBE SCREEN	☐ PUMP	☐ OTHER
☐ OTHER	☐ OTHER	☐ OTHER	☐ OTHER	☐ HDPE TUBING	☐ TEFLON BLADDER	☐ FILTERS	☐ NO. TYPE
☐ OTHER	☐ OTHER	☐ OTHER	☐ OTHER	☐ LDPE TUBING	☐ OTHER		
☐ OTHER	☐ OTHER	☐ OTHER	☐ OTHER	☐ OTHER	☐ OTHER		

PARAMETER	METHOD NUMBER	FIELD FILTERED	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED	QC COLLECTED	SAMPLE BOTTLE ID NUMBERS
VOCs	8260	—	HCL	3x40mL	✓	—	Bmw-3-072618
Total Metals	6020	—	HNO3	1x250mL	✓	—	
Dissolved Metals	6020	NO	—	1x250mL	✓	—	
PFA's	537	—	Thi2m	3x250mL	✓	—	

PURGE OBSERVATIONS		SKETCH/NOTES	
PURGE WATER CONTAINERIZED	YES ☐ NO ☐	- water has blackish tint and slight odor - OR = over-range - water appears to bring up coarse particles	
NO-PURGE METHOD UTILIZED	YES ☐ NO ☐		
NUMBER OF GALLONS GENERATED	_____		
If yes, purged approximately 1 standing volume prior to sampling or _____ mL for this sample location.			
Sampler Signature: _____		Print Name: _____	
Checked By: _____		Date: _____	



LOW FLOW GROUNDWATER SAMPLING RECORD

PROJECT NAME <u>Hygrade</u>	
PROJECT NUMBER <u>2612162331</u>	
SAMPLE ID <u>BWW-84</u>	SAMPLE TIME <u>1325</u>

LOCATION ID	DATE <u>7/26/18</u>
START TIME <u>1235</u>	END TIME <u>1325</u>
SITE NAME/NUMBER <u>Hygrade LLC</u>	PAGE <u>1</u> OF <u>1</u>

WELL DIAMETER (INCHES) ☐ 1 ☒ 2 ☐ 4 ☐ 6 ☐ 8 ☐ OTHER _____

TUBING ID (INCHES) ☐ 1/8 ☐ 1/4 ☐ 3/8 ☐ 1/2 ☐ 5/8 ☐ OTHER _____

MEASUREMENT POINT (MP) ☐ TOP OF RISER (TOR) ☐ TOP OF CASING (TOC) ☐ OTHER _____

WELL INTEGRITY

	YES	NO	N/A
CAP			
CASING			
LOCKED			
COLLAR			

INITIAL DTW (BMP) <u>1.85</u> FT	FINAL DTW (BMP) <u>2.08</u> FT	PROT. CASING STICKUP (AGS) _____ FT	TOC/TOR DIFFERENCE _____ FT
WELL DEPTH (BMP) <u>9.12</u> FT	SCREEN LENGTH <u>5</u> FT	PID AMBIENT AIR _____ PPM	REFILL TIMER SETTING _____ SEC
WATER COLUMN <u>7.27</u> FT	DRAWDOWN VOLUME (initial DTW - final DTW X well diam. squared X 0.041) _____ GAL	PID WELL MOUTH _____ PPM	DISCHARGE TIMER SETTING _____ SEC
CALCULATED GAL/VOL (column X well diameter squared X 0.041) <u>1.19</u> GAL	TOTAL VOL. PURGED <u>4</u> GAL	DRAWDOWN/ TOTAL PURGED _____	PRESSURE TO PUMP _____ PSI

FIELD PARAMETERS WITH PROGRAM STABILIZATION CRITERIA (AS LISTED IN THE QAPP)

TIME 3-5 Minutes	DTW (FT) 0.0-0.33 ft Drawdown	PURGE RATE (mL/min)	TEMP. (°C) (+/- 3 degrees)	SP. CONDUCTANCE (mS/cm) (+/- 3%)	pH (units) (+/- 0.1 units)	DISS. O ₂ (mg/L) (+/- 10%)	TURBIDITY (ntu) (+/- 10% <10 ntu)	REDOX (mv) (+/- 10 mv)	PUMP INTAKE DEPTH (ft)	COMMENTS
BEGIN PURGING										
1235	2.33	250	18.99	2.678	6.97	1.56	78.0	89.3	8.50	septic odor
1240	2.34	250	19.15	2.670	6.95	1.66	64.9	58.0	8.50	septic odor
1245	2.33	250	19.48	2.658	6.88	1.29	18.6	39.2	8.50	septic odor
1250	2.33	250	19.55	2.746	6.89	1.80	13.3	9.7	8.50	septic odor
1255	2.38	250	19.57	2.769	6.89	1.89	5.46	-19.7	8.50	septic odor
1300	2.43	250	19.82	2.808	6.88	1.37	5.72	-70	8.50	septic odor
1305	2.37	250	19.69	2.820	6.88	1.52	3.23	-83.0	8.50	septic odor
1310	2.39	250	19.71	2.800	6.86	1.51	2.23	-94.3	8.50	septic odor
1315	2.39	250	19.71	2.788	6.85	1.50	2.33	-102.1	8.50	septic odor
1320	2.42	250	19.75	2.774	6.84	1.52	1.26	-104.4	8.50	septic odor
1325	2.40	250	19.76	2.770	6.83	1.48	1.34	-106.1	8.50	septic odor / sample

FINAL STABILIZED FIELD PARAMETERS (to appropriate significant figures(SF))

TEMP: nearest degree (ex. 10.1 = 10)
 COND: 3 SF max (ex. 3333 = 3330, 0.696 = 0.696)
 pH: nearest tenth (ex. 5.53 = 5.5)
 DO: nearest tenth (ex. 3.51 = 3.5)
 TURB: 3 SF max, nearest tenth (6.19 = 6.2, 101 = 101)
 ORP: 2 SF (44.1 = 44, 191 = 190)

EQUIPMENT DOCUMENTATION

TYPE OF PUMP		DECON FLUIDS USED		TUBING/PUMP/BLADDER MATERIALS		EQUIPMENT USED	
☒ PERISTALTIC	☐	☐ LIQUINOX	☐	☐ SILICON TUBING	☐	☒ WL METER	_____
☐ SUBMERSIBLE	☒	☐ DEIONIZED WATER	☐	☐ TEFLON TUBING	☐	☒ PID	_____
☐ BLADDER	☐	☐ POTABLE WATER	☐	☐ TEFLON LINED TUBING	☐	☒ WQ METER	_____
☐ WATTEA	☐	☐ NITRIC ACID	☒	☐ HDPE TUBING	☐	☒ TURB. METER	_____
☐ OTHER	☐	☐ HEXANE	☐	☐ LDPE TUBING	☐	☐ PUMP	_____
☐ OTHER	☐	☐ METHANOL	☐	☐ OTHER	☐	☐ OTHER	_____
☐ OTHER	☐	☐ OTHER	☐	☐ OTHER	☐	☐ FILTERS	NO. _____ TYPE _____

ANALYTICAL PARAMETERS

PARAMETER	METHOD NUMBER	FIELD FILTERED	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED	QC COLLECTED	SAMPLE BOTTLE ID NUMBERS

PURGE OBSERVATIONS

PURGE WATER CONTAINERIZED ☒ YES ☐ NO

NO-PURGE METHOD UTILIZED ☐ YES ☐ NO

NUMBER OF GALLONS GENERATED 4

If yes, purged approximately 1 standing volume prior to sampling or _____ mL for this sample location.

SKETCH/NOTES

Bacteria Sample Taken Here (B1)
Septic Odor. DUP Taken Here

Sampler Signature: Ben Hess

Print Name: Ben Hess

Checked By: _____

Date: 07/26/18



214-25 42nd Avenue, Bayside, NY 11361

LOW FLOW GROUNDWATER SAMPLING RECORD

LOW FLOW GROUNDWATER SAMPLING RECORD

PROJECT NAME <u>H-gate</u>	
PROJECT NUMBER <u>3612162331</u>	
SAMPLE ID <u>MW-5</u>	SAMPLE TIME <u>1015</u>

LOCATION ID	DATE <u>7-26-18</u>
START TIME <u>935</u>	END TIME <u>1015</u>
SITE NAME/NUMBER <u>H-gate LIL</u>	PAGE <u>1</u> OF <u>1</u>

WELL DIAMETER (INCHES) ☐ 1 ☒ 2 ☐ 4 ☐ 6 ☐ 8 ☐ OTHER _____	WELL INTEGRITY YES NO N/A CAP _____ CASING _____ LOCKED _____ COLLAR _____
TUBING ID (INCHES) ☐ 1/8 ☐ 1/4 ☐ 3/8 ☐ 1/2 ☐ 5/8 ☐ OTHER _____	
MEASUREMENT POINT (MP) ☐ TOP OF RISER (TOR) ☒ TOP OF CASING (TOC) ☐ OTHER _____	
INITIAL DTW (BMP) <u>8.08</u> FT	FINAL DTW (BMP) <u>8.20</u> FT
WELL DEPTH (BMP) <u>18.31</u> FT	SCREEN LENGTH _____ FT
WATER COLUMN _____ FT	DRAWDOWN VOLUME _____ GAL
CALCULATED GAL/VOL _____ GAL	TOTAL VOL. PURGED _____ GAL
(column X well diameter squared X 0.041)	
(mL per minute X total minutes X 0.00026 gal/mL)	
PROT. CASING STICKUP (AGS) _____ FT	TOC/TOR DIFFERENCE _____ FT
PID AMBIENT AIR _____ PPM	REFILL TIMER SETTING _____ SEC
PID WELL MOUTH _____ PPM	DISCHARGE TIMER SETTING _____ SEC
DRAWDOWN/ TOTAL PURGED _____	PRESSURE TO PUMP _____ PSI

FIELD PARAMETERS WITH PROGRAM STABILIZATION CRITERIA (AS LISTED IN THE QAPP)										
TIME 3-5 Minutes	DTW (FT) 0.0-0.33 ft Drawdown	PURGE RATE (mL/min)	TEMP. (°C) (+/- 3 degrees)	SP. CONDUCTANCE (mS/cm) (+/- 3%)	pH (units) (+/- 0.1 units)	DISS. O ₂ (mg/L) (+/- 10%)	TURBIDITY (ntu) (+/- 10% <10 ntu)	REDOX (mv) (+/- 10 mv)	PUMP INTAKE DEPTH (ft)	COMMENTS
BEGIN PURGING										
935	8.31	300	17.17	1.603	6.76	0.30	—	201.2	17.00	Turb Over range
940	8.25	250	17.74	1.549	6.67	0.22	77.1	199.9	17.00	
945	8.24	225	17.97	1.515	6.65	0.21	34.7	198.2	17.00	
950	8.26	225	17.86	1.524	6.63	0.25	25.9	195.4	17.00	
955	8.25	225	17.79	1.537	6.62	0.30	20.9	193.6	17.00	
1000	8.25	225	18.05	1.543	6.61	0.44	14.0	192.1	17.00	
1005	8.25	225	18.05	1.545	6.62	0.41	11.4	191.6	17.00	
1010	8.25	225	18.09	1.547	6.62	0.42	11.3	188.8	17.00	
1015	8.25	225	18.18	1.554	6.62	0.43	8.53	186.8	17.00	sample

FINAL STABILIZED FIELD PARAMETERS (to appropriate significant figures(SF))

TEMP.: nearest degree (ex. 10.1 = 10)
COND.: 3 SF max (ex. 3333 = 3330, 0.696 = 0.696)
pH: nearest tenth (ex. 5.53 = 5.5)
DO: nearest tenth (ex. 3.51 = 3.5)
TURB: 3 SF max, nearest tenth (6.19 = 6.2, 101 = 101)
ORP: 2 SF (44.1 = 44, 191 = 190)

EQUIPMENT DOCUMENTATION

TYPE OF PUMP ☒ PERISTALTIC ☐ SUBMERSIBLE ☐ BLADDER ☐ WATERA ☐ OTHER ☐ OTHER	DECON FLUIDS USED ☒ LIQUINOX ☐ DEIONIZED WATER ☐ POTABLE WATER ☐ NITRIC ACID ☐ HEXANE ☐ METHANOL ☐ OTHER	TUBING/PUMP/BLADDER MATERIALS ☐ SILICON TUBING ☐ TEFLON TUBING ☐ TEFLON LINED TUBING ☒ HDPE TUBING ☐ LDPE TUBING ☐ OTHER ☐ OTHER	EQUIPMENT USED ☒ WL METER ☒ PID ☒ WQ METER ☒ TURB. METER ☒ PUMP ☐ OTHER ☐ FILTERS NO. _____ TYPE _____
---	--	--	--

ANALYTICAL PARAMETERS

PARAMETER	METHOD NUMBER	FIELD FILTERED	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED	QC COLLECTED	SAMPLE BOTTLE ID NUMBERS

PURGE OBSERVATIONS

PURGE WATER CONTAINERIZED	YES ☒ NO ☐	NUMBER OF GALLONS GENERATED <u>3.5</u>
NO-PURGE METHOD UTILIZED	YES ☐ NO ☐	If yes, purged approximately 1 standing volume prior to sampling or _____ mL for this sample location.

SKETCH/NOTES

Sampler Signature: Ben Hess Print Name: Ben Hess

Checked By: _____ Date: 7/26/18



PROJECT NAME Hygrade	
PROJECT NUMBER 3612162331	
SAMPLE ID MIA-65-072618	SAMPLE TIME 1035

LOCATION ID MW-65	DATE 5/26/18
START TIME 0958	END TIME 1040
SITE NAME/NUMBER Hygrade	PAGE 1 OF

WELL DIAMETER (INCHES) ☐ 1 ☒ 2 ☐ 4 ☐ 6 ☐ 8

TUBING ID (INCHES) ☐ 1/8 ☒ 1/4 ☐ 3/8 ☐ 1/2 ☐ 5/8

MEASUREMENT POINT (MP) ☐ TOP OF RISER (TOR) ☐ TOP OF CASING (TOC)

☐ OTHER _____

☐ OTHER _____

☐ OTHER _____

WELL INTEGRITY			
	YES	NO	N/A
G	☒	☐	☐
ED	☒	☐	☐
AR	☒	☐	☐

INITIAL DTW
(BMP)

FINAL DTW
(BMP)

1372 FT

PROT. CASING
STICKUP (AGS)

TOC/TOR DIFFERENCE	
	FT

WELL DEPTH (BMP) 20 FT

SCREEN LENGTH 10 FT

PID	
AMBIENT AIR	PPM

**REFILL TIMER
SETTING**

WATER COLUMN 11.32 FT

DRAWDOWN VOLUME 0.8 GAL

PID WELL
MOUTH

**DISCHARGE
TIMER SETTING**

CALCULATED
GAL/VOL
(column X well diameter squared X 0.041)

TOTAL VOL.
PURGED 24 GAL

DRAWDOWN/ TOTAL PURGED	

PRESSURE
TO PUMP

[illegible]

TEMP.: nearest degree (ex. 10.1 = 10)
COND.: 3 SF max (ex. 3333 = 3330, 0.696 = 0.696)
pH: nearest tenth (ex. 5.53 = 5.5)
DO: nearest tenth (ex. 3.51 = 3.5)
TURB: 3 SF max, nearest tenth (6.19 = 6.2, 101 = 101)
ORP: 2 SF (44.1 = 44, 191 = 190)

TYPE OF PUMP	
☒	PERISTALTIC
☐	SUBMERSIBLE
☐	BLADDER
☐	WATTERA
☐	OTHER
☐	OTHER

LIQUINOX
DEIONIZED WATER
POTABLE WATER
NITRIC ACID
HEXANE
METHANOL
OTHER Acetone

ING
NG
D TUBING
G
G

S. STEEL PUMP MATERIAL
PVC PUMP MATERIAL
GEOPROBE SCREEN
TEFLON BLADDER
OTHER _____
OTHER _____
OTHER _____

METER	Heron	
METER	JSE 556	
B. METER	HATCH 21000	
IP	Geopump	
ER		
ERS	NO.	TYPE

ANALYTICAL PARAMETERS							
PARAMETER	METHOD NUMBER	FIELD FILTERED	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED	QC COLLECTED	SAMPLE BOTTLE ID NUMBERS
VOCs	8260	—	HCL	3x40mL	y	N	ML-65-0726
Dissolved Metals	6020	No	—	1x250mL	y	N	↓
Total Metals	6020	—	HNO ₃	1x250mL	y	N	↓
PFAAs	537	—	Trizma	3x250mL	y	N	↓

PURGE WATER	YES	NO
CONTAINERIZED	☒	☐
NO-PURGE METHOD	YES	NO
UTILIZED	☐	☐

NUMBER OF GALLONS
GENERATED _____

If yes, purged approximately 1 standing volume prior
to sampling or _____ ml. for this sample location

SKETCH/NOTES

Sampler Signature: _____

Print Name:

Checked By:

Date: _____



LOW FLOW GROUNDWATER SAMPLING RECORD

WELL INTEGRITY

	YES	NO	N/A
CAP	☒	☐	☐
CASING	☒	☐	☐
LOCKED	☒	☐	☐
COLLAR	☒	☐	☐

TOC/TOR DIFFERENCE	
REFILL TIMER SETTING	
DISCHARGE TIMER SETTING	
PRESSURE TO PUMP	

FIELD PARAMETERS WITH PROGRAM STABILIZATION CRITERIA (AS LISTED IN THE QAPP)

[illegible]**FINAL STABILIZED FIELD PARAMETERS (to appropriate significant figures[SF])**

TEMP.: nearest degree (ex. 10.1 = 10)
COND.: 3 SF max (ex. 3333 = 3330, 0.696 = 0.696)
pH: nearest tenth (ex. 5.53 = 5.5)
DO: nearest tenth (ex. 3.51 = 3.5)
TURB: 3 SF max, nearest tenth (6.19 = 6.2, 101 = 101)
ORP: 2 SF (44.1 = 44, 191 = 190)

EQUIPMENT DOCUMENTATION

TYPE OF PUMP		DECON FLUIDS USED		TUBING/PUMP/BLADDER MATERIALS		EQUIPMENT USED		
☒	PERISTALTIC	☐	LIQUINOX	☐	SILICON TUBING	☒	WL METER	Her 0 0
☐	SUBMERSIBLE	☐	DEIONIZED WATER	☐	TEFLON TUBING	☐	PID	
☐	BLADDER	☐	POTABLE WATER	☐	TEFLON LINED TUBING	☐	WQ METER	HB YSE
☐		☐	NITRIC ACID	☒	HDPE TUBING	☐	TURB. METER	Hach 2000
☐	WATTERA	☐	HEXANE	☐	LDPE TUBING	☒	PUMP	Geogump
☐	OTHER	☒	METHANOL	☐	OTHER	☐	OTHER	
☐	OTHER	☒	OTHER Aironox	☐	OTHER	☐	FILTERS	NO. TYPE

ANALYTICAL PARAMETERS

PARAMETER	METHOD NUMBER	FIELD FILTERED	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED	QC COLLECTED	SAMPLE BOTTLE ID NUMBERS
VOCs	8260	/	HCL	3x40mL	y	N	MW-60-07264
Dissolved metals	6020	No	-	1x250 mL	y	N	
Total metals	6020	/	HNO ₃	1x250 mL	y	N	
PFA's	537	/	Inzmia	3x250mL	y	N	↓

PURGE OBSERVATIONS

PURGE WATER CONTAINERIZED ☒ YES ☐ NO

NO-PURGE METHOD UTILIZED ☐ YES ☐ NO

NUMBER OF GALLONS GENERATED 3

If yes, purged approximately 1 standing volume prior to sampling or _____ mL for this sample location.

SKETCH/NOTES

Date: 7/26/18



LOW FLOW GROUNDWATER SAMPLING RECORD

PROJECT NAME H4grade		LOCATION ID	DATE 7-26-18
PROJECT NUMBER 3612162331		START TIME 855	END TIME 1130
SAMPLE ID MW-Er	SAMPLE TIME	SITE NAME/NUMBER H4grade LIC	PAGE 1 OF 1

WELL DIAMETER (INCHES) ☒ 1 ☐ 2 ☐ 4 ☐ 6 ☐ 8 ☐ OTHER _____

TUBING ID (INCHES) ☐ 1/8 ☐ 1/4 ☐ 3/8 ☐ 1/2 ☐ 5/8 ☐ OTHER _____

MEASUREMENT POINT (MP) ☐ TOP OF RISER (TOR) ☐ TOP OF CASING (TOC) ☐ OTHER _____

WELL INTEGRITY

ELL INTEGRITY		
YES	NO	N/A

	125	150	175
CAP	—	—	—
CASING	—	—	—
LOCKED	—	—	—
COLLAR	—	—	—

INITIAL DTW (BMP)	8.34 FT	FINAL DTW (BMP)	4.79 FT	PROT. CASING STICKUP (AGS)	FT	TOC/TOR DIFFERENCE	FT
WELL DEPTH (BMP)	15.23 FT	SCREEN LENGTH	FT	PID AMBIENT AIR	PPM	REFILL TIMER SETTING	SEC
WATER COLUMN	FT	DRAWDOWN VOLUME (initial DTW- final DTW X well diam. squared X 0.041)	GAL	PID WELL MOUTH	PPM	DISCHARGE TIMER SETTING	SEC
CALCULATED GAL/VOL (column X well diameter squared X 0.041)	GAL	TOTAL VOL. PURGED (mL per minute X total minutes X 0.00026 gal/mL)	GAL	DRAWDOWN/ TOTAL PURGED		PRESSURE TO PUMP	PSI

FIELD PARAMETERS WITH PROGRAM STABILIZATION CRITERIA (AS LISTED IN THE QAPP)

[illegible]**FINAL STABILIZED FIELD PARAMETERS (to appropriate significant figures[SF])**

TEMP.: nearest degree (ex. 10.1 = 10)
COND.: 3 SF max (ex. 3333 = 3330, 0.696 = 0.696)
pH: nearest tenth (ex. 5.53 = 5.5)
DO: nearest tenth (ex. 3.51 = 3.5)
TURB: 3 SF max, nearest tenth (6.19 = 6.2, 101 = 101)
ORP: 2 SF (44.1 = 44, 191 = 190)

EQUIPMENT DOCUMENTATION

TYPE OF PUMP		DECON FLUIDS USED		TUBING/PUMP/BLADDER MATERIALS		EQUIPMENT USED	
☒	PERISTALTIC	☐	LINQUOX	☐	SILICON TUBING	☒	WL METER
☐	SUBMERSIBLE	☐	DEIONIZED WATER	☐	TEFLON TUBING	☐	PID
☐	BLADDER	☐	POTABLE WATER	☐	TEFLON LINED TUBING	☐	WQ METER
		☐	NITRIC ACID	☒	HDPE TUBING	☒	TURB. METER
	WATERA	☐	HEXANE	☐	LDPE TUBING	☐	PUMP
	OTHER	☐	METHANOL	☐	OTHER	☐	OTHER
	OTHER	☐	OTHER	☐	OTHER	☐	FILTERS NO. TYPE
		☐		☐		☐	

ANALYTICAL PARAMETERS

[illegible]

PURGE OBSERVATIONS

PURGE WATER CONTAINERIZED	YES ☒	NO ☐	NUMBER OF GALLONS GENERATED	<u> </u>
NO-PURGE METHOD UTILIZED	YES ☐	NO ☐	If yes, purged approximately 1 standing volume prior to sampling or _____ ml. for this sample location.	

Sampler Signature: Print Name: Ben Hess

Checked By: _____ Date: 7-26-18

SKETCH/NOTES

well runs dry extremely quick.
wasn't able to take additional
parameter readings

**APPENDIX B –
CERTIFIED LABORATORY ANALYTICAL REPORTS AND DATA USABILITY
SUMMARY REPORTS**

**DATA USABILITY SUMMARY REPORT
JULY 2018 GROUNDWATER SAMPLING EVENT
FORMER HYGRADE POLISHING AND PLATING COMPANY
LONG ISLAND CITY, NEW YORK**

1.0 INTRODUCTION

Groundwater samples were collected at the Former Hygrade site in July 2018 and submitted to Alpha Analytical Laboratories located in Mansfield, Massachusetts, and Westborough, Massachusetts, for analysis. Samples were analyzed by the following methods:

- Volatile Organic Compounds (VOCs) by USEPA Method 8260C
- Per- and Polyfluorinated Alkyl Substances (PFAS) by USEPA Method 537(M)
- Total and Dissolved Metals by USEPA Methods 6020B/7470A

Results were reported in the following sample delivery groups (SDGs):

- L1828998
- L1828999
- L1829069
- L1829077

A Data Usability Summary Report (DUSR) review was completed based on the New York State Department of Environmental Conservation (NYSDEC) Division of Environmental Remediation guidance (NYSDEC, 2010). Sample event information included in this DUSR is presented in the following tables:

- Table 1 – Summary of Samples and Analytical Methods
- Table 2 – Summary of Analytical Results
- Table 3 – Qualification Action Summary

Laboratory deliverables included:

- Category B deliverables as defined in the NYSDEC Analytical Services Protocols (NYSDEC, 2005).

The DUSR review included the following evaluations. A table of the project control limits for VOCs and metals is presented in Attachment A. Control limits specified by the laboratory and in Method 537 were used for PFAS review. DUSR review checklists and applicable laboratory QC summary forms are included in Attachment B to document QC outliers associated with qualification actions.

- Lab Report Narrative Review
- Data Package Completeness and COC records (Table 1 verification)
- Sample Preservation and Holding Times
- Instrument Calibration (report narrative/lab-qualifier evaluation)
- QC Blanks
- Laboratory Control Samples (LCS)

- Matrix Spike/Matrix Spike Duplicates (MS/MSD)
- Surrogate Spikes (if applicable)
- Internal Standards (if applicable)
- Field Duplicates
- Target Analyte Identification and Quantitation
- Raw Data (chromatograms), Calculation Checks and Transcription Verifications
- Reporting Limits
- Electronic Data Qualification and Verification

The following laboratory or data review qualifiers are used in the final data presentation:

U = target analyte is not detected above the reported detection limit

J = concentration is estimated

J+ = concentration is estimated and potentially biased high

Results are interpreted to be usable as reported by the laboratory unless discussed in the following sections.

2.0 EXECUTIVE SUMMARY

Based on the DUSR review the majority of sample results are interpreted to be usable as reported by the laboratory. Results for a subset of samples were qualified due to blank contamination, internal standard recoveries, LCS recoveries, and/or MS/MSD recoveries.

3.0 DATA QUALIFICATION ACTIONS AND OBSERVATIONS

Sample Receipt

The trip blank TRIP BLANK-07218 was correctly logged into the laboratory as indicated on the COC; however, the intended trip blank suffix may have been 072718 (rather than 07218) to match the date on the COC. The trip blank identification was not changed during data validation.

The Sample Receipt and Container Information sheets for a subset of samples appeared to have incorrect pH measurements reported. The laboratory reviewed the information and provided corrected documentation.

VOCs

The following samples were analyzed at two to five-fold dilutions due to concentrations of target analytes. Reporting limits for non-detect analytes are elevated (2-5X):

BMW-3-072618

MW-6S-072618

Reporting limits for bromomethane in samples BMW-1-072718 and BMW-2-072718 were qualified estimated (UJ) based on low recovery in the LCS. Qualified results are summarized in Table 3 with reason code LCS-L.

An MS/MSD was performed using sample BMW-1-072718. MS/MSD percent recoveries and relative percent differences (RPDs) were within control limits for all VOCs except vinyl chloride. The positive detection of vinyl chloride in sample BMW-1-072718 was qualified estimated (J+) based on a slight high recovery in the MS. The MSD recovery was within 70-130 control limits. The qualified result is included on Table 3 with reason code MS-L.

A field duplicate (DUP-072618) was collected at location BMW-4. Results matched well for all VOCs.

PFAS

Low concentration detections of 6:2 fluorotelomer sulfonate in samples BMW-1-072718 and BMW-2-072718 were qualified non-detect (U) based on contamination in the associated laboratory method blank. Qualified results are summarized in Table 3 with reason code BL1.

For PFAS samples BMW-3-072618 and MW-E-072618, percent recoveries of one or more extracted internal standards were outside the 50-150 control limits specified by the laboratory. Positive and non-detect results for target compounds associated with internal standards outside control limits were qualified estimated (J+ or UJ). Qualified results are summarized in Table 3 with reason code IS-L or IS-H as applicable.

An MS/MSD was performed for sample BMW-1-072718. MS/MSD percent recoveries and relative percent differences (RPDs) were within control limits for PFAS compounds.

A field duplicate (DUP-072618) was collected at location BMW-4. Results matched well for all PFAS compounds.

Metals

Detections of total and dissolved antimony were qualified non-detect (U) in a subset samples based on detections in the method blanks.

Detections of total and dissolved aluminum, and dissolved nickel, in a subset of samples were qualified non-detect (U) or estimated (J) based on detection in the field blank.

Detections of total chromium in a subset of samples were qualified non-detect (U) based on detections in the field blank.

Detections of dissolved copper in a subset of samples were qualified estimated (J) based on detections in the method blank and field blank.

Detections of total and/or dissolved iron in a subset of samples were qualified estimated (J) or non-detect (U) based on detections in the method blank and field blank. Detections of total thallium and dissolved zinc in a subset of samples were qualified estimated (J) or non-detect (U) based on detection in the method blank. Qualified results are summarized in Table 3 with reason codes BL1 and/or BL2.

An MS or MS/MSD was performed for samples BMW-3-072618 and BMW-1-072718. MS percent recoveries for BMW-3-072618 were within control limits for all total metals, and all dissolved metals except:

Iron (137)
Potassium (132)

Detections of dissolved iron and potassium in sample BMW-3-072618 were qualified estimated (J+) and may represent potential high biases.

MS/MSD percent recoveries and relative percent differences (RPDs) for BMW-1-072718 were within control limits for all total metals, and all dissolved metals except:

Antimony (127)
Magnesium (127, 136)

Detections of dissolved antimony and magnesium in sample BMW-1-072718 were qualified estimated (J+) and may represent potential high biases. The qualified results are summarized in Table 3 with reason code MS-H.

A field duplicate (DUPLICATE) was collected at location BMW-4. Results matched well for all total and dissolved metals.

Reference:

New York State Department of Environmental Conservation (NYSDEC), 2005. "Analytical Services Protocols"; July 2005.

New York State Department of Environmental Conservation (NYSDEC), 2010. "Technical Guidance for Site Investigation and Remediation-Appendix 2B"; DER-10; Division of Environmental Remediation; May 2010.

USEPA, 2012. "ICP-AES Data Validation"; USEPA Region II; SOP # HW-2a, Revision 15; Hazardous Waste Support Section; December 2012.

USEPA, 2014. "Validating Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry SW-846 Method 8260B"; USEPA Region II; SOP # HW-24, Revision 4; Hazardous Waste Support Section; September 2014.

Data Validator: Julie Ricardi



October 17, 2018

Former Hygrade Site, Long Island City, NY
NYSDEC BCP Site #C241148
Wood Environment and Infrastructure Solutions
Reviewed by: Chris Ricardi, NRCC-EAC

Project No. 3612162331

A handwritten signature in black ink that reads "Chris Ricardi". The signature is fluid and cursive, with the first name "Chris" and last name "Ricardi" clearly legible.

October 18, 2018

TABLE 1 - SUMMARY OF SAMPLES AND ANALYTICAL METHODS
DATA USABILITY SUMMARY REPORT
JULY 2018 GROUNDWATER SAMPLING EVENT
FORMER HYGRADE POLISHING AND PLATING COMPANY
LONG ISLAND CITY, NEW YORK

SDG	Location	Field Sample ID	Sample Date	Media	Lab Sample ID	Method Class Fraction	8260C VOC T	537(M) PFAS T	6020A Metals T	6020A Metals D	7470A Mercury T	7470A Mercury D
L1828998	BMW-3	BMW-3-072618	7/26/2018	GW	L1828998-01	FS		21				
L1828998	BMW-4	BMW-4-072618	7/26/2018	GW	L1828998-02	FS		21				
L1828998	BMW-4	DUP-072618	7/26/2018	GW	L1828998-06	FD		21				
L1828998	MW-5	MW-5-072618	7/26/2018	GW	L1828998-03	FS		21				
L1828998	MW-6D	MW-6D-072618	7/26/2018	GW	L1828998-05	FS		21				
L1828998	MW-6S	MW-6S-072618	7/26/2018	GW	L1828998-04	FS		21				
L1828998	MW-E	MW-E-072618	7/26/2018	GW	L1828998-07	FS		21				
L1828998	QC	FB-072618	7/26/2018	BW	L1828998-08	FB		21				
L1828999	BMW-3	BMW-3-072618	7/26/2018	GW	L1828999-01	FS	76		22	22	1	1
L1828999	BMW-4	BMW-4-072618	7/26/2018	GW	L1828999-02	FS	76		22	22	1	1
L1828999	BMW-4	DUP-072618	7/26/2018	GW	L1828999-07	FD	76		22	22	1	1
L1828999	MW-5	MW-5-072618	7/26/2018	GW	L1828999-03	FS	76		22	22	1	1
L1828999	MW-6D	MW-6D-072618	7/26/2018	GW	L1828999-05	FS	76		22	22	1	1
L1828999	MW-6S	MW-6S-072618	7/26/2018	GW	L1828999-04	FS	76		22	22	1	1
L1828999	MW-E	MW-E-072618	7/26/2018	GW	L1828999-06	FS	76		22	22	1	1
L1828999	QC	FB-072618	7/26/2018	BW	L1828999-09	FB	76		22	22	1	1
L1828999	QC	TB-072418	7/24/2018	BW	L1828999-08	TB	76					
L1829069	BMW-1	BMW-1-072718	7/27/2018	GW	L1829069-01	FS		21				
L1829069	BMW-2	BMW-2-072718	7/27/2018	GW	L1829069-02	FS		21				
L1829077	BMW-1	BMW-1-072718	7/27/2018	GW	L1829077-01	FS	76		22	22	1	1
L1829077	BMW-2	BMW-2-072718	7/27/2018	GW	L1829077-02	FS	76		22	22	1	1
L1829077	QC	TRIP BLANK-07218	7/27/2018	BW	L1829077-03	TB	76					

GW = groundwater
FS = field sample
FD = field duplicate
FB = field blank
TB = trip blank

VOC = volatile organic compound
PFAS = per- /polyfluorinated alkyl substance
T = total
D = dissolved
Number = number of analytes reported

TABLE 2 - SUMMARY OF ANALYTICAL RESULTS
DATA USABILTY SUMMARY REPORT
JULY 2018 GROUNDWATER SAMPLING EVENT
FORMER HYGRADE POLISHING AND PLATING COMPANY
LONG ISLAND CITY, NEW YORK

				SDG:	L1828999		L1828999		L1828999		L1828999		L1828999		L1828999	
				Location:	BMW-3		BMW-4		BMW-4		MW-5		MW-6D		MW-6S	
				Date Collected:	07/26/18		07/26/18		07/26/18		07/26/18		07/26/18		07/26/18	
				Sample ID:	BMW-3-072618		BMW-4-072618		DUP-072618		MW-5-072618		MW-6D-072618		MW-6S-072618	
				Type:	FS		FS		FD		FS		FS		FS	
Method	Fraction	Unit	Parameter		Final Result	Final Qual	Final Result	Final Qual	Final Result	Final Qual	Final Result	Final Qual	Final Result	Final Qual	Final Result	Final Qual
6020B	D	MG/L	Aluminum		0.01	U	0.01	U	0.01	U	0.01	U	0.0103	J	0.01	U
6020B	D	MG/L	Antimony		0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U
6020B	D	MG/L	Arsenic		0.00714		0.01175		0.01095		0.00017	J	0.00025	J	0.0013	
6020B	D	MG/L	Barium		0.2019		0.1404		0.146		0.08723		0.09888		0.1146	
6020B	D	MG/L	Beryllium		0.0005	U	0.0005	U	0.0005	U	0.0005	U	0.0005	U	0.0005	U
6020B	D	MG/L	Cadmium		0.0002	U	0.0002	U	0.0002	U	0.0001	J	0.00011	J	0.0002	U
6020B	D	MG/L	Calcium		241		203		207		176		142		302	
6020B	D	MG/L	Chromium		0.00138		0.00072	J	0.0007	J	0.00567		0.00071	J	0.00018	J
6020B	D	MG/L	Cobalt		0.01629		0.0134		0.01336		0.0006		0.00035	J	0.00329	
6020B	D	MG/L	Copper		0.001	U	0.001	U	0.001	U	0.00101	J	0.00258	J	0.001	U
6020B	D	MG/L	Iron		0.274	J+	8.46		7.23		0.0585	J	0.0646	J	0.0807	J
6020B	D	MG/L	Lead		0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U
6020B	D	MG/L	Magnesium		48		31.7		31.3		12.6		12.2		113	
6020B	D	MG/L	Manganese		3.668		3.037		2.989		0.02158		0.1825		3.922	
6020B	D	MG/L	Nickel		0.4899		0.09069		0.09311		0.00382	J	0.00268	J	0.02947	
6020B	D	MG/L	Potassium		33.4	J+	53.2		53.2		24.2		24.3		15.9	
6020B	D	MG/L	Selenium		0.005	U	0.005	U	0.005	U	0.00726		0.0052		0.005	U
6020B	D	MG/L	Silver		0.0004	U	0.0004	U	0.0004	U	0.0004	U	0.0004	U	0.0004	U
6020B	D	MG/L	Sodium		266		199		199		118		159		160	
6020B	D	MG/L	Thallium		0.0005	U	0.0005	U	0.0005	U	0.0005	U	0.0005	U	0.0005	U
6020B	D	MG/L	Vanadium		0.005	U	0.005	U	0.005	U	0.005	U	0.0026	J	0.005	U
6020B	D	MG/L	Zinc		0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U
7470A	D	MG/L	Mercury		0.0002	U	0.0002	U	0.0002	U	0.0002	U	0.0002	U	0.0002	U
8260C	N	UG/L	1,1,1,2-Tetrachloroethane		5	U	2.5	U	2.5	U	2.5	U	2.5	U	12	U
8260C	N	UG/L	1,1,1-Trichloroethane		5	U	2.5	U	2.5	U	2.5	U	2.5	U	12	U
8260C	N	UG/L	1,1,2,2-Tetrachloroethane		1	U	0.5	U	0.5	U	0.5	U	0.5	U	2.5	U
8260C	N	UG/L	1,1,2-Trichloroethane		3	U	1.5	U	1.5	U	1.5	U	1.5	U	7.5	U
8260C	N	UG/L	1,1-Dichloroethane		5	U	2.5	U	2.5	U	2.5	U	2.5	U	12	U
8260C	N	UG/L	1,1-Dichloroethene		0.35	J	0.5	U	0.5	U	0.5	U	0.5	U	2.5	U
8260C	N	UG/L	1,1-Dichloropropene		5	U	2.5	U	2.5	U	2.5	U	2.5	U	12	U
8260C	N	UG/L	1,2,3-Trichlorobenzene		5	U	2.5	U	2.5	U	2.5	U	2.5	U	12	U
8260C	N	UG/L	1,2,3-Trichloropropane		5	U	2.5	U	2.5	U	2.5	U	2.5	U	12	U
8260C	N	UG/L	1,2,4-Trichlorobenzene		5	U	2.5	U	2.5	U	2.5	U	2.5	U	12	U

TABLE 2 - SUMMARY OF ANALYTICAL RESULTS
DATA USABILTY SUMMARY REPORT
JULY 2018 GROUNDWATER SAMPLING EVENT
FORMER HYGRADE POLISHING AND PLATING COMPANY
LONG ISLAND CITY, NEW YORK

				SDG:	L1828999		L1828999		L1828999		L1828999		L1828999		
				Location:	BMW-3		BMW-4		BMW-4		MW-5		MW-6D		
				Date Collected:	07/26/18		07/26/18		07/26/18		07/26/18		07/26/18		
				Sample ID:	BMW-3-072618		BMW-4-072618		DUP-072618		MW-5-072618		MW-6D-072618		
				Type:	FS		FS		FD		FS		FS		
Method	Fraction	Unit	Parameter	Final Result	Final Qual	Final Result	Final Qual	Final Result	Final Qual	Final Result	Final Qual	Final Result	Final Qual	Final Result	Final Qual
8260C	N	UG/L	1,2,4-Trimethylbenzene	5	U	2.5	U	2.5	U	2.5	U	2.5	U	12	U
8260C	N	UG/L	1,2-Dibromo-3-chloropropane	5	U	2.5	U	2.5	U	2.5	U	2.5	U	12	U
8260C	N	UG/L	1,2-Dibromoethane	4	U	2	U	2	U	2	U	2	U	10	U
8260C	N	UG/L	1,2-Dichlorobenzene	5	U	2.5	U	2.5	U	2.5	U	2.5	U	12	U
8260C	N	UG/L	1,2-Dichloroethane	1	U	0.14	J	0.5	U	0.5	U	0.5	U	0.82	J
8260C	N	UG/L	1,2-Dichloroethene (total)	190		11		12		2.5	U	2.5	U	33	
8260C	N	UG/L	1,2-Dichloropropane	2	U	1	U	1	U	1	U	1	U	5	U
8260C	N	UG/L	1,3,5-Trimethylbenzene	5	U	2.5	U	2.5	U	2.5	U	2.5	U	12	U
8260C	N	UG/L	1,3-Dichlorobenzene	5	U	2.5	U	2.5	U	2.5	U	2.5	U	12	U
8260C	N	UG/L	1,3-Dichloropropane	5	U	2.5	U	2.5	U	2.5	U	2.5	U	12	U
8260C	N	UG/L	1,3-Dichloropropene (total)	1	U	0.5	U	0.5	U	0.5	U	0.5	U	2.5	U
8260C	N	UG/L	1,4-Dichlorobenzene	5	U	2.5	U	2.5	U	2.5	U	2.5	U	12	U
8260C	N	UG/L	1,4-Dioxane	500	U	250	U	250	U	250	U	250	U	1200	U
8260C	N	UG/L	2,2-Dichloropropane	5	U	2.5	U	2.5	U	2.5	U	2.5	U	12	U
8260C	N	UG/L	2-Butanone	180		5	U	5	U	5	U	5	U	25	U
8260C	N	UG/L	2-Chlorotoluene	5	U	2.5	U	2.5	U	2.5	U	2.5	U	12	U
8260C	N	UG/L	2-Hexanone	10	U	5	U	5	U	5	U	5	U	25	U
8260C	N	UG/L	4-Chlorotoluene	5	U	2.5	U	2.5	U	2.5	U	2.5	U	12	U
8260C	N	UG/L	4-Ethyltoluene	4	U	2	U	2	U	2	U	2	U	10	U
8260C	N	UG/L	4-iso-Propyltoluene	5	U	2.5	U	2.5	U	2.5	U	2.5	U	12	U
8260C	N	UG/L	4-Methyl-2-pentanone	10	U	5	U	5	U	5	U	5	U	25	U
8260C	N	UG/L	Acetone	200		2.7	J	2.6	J	2.3	J	2.2	J	9.7	J
8260C	N	UG/L	Acrylonitrile	10	U	5	U	5	U	5	U	5	U	82	
8260C	N	UG/L	Benzene	5.6		3.9		3.9		0.5	U	0.5	U	2.5	U
8260C	N	UG/L	Benzene, 1,2,4,5-tetramethyl	4	U	2	U	2	U	2	U	2	U	10	U
8260C	N	UG/L	Bromobenzene	5	U	2.5	U	2.5	U	2.5	U	2.5	U	12	U
8260C	N	UG/L	Bromochloromethane	5	U	2.5	U	2.5	U	2.5	U	2.5	U	12	U
8260C	N	UG/L	Bromodichloromethane	1	U	0.5	U	0.5	U	0.5	U	0.5	U	2.5	U
8260C	N	UG/L	Bromoform	4	U	2	U	2	U	2	U	2	U	10	U
8260C	N	UG/L	Bromomethane	5	U	2.5	U	2.5	U	2.5	U	2.5	U	12	U
8260C	N	UG/L	Carbon disulfide	10	U	5	U	5	U	5	U	5	U	25	U
8260C	N	UG/L	Carbon tetrachloride	1	U	0.5	U	0.5	U	0.5	U	0.5	U	2.5	U
8260C	N	UG/L	Chlorobenzene	5	U	2.5	U	2.5	U	2.5	U	2.5	U	12	U

TABLE 2 - SUMMARY OF ANALYTICAL RESULTS
DATA USABILTY SUMMARY REPORT
JULY 2018 GROUNDWATER SAMPLING EVENT
FORMER HYGRADE POLISHING AND PLATING COMPANY
LONG ISLAND CITY, NEW YORK

				SDG:	L1828999		L1828999		L1828999		L1828999		L1828999		
				Location:	BMW-3		BMW-4		BMW-4		MW-5		MW-6D		
				Date Collected:	07/26/18		07/26/18		07/26/18		07/26/18		07/26/18		
				Sample ID:	BMW-3-072618		BMW-4-072618		DUP-072618		MW-5-072618		MW-6D-072618		
				Type:	FS		FS		FD		FS		FS		
Method	Fraction	Unit	Parameter	Final Result	Final Qual	Final Result	Final Qual	Final Result	Final Qual	Final Result	Final Qual	Final Result	Final Qual	Final Result	Final Qual
8260C	N	UG/L	Chloroethane	5 U		2.5 U		2.5 U		2.5 U		2.5 U		12 U	
8260C	N	UG/L	Chloroform	5 U		2.5 U		2.5 U		2.5 U		2.5 U		12 U	
8260C	N	UG/L	Chloromethane	5 U		2.5 U		2.5 U		2.5 U		2.5 U		12 U	
8260C	N	UG/L	Cis-1,2-Dichloroethene	180		6.3		6.4		2.5 U		2.5 U		33	
8260C	N	UG/L	Cis-1,3-Dichloropropene	1 U		0.5 U		0.5 U		0.5 U		0.5 U		2.5 U	
8260C	N	UG/L	Dibromochloromethane	1 U		0.5 U		0.5 U		0.5 U		0.5 U		2.5 U	
8260C	N	UG/L	Dibromomethane	10 U		5 U		5 U		5 U		5 U		25 U	
8260C	N	UG/L	Dichlorodifluoromethane	10 U		5 U		5 U		5 U		5 U		25 U	
8260C	N	UG/L	Diethyl ether	5 U		2.5 U		2.5 U		2.5 U		2.5 U		12 U	
8260C	N	UG/L	Ethylbenzene	5 U		2.5 U		2.5 U		2.5 U		2.5 U		12 U	
8260C	N	UG/L	Hexachlorobutadiene	5 U		2.5 U		2.5 U		2.5 U		2.5 U		12 U	
8260C	N	UG/L	Isopropylbenzene	5 U		2.5 U		2.5 U		2.5 U		2.5 U		12 U	
8260C	N	UG/L	Methyl Tertbutyl Ether	5 U		1.6 J		1.6 J		2.5 U		2.5 U		1000	
8260C	N	UG/L	Methylene chloride	5 U		2.5 U		2.5 U		2.5 U		2.5 U		12 U	
8260C	N	UG/L	n-Butylbenzene	5 U		2.5 U		2.5 U		2.5 U		2.5 U		12 U	
8260C	N	UG/L	Naphthalene	5 U		2.5 U		2.5 U		2.5 U		2.5 U		12 U	
8260C	N	UG/L	p-Diethylbenzene	4 U		2 U		2 U		2 U		2 U		10 U	
8260C	N	UG/L	Propylbenzene	5 U		2.5 U		2.5 U		2.5 U		2.5 U		12 U	
8260C	N	UG/L	sec-Butylbenzene	5 U		2.5 U		2.5 U		2.5 U		2.5 U		12 U	
8260C	N	UG/L	Styrene	5 U		2.5 U		2.5 U		2.5 U		2.5 U		12 U	
8260C	N	UG/L	tert-Butylbenzene	5 U		2.5 U		2.5 U		2.5 U		2.5 U		12 U	
8260C	N	UG/L	Tetrachloroethene	1 U		2.2		2.4		0.57		0.49 J		13	
8260C	N	UG/L	Toluene	5 U		8.2		8.4		2.5 U		2.5 U		12 U	
8260C	N	UG/L	trans-1,2-Dichloroethene	5.3		4.8		5.1		2.5 U		2.5 U		12 U	
8260C	N	UG/L	trans-1,3-Dichloropropene	1 U		0.5 U		0.5 U		0.5 U		0.5 U		2.5 U	
8260C	N	UG/L	trans-1,4-Dichloro-2-butene	5 U		2.5 U		2.5 U		2.5 U		2.5 U		12 U	
8260C	N	UG/L	Trichloroethene	5.5		2.7		2.9		4.6		1.1		6.4	
8260C	N	UG/L	Trichlorofluoromethane	5 U		2.5 U		2.5 U		2.5 U		2.5 U		12 U	
8260C	N	UG/L	Vinyl acetate	10 U		5 U		5 U		5 U		5 U		25 U	
8260C	N	UG/L	Vinyl chloride	47		3.1		3		1 U		0.08 J		1.2 J	
8260C	N	UG/L	Xylene, o	5 U		0.76 J		0.76 J		2.5 U		2.5 U		12 U	
8260C	N	UG/L	Xylenes (m&p)	5 U		2.5 U		2.5 U		2.5 U		2.5 U		12 U	
8260C	N	UG/L	Xylenes, Total	5 U		0.76 J		0.76 J		2.5 U		2.5 U		12 U	

TABLE 2 - SUMMARY OF ANALYTICAL RESULTS
DATA USABILTY SUMMARY REPORT
JULY 2018 GROUNDWATER SAMPLING EVENT
FORMER HYGRADE POLISHING AND PLATING COMPANY
LONG ISLAND CITY, NEW YORK

SDG: Location: Date Collected: Sample ID: Type:				L1828999		L1828999		L1828999		L1828999		L1828999		L1828999	
				BMW-3		BMW-4		BMW-4		MW-5		MW-6D		MW-6S	
				07/26/18		07/26/18		07/26/18		07/26/18		07/26/18		07/26/18	
				BMW-3-072618		BMW-4-072618		DUP-072618		MW-5-072618		MW-6D-072618		MW-6S-072618	
				FS		FS		FD		FS		FS		FS	
Method	Fraction	Unit	Parameter	Final Result	Final Qual	Final Result	Final Qual	Final Result	Final Qual	Final Result	Final Qual	Final Result	Final Qual	Final Result	Final Qual
6020B	T	MG/L	Aluminum	0.028		0.0353		0.01 U		0.0726		0.0274		0.0229	
6020B	T	MG/L	Antimony	0.004 U		0.004 U		0.004 U		0.004 U		0.004 U		0.004 U	
6020B	T	MG/L	Arsenic	0.01819		0.04666		0.04676		0.00029 J		0.00027 J		0.00188	
6020B	T	MG/L	Barium	0.2706		0.2649		0.2576		0.09278		0.1029		0.1353	
6020B	T	MG/L	Beryllium	0.0005 U		0.0005 U		0.0005 U		0.0005 U		0.0005 U		0.0005 U	
6020B	T	MG/L	Cadmium	0.0002 U		0.0002 U		0.0002 U		0.00007 J		0.0001 J		0.0002 U	
6020B	T	MG/L	Calcium	257		221		215		163		139		304	
6020B	T	MG/L	Chromium	0.0027		0.00188		0.00176		0.00677		0.001 U		0.001 U	
6020B	T	MG/L	Cobalt	0.01717		0.01518		0.01487		0.00055		0.00039 J		0.00349	
6020B	T	MG/L	Copper	0.00117		0.001 U		0.001 U		0.00119		0.00233		0.00077 J	
6020B	T	MG/L	Iron	18.5		45.7		44.9		0.232		0.091 J		1.39	
6020B	T	MG/L	Lead	0.001 U		0.001 U		0.001 U		0.00083 J		0.001 U		0.00046 J	
6020B	T	MG/L	Magnesium	46.6		34		33.2		12.4		12.4		119	
6020B	T	MG/L	Manganese	3.724		3.342		3.306		0.02182		0.1858		3.799	
6020B	T	MG/L	Nickel	0.4654		0.0966		0.09603		0.00345		0.0028		0.0305	
6020B	T	MG/L	Potassium	35.1		57.3		56.3		23		24.5		16.2	
6020B	T	MG/L	Selenium	0.005 U		0.005 U		0.005 U		0.0068		0.00528		0.005 U	
6020B	T	MG/L	Silver	0.0004 U		0.0004 U		0.0004 U		0.0004 U		0.0004 U		0.0004 U	
6020B	T	MG/L	Sodium	226		183		179		97.9		135		143	
6020B	T	MG/L	Thallium	0.0005 U		0.0005 U		0.0005 U		0.0005 U		0.0005 U		0.0005 U	
6020B	T	MG/L	Vanadium	0.00174 J		0.005 U		0.005 U		0.005 U		0.00276 J		0.005 U	
6020B	T	MG/L	Zinc	0.01 U		0.01 U		0.01 U		0.01 U		0.01 U		0.0044 J	
7470A	T	MG/L	Mercury	0.0002 U		0.0002 U		0.0002 U		0.0002 U		0.0002 U		0.0002 U	

Notes:

U = undetected

J = estimated value

FS = field sample

FD = field duplicate

N, T = total

TABLE 2 - SUMMARY OF ANALYTICAL RESULTS
DATA USABILTY SUMMARY REPORT
JULY 2018 GROUNDWATER SAMPLING EVENT
FORMER HYGRADE POLISHING AND PLATING COMPANY
LONG ISLAND CITY, NEW YORK

				SDG:	L1828999	L1828999	L1828999	L1829077	L1829077	L1829077
				Location:	MW-E	QC	QC	BMW-1	BMW-2	QC
				Date Collected:	07/26/18	07/24/18	07/26/18	07/27/18	07/27/18	07/27/18
				Sample ID:	MW-E-072618	TB-072418	FB-072618	BMW-1-072718	BMW-2-072718	TRIP BLANK-07218
				Type:	FS	TB	FB	FS	FS	TB
Method	Fraction	Unit	Parameter		Final Result	Final Qual	Final Result	Final Qual	Final Result	Final Qual
6020B	D	MG/L	Aluminum		0.01 U		0.00876 J		0.01 U	
6020B	D	MG/L	Antimony		0.004 U		0.004 U		0.00244 J+	
6020B	D	MG/L	Arsenic		0.00057		0.0005 U		0.00091	
6020B	D	MG/L	Barium		0.08579		0.0005 U		0.1128	
6020B	D	MG/L	Beryllium		0.0005 U		0.0005 U		0.0005 U	
6020B	D	MG/L	Cadmium		0.0002 U		0.0002 U		0.00319	
6020B	D	MG/L	Calcium		81.8		0.0398 J		280	
6020B	D	MG/L	Chromium		0.00107		0.001 U		0.00095 J	
6020B	D	MG/L	Cobalt		0.0005 U		0.0005 U		0.01066	
6020B	D	MG/L	Copper		0.00112 J		0.00066 J		0.00389 J	
6020B	D	MG/L	Iron		0.05 U		0.0871		0.066 J	
6020B	D	MG/L	Lead		0.001 U		0.001 U		0.001 U	
6020B	D	MG/L	Magnesium		11.4		0.07 U		39.1 J+	
6020B	D	MG/L	Manganese		0.05728		0.001 U		8.269	
6020B	D	MG/L	Nickel		0.002 U		0.00078 J		0.09146	
6020B	D	MG/L	Potassium		21.3		0.1 U		26.5	
6020B	D	MG/L	Selenium		0.00376 J		0.005 U		0.005 U	
6020B	D	MG/L	Silver		0.0004 U		0.0004 U		0.0004 U	
6020B	D	MG/L	Sodium		123		0.109 B		219	
6020B	D	MG/L	Thallium		0.0005 U		0.0005 U		0.00062	
6020B	D	MG/L	Vanadium		0.005 U		0.005 U		0.005 U	
6020B	D	MG/L	Zinc		0.01 U		0.01 U		0.01 U	
7470A	D	MG/L	Mercury		0.0002 U		0.0002 U		0.0002 U	
8260C	N	UG/L	1,1,1,2-Tetrachloroethane		2.5 U	2.5 U	2.5 U		2.5 U	2.5 U
8260C	N	UG/L	1,1,1-Trichloroethane		2.5 U	2.5 U	2.5 U		2.5 U	2.5 U
8260C	N	UG/L	1,1,2,2-Tetrachloroethane		0.5 U	0.5 U	0.5 U		0.5 U	0.5 U
8260C	N	UG/L	1,1,2-Trichloroethane		1.5 U	1.5 U	1.5 U		1.5 U	1.5 U
8260C	N	UG/L	1,1-Dichloroethane		2.5 U	2.5 U	2.5 U		2.5 U	2.5 U
8260C	N	UG/L	1,1-Dichloroethene		0.5 U	0.5 U	0.5 U		0.5 U	0.5 U
8260C	N	UG/L	1,1-Dichloropropene		2.5 U	2.5 U	2.5 U		2.5 U	2.5 U
8260C	N	UG/L	1,2,3-Trichlorobenzene		2.5 U	2.5 U	2.5 U		2.5 U	2.5 U
8260C	N	UG/L	1,2,3-Trichloropropane		2.5 U	2.5 U	2.5 U		2.5 U	2.5 U
8260C	N	UG/L	1,2,4-Trichlorobenzene		2.5 U	2.5 U	2.5 U		2.5 U	2.5 U

TABLE 2 - SUMMARY OF ANALYTICAL RESULTS
DATA USABILTY SUMMARY REPORT
JULY 2018 GROUNDWATER SAMPLING EVENT
FORMER HYGRADE POLISHING AND PLATING COMPANY
LONG ISLAND CITY, NEW YORK

				SDG:	L1828999		L1828999		L1828999		L1829077		L1829077		L1829077	
				Location:	MW-E		QC		QC		BMW-1		BMW-2		QC	
				Date Collected:	07/26/18		07/24/18		07/26/18		07/27/18		07/27/18		07/27/18	
				Sample ID:	MW-E-072618		TB-072418		FB-072618		BMW-1-072718		BMW-2-072718		TRIP BLANK-07218	
				Type:	FS		TB		FB		FS		FS		TB	
Method	Fraction	Unit	Parameter	Final Result	Final Qual	Final Result	Final Qual	Final Result	Final Qual	Final Result	Final Qual	Final Result	Final Qual	Final Result	Final Qual	
8260C	N	UG/L	1,2,4-Trimethylbenzene	2.5 U		2.5 U		2.5 U		2.5 U		2.5 U		2.5 U		
8260C	N	UG/L	1,2-Dibromo-3-chloropropane	2.5 U		2.5 U		2.5 U		2.5 U		2.5 U		2.5 U		
8260C	N	UG/L	1,2-Dibromoethane	2 U		2 U		2 U		2 U		2 U		2 U		
8260C	N	UG/L	1,2-Dichlorobenzene	2.5 U		2.5 U		2.5 U		2.5 U		2.5 U		2.5 U		
8260C	N	UG/L	1,2-Dichloroethane	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		
8260C	N	UG/L	1,2-Dichloroethene (total)	2.5 U		2.5 U		2.5 U		4.5		4.3		2.5 U		
8260C	N	UG/L	1,2-Dichloropropane	1 U		1 U		1 U		1 U		1 U		1 U		
8260C	N	UG/L	1,3,5-Trimethylbenzene	2.5 U		2.5 U		2.5 U		2.5 U		2.5 U		2.5 U		
8260C	N	UG/L	1,3-Dichlorobenzene	2.5 U		2.5 U		2.5 U		2.5 U		2.5 U		2.5 U		
8260C	N	UG/L	1,3-Dichloropropane	2.5 U		2.5 U		2.5 U		2.5 U		2.5 U		2.5 U		
8260C	N	UG/L	1,3-Dichloropropene (total)	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		
8260C	N	UG/L	1,4-Dichlorobenzene	2.5 U		2.5 U		2.5 U		2.5 U		2.5 U		2.5 U		
8260C	N	UG/L	1,4-Dioxane	250 U		250 U		250 U		250 U		250 U		250 U		
8260C	N	UG/L	2,2-Dichloropropane	2.5 U		2.5 U		2.5 U		2.5 U		2.5 U		2.5 U		
8260C	N	UG/L	2-Butanone	5 U		5 U		5 U		5 U		5 U		5 U		
8260C	N	UG/L	2-Chlorotoluene	2.5 U		2.5 U		2.5 U		2.5 U		2.5 U		2.5 U		
8260C	N	UG/L	2-Hexanone	5 U		5 U		5 U		5 U		5 U		5 U		
8260C	N	UG/L	4-Chlorotoluene	2.5 U		2.5 U		2.5 U		2.5 U		2.5 U		2.5 U		
8260C	N	UG/L	4-Ethyltoluene	2 U		2 U		2 U		2 U		2 U		2 U		
8260C	N	UG/L	4-iso-Propyltoluene	2.5 U		2.5 U		2.5 U		2.5 U		2.5 U		2.5 U		
8260C	N	UG/L	4-Methyl-2-pentanone	5 U		5 U		5 U		5 U		5 U		5 U		
8260C	N	UG/L	Acetone	3 J		2.5 J		2.4 J		5 U		5 U		5 U		
8260C	N	UG/L	Acrylonitrile	5 U		5 U		5 U		5 U		5 U		5 U		
8260C	N	UG/L	Benzene	0.5 U		0.5 U		0.5 U		0.5 U		0.16 J		0.5 U		
8260C	N	UG/L	Benzene, 1,2,4,5-tetramethyl	2 U		2 U		2 U		2 U		2 U		2 U		
8260C	N	UG/L	Bromobenzene	2.5 U		2.5 U		2.5 U		2.5 U		2.5 U		2.5 U		
8260C	N	UG/L	Bromochloromethane	2.5 U		2.5 U		2.5 U		2.5 U		2.5 U		2.5 U		
8260C	N	UG/L	Bromodichloromethane	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		
8260C	N	UG/L	Bromoform	2 U		2 U		2 U		2 U		2 U		2 U		
8260C	N	UG/L	Bromomethane	2.5 U		2.5 U		2.5 U		2.5 UJ		2.5 UJ		2.5 U		
8260C	N	UG/L	Carbon disulfide	5 U		5 U		5 U		5 U		5 U		5 U		
8260C	N	UG/L	Carbon tetrachloride	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		
8260C	N	UG/L	Chlorobenzene	2.5 U		2.5 U		2.5 U		2.5 U		2.5 U		2.5 U		

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JULY 2018 GROUNDWATER SAMPLING EVENT
FORMER HYGRADE POLISHING AND PLATING COMPANY
LONG ISLAND CITY, NEW YORK

				SDG:	L1828999		L1828999		L1828999		L1829077		L1829077		L1829077	
				Location:	MW-E		QC		QC		BMW-1		BMW-2		QC	
				Date Collected:	07/26/18		07/24/18		07/26/18		07/27/18		07/27/18		07/27/18	
				Sample ID:	MW-E-072618		TB-072418		FB-072618		BMW-1-072718		BMW-2-072718		TRIP BLANK-07218	
				Type:	FS		TB		FB		FS		FS		TB	
Method	Fraction	Unit	Parameter	Final Result	Final Qual	Final Result	Final Qual	Final Result	Final Qual	Final Result	Final Qual	Final Result	Final Qual	Final Result	Final Qual	
8260C	N	UG/L	Chloroethane	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	
8260C	N	UG/L	Chloroform	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	
8260C	N	UG/L	Chloromethane	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	
8260C	N	UG/L	Cis-1,2-Dichloroethene	2.5	U	2.5	U	2.5	U	4.5		4.3		2.5	U	
8260C	N	UG/L	Cis-1,3-Dichloropropene	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	
8260C	N	UG/L	Dibromochloromethane	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	
8260C	N	UG/L	Dibromomethane	5	U	5	U	5	U	5	U	5	U	5	U	
8260C	N	UG/L	Dichlorodifluoromethane	5	U	5	U	5	U	5	U	5	U	5	U	
8260C	N	UG/L	Diethyl ether	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	
8260C	N	UG/L	Ethylbenzene	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	
8260C	N	UG/L	Hexachlorobutadiene	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	
8260C	N	UG/L	Isopropylbenzene	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	
8260C	N	UG/L	Methyl Tertbutyl Ether	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	
8260C	N	UG/L	Methylene chloride	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	
8260C	N	UG/L	n-Butylbenzene	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	
8260C	N	UG/L	Naphthalene	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	
8260C	N	UG/L	p-Diethylbenzene	2	U	2	U	2	U	2	U	2	U	2	U	
8260C	N	UG/L	Propylbenzene	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	
8260C	N	UG/L	sec-Butylbenzene	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	
8260C	N	UG/L	Styrene	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	
8260C	N	UG/L	tert-Butylbenzene	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	
8260C	N	UG/L	Tetrachloroethene	0.5	U	0.5	U	0.5	U	0.7		1.6		0.5	U	
8260C	N	UG/L	Toluene	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	
8260C	N	UG/L	trans-1,2-Dichloroethene	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	
8260C	N	UG/L	trans-1,3-Dichloropropene	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	
8260C	N	UG/L	trans-1,4-Dichloro-2-butene	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	
8260C	N	UG/L	Trichloroethene	0.5	U	0.5	U	0.5	U	2.2		3.7		0.5	U	
8260C	N	UG/L	Trichlorofluoromethane	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	
8260C	N	UG/L	Vinyl acetate	5	U	5	U	5	U	5	U	5	U	5	U	
8260C	N	UG/L	Vinyl chloride	1	U	1	U	1	U	0.22 J+		0.3 J		1	U	
8260C	N	UG/L	Xylene, o	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	
8260C	N	UG/L	Xylenes (m&p)	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	
8260C	N	UG/L	Xylenes, Total	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	

TABLE 2 - SUMMARY OF ANALYTICAL RESULTS
DATA USABILTY SUMMARY REPORT
JULY 2018 GROUNDWATER SAMPLING EVENT
FORMER HYGRADE POLISHING AND PLATING COMPANY
LONG ISLAND CITY, NEW YORK

SDG: Location: Date Collected: Sample ID: Type:				L1828999		L1828999		L1828999		L1829077		L1829077		L1829077	
				MW-E		QC		QC		BMW-1		BMW-2		QC	
				07/26/18		07/24/18		07/26/18		07/27/18		07/27/18		07/27/18	
				MW-E-072618		TB-072418		FB-072618		BMW-1-072718		BMW-2-072718		TRIP BLANK-07218	
				FS		TB		FB		FS		FS		TB	
Method	Fraction	Unit	Parameter	Final Result	Final Qual	Final Result	Final Qual	Final Result	Final Qual	Final Result	Final Qual	Final Result	Final Qual	Final Result	Final Qual
6020B	T	MG/L	Aluminum	15.1				0.00393 J		0.0184 J		0.0157 J			
6020B	T	MG/L	Antimony	0.004 U				0.004 U		0.004 U		0.004 U			
6020B	T	MG/L	Arsenic	0.01372				0.0005 U		0.001		0.00089			
6020B	T	MG/L	Barium	0.2608				0.0005 U		0.1115		0.1096			
6020B	T	MG/L	Beryllium	0.00082				0.0005 U		0.0005 U		0.0005 U			
6020B	T	MG/L	Cadmium	0.00012 J				0.0002 U		0.0033		0.01045			
6020B	T	MG/L	Calcium	87.9				0.0536 J		283		258			
6020B	T	MG/L	Chromium	0.0451				0.00025 J		0.0021		0.00244			
6020B	T	MG/L	Cobalt	0.01371				0.0005 U		0.01086		0.01312			
6020B	T	MG/L	Copper	0.04177				0.001 U		0.00431		0.00415			
6020B	T	MG/L	Iron	33.5				0.05 U		0.34		0.824			
6020B	T	MG/L	Lead	0.01824				0.001 U		0.001 U		0.001 U			
6020B	T	MG/L	Magnesium	21.2				0.07 U		39.2		33			
6020B	T	MG/L	Manganese	1.54				0.001 U		8.499		7.225			
6020B	T	MG/L	Nickel	0.03469				0.002 U		0.09334		0.1593			
6020B	T	MG/L	Potassium	26.8				0.1 U		26.6		33.4			
6020B	T	MG/L	Selenium	0.00735				0.005 U		0.005 U		0.005 U			
6020B	T	MG/L	Silver	0.0004 U				0.0004 U		0.0004 U		0.0004 U			
6020B	T	MG/L	Sodium	104				0.1 U		225		206			
6020B	T	MG/L	Thallium	0.00038 J				0.0005 U		0.00067 J		0.0005 U			
6020B	T	MG/L	Vanadium	0.05097				0.005 U		0.005 U		0.005 U			
6020B	T	MG/L	Zinc	0.09505				0.01 U		0.00914 J		0.00627 J			
7470A	T	MG/L	Mercury	0.0002 U				0.0002 U		0.0002 U		0.0002 U			

Notes:

U = undetected

J = estimated value

FS = field sample

FD = field duplicate

N, T = total

TABLE 2 - SUMMARY OF ANALYTICAL RESULTS
DATA USABILTY SUMMARY REPORT
JULY 2018 GROUNDWATER SAMPLING EVENT
FORMER HYGRADE POLISHING AND PLATING COMPANY
LONG ISLAND CITY, NEW YORK

				SDG:	L1828998		L1828998		L1828998		L1828998		L1828998	
				Location:	BMW-3		BMW-4		BMW-4		MW-5		MW-6D	
				Date Collected:	07/26/18		07/26/18		07/26/18		07/26/18		07/26/18	
				Sample ID:	BMW-3-072618		BMW-4-072618		DUP-072618		MW-5-072618		MW-6D-072618	
				Type:	FS		FS		FD		FS		FS	
Method	Fraction	Unit	Parameter	Final Result	Final Qual	Final Result	Final Qual	Final Result	Final Qual	Final Result	Final Qual	Final Result	Final Qual	
537(M)	N	NG/L	6:2 fluorotelomer sulfonate	2.57		2.54		3.37		4.67		1.85	U	
537(M)	N	NG/L	8:2 Fluorotelomer sulfonate	1.92	U	1.92	U	1.92	U	1.78	U	1.85	U	
537(M)	N	NG/L	N-ethyl perfluorooctanesulfonamidoacetic acid	0.612	J	1.92	U	1.92	U	1.78	U	1.85	U	
537(M)	N	NG/L	N-methyl perfluorooctanesulfonamidoacetic acid	1.92	U	1.92	U	1.92	U	1.78	U	1.85	U	
537(M)	N	NG/L	Perfluorobutanesulfonic acid	106	J+	148		149		21.4		27.5		
537(M)	N	NG/L	Perfluorobutanoic acid	32.4		23.5		23.3		9.84		13.9		
537(M)	N	NG/L	Perfluorodecanesulfonic acid	1.92	U	1.92	U	1.92	U	1.78	U	1.85	U	
537(M)	N	NG/L	Perfluorodecanoic acid	1.92	U	1.92	U	0.838	J	1.78	U	1.85	U	
537(M)	N	NG/L	Perfluorododecanoic acid	1.92	U	1.92	U	1.92	U	1.78	U	1.85	U	
537(M)	N	NG/L	Perfluoroheptanesulfonic acid	126		62.1		60.1		1.71	J	0.948	J	
537(M)	N	NG/L	Perfluoroheptanoic acid	27.7		21.1		20.9		7.35		6.55		
537(M)	N	NG/L	Perfluorohexane sulfonic acid	98.3	J+	92.6		95		3.94		2.41		
537(M)	N	NG/L	Perfluorohexanoic acid	150		98.9		99.4		11		12.1		
537(M)	N	NG/L	Perfluorononanoic acid	3.31		2.92		2.65		0.818	J	1.68	J	
537(M)	N	NG/L	Perfluorooctane sulfonamide	1.92	U	1.92	U	0.25	J	1.78	U	1.85	U	
537(M)	N	NG/L	Perfluorooctanesulfonic acid	5,970	J	2,560	J	2,640	J	112		61		
537(M)	N	NG/L	Perfluorooctanoic acid	64.3		62.7		66.8		30.5		24.6		
537(M)	N	NG/L	Perfluoropentanoic acid	72		71.9		72.3		13.3		12		
537(M)	N	NG/L	Perfluorotetradecanoic acid	1.92	U	1.92	U	1.92	U	1.78	U	1.85	U	
537(M)	N	NG/L	Perfluorotridecanoic acid	1.92	U	1.92	U	1.92	U	1.78	U	1.85	U	
537(M)	N	NG/L	Perfluoroundecanoic acid	1.92	U	1.92	U	1.92	U	1.78	U	1.85	U	

Notes:

U = undetected
J = estimated value
FS = field sample
FD = field duplicate
N, T = total

TABLE 2 - SUMMARY OF ANALYTICAL RESULTS
DATA USABILITY SUMMARY REPORT
JULY 2018 GROUNDWATER SAMPLING EVENT
FORMER HYGRADE POLISHING AND PLATING COMPANY
LONG ISLAND CITY, NEW YORK

				SDG:	L1828998	L1828998	L1828998	L1829069	L1829069
				Location:	MW-6S	MW-E	QC	BMW-1	BMW-2
				Date Collected:	07/26/18	07/26/18	07/26/18	07/27/18	07/27/18
				Sample ID:	MW-6S-072618	MW-E-072618	FB-072618	BMW-1-072718	BMW-2-072718
				Type:	FS	FS	FB	FS	FS
Method	Fraction	Unit	Parameter	Final Result	Final Qual	Final Result	Final Qual	Final Result	Final Qual
537(M)	N	NG/L	6:2 fluorotelomer sulfonate	3.63		140		1.85 U	15.2 U
537(M)	N	NG/L	8:2 Fluorotelomer sulfonate	2 U		1.92 U		1.85 U	1.85 U
537(M)	N	NG/L	N-ethyl perfluorooctanesulfonamidoacetic acid	2 U		1.92 U		1.85 U	1.85 U
537(M)	N	NG/L	N-methyl perfluorooctanesulfonamidoacetic acid	2 U		1.92 U		1.85 U	1.85 U
537(M)	N	NG/L	Perfluorobutanesulfonic acid	22.7		11.1		1.85 U	1340 J
537(M)	N	NG/L	Perfluorobutanoic acid	14.8		33.3		1.85 U	31
537(M)	N	NG/L	Perfluorodecanesulfonic acid	2 U		1.92 U		1.85 U	1.85 U
537(M)	N	NG/L	Perfluorodecanoic acid	2 U		6.57		1.85 U	2.4
537(M)	N	NG/L	Perfluorododecanoic acid	2 U		1.92 U		1.85 U	1.85 U
537(M)	N	NG/L	Perfluoroheptanesulfonic acid	11.1		1.92 U		1.85 U	56
537(M)	N	NG/L	Perfluoroheptanoic acid	6.88		18.6		1.85 U	27.8
537(M)	N	NG/L	Perfluorohexane sulfonic acid	27.2		2.71		1.85 U	211
537(M)	N	NG/L	Perfluorohexanoic acid	9.08		102		1.85 U	61.2
537(M)	N	NG/L	Perfluorononanoic acid	2.38		1.33 J		1.85 U	6.17
537(M)	N	NG/L	Perfluorooctane sulfonamide	2 U		1.92 U		1.85 U	1.85 U
537(M)	N	NG/L	Perfluorooctanesulfonic acid	541 J		9		0 J	739 J
537(M)	N	NG/L	Perfluorooctanoic acid	61.4		64.1		0.67 J	92.6
537(M)	N	NG/L	Perfluoropentanoic acid	10.8		82.9		1.85 U	59.6
537(M)	N	NG/L	Perfluorotetradecanoic acid	2 U		1.92 UJ		1.85 U	1.85 U
537(M)	N	NG/L	Perfluorotridecanoic acid	2 U		1.92 U		1.85 U	1.85 U
537(M)	N	NG/L	Perfluoroundecanoic acid	2 U		0.442 J		1.85 U	1.85 U

Notes:

U = undetected

J = estimated value

FS = field sample

FD = field duplicate

N, T = total

TABLE 3 - QUALIFICATION ACTIONS SUMMARY
DATA USABILTY SUMMARY REPORT
JULY 2018 GROUNDWATER SAMPLING EVENT
FORMER HYGRADE POLISHING AND PLATING COMPANY
LONG ISLAND CITY, NEW YORK

SDG	Analysis Method	Lab Sample Id	Field Sample Date	Field Sample Id	Fraction	Param Name	Lab Result Text	Lab Qual	Final Result	Final Qual	Val Reason Code	Result Uom
L1829069	537(M)	L1829069-01	7/27/2018	BMW-1-072718	N	6:2 fluorotelomer sulfonate	15.2	B	15.2	U	BL1	NG/L
L1829069	537(M)	L1829069-02	7/27/2018	BMW-2-072718	N	6:2 fluorotelomer sulfonate	17.2	B	17.2	U	BL1	NG/L
L1828998	537(M)	L1828998-01	7/26/2018	BMW-3-072618	N	Perfluorobutanesulfonic acid	106		106	J+	IS-H	NG/L
L1828998	537(M)	L1828998-01	7/26/2018	BMW-3-072618	N	Perfluorohexane sulfonic acid	98.3		98.3	J+	IS-H	NG/L
L1828998	537(M)	L1828998-07	7/26/2018	MW-E-072618	N	Perfluorotetradecanoic acid	1.92	U	1.92	UJ	IS-L	NG/L
L1828999	6020B	L1828999-07	7/26/2018	DUP-072618	T	Aluminum	0.00885	J	0.01	U	BL2	MG/L
L1828999	6020B	L1828999-03	7/26/2018	MW-5-072618	D	Aluminum	0.00469	J	0.01	U	BL2	MG/L
L1828999	6020B	L1828999-05	7/26/2018	MW-6D-072618	D	Aluminum	0.0103		0.0103	J	BL2	MG/L
L1828999	6020B	L1828999-06	7/26/2018	MW-E-072618	D	Aluminum	0.00526	J	0.01	U	BL2	MG/L
L1829077	6020B	L1829077-01	7/27/2018	BMW-1-072718	T	Aluminum	0.0184		0.0184	J	BL2	MG/L
L1829077	6020B	L1829077-01	7/27/2018	BMW-1-072718	D	Aluminum	0.00428	J	0.01	U	BL2	MG/L
L1829077	6020B	L1829077-02	7/27/2018	BMW-2-072718	D	Aluminum	0.00341	J	0.01	U	BL2	MG/L
L1829077	6020B	L1829077-02	7/27/2018	BMW-2-072718	T	Aluminum	0.0157		0.0157	J	BL2	MG/L
L1828999	6020B	L1828999-01	7/26/2018	BMW-3-072618	D	Antimony	0.00224	J	0.004	U	BL1	MG/L
L1828999	6020B	L1828999-01	7/26/2018	BMW-3-072618	T	Antimony	0.00083	J	0.004	U	BL1	MG/L
L1828999	6020B	L1828999-02	7/26/2018	BMW-4-072618	D	Antimony	0.00092	J	0.004	U	BL1	MG/L
L1828999	6020B	L1828999-07	7/26/2018	DUP-072618	D	Antimony	0.00043	J	0.004	U	BL1	MG/L
L1828999	6020B	L1828999-03	7/26/2018	MW-5-072618	D	Antimony	0.00136	J	0.004	U	BL1	MG/L
L1828999	6020B	L1828999-03	7/26/2018	MW-5-072618	T	Antimony	0.00084	J	0.004	U	BL1	MG/L
L1828999	6020B	L1828999-05	7/26/2018	MW-6D-072618	T	Antimony	0.00092	J	0.004	U	BL1	MG/L
L1828999	6020B	L1828999-05	7/26/2018	MW-6D-072618	D	Antimony	0.00118	J	0.004	U	BL1	MG/L
L1828999	6020B	L1828999-04	7/26/2018	MW-6S-072618	D	Antimony	0.00063	J	0.004	U	BL1	MG/L
L1828999	6020B	L1828999-06	7/26/2018	MW-E-072618	T	Antimony	0.00089	J	0.004	U	BL1	MG/L
L1828999	6020B	L1828999-06	7/26/2018	MW-E-072618	D	Antimony	0.00089	J	0.004	U	BL1	MG/L
L1829077	6020B	L1829077-01	7/27/2018	BMW-1-072718	T	Antimony	0.00197	J	0.004	U	BL1	MG/L
L1829077	6020B	L1829077-01	7/27/2018	BMW-1-072718	D	Antimony	0.00244	J	0.00244	J+	MS-H	MG/L
L1829077	6020B	L1829077-02	7/27/2018	BMW-2-072718	T	Antimony	0.00109	J	0.004	U	BL1	MG/L
L1828999	6020B	L1828999-05	7/26/2018	MW-6D-072618	T	Chromium	0.00096	J	0.001	U	BL2	MG/L
L1828999	6020B	L1828999-04	7/26/2018	MW-6S-072618	T	Chromium	0.0006	J	0.001	U	BL2	MG/L
L1828999	6020B	L1828999-03	7/26/2018	MW-5-072618	D	Copper	0.00101		0.00101	J	BL2	MG/L

TABLE 3 - QUALIFICATION ACTIONS SUMMARY
DATA USABILTY SUMMARY REPORT
JULY 2018 GROUNDWATER SAMPLING EVENT
FORMER HYGRADE POLISHING AND PLATING COMPANY
LONG ISLAND CITY, NEW YORK

SDG	Analysis Method	Lab Sample Id	Field Sample Date	Field Sample Id	Fraction	Param Name	Lab Result Text	Lab Qual	Final Result	Final Qual	Val Reason Code	Result Uom
L1828999	6020B	L1828999-05	7/26/2018	MW-6D-072618	D	Copper	0.00258		0.00258	J	BL2	MG/L
L1828999	6020B	L1828999-06	7/26/2018	MW-E-072618	D	Copper	0.00112		0.00112	J	BL2	MG/L
L1829077	6020B	L1829077-01	7/27/2018	BMW-1-072718	D	Copper	0.00389		0.00389	J	BL1	MG/L
L1829077	6020B	L1829077-02	7/27/2018	BMW-2-072718	D	Copper	0.00441		0.00441	J	BL1	MG/L
L1828999	6020B	L1828999-01	7/26/2018	BMW-3-072618	D	Iron	0.274		0.274	J+	BL2, MS-H	MG/L
L1828999	6020B	L1828999-03	7/26/2018	MW-5-072618	D	Iron	0.0585		0.0585	J	BL1, BL2	MG/L
L1828999	6020B	L1828999-05	7/26/2018	MW-6D-072618	D	Iron	0.0646		0.0646	J	BL1, BL2	MG/L
L1828999	6020B	L1828999-05	7/26/2018	MW-6D-072618	T	Iron	0.091		0.091	J	BL1	MG/L
L1828999	6020B	L1828999-04	7/26/2018	MW-6S-072618	D	Iron	0.0807		0.0807	J	BL1, BL2	MG/L
L1828999	6020B	L1828999-06	7/26/2018	MW-E-072618	D	Iron	0.0293	J	0.05	U	BL1, BL2	MG/L
L1829077	6020B	L1829077-01	7/27/2018	BMW-1-072718	D	Iron	0.066		0.066	J	BL1	MG/L
L1829077	6020B	L1829077-02	7/27/2018	BMW-2-072718	D	Iron	0.0611		0.0611	J	BL1	MG/L
L1829077	6020B	L1829077-01	7/27/2018	BMW-1-072718	D	Magnesium	39.1		39.1	J+	MS-H	MG/L
L1828999	6020B	L1828999-03	7/26/2018	MW-5-072618	D	Nickel	0.00382		0.00382	J	BL2	MG/L
L1828999	6020B	L1828999-05	7/26/2018	MW-6D-072618	D	Nickel	0.00268		0.00268	J	BL2	MG/L
L1828999	6020B	L1828999-06	7/26/2018	MW-E-072618	D	Nickel	0.0006	J	0.002	U	BL2	MG/L
L1828999	6020B	L1828999-01	7/26/2018	BMW-3-072618	D	Potassium	33.4		33.4	J+	MS-H	MG/L
L1829077	6020B	L1829077-01	7/27/2018	BMW-1-072718	T	Thallium	0.00067		0.00067	J	BL1	MG/L
L1829077	6020B	L1829077-02	7/27/2018	BMW-2-072718	T	Thallium	0.00018	J	0.0005	U	BL1	MG/L
L1829077	6020B	L1829077-01	7/27/2018	BMW-1-072718	D	Zinc	0.00739	J	0.01	U	BL1	MG/L
L1829077	6020B	L1829077-02	7/27/2018	BMW-2-072718	D	Zinc	0.00397	J	0.01	U	BL1	MG/L
L1829077	8260C	L1829077-01	7/27/2018	BMW-1-072718	N	Bromomethane	2.5	U	2.5	UJ	LCS-L	UG/L
L1829077	8260C	L1829077-02	7/27/2018	BMW-2-072718	N	Bromomethane	2.5	U	2.5	UJ	LCS-L	UG/L
L1829077	8260C	L1829077-01	7/27/2018	BMW-1-072718	N	Vinyl chloride	0.22	J	0.22	J+	MS-H	UG/L

Notes:

U = undetected

J = estimated value

FD = field duplicate precision not met

BL1 = method blank contamination

TABLE 3 - QUALIFICATION ACTIONS SUMMARY
DATA USABILTY SUMMARY REPORT
JULY 2018 GROUNDWATER SAMPLING EVENT
FORMER HYGRADE POLISHING AND PLATING COMPANY
LONG ISLAND CITY, NEW YORK

SDG	Analysis Method	Lab Sample Id	Field Sample Date	Field Sample Id	Fraction	Param Name	Lab Result Text	Lab Qual	Final Result	Final Qual	Val Reason Code	Result Uom
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BL2 = field or trip blank contamination

HT = extraction holding time not met

IS-H = internal standard recovery high

IS-L = internal standard recovery low

LCS-L = LCS recovery low

MS-H = matrix spike recovery high

N, T = total

D = dissolved

ATTACHMENT A
SUMMARY OF VALIDATION QC LIMITS FOR SURROGATES, SPIKES, AND DUPLICATES
BASED ON THE REGION 2 VALIDATION GUIDELINES

PARAMETER	QC TEST	ANALYTE	WATER	Water
			(%R)	(RPD)
Volatiles	Surrogate	All Surrogate Compounds	80 - 120	
	LCS	All Target Compounds	70 - 130	
	MS/MSD	All Target Compounds	70 - 130	20
	Field Duplicate	All Target Compounds		50
Per- and Polyfluorinated Alkyl Substances (PFAS)	Surrogate	All Surrogate Compounds	Lab Limits	
	LCS	All Target Compounds	Lab Limits	
	MS/MSD	All Target Compounds	Lab Limits	Lab Limits
	Field Duplicate	All Target Compounds		50
Inorganics-Metals	LCS	All Target Analytes	80 - 120	
	MS/MSD	All Target Analytes	75 -125	20
	Lab Duplicate	All Target Analytes		20
	Field Duplicate	All Target Analytes		20

Notes:

LCS - Laboratory Control Sample

MS/MSD - Matrix spike/ Matrix Spike Duplicate

RPD = Relative percent difference

%R = percent recovery

QC Limits are based on USEPA Region II Data Validation Guidelines and Project QA/QC Objectives

ATTACHMENT B

VOCs

NYSDEC DUSR PROJECT CHEMIST REVIEW RECORD

Project: Hygrade

Method: 8260C

Laboratory: Alpha Analytical

SDG(s): L1828999

Date: 10/16/18

U829077

Reviewer: Julie Ricciardi

Review Level ☒ NYSDEC DUSR

USEPA Region II Guideline

1. ☒ **Case Narrative Review and COC/Data Package Completeness**

COMMENTS

Were problems noted? OK

Are Field Sample IDs and Locations assigned correctly? YES NO (circle one)

Were all the samples on the COC analyzed for the requested analyses? YES NO (circle one)

2. ☒ **Holding time and Sample Collection**

All samples were analyzed within the 14 day holding time. YES NO (circle one)

3. ☒ **QC Blanks**

Are method blanks free of contamination? YES NO (circle one)

Are Trip blanks free of contamination? YES NO (circle one)

Are Rinse blanks free of contamination? YES NO NA (circle one)

4. ☒ **Instrument Tuning - Data Package Narrative Review**

Did the laboratory narrative identify any results that were not within method criteria? YES NO (circle one)

If yes, use professional judgment to evaluate data and qualify results if needed

5. ☒ **Instrument Calibration - Data Package Narrative Review**

Did the laboratory narrative identify compounds that were not within criteria in the initial and/or continuing calibration standards? YES NO (circle one)

Initial Calibration %RSD = 20% (30% for 1,1-DCE, chloroform, 1,2-DCP, toluene, ethylbenzene, VC)

Initial Avg RRF and Continuing RRF should be ≥ 0.05 and 0.10 for Chloromethane, 1,1-Dichloroethane, Bromoform and 0.30 for Chlorobenzene and 1,1,2,2-Tetrachloroethane

Continuing Calibration %D = 20%

Did the laboratory qualify results based on initial or continuing calibration exceedances? YES NO (circle one)

If yes to above, use professional judgment to evaluate data and qualify results if needed

6. ☒ **Internal Standards - Data Package Narrative Review**

(Area Limits = -50% to +100%, RTs within 30 seconds of daily CCAL standard (or ICAL mid-point if samples follow ICAL))

Did the laboratory narrative identify any sample internal standards that were not within criteria? YES NO (circle one)

Did the laboratory qualify results based on internal standard exceedances? YES NO (circle one)

If yes to above, use professional judgment to evaluate data and qualify results if needed

7. ☒ **Surrogate Recovery - Region II limits (water 80-120%, soil 70-130%)**

Were all results within Region II limits? YES NO (circle one)

8. ☒ **Matrix Spike - Region II limits (water and soil 70-130%, water RPD 20, soil RPD 35)**

Were MS/MSDs submitted/analyzed? YES NO

Were all results within the Region II limits? YES NO NA (circle one)

See attached summary for QC

9. ☒ **Duplicates - Region II Limits (water RPD 50, soil RPD 100)**

Were Field Duplicates submitted/analyzed? YES NO

BHW-4-072618 / DUP-072618:

Were all results within Region II limits? (soil RPD<100, water RPD<50) YES NO NA

OIC

10. ☒ **Laboratory Control Sample Results - Region II (Water and soil 70-130%)**

Were all results were within Region II control limits? YES NO (circle one)

See attached for gru1

11. ☒ **Raw Data Review and Calculation Checks**

See attached

12. ☒ **Electronic Data Review and Edits**

Does the EDD match the Form Is? YES NO (circle one)

13. ☒ **Tables and TIC Review**

Table 1 (Samples and Analytical Methods)

Table 2 (Analytical Results)

Table 3 (Qualification Actions)

Were all tables produced and reviewed? YES NO (circle one)

Table 4 (TICs) Did lab report TICs? YES NO (circle one)

41829077

(4 File)

Disposal Site Information

175	Please identify below location
-----	--------------------------------

applicable disposal facilities.

NY ☐

NJ ☐

☐ Other:	
Sample Filtration	

	Done	
☐		
☐		

☐ Lab to do
☒ Preservation

00 01 01 00

(Please specify below)

Sample Specific Comments

[illegible][illegible][illegible]

[illegible][illegible]

Please print clearly, legibly and completely. Submit

and completely. Additionally, not be logged in and turnaround time clock will

start until any ambiguities resolved. BY EXECUTING

THIS COC, THE CLIENT
HAS READ AND AGREEE

TO BE BOUND BY ALPHA
TERMS & CONDITIONS.

596 (See reverse side.)

1

Lab Control Sample Analysis

Batch Quality Control

Project Name: HYGRADE/STALINGRAD

Lab Number: L1828999

Project Number: 3612162331

Report Date: 08/03/18

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
-----------	------------------	------	------------------	------	---------------------	-----	------	---------------

Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-09 Batch: WG1141394-3 WG1141394-4

Bromochloromethane	88		91		70-130	3		20
2,2-Dichloropropane	88		92		63-133	4		20
1,2-Dibromoethane	98		96		70-130	2		20
1,3-Dichloropropane	96		97		70-130	1		20
1,1,1,2-Tetrachloroethane	86		89		64-130	3		20
Bromobenzene	82		85		70-130	4		20
n-Butylbenzene	97		100		53-136	3		20
sec-Butylbenzene	92		97		70-130	5		20
tert-Butylbenzene	88		93		70-130	6		20
o-Chlorotoluene	94		99		70-130	5		20
p-Chlorotoluene	98		100		70-130	2		20
1,2-Dibromo-3-chloropropane	89		98		41-144	10		20
Hexachlorobutadiene	110		120		63-130	9		20
Isopropylbenzene	93		97		70-130	4		20
p-Isopropyltoluene	90		97		70-130	7		20
Naphthalene J ⁺	150	Q	160	Q	70-130	6		20
n-Propylbenzene	94		100		69-130	6		20
1,2,3-Trichlorobenzene J ⁺	220	Q	240	Q	70-130	9		20
1,2,4-Trichlorobenzene	110		120		70-130	9		20
1,3,5-Trimethylbenzene	95		100		64-130	5		20
1,2,4-Trimethylbenzene	100		100		70-130	0		20
1,4-Dioxane J ⁺	148		160		56-162	8		20
p-Diethylbenzene	93		100		70-130	7		20

(ND)

J⁺No qual J⁺ 10/16/18 All else OK

Lab Control Sample Analysis

Batch Quality Control

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829077
Report Date: 08/08/18

70-130

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	Qual	Limits	Qual
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-03 Batch: WG1141450-3 WG1141450-4								
Methylene chloride	86		92		70-130	7	20	
1,1-Dichloroethane	89		96		70-130	8	20	
Chloroform	86		92		70-130	7	20	
Carbon tetrachloride	86		93		63-132	8	20	
1,2-Dichloropropane	86		92		70-130	7	20	
Dibromochloromethane	80		87		63-130	8	20	
1,1,2-Trichloroethane	85		92		70-130	8	20	
Tetrachloroethene	85		92		70-130	8	20	
Chlorobenzene	87		93		75-130	7	20	
Trichlorofluoromethane	93		100		62-150	7	20	
1,2-Dichloroethane	93		99		70-130	6	20	
1,1,1-Trichloroethane	90		96		67-130	6	20	
Bromodichloromethane	88		93		67-130	6	20	
trans-1,3-Dichloropropene	87		94		70-130	8	20	
cis-1,3-Dichloropropene	84		89		70-130	6	20	
1,1-Dichloropropene	89		96		70-130	8	20	
Bromoform	78		83		54-136	6	20	
1,1,2,2-Tetrachloroethane	86		92		67-130	7	20	
Benzene	84		91		70-130	8	20	
Toluene	89		96		70-130	8	20	
Ethylbenzene	91		97		70-130	6	20	
Chloromethane	84		90		64-130	7	20	
Bromomethane	56		68		39-139	19	20	

BMW-1-072718
BMW-2-072718

All else OK

2/10/18

Matrix Spike Analysis Batch Quality Control

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829077
Report Date: 08/08/18

70-130/20

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Found	MSD %Recovery	Recovery Limits	RPD Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-03 QC Batch ID: WG1141450-6 WG1141450-7 QC Sample: L1829077-01 Client ID: BMW-1-072718									
Methylene chloride	ND	10	9.8	98	9.8	98	70-130	0	20
1,1-Dichloroethane	ND	10	11	110	11	110	70-130	0	20
Chloroform	ND	10	10	100	10	100	70-130	0	20
Carbon tetrachloride	ND	10	10	100	10	100	63-132	0	20
1,2-Dichloropropane	ND	10	10	100	10	100	70-130	0	20
Dibromochloromethane	ND	10	9.3	93	9.4	94	63-130	1	20
1,1,2-Trichloroethane	ND	10	10	100	10	100	70-130	0	20
Tetrachloroethene	0.70	10	10	93	10	93	70-130	0	20
Chlorobenzene	ND	10	10	100	9.9	99	75-130	1	20
Trichlorofluoromethane	ND	10	12	120	11	110	62-150	9	20
1,2-Dichloroethane	ND	10	11	110	11	110	70-130	0	20
1,1,1-Trichloroethane	ND	10	11	110	11	110	67-130	0	20
Bromodichloromethane	ND	10	9.9	99	10	100	67-130	1	20
trans-1,3-Dichloropropene	ND	10	9.6	96	9.5	95	70-130	1	20
cis-1,3-Dichloropropene	ND	10	9.1	91	9.2	92	70-130	1	20
1,1-Dichloropropene	ND	10	11	110	10	100	70-130	10	20
Bromoform	ND	10	8.8	88	8.9	89	54-136	1	20
1,1,2,2-Tetrachloroethane	ND	10	10	100	10	100	67-130	0	20
Benzene	ND	10	10	100	10	100	70-130	0	20
Toluene	ND	10	10	100	10	100	70-130	0	20
Ethylbenzene	ND	10	10	100	10	100	70-130	0	20
Chloromethane	ND	10	10	100	10	100	64-130	0	20
Bromomethane	ND	10	4.5	45	5.6	56	39-139	22	20

OK

No qual for 10/10/18

Matrix Spike Analysis

Batch Quality Control

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829077
Report Date: 08/08/18

70-130

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Found	MSD %Recovery	Recovery Limits	RPD Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-03 QC Batch ID: WG1141450-6 WG1141450-7 QC Sample: L1829077-01 Client ID: BMW-1-072718									
Vinyl chloride	MS-H 0.22J	10	14	140	13	✓ 130	55-140	7	20
Chloroethane	ND	10	13	130	13	✓ 130	55-138	0	20
1,1-Dichloroethene	ND	10	10	100	10	100	61-145	0	20
trans-1,2-Dichloroethene	ND	10	10	100	10	100	70-130	0	20
Trichloroethene	2.2	10	12	98	12	98	70-130	0	20
1,2-Dichlorobenzene	ND	10	9.8	98	9.8	98	70-130	0	20
1,3-Dichlorobenzene	ND	10	9.8	98	9.7	97	70-130	1	20
1,4-Dichlorobenzene	ND	10	9.6	96	9.6	96	70-130	0	20
Methyl tert butyl ether	ND	10	10	100	10	100	63-130	0	20
p/m-Xylene	ND	20	20	100	20	100	70-130	0	20
o-Xylene	ND	20	20	100	20	100	70-130	0	20
cis-1,2-Dichloroethene	4.5	10	15	105	14	95	70-130	7	20
Dibromomethane	ND	10	9.8	98	9.6	96	70-130	2	20
1,2,3-Trichloropropane	ND	10	11	110	11	110	64-130	0	20
Acrylonitrile	ND	10	9.6	96	9.8	98	70-130	2	20
Styrene	ND	20	20	100	20	100	70-130	0	20
Dichlorodifluoromethane	ND	10	14	140	13	✓ 130	36-147	7	20
Acetone	ND	10	11	110	12	120	58-148	9	20
Carbon disulfide	ND	10	11	110	10	100	51-130	10	20
2-Butanone	ND	10	8.7	87	8.9	89	63-138	2	20
Vinyl acetate	ND	10	9.6	96	9.5	95	70-130	1	20
4-Methyl-2-pentanone	ND	10	9.9	99	10	100	59-130	1	20
2-Hexanone	ND	10	8.5	85	8.8	88	57-130	3	20

Matrix Spike Analysis

Batch Quality Control

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829077
Report Date: 08/08/18

70-130/20

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Found	MSD %Recovery	Recovery Limits	RPD Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-03 QC Batch ID: WG1141450-6 WG1141450-7 QC Sample: L1829077-01 Client ID: BMW-1-072718									
Bromochloromethane	ND	10	9.5	95	9.8	98	70-130	3	20
2,2-Dichloropropane	ND	10	9.3	93	9.3	93	63-133	0	20
1,2-Dibromoethane	ND	10	9.5	95	9.4	94	70-130	1	20
1,3-Dichloropropane	ND	10	10	100	10	100	70-130	0	20
1,1,1,2-Tetrachloroethane	ND	10	9.8	98	9.7	97	64-130	1	20
Bromobenzene	ND	10	9.7	97	9.6	96	70-130	1	20
n-Butylbenzene	ND	10	11	110	11	110	53-136	0	20
sec-Butylbenzene	ND	10	11	110	11	110	70-130	0	20
tert-Butylbenzene	ND	10	11	110	11	110	70-130	0	20
o-Chlorotoluene	ND	10	11	110	11	110	70-130	0	20
p-Chlorotoluene	ND	10	11	110	11	110	70-130	0	20
1,2-Dibromo-3-chloropropane	ND	10	8.0	80	8.5	85	41-144	6	20
Hexachlorobutadiene	ND	10	9.2	92	9.4	94	63-130	2	20
Isopropylbenzene	ND	10	11	110	11	110	70-130	0	20
p-Isopropyltoluene	ND	10	11	110	11	110	70-130	0	20
Naphthalene	ND	10	8.4	84	8.9	89	70-130	6	20
n-Propylbenzene	ND	10	11	110	11	110	69-130	0	20
1,2,3-Trichlorobenzene	ND	10	8.2	82	8.6	86	70-130	5	20
1,2,4-Trichlorobenzene	ND	10	8.6	86	9.0	90	70-130	5	20
1,3,5-Trimethylbenzene	ND	10	11	110	11	110	64-130	0	20
1,2,4-Trimethylbenzene	ND	10	11	110	11	110	70-130	0	20
1,4-Dioxane	ND	500	350	70	450	90	56-162	25	Q 20
p-Diethylbenzene	ND	10	11	110	11	110	70-130	0	20

Sample Calc

Data Path : I:\VOLATILES\Elaine\2018\180731A\
 Data File : VE180731A07.D
 Acq On : 31 Jul 2018 11:56
 Operator : ELAINE:KJD
 Sample : 11828999-01D, 31, 5, 10, , , a
 Misc : WG1141394, ICAL14693
 ALS Vial : 1 Sample Multiplier: 1

$$\text{Conc} = \frac{639577}{315916} \times \frac{10}{0.229} = 88.4$$

$$\times 2 = 176.8 \text{ ug}$$

Quant Time: Jul 31 14:36:54 2018

Quant Method : I:\VOLATILES\Elaine\2018\180731A\Elaine_180507A_8260.m

Quant Title : VOLATILES BY GC/MS

QLast Update : Tue May 08 16:08:22 2018

Response via : Initial Calibration

CCAL FILE(s) : 1 - I:\VOLATILES\Elaine\2018\180731A\VE180731A01.D

Sub List : 8260-NYTCL - Megamix plus Diox

Jr
10/17/18

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorobenzene	9.819	96	315916	10.000	ug/L	0.00
Standard Area 1 = 343862			Recovery =	91.87%		
59) Chlorobenzene-d5	14.941	117	297826	10.000	ug/L	0.00
Standard Area 1 = 310825			Recovery =	95.82%		
79) 1,4-Dichlorobenzene-d4	19.236	152	153510	10.000	ug/L	0.00
Standard Area 1 = 157058			Recovery =	97.74%		
System Monitoring Compounds						
36) Dibromofluoromethane	8.556	113	77332	10.900	ug/L	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery =	109.00%		
43) 1,2-Dichloroethane-d4	9.323	65	96200	11.863	ug/L	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery =	118.63%		
60) Toluene-d8	12.372	98	347797	9.897	ug/L	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery =	98.97%		
83) 4-Bromofluorobenzene	17.086	95	169912	11.184	ug/L	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery =	111.84%		
Target Compounds						
						Qvalue
2) Dichlorodifluoromethane	0.000		0	N.D.		
3) Chloromethane	2.884	50	394	N.D.		
4) Vinyl chloride	3.047	62	120300	23.471	ug/L	95
5) Bromomethane	3.733	94	72	0.111	ug/L	98
6) Chloroethane	0.000		0	N.D.		
7) Trichlorofluoromethane	0.000		0	N.D.		
8) Ethyl ether	0.000		0	N.D.		
10) 1,1-Dichloroethene	5.197	96	986	0.175	ug/L #	79
11) Carbon disulfide	5.965	76	8593	0.606	ug/L	94
15) Methylene chloride	5.954	84	1933	0.288	ug/L	80
17) Acetone	5.007	43	121533	99.042	ug/L	95
18) trans-1,2-Dichloroethene	6.395	96	16831	2.667	ug/L	94
20) Methyl tert-butyl ether	6.166	73	761	N.D.		
23) 1,1-Dichloroethane	0.000		0	N.D.		
25) Acrylonitrile	0.000		0	N.D.		
27) Vinyl acetate	0.000		0	N.D.		
28) cis-1,2-Dichloroethene	7.979	96	639577	88.478	ug/L ✓	95
29) 2,2-Dichloropropane	0.000		0	N.D.		
30) Bromochloromethane	0.000		0	N.D.		
32) Chloroform	0.000		0	N.D.		

Initial Calibration Summary Form 6

Client : Wood Env & Infrastructure Solutions Lab Number : L1828999
Project Name : HYGRADE/STALINGRAD Project Number : 3612162331
Instrument ID : ELAINE Ical Ref : ICAL14693
Calibration dates : 05/08/18 02:02 05/08/18 07:19

Calibration Files

L11 =VE180507A03.D L1 =VE180507A05.D L2 =VE180507A07.D L3 =VE180507A08.D L4 =VE180507A09.D
L6 =VE180507A10.D L8 =VE180507A11.D L10 =VE180507A12.D

Compound	L11	L1	L2	L3	L4	L6	L8	L10	Avg	%RSD
1) I Fluorobenzene	-----ISTD-----									
2) TP Dichlorodifluo		0.162	0.163	0.259	0.181	0.211	0.215	0.202	0.199	17.17
3) TP Chloromethane		0.256	0.246	0.259	0.197	0.215	0.232	0.221	0.232	9.74
4) TC Vinyl chloride	0.134	0.141	0.150	0.207	0.151	0.172	0.178	0.166	0.162	14.43
5) TP Bromomethane		0.062	0.065	0.080	0.082	0.122	0.141		*Q	0.9993
6) TP Chloroethane		0.145	0.156	0.184	0.138	0.149	0.154	0.140	0.152	10.26
7) TP Trichlorofluor		0.250	0.248	0.379	0.272	0.328	0.365	0.348	0.313	17.73
8) TP Ethyl ether		0.109	0.103	0.111	0.093	0.099	0.100	0.096	0.101	6.63
10) TC 1,1-Dichloroet		0.152	0.163	0.217	0.158	0.182	0.191	0.189	0.179	12.69
11) TP Carbon disulfide		0.429	0.414	0.509	0.392	0.460	0.494	0.443	0.449	9.39
12) TP Freon-113		0.146	0.144	0.231	0.159	0.191	0.201	0.184	0.179	17.72
13) TP Iodomethane		0.033	0.072	0.146	0.152	0.174	0.168	0.151	*L	0.9958
14) TP Acrolein		0.019	0.022	0.029	0.025	0.026	0.029	0.027	0.025#	15.31
15) TP Methylene chlo		0.245	0.230	0.237	0.192	0.197	0.200	0.187	0.213	11.15
17) TP Acetone			0.041	0.042	0.036	0.038	0.038	0.038	0.039#	5.96
18) TP trans-1,2-Dich		0.189	0.199	0.233	0.182	0.199	0.209	0.189	0.200	8.56
19) TP Methyl acetate		0.111	0.101	0.118	0.096	0.100	0.103	0.106	0.105	7.03
20) TP Methyl tert butyl ether		0.455	0.457	0.499	0.421	0.450	0.458	0.437	0.454	5.33
21) TP tert-Butyl alc		0.010	0.010	0.011	0.010	0.011	0.011	0.012	0.011#	7.26
22) TP Diisopropyl ether		0.733	0.725	0.787	0.661	0.696	0.706	0.662	0.710	6.21
23) TP 1,1-Dichloroet		0.383	0.414	0.445	0.351	0.371	0.383	0.352	0.386	8.81
24) TP Halothane		0.138	0.150	0.190	0.145	0.167	0.175	0.161	0.161	11.40
25) TP Acrylonitrile		0.045	0.053	0.058	0.052	0.054	0.056	0.055	0.053	7.49
26) TP Ethyl tert-but		0.607	0.618	0.683	0.571	0.611	0.620	0.590	0.614	5.68
27) TP Vinyl acetate		0.294	0.308	0.338	0.307	0.325	0.360	0.320	0.322	6.85
28) TP cis-1,2-Dichlo		0.238	0.247	0.257	0.209	0.218	0.225	0.208	0.229	8.30 ✓
29) TP 2,2-Dichloropr		0.281	0.290	0.361	0.270	0.307	0.325	0.297	0.304	10.02
30) TP Bromochloromet		0.107	0.108	0.116	0.097	0.096	0.093	0.087	0.100	9.98
31) TP Cyclohexane		0.304	0.296	0.448	0.305	0.366	0.396	0.348	0.352	16.01
32) TC Chloroform		0.380	0.386	0.420	0.336	0.358	0.368	0.344	0.370	7.65
33) TP Ethyl acetate		0.110	0.124	0.148	0.122	0.132	0.136	0.132	0.129	9.28
34) TP Carbon tetrachloride	0.188	0.205	0.230	0.326	0.239	0.290	0.309	0.280	0.258	19.44
35) TP Tetrahydrofuran		0.043	0.041	0.043	0.036	0.039	0.041	0.040	0.041#	5.76
36) S Dibromofluoromethane	0.223	0.224	0.226	0.227	0.226	0.221	0.224	0.225	0.225	0.86
37) TP 1,1,1-Trichlor		0.299	0.303	0.393	0.292	0.335	0.352	0.320	0.328	10.94
39) TP 2-Butanone		0.052	0.056	0.063	0.054	0.056	0.058	0.058	0.057#	5.95
40) TP 1,1-Dichloropr		0.263	0.271	0.364	0.263	0.305	0.323	0.294	0.298	12.36
41) TP Benzene	0.886	0.920	0.932	1.001	0.788	0.836	0.850	0.753	0.871	9.27



Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\Elaine\2018\180507\
 Data File : VE180507A08.D
 Acq On : 8 May 2018 4:58 am
 Operator : ELAINE:NLK
 Sample : ISTD13
 Misc : WG1113729
 ALS Vial : 1 Sample Multiplier: 1

$$R_{RF} = \frac{117612}{458097} \times \frac{10}{10} = 0.257$$

CU 1,2 DCE

Quant Time: May 08 13:22:19 2018

Quant Method : I:\VOLATILES\Elaine\2018\180507\Elaine_180507A_8260.m OK

Quant Title : VOLATILES BY GC/MS

QLast Update : Tue Apr 24 18:14:54 2018

Response via : Initial Calibration

CCAL FILE(s) : 1 - I:\VOLATILES\Elaine\2018\180507\VE180507A08.D

Sub List : 8260-Curve - Megamix plus Diox

10/17/18

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorobenzene	9.819	96	458097	10.000	ug/L	0.00
Standard Area 1 = 458097			Recovery =	100.00%		
59) Chlorobenzene-d5	14.941	117	388797	10.000	ug/L	0.00
Standard Area 1 = 388797			Recovery =	100.00%		
79) 1,4-Dichlorobenzene-d4	19.241	152	199442	10.000	ug/L	0.00
Standard Area 1 = 199442			Recovery =	100.00%		
System Monitoring Compounds						
36) Dibromofluoromethane	8.556	113	104114	11.251	ug/L	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery =	112.51%		
43) 1,2-Dichloroethane-d4	9.329	65	118137	11.104	ug/L	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery =	111.04%		
60) Toluene-d8	12.377	98	458217	9.630	ug/L	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery =	96.30%		
83) 4-Bromofluorobenzene	17.086	95	195847	8.445	ug/L	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery =	84.45%		
Target Compounds						
						Qvalue
2) Dichlorodifluoromethane	2.524	85	118791	13.161	ug/L	98
3) Chloromethane	2.884	50	118733	9.146	ug/L	99
4) Vinyl chloride	3.052	62	94640	10.836	ug/L	98
5) Bromomethane	3.733	94	36676	5.333	ug/L	98
6) Chloroethane	3.853	64	84386	9.622	ug/L	98
7) Trichlorofluoromethane	4.250	101	173664	11.344	ug/L	98
8) Ethyl ether	4.702	74	50828	9.217	ug/L	93
10) 1,1-Dichloroethene	5.197	96	99231	9.569	ug/L	96
11) Carbon disulfide	5.965	76	233185	8.780	ug/L	100
12) Freon-113	4.919	101	105823	11.048	ug/L #	92
13) Iodomethane	5.676	142	66947	5.956	ug/L	97
14) Acrolein	4.914	56	13231	10.115	ug/L	95
15) Methylene chloride	5.948	84	108447	9.514	ug/L	86
17) Acetone	5.012	43	19166	8.156	ug/L	93
18) trans-1,2-Dichloroethene	6.400	96	106638	9.562	ug/L	98
19) Methyl acetate	5.714	43	53954	9.238	ug/L #	89
20) Methyl tert-butyl ether	6.166	73	228771	9.407	ug/L	94
21) tert-Butyl alcohol	5.317	59	24102	40.672	ug/L #	85
22) Diisopropyl ether	6.863	45	360617	9.060	ug/L	96
23) 1,1-Dichloroethane	7.053	63	204008	9.920	ug/L	99
24) Halothane	6.318	117	87171	10.530	ug/L	100

PFAS

NYSDEC DUSR PROJECT CHEMIST REVIEW RECORD

Project: Hygrade

Method: 537 Mod.

Laboratory: Alpha Analytical

SDG(s): L1828998

Date:

L1829069

Reviewer:

Review Level ☒ NYSDEC DUSR

USEPA Region II Guideline

1. ☒ Case Narrative Review and Data Package Completeness

COMMENTS

Were problems noted? See attached

Were all the samples on the COC analyzed for the requested analyses? ☒ YES ☐ NO (circle one)

Are Field Sample IDs and Locations assigned correctly? ☒ YES ☐ NO (circle one)

2. ☒ Holding time and Sample Collection

Water: 14 days from collection to extraction; 28 days from extraction to analysis

Hold time met for all samples? ☒ YES ☐ NO (circle one)

3. ☒ QC Blanks

Are method blanks free of contamination? ☒ YES ☐ NO (circle one)

Are rinse blanks free of contamination? ☒ YES ☐ NO ☐ NA (circle one)

Are field reagent blanks free of contamination? ☒ YES ☐ NO ☐ NA (circle one)

4. ☒ Instrument Tuning - Data Package Narrative Review

Did the laboratory narrative identify any results that were not within method criteria? ☒ YES ☐ NO (circle one)

If yes, use professional judgment to evaluate data and qualify results if needed

5. ☒ Internal Standards - Data Package Narrative Review

(Area Limits = -50% to +100%, RTs within 30 seconds of daily CCAL standard (or ICAL mid-point if samples follow ICAL))

Did the laboratory narrative identify any sample internal standards that were not within criteria?

☒ YES ☐ NO (circle one)

Did the laboratory qualify results based on internal standard exceedances? ☒ YES ☐ NO (circle one)

If yes to above, use professional judgment to evaluate data and qualify results if needed

6. ☒ Instrument Calibration - Data Package Narrative Review

Did the laboratory narrative identify compounds that were not within criteria in the initial and/or continuing calibration standards? ☒ YES ☐ NO (circle one)

Initial Calibration %RSD = 15%, Continuing Calibration %D = 20%

Did the laboratory qualify results based on initial or continuing calibration exceedances? ☒ YES ☐ NO (circle one)

If yes to above, use professional judgment to evaluate data and qualify results if needed

7. ☒ Surrogate Recovery (lab limits)

Were all results within limits? ☒ YES ☐ NO (circle one)

Were any recoveries < 10%? (use professional judgment)

8. ☒ Matrix Spike (lab limits)

Were MS/MSDs submitted/analyzed? ☒ YES ☐ NO (circle one)

Were all results within limits? ☒ YES ☐ NO ☐ NA (circle one)

HT 28 days based on EPA

NOTE A subset of pH recordings in log in documentation were entered incorrectly and were reissued by the lab upon questioning docs. Dilutions for PFOS & PFBS in subset of samples were extracted 4 to 6 days after expiration of HT; affected results qualified for HT.

See attached for extracted IS summaries; injected IS all OK

No quals; prof. judgment

See IS above

BMW-1-072718: OK

9. ☒ **Duplicates** (RPD limits = water 50)

Were Field Duplicates submitted/analyzed? YES NO

BMW-4-072618 / DUP-072618; OK
Were RPDs within criteria? YES NO NA (circle one)

10. ☒ **Laboratory Control Sample Results** (lab limits)

Were all results within limits? YES NO (circle one)

11. ☒ **Raw Data Review and Calculation Checks**

See attached

12. ☒ **Electronic Data Review and Edits**

Does the EDD match the Form Is? YES NO (circle one)

13. ☒ **Tables**

Table 1 (Samples and Analytical Methods)

Table 2 (Analytical Results)

Table 3 (Qualification Actions)

Were all tables produced and reviewed? YES NO (circle one)

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1828998
Report Date: 08/15/18

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1828998-01	BMW-3-072618	WATER	LONG ISLAND CITY, NY	07/26/18 13:50	07/26/18
L1828998-02	BMW-4-072618	WATER	LONG ISLAND CITY, NY	07/26/18 13:25	07/26/18
L1828998-03	MW-5-072618	WATER	LONG ISLAND CITY, NY	07/26/18 10:15	07/26/18
L1828998-04	MW-6S-072618	WATER	LONG ISLAND CITY, NY	07/26/18 10:35	07/26/18
L1828998-05	MW-6D-072618	WATER	LONG ISLAND CITY, NY	07/26/18 09:30	07/26/18
L1828998-06	DUP-072618	WATER	LONG ISLAND CITY, NY	07/26/18 13:25	07/26/18
L1828998-07	MW-E-072618	WATER	LONG ISLAND CITY, NY	07/26/18 11:30	07/26/18
L1828998-08	FB-072618	WATER	LONG ISLAND CITY, NY	07/26/18 13:05	07/26/18

10/10/18

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829069
Report Date: 08/20/18

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1829069-01	BMW-1-072718	WATER	LONG ISLAND CITY, NY	07/27/18 09:20	07/27/18
L1829069-02	BMW-2-072718	WATER	LONG ISLAND CITY, NY	07/27/18 10:45	07/27/18



Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1828998
Report Date: 08/15/18

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Perfluorinated Alkyl Acids by Isotope Dilution

L1828998: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes.

Please refer to the surrogate section of the report for details.

See check list

L1828998-01, -02, -04, and -06: The samples were re-extracted on dilution outside of method holding time in order to quantify the results within the calibration range. The result(s) should be considered estimated, and are qualified with an E flag, for any compound(s) that exceeded the calibration range in the initial analysis. The re-analysis was performed only for the compound(s) that exceeded the calibration range. ✓ HT for PFOS is

The WG1146058-1 Method Blank, associated with L1828998-01, -02, -04, and -06, has a concentration above the reporting limit for 6:2FTS. The results of the original analysis are reported and are qualified with a "B" for any associated sample concentrations that are less than 10x the blank concentration for this analyte.

OK { The continuing calibration standard WG1144723-3, associated with L01828998 as well as the associated QC, had the response for Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA) (49%D) above the acceptance criteria for the method. The associated target analytes were within acceptance criteria, therefore no further action was taken.

See check list for all

Jr
10/10/18

* Holding Time 28 days based on EPA Technical Brief.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Susan E. Neil Susan O'Neil

Title: Technical Director/Representative

Date: 08/15/18



Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829069
Report Date: 08/20/18

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Perfluorinated Alkyl Acids by Isotope Dilution

L1829069-01 and -02: The samples were re-extracted on dilution out of method holding time in order to quantify the results within the calibration range. The result(s) should be considered estimated, and are qualified *See* with an E flag, for any compound(s) that exceeded the calibration range in the initial analysis. The re-analysis *checklist* was performed only for the compound(s) that exceeded the calibration range.

The WG1144996-1 Method Blank, associated with L1829069-01 and -02, has a concentration above the reporting limit for 6:2FTS. The results of the original analysis are reported and are qualified with a "B" for any associated sample concentrations that are less than 10x the blank concentration for this analyte.

The WG1144996-4/-5 MS/MSD recoveries, performed on L1829069-01, are outside the acceptance criteria for perfluorobutanesulfonic acid (pfbs) (286% MSD only) and perfluorooctanesulfonic acid (pfos) (0%/299%).

The unacceptable percent recoveries are attributed to the elevated concentrations of target compounds present in the native sample.

The WG1147316-4/-5 MS/MSD recoveries, performed on L1829069-01, are outside the acceptance criteria *See* for perfluorobutanesulfonic acid (pfbs) (180%/180%) and perfluorooctanesulfonic acid (pfos) (201% MS only). *checklist*

The unacceptable percent recoveries are attributed to the elevated concentrations of target compounds present in the native sample.

The continuing calibration standard WG1145801-1, associated with L1829069 as well as the associated QC, had the response for the extracted internal standard Perfluoro[1,2-13C₂]Tetradecanoic Acid (M2PFTEDA) (44.5%D) below the acceptance criteria for the method. The associated target analyte was within acceptance criteria, therefore no further action was taken.

OK; no qual

gr
10/10/18

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

Susan E. Neil

Susan O' Neil

Title: Technical Director/Representative

Date: 08/20/18

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829069
Report Date: 08/20/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 122,537(M)
Analytical Date: 08/14/18 07:53
Analyst: AJ

Extraction Method: EPA 537
Extraction Date: 08/10/18 07:57

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-02 Batch: WG1144996-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.131
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.086
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.110
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.126
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.092
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.108
Perfluorooctanoic Acid (PFOA)	OK; > 0.192	J	ng/l	2.00	0.050
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	13.4	(u) in subset of samples	ng/l	2.00	0.194
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.155
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.101
Perfluorooctanesulfonic Acid (PFOS)	OK; > 0.140	J	ng/l	2.00	0.112
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.190
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	0.291
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.250
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.191
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.222
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.227
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.373
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.092
Perfluorotridecanoic Acid (PFTTrDA)	ND		ng/l	2.00	0.090
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.072

2-
10/16/18



Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829069
Report Date: 08/20/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 122,537(M)
Analytical Date: 08/18/18 00:00
Analyst: AJ

Extraction Method: EPA 537
Extraction Date: 08/16/18 4:12

OK for applicable
analytes PFBS & PFOS

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-02 Batch: WG1147316-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.131
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.086
Perfluorobutanesulfonic Acid (PFBS)	ND ✓		ng/l	2.00	0.110
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.126
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.092
Perfluorohexanesulfonic Acid (PFHxS)	0.240	J	ng/l	2.00	0.108
Perfluorooctanoic Acid (PFOA)	0.208	J	ng/l	2.00	0.050
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	0.194
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.155
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.101
Perfluorooctanesulfonic Acid (PFOS)	ND ✓		ng/l	2.00	0.112
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.190
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	0.291
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.250
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.191
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.222
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.227
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.373
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.092
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.090
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.072

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1828998
Report Date: 08/15/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 122,537(M)
Analytical Date: 08/12/18 12:17
Analyst: PB

Extraction Method: EPA 537
Extraction Date: 08/09/18 09:00

Method Blank

Sample concs > ALC; no qual

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-08 Batch: WG1144495-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.131
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.086
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.110
Perfluorohexanoic Acid (PFHxA)	OK 0.160	J	ng/l	2.00	0.126
Perfluoroheptanoic Acid (PFHpA)	OIL 0.132	J	ng/l	2.00	0.092
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.108
Perfluorooctanoic Acid (PFOA)	OK 0.720	J	ng/l	2.00	0.050
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	0.194
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.155
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.101
Perfluorooctanesulfonic Acid (PFOS)	OK 0.260	J	ng/l	2.00	0.112
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.190
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	0.291
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.250
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.191
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.222
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.227
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.373
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.092
Perfluorotridecanoic Acid (PFTTrDA)	ND		ng/l	2.00	0.090
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.072

jr
10/16/18



Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1828998
Report Date: 08/15/18

SAMPLE RESULTS

Lab ID: L1828998-08
Client ID: FB-072618
Sample Location: LONG ISLAND CITY, NY

Date Collected: 07/26/18 13:05
Date Received: 07/26/18
Field Prep: Not Specified

Sample Depth:

Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 08/12/18 19:28
Analyst: PB

Extraction Method: EPA 537
Extraction Date: 08/09/18 09:00

Field Blank

Sample used > A.C.; no quals

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.85	0.121	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.85	0.079	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.85	0.102	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.85	0.117	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.85	0.086	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.85	0.100	1
Perfluorooctanoic Acid (PFOA) OK	0.670	J	ng/l	1.85	0.047	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.85	0.180	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.85	0.144	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.85	0.093	1
Perfluorooctanesulfonic Acid (PFOS) OK	0.348	J	ng/l	1.85	0.103	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.85	0.176	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.85	0.269	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.85	0.232	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.85	0.177	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.85	0.206	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.85	0.210	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.85	0.345	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.85	0.085	1
Perfluorotridecanoic Acid (PFTTrDA)	ND		ng/l	1.85	0.084	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.85	0.067	1

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10/16/18



Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1828998
Report Date: 08/15/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 122,537(M)
Analytical Date: 08/15/18 08:09
Analyst: AJ

Extraction Method: EPA 537
Extraction Date: 08/13/18 17:00

method Blank
PFOS only

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-02,04,06 Batch: WG1146058-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.131
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.086
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.110
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.126
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.092
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.108
Perfluorooctanoic Acid (PFOA)	0.280	N/A J	ng/l	2.00	0.050
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	2.31	N/A	ng/l	2.00	0.194
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.155
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.101
Perfluorooctanesulfonic Acid (PFOS)	ND	OK	ng/l	2.00	0.112
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.190
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	0.291
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.250
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.191
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.222
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.227
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.373
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.092
Perfluorotridecanoic Acid (PFTTrDA)	ND		ng/l	2.00	0.090
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.072

Matrix Spike Analysis

Batch Quality Control

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829069
Report Date: 08/20/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Found	MSD %Recovery	Recovery Qual	Recovery Limits	RPD Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1144996-4 WG1144996-5 QC Sample: L1829069-01 Client ID: BMW-1-072718										
Perfluorobutanoic Acid (PFBA)	31.0	37	66.5	96	71.9	106		67-148	8	30
Perfluoropentanoic Acid (PFPeA)	59.6	37	96.6	100	105	118		63-161	8	30
Perfluorooctanesulfonic Acid (PFOS)	1460E N/A	37	1500E	108	OK 1570E	286	Q	65-157	5	30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	37	34.4	93	39.4	102		37-219	14	30
Perfluorohexanoic Acid (PFHxA)	61.2	37	103	113	109	124		69-168	6	30
Perfluorooctanesulfonic Acid (PFPeS)	44.6	37	83.4	105	90.7	120		52-156	8	30
Perfluoroheptanoic Acid (PFHpA)	27.8	37	62.5	94	69.4	108		58-159	10	30
Perfluorohexanesulfonic Acid (PFHxS)	211	37	256	122	264	138		69-177	3	30
Perfluorooctanoic Acid (PFOA)	92.6	37	131	104	141	126		63-159	7	30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	15.2B	37	55.1	108	63.4	125		49-187	14	30
Perfluoroheptanesulfonic Acid (PFHpS)	56.0	37	98.4	114	114	151		61-179	15	30
Perfluorononanoic Acid (PFNA)	6.17	37	45.3	106	49.2	112		68-171	8	30
Perfluorooctanesulfonic Acid (PFOS)	885E N/A	37	884E	0	Q OK 1000E	299	Q	52-151	12	30
Perfluorodecanoic Acid (PFDA)	2.40	37	43.3	110	50.0	124		63-171	14	30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	37	28.4	77	29.0	75		56-173	2	30
Perfluorononanesulfonic Acid (PFNS)	ND	37	35.2	95	41.2	107		48-150	16	30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	37	32.6	88	40.8	106		60-166	22	30
Perfluoroundecanoic Acid (PFUnA)	ND	37	31.9	86	35.1	91		60-153	10	30
Perfluorodecanesulfonic Acid (PFDS)	ND	37	30.5	82	38.5	100		38-156	23	30
Perfluorooctanesulfonamide (FOSA)	ND	37	32.0	86	37.6	98		46-170	16	30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	37	23.2	63	30.8	80		45-170	28	30
Perfluorododecanoic Acid (PFDoA)	ND	37	33.8	91	37.8	98		67-153	11	30

Matrix Spike Analysis

Batch Quality Control

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829069
Report Date: 08/20/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Found	MSD %Recovery	MSD Qual	Recovery Limits	RPD Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1144996-4 WG1144996-5 QC Sample: L1829069-01 Client ID: BMW-1-072718										
Perfluorotridecanoic Acid (PFTTrDA)	ND	37	28.1	76	34.5	90		48-158	20	30
Perfluorotetradecanoic Acid (PFTA)	ND	37	42.0	113	41.3	107		59-182	2	30

Surrogate	MS % Recovery	MS Qualifier	% Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	92		80		7-170
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	155		135		1-313
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	106		78		1-244
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEFOSAA)	60		54		23-146
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	68		50		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	86		73		40-144
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	93		77		38-144
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	71		63		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	87		74		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	124		108		47-153
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	77		52		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	43		37		33-143
Perfluoro[13C4]Butanoic Acid (MPFBA)	103		93		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	77		68		16-173
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	77		61		1-87
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	105		84		42-146
Perfluoro[13C8]Octanoic Acid (M8PFOA)	98		86		36-149
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	84		74		34-146
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	84		73		31-159

Matrix Spike Analysis

Batch Quality Control

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829069
Report Date: 08/20/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Found	MSD %Recovery	MSD Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1147316-4 WG1147316-5 QC Sample: L1829069-01 Client ID: BMW-1-072718											
Perfluorobutanoic Acid (PFBA)	ND	200	245	108	240	105		67-148	2		30
Perfluoropentanoic Acid (PFPeA)	ND	200	280	110	275	107		63-161	2		30
Perfluorobutanesulfonic Acid (PFBS)	1340	200	1700	OK 180	1700	180	Q	65-157	0		30
Perfluorohexanoic Acid (PFHxA)	ND	200	284	114	272	108		69-168	4		30
Perfluoroheptanoic Acid (PFHpA)	ND	200	231	103	230	102		58-159	0		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	200	426	107	413	100		69-177	3		30
Perfluorooctanoic Acid (PFOA)	ND	200	308	112	308	112		63-159	0		30
Perfluorononanoic Acid (PFNA)	ND	200	230	115	233	117		68-171	1		30
Perfluorooctanesulfonic Acid (PFOS)	739	200	1140	OK 201	964	113	Q	52-151	17		30
Sample was 74X spike (no qual)											
Surrogate		MS % Recovery	MS Qualifier	MS % Recovery	MSD % Recovery	MSD Qualifier	MSD Qualifier	Acceptance Criteria			
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)		101		111				21-145			
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)		105		110				30-139			
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)		118		119				47-153			
Perfluoro[13C4]Butanoic Acid (MPFBA)		97		98				2-156			
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)		94		95				16-173			
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)		105		121				42-146			
Perfluoro[13C8]Octanoic Acid (M8PFOA)		93		96				36-149			
Perfluoro[13C9]Nonanoic Acid (M9PFNA)		91		99				34-146			
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)		119		120				31-159			

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1828998
Report Date: 08/15/18

SAMPLE RESULTS

Lab ID: L1828998-01
Client ID: BMW-3-072618
Sample Location: LONG ISLAND CITY, NY

Date Collected: 07/26/18 13:50
Date Received: 07/26/18
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	54		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	64		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	IS-H (J+)	174	Q 31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	71		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	83		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	IS-H (J+)	190	Q 47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	89		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	201		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	65		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	84		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	72		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	115		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	63		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	80		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	50		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	74		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	63		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	53		33-143

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10/16/18



Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1828998
Report Date: 08/15/18

SAMPLE RESULTS

Lab ID: L1828998-07
Client ID: MW-E-072618
Sample Location: LONG ISLAND CITY, NY

Date Collected: 07/26/18 11:30
Date Received: 07/26/18
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	82		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	69		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	89		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	77		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	76		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	102		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	86		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	91		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	78		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	82		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	69		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	70		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	47		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	65		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	4		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	50		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	42		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	23	Q	33-143

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10/16/18



Dataset: C:\MassLynx\Data\2018\180812_537ISO.PRO\Data\wg1145604B.qld
Last Altered: Monday, August 13, 2018 13:29:40 Eastern Daylight Time
Printed: Monday, August 13, 2018 13:34:05 Eastern Daylight Time

PFBS Calc

Method: C:\MassLynx\Data\2018\180812_537ISO.PRO\MethDB\537ISO_Q_180810.mdb 13 Aug 2018 10:21:01
Library: C:\MassLynx\Data\2018\180812_537ISO.PRO\CurveDB\180810_537ISO_ICAL.cdb 10 Aug 2018 10:56:07

L1828998-01
Sample: I9407
Date: 12-Aug-2018
Time: 17:15:59
Description: WG1145604, WG1144495, ICAL14964
Instrument: XEVO-TQSmicro#QEA0276
Acq: LCMS01:PB
Set Method Name: C:\MassLynx\Data\2018\180812_537ISO.PRO\ACQUDB\LCMS_537_ISO
Run Method Name: C:\MassLynx\Data\2018\180812_537ISO.PRO\ACQUDB\180112_TUNE.IPR
Acq Method Name: C:\MassLynx\Data\2018\180812_537ISO.PRO\ACQUDB\537ISO28_M.EXP

Conc = $\frac{25168}{9275} \times \frac{9.3034}{198601} \times \frac{1}{0.260} = 98.47 \frac{ng}{L}$

TV = $16.188 \times \frac{100}{174} = 9.3034$

OK; 7.1% diff

* from form 1 IS recovery 10/17/18

Name	CAS	RT	Trace	Area	M Flag	Conc (ng/mL)	Ion Ratio	Ratio Flag	%Rec
PFBA	375-22-4	2.15	212.926 > 169.111	18906		8.438		na	
M3PFBA	INT STD	2.14	215.926 > 172.122	46966		9.446		na	94.5
MPFBA	INT STD	2.14	216.926 > 172.137	28126		5.385		na	53.9
PFPeA	2706-90-3	5.11	262.926 > 219.002	58636		18.725		na	
M5PFPEA	INT STD	5.11	267.989 > 223.081	38556		6.394		na	63.9
PFBS	375-73-5	5.78	298.989 > 80.295	25168		27.520		na	
M3PFBS	INT STD	5.78	301.989 > 80.254	9275		16.188		na	161.9
4:2FTS	757124-72-4		326.926 > 306.957			ND		na	
M2-4:2FTS	INT STD	6.96	329.117 > 309.079	7101		25.278		na	252.8
PFHxA	307-24-4	7.04	312.989 > 269.028	135063		39.101	15.96	NO	
M5PFHxA	INT STD	7.04	317.989 > 273.045	37834		7.120		na	71.2
PFPeS	2706-91-4	7.36	348.926 > 80.251	3359		3.951	2.43	NO	
PFHpA	375-85-9	8.31	362.926 > 319.014	30752		7.207	5.08	NO	
M4PFHpA	INT STD	8.32	366.926 > 321.979	43820		8.318		na	83.2
br-PFHxS	355-46-4	8.25	398.926 > 80.295	2381		2.691	2.58	NO	
L-PFHxS	355-46-4	8.48	398.926 > 80.295	18299		22.870	1.56	YES	
PFHxS	355-46-4		398.926 > 80.295	20680		25.562		na	
M3PFHxS	INT STD	8.48	401.926 > 80.317	7714		17.935		na	179.4
br-PFOA	335-67-1	9.03	412.989 > 368.9	4675		1.118	1.39	YES	
L-PFOA	335-67-1	9.26	412.989 > 368.9	65286		15.612	8.52	NO	
M2PFOA	INT STD	9.26	415.032 > 369.968	56201		8.162		na	81.6
PFOA	335-67-1		412.989 > 368.9	69960		16.730		na	
M8PFOA	INT STD	9.26	420.989 > 375.979	41913		8.892		na	88.9
6:2FTS	27619-97-2	9.22	426.989 > 406.921	233		0.668	1.01	NO	
M2-6:2FTS	INT STD	9.22	428.989 > 408.917	3438		19.055		na	190.6
PFHpS	375-92-8	9.36	448.926 > 80.257	5824		32.863	0.85	YES	
PFNA	375-95-1	10.03	462.989 > 418.931	1965		0.860	3.54	NO	
M9PFNA	INT STD	10.03	472.053 > 426.947	28177		6.458		na	64.6
br-PFOS	1763-23-1	9.82	498.989 > 80.294	383931		907.443	4.30	YES	
L-PFOS	1763-23-1	10.08	498.989 > 80.294	356710		1193.436	1.49	YES	
PFOS	1763-23-1		498.989 > 80.294	740641		2100.879		na	
M4PFOS	INT STD	10.08	503.032 > 80.306	3960		4.444		na	44.4
M8PFOS	INT STD	10.07	507.053 > 80.294	3049		8.069		na	80.7
PFDA	335-76-2		513.053 > 468.906			ND		na	
M2PFDA	INT STD	10.65	515.053 > 469.934	27210		6.756		na	67.6
M6PFDA	INT STD	10.65	519.053 > 473.931	21666		7.238		na	72.4
8:2FTS	39108-34-4		526.989 > 506.946			ND		na	
M2-8:2FTS	INT STD	10.64	529.053 > 508.945	906		10.977		na	109.8
PFNS	68259-12-1		548.989 > 80.249			ND	0.00	YES	

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1828998
Report Date: 08/15/18

SAMPLE RESULTS

Lab ID: L1828998-01
Client ID: BMW-3-072618
Sample Location: LONG ISLAND CITY, NY

Date Collected: 07/26/18 13:50
Date Received: 07/26/18
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	54		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	64		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	174	Q	31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	71		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	83		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	190	Q	47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	89		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	201		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	65		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	84		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	72		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	115		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	63		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	80		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	50		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	74		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	63		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	53		33-143

Workgroup: WG1144495

Sample/ Type	Extraction				Concentration								
	Extract Date	Analyst	Sample Vol ml	Surr Amt ml	Spike Amt ml	Lot: Spe Cartrid	Flow Rate ml/min	Lot: Cinup Cartrid	Flow Rate 2 ml/min	Conc Date	Analyst	Final Vol ml	Conc Unit
L1828858-16 SAMP	08/09/18 09:00	Tyler Russell	270	.02		155001	4	102154	4	08/09/18 12:30	Tyler Russell	1	NEVAP 65 3
L1828858-18 SAMP	08/09/18 09:00	Tyler Russell	280	.02		155001	4	102154	4	08/09/18 12:30	Tyler Russell	1	NEVAP 65 3
L1828858-21 SAMP	08/09/18 09:00	Tyler Russell	290	.02		155001	4	102154	4	08/09/18 12:30	Tyler Russell	1	NEVAP 65 3
L1828858-25 SAMP	08/09/18 09:00	Tyler Russell	260	.02		155001	4	102154	4	08/09/18 12:30	Tyler Russell	1	NEVAP 65 3
L1828858-26 SAMP	08/09/18 09:00	Tyler Russell	260	.02		155001	4	102154	4	08/09/18 12:30	Tyler Russell	1	NEVAP 65 3
L1828998-01	08/09/18 09:00	Tyler Russell	260 260L	.02		155001	4	102154	4	08/09/18 12:30	Tyler Russell	1	NEVAP 65 3
L1828998-02	08/09/18 09:00	Tyler Russell	260	.02		155001	4	102154	4	08/09/18 12:30	Tyler Russell	1	NEVAP 65 3
L1828998-03 WATER	08/09/18 09:00	Tyler Russell	280	.02		155001	4	102154	4	08/09/18 12:30	Tyler Russell	1	NEVAP 65 3
L1828998-04	08/09/18 09:00	Tyler Russell	250	.02		155001	4	102154	4	08/09/18 12:30	Tyler Russell	1	NEVAP 65 3
L1828998-05 WATER	08/09/18 09:00	Tyler Russell	270	.02		155001	4	102154	4	08/09/18 12:30	Tyler Russell	1	NEVAP 65 3

Initial Calibration Summary Form 6

Client : Wood Env & Infrastructure Solutions
Project Name : HYGRADE
Instrument ID : LCMS01
Calibration dates : 08/10/18 08:14 08/10/18 09:53
Lab Number : L1828998
Project Number : 3612162331
Ical Ref : ICAL14964

Quantify Compound Summary Report MassLynx MassLynx V4.1 SCN 945

Alpha Analytical Inc.
Dataset: C:\MassLynx\Data\2018\180810_537ISO.PRO\Data\WG1143721_ICAL.qld
Last Altered: Friday, August 10, 2018 10:56:07 Eastern Daylight Time
Printed: Friday, August 10, 2018 11:02:59 Eastern Daylight Time

Page 6 of 53

Compound name: PFBS

Name	ID	Acq Date	Acq Time	RT	IS Area	Area Conc (ng...)	%Rec	RRF	1° S/N	2° S/N	(b/a)
1	I9345	10-Aug-18	08:14:15	6.878	13437.441	500.856	85.4	0.842	143		1.18
2	I9346	10-Aug-18	08:30:52	6.875	13084.128	1151.963	100.9	0.995	106		1.24
3	I9347	10-Aug-18	08:47:24	6.866	13340.224	5585.363	96.0	0.946	991		1.19
4	I9348	10-Aug-18	09:04:02	6.875	13896.968	12445.803	102.6	1.012	3023		1.23
5	I9349	10-Aug-18	09:20:36	6.878	12770.325	54476.852	97.8	0.964	4797		1.14
6	I9350	10-Aug-18	09:37:13	6.869	11674.533	133847.047	105.1	1.036	13163		1.10
7	I9351	10-Aug-18	09:53:51	6.869	11746.308	148351.125	96.5	0.951	7396		1.09

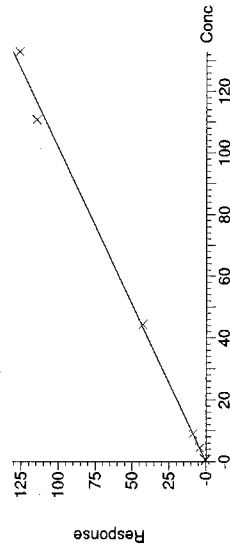
Compound name: PFBS

Coefficient of Determination: $R^2 = 0.998288$

Calibration curve: $0.98601 \times x$

Response type: Internal Std (Ref 7), Area * (IS Conc. / IS Area)

Curve type: Linear, Origin: Force, Weighting: 1/x, Axis trans: None



Dataset: C:\MassLynx\Data\2018\180815_537ISO.PRO\Data\wg1146623A.qld
 Last Altered: Wednesday, August 15, 2018 10:25:52 Eastern Daylight Time
 Printed: Wednesday, August 15, 2018 10:26:45 Eastern Daylight Time

PfOS Calc

Method: C:\MassLynx\Data\2018\180815_537ISO.PRO\MethDB\537ISO_Q_180814.mdb 14 Aug 2018 20:00:25
 Calibration: C:\MassLynx\Data\2018\180815_537ISO.PRO\CurveDB\180814_537ISO_ICAL.cdb 14 Aug 2018 19:58:55

L1828998-01RE
 Sample: I9531
 Date: 15-Aug-2018
 Time: 08:59:34

Description: WG1146623, WG1146058, ICAL14973

Instrument: XEVO-TQSmicro#QEA0276

Acq: LCMS01:AJ

Method Name: C:\MassLynx\Data\2018\180815_537ISO.PRO\ACQ\LCMS_537_ISO

Reference Method Name: C:\MassLynx\Data\2018\180815_537ISO.PRO\ACQ\180112_TUNE.IPR

Sample Method Name: C:\MassLynx\Data\2018\180815_537ISO.PRO\ACQ\537ISO28_M.EXP

$$\text{Conc} = \frac{32470}{4048} \times \frac{9.55}{1.11618} \times \frac{1}{0.0125} = 5490 \frac{\text{ng}}{\text{L}}$$

$$\text{TV PfOS (M8)} = 13.179 \times \frac{100}{138} = 9.55$$

OK; 8%
diff

10/17/18

Name	CAS	RT	Trace	Area	M Flag	Conc (ng/mL)	Ion Ratio	Ratio Flag	%Rec
M3PFBA	INT STD	2.15	215.926 > 172.122	18533		5.709		na	57.1
br-PFOA	335-67-1	9.10	412.989 > 368.9	107		0.034	1.34	YES	
L-PFOA	335-67-1	9.32	412.989 > 368.9	2234		0.707	10.07	NO	
M2PFOA	INT STD	9.32	415.032 > 369.968	30711		7.546		na	75.5
PFOA	335-67-1		412.989 > 368.9	2341		0.741		na	
M8PFOA	INT STD	9.32	420.989 > 375.979	32900		12.601		na	126.0
br-PFOS	1763-23-1	9.87	498.989 > 80.294	13842		27.028	4.28	YES	
L-PFOS	1763-23-1	10.12	498.989 > 80.294	18628		47.578	1.52	YES	
PFOS	1763-23-1		498.989 > 80.294	32470		74.607		na	
M4PFOS	INT STD	10.12	503.032 > 80.306	2937		5.749		na	57.5
M8PFOS	INT STD	10.12	507.053 > 80.294	4048		13.179		na	131.8
M2PFDA	INT STD	10.69	515.053 > 469.934	15241		7.267		na	72.7

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1828998
Report Date: 08/15/18

SAMPLE RESULTS

Lab ID: L1828998-01 RE
Client ID: BMW-3-072618
Sample Location: LONG ISLAND CITY, NY

Date Collected: 07/26/18 13:50
Date Received: 07/26/18
Field Prep: Not Specified

Sample Depth:

Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 08/15/18 08:59
Analyst: AJ

Extraction Method: EPA 537
Extraction Date: 08/13/18 17:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctanesulfonic Acid (PFOS)	5970		ng/l	40.0	2.23	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	138		42-146



Workgroup: WG1146058

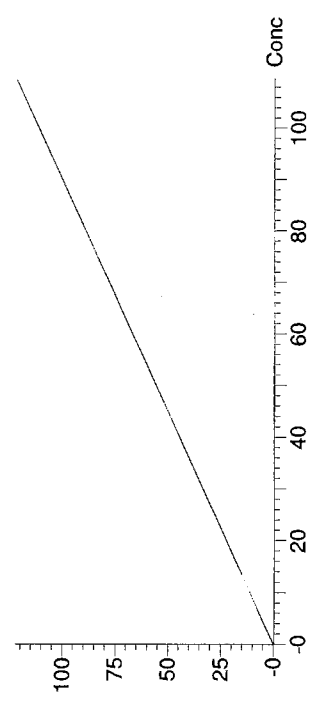
Prep Method: EPA 537 Solvent Type: Methanol Surrogate Type: NA Spike Type: 537 Spike Verify by: DR Lims Spikelot: 537I Lot #: DU475-US Lot #: LC_537_ISO_SURR_180807B Lot #: LC_537_LCS_180730 Additional Reagents/Std's <table border="1" style="width:100%; border-collapse: collapse;"> <tr><td>1:1 Acetic Acid</td></tr> <tr><td>Trizma</td></tr> <tr><td>Acetic Acid</td></tr> </table>	1:1 Acetic Acid	Trizma	Acetic Acid	Conc.Method: N-EVAP Solvent Type: NA Lot #: OW080218B Additional Reagents/Std's <table border="1" style="width:100%; border-collapse: collapse;"> <tr><td>IS</td></tr> <tr><td>537_ISO_ISTD_180811</td></tr> </table>	IS	537_ISO_ISTD_180811	Cleanup 1 Cleanup Method 1: Cleanup Method 2: Solvent Type: Lot #:
1:1 Acetic Acid							
Trizma							
Acetic Acid							
IS							
537_ISO_ISTD_180811							

Extraction										Concentration			
Sample/Type	Extract Date	Analyst	Sample Vol ml	Sur Amt ml	Spike Amt ml	Lot: Spe Cartrid	Flow Rate ml/min	Lot: Clnup Cartrid	Flow Rate ml/min	Conc Date	Analyst	Final Vol ml	Conc Unit
L1828998-01 WATER	08/13/18 17:00	Daniel Robbins	12.5	.02		156304	4	102154	4	08/13/18 20:00	Daniel Robbins	1	NEVAP 65 3
Diluted to 250 mL with DI H2O DR 8/13/18													
L1828998-02 WATER	08/13/18 17:00	Daniel Robbins	50	.02		156304	4	102154	4	08/13/18 20:00	Daniel Robbins	1	NEVAP 65 3
Diluted to 250 mL with DI H2O DR 8/13/18													
L1828998-04 WATER	08/13/18 17:00	Daniel Robbins	125	.02		156304	4	102154	4	08/13/18 20:00	Daniel Robbins	1	NEVAP 65 3
Diluted to 250 mL with DI H2O DR 8/13/18													
L1828998-06 WATER	08/13/18 17:00	Daniel Robbins	50	.02		156304	4	102154	4	08/13/18 20:00	Daniel Robbins	1	NEVAP 65 3
Diluted to 250 mL with DI H2O DR 8/13/18													
WG1146058-1 BLANK	08/13/18 17:00	Daniel Robbins	250	.02		156304	4	102154	4	08/13/18 20:00	Daniel Robbins	1	NEVAP 65 3
Shares QC w/ WG1146057 DR 8/13/18 OTHER REAGENTS: 2% NH4OH in MeOH: OW081118A 25mM NaOAc in H2O: OW081118B PIPETTE ID'S 20ul: WHG-31 100ul: WHG-30 300ul: WHG-33 1ml: WHG-29 5ml: #239 Used 80:20 MeOH/water to reconstitute all samples.													

Compound name: PFOS

Name	ID	Acq.Date	Acq.Time	RT	IS Area	Area	ng/mL	%Rec	RRF	1° S/N	2° S/N	(b/a)
I9488	IA2-537STD0.5	14-Aug-18	16:32:08		5650.847	288.147	0.482					
I9489	IA2-537STD1.0	14-Aug-18	16:48:40		5888.845	532.210	0.874					
I9490	IA2-537STD5.0	14-Aug-18	17:05:26		5445.654	2665.162	4.764					
I9491	IA2-537STD10.0	14-Aug-18	17:22:01		5408.768	5094.084	9.159					
I9492	IA2-537STD50.0	14-Aug-18	17:38:31		5304.882	25065.696	45.998					
I9493	IA2-537STD125	14-Aug-18	17:55:09		5119.402	61094.202	115.742					
I9494	IA2-537STD150	14-Aug-18	18:11:49		4604.374	66860.617	140.576					

Compound name: PFOS
 Coefficient of Determination: 0.000000
 Calibration curve: $1.11618 \times 10^{-5} x$
 Response type: Internal Std (Ref 33), Area * (IS Conc. / IS Area)
 Curve type: Linear, Origin: Force, Weighting: 1/x, Axis trans: None



METALS

NYSDEC DUSR PROJECT CHEMIST REVIEW RECORD

Project: Hygrade

Method(s): 6010B / 7470A

Laboratory: Alpha Analytical

Date: 10/16/18

Reviewer: Julie Ricciardi

SDG(s): L1828999

L1829077

Review Level ☒ NYSDEC DUSR

USEPA Region II Guideline

1. ☒ Case Narrative Review and Data Package Completeness

COMMENTS

Were problems noted? See attached

Were all the samples on the COC analyzed for the requested analyses? ☒ YES ☐ NO (circle one)

See attached preservation documentation and email to lab re pH

Are Field Sample IDs and Locations assigned correctly? ☒ YES ☐ NO (circle one)

2. ☒ Holding time and Sample Collection

Were all samples were all prepped and analyzed with the holding time (6 month) ☒ YES ☐ NO

3. ☒ QC Blanks

Are method blanks clean? YES ☒ NO (circle one)

See attached

Are Initial and continuing calibration blanks clean? YES ☒ NO (circle one)

4. ☒ Instrument Calibration - Data Package Narrative Review

Did the laboratory narrative identify any results that were not within criteria in the initial and/or continuing calibration standards? YES ☒ NO (circle one)

Initial calibration criteria based on method guidance and continuing calibration standards recovery 90-110% (80-120% Hg)

Did the laboratory qualify results based on initial or continuing calibration exceedances? YES ☒ NO

If yes to above, use professional judgment to evaluate data and qualify results if needed

5. ☒ Laboratory Control Sample Results

Were all results were within 80-120% limits? YES ☒ NO (circle one)

6. ☒ Matrix Spike

Were MS/MSDs submitted/analyzed? ☒ YES ☐ NO

Were all results were within 75-125% limits? YES ☒ NO ☐ NA (circle one)

7. ☒ Duplicates

Were Field Duplicates submitted/analyzed? ☒ YES ☐ NO

BMW-4-072618 / DUP-072618 : OK - All Total: initially a hit in both sample + Dup. Dup

Aqueous RPD within limit? (20%) ☒ YES ☐ NO ☐ NA (circle one)

Soil RPD within limit? (35%) ☒ YES ☐ NO ☒ NA (circle one)

Lab Dup RPD <20% for water, 35% for soil values > 5X the CRQL (or $\pm$ CRQL) ☒ YES ☐ NO ☐ NA result u-qualified due to blank water -

8. ☒ Were both Total and Dissolved metals reported? ☒ YES ☐ NO ☐ NA (circle one)

If the dissolved concentration is > 20% of the total concentration then estimate (J) both results using professional judgment OK

9. ☒ Percent solids < 50% for any soil/sediment sample? YES ☒ NO ☒ NA (circle one)

If yes, estimate all results using professional judgment

10. ☒ **Raw Data Review and Calculation Checks**

See attached

11. ☒ **Electronic Data Review and Edits**

Does the EDD match the Form Is? ☒ YES NO (circle one)

12. ☒ **DUSR Tables Review**

Table 1 (Samples and Analytical Methods)

Table 2 (Analytical Results)

Table 3 (Qualification Actions)

Were all tables produced and reviewed? ☒ YES NO (circle one)

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829077
Report Date: 08/08/18

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1829077-01	BMW-1-072718	WATER	LONG ISLAND CITY, NY	07/27/18 09:20	07/27/18
L1829077-02	BMW-2-072718	WATER	LONG ISLAND CITY, NY	07/27/18 10:45	07/27/18
L1829077-03	TRIP BLANK-07218	WATER	LONG ISLAND CITY, NY	07/27/18 11:10	07/27/18



Project Name: HYGRADE/STALINGRAD
Project Number: 3612162331

Lab Number: L1828999
Report Date: 08/03/18

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Total Metals

The WG1141310-3 MS recoveries for calcium (0%), iron (10%), manganese (60%), and sodium (260%), performed on L1828999-01, do not apply because the sample concentrations are greater than four times the spike amount added. ✓

Dissolved Metals

L1828999-09: The Field Blank has a concentration above the reporting limit for iron. The result was confirmed. See
The WG1141765-1 Method Blank, associated with L1828999-01 through -07 and -09, has a concentration above the reporting limit for sodium. L1828999-01 through -07 have concentrations greater than 10x the blank concentration for this analyte, and no corrective action is required. The concentration in L1828999-09 is less than 10x the blank concentration; therefore, the result is qualified with a "B". checklist ↓

The WG1141765-3 MS recovery, performed on L1828999-01, is outside the acceptance criteria for antimony (127%). A post digestion spike was performed and yielded an unacceptable recovery of 72%, and the serial dilution recovery was not applicable; therefore, this element fails the matrix test and the results reported in the native sample should be considered estimated. See MS/MSD Summary

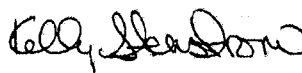
The WG1141765-3 MS recoveries for calcium (260%), iron (137%), magnesium (147%), and sodium (340%), performed on L1828999-01, do not apply because the sample concentrations are greater than four times the spike amounts added. ✓

The WG1141765-3 MS recovery, performed on L1828999-01, is outside the acceptance criteria for potassium (132%). A post digestion spike was performed and was within acceptance criteria. See MS/MSD Summary

8~10/10/18

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Kelly Stenstrom

Title: Technical Director/Representative

Date: 08/03/18

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829077
Report Date: 08/08/18

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Total Metals

The WG1142264-2 LCS recovery, associated with L1829077-01 and -02, is above the acceptance criteria for mercury (121%); however, the associated samples are non-detect to the RL for this target analyte. The results of the original analysis are reported. ✓

The WG1143616-3/-4 MS/MSD recoveries for calcium (MS at 140%), manganese (0%/0%) and sodium (0%/0%), performed on L1829077-01, do not apply because the sample concentrations are greater than four times the spike amounts added. ✓

The WG1143616-3 MS recovery for antimony (134%), performed on L1829077-01, does not apply because the sample concentration is greater than four times the spike amount added. ✓

Dissolved Metals

The WG1143665-3/-4 MS/MSD recoveries for calcium (190%/200%), manganese (0%/0%) and sodium (150%/170%), performed on L1829077-01, do not apply because the sample concentrations are greater than four times the spike amounts added. ✓

The WG1143665-3/-4 MS/MSD recoveries, performed on L1829077-01, are outside the acceptance criteria for antimony (MS at 127%) and magnesium (127%/136%). A post digestion spike was performed and was within acceptance criteria.

It Sb, Mg in filtered sample

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

Cristin Walker Cristin Walker

Title: Technical Director/Representative

Date: 08/08/18

Project Name: HYGRADE/STALINGRAD

Lab Number: L1828999

Project Number: 3612162331

Report Date: 08/03/18

Method Blank Analysis Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Dissolved Metals - Mansfield Lab for sample(s): 01-07,09 Batch: WG1141015-1										
Mercury, Dissolved	ND		mg/l	0.00020	0.00006	1	07/30/18 16:50	07/31/18 11:29	1,7470A	MG

Prep Information

Digestion Method: EPA 7470A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01-07,09 Batch: WG1141016-1										
Mercury, Total	ND		mg/l	0.00020	0.00006	1	07/30/18 16:50	07/31/18 11:05	1,7470A	MG

Prep Information

Digestion Method: EPA 7470A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01-07,09 Batch: WG1141310-1										
Aluminum, Total	ND		mg/l	0.0100	0.00327	1	07/31/18 14:20	08/01/18 15:07	1,6020B	AM
Antimony, Total	0.00043	J	mg/l	0.00400	0.00042	1	07/31/18 14:20	08/01/18 15:07	1,6020B	AM
Arsenic, Total	ND		mg/l	0.00050	0.00016	1	07/31/18 14:20	08/01/18 15:07	1,6020B	AM
Barium, Total	ND		mg/l	0.00050	0.00017	1	07/31/18 14:20	08/01/18 15:07	1,6020B	AM
Beryllium, Total	ND		mg/l	0.00050	0.00010	1	07/31/18 14:20	08/01/18 15:07	1,6020B	AM
Cadmium, Total	ND		mg/l	0.00020	0.00005	1	07/31/18 14:20	08/01/18 15:07	1,6020B	AM
Calcium, Total	ND		mg/l	0.100	0.0394	1	07/31/18 14:20	08/01/18 15:07	1,6020B	AM
Chromium, Total	ND		mg/l	0.00100	0.00017	1	07/31/18 14:20	08/01/18 15:07	1,6020B	AM
Cobalt, Total	ND		mg/l	0.00050	0.00016	1	07/31/18 14:20	08/01/18 15:07	1,6020B	AM
Copper, Total	ND		mg/l	0.00100	0.00038	1	07/31/18 14:20	08/01/18 15:07	1,6020B	AM
Iron, Total	0.0282	J	mg/l	0.0500	0.0191	1	07/31/18 14:20	08/01/18 15:07	1,6020B	AM
Lead, Total	ND		mg/l	0.00100	0.00034	1	07/31/18 14:20	08/01/18 15:07	1,6020B	AM
Magnesium, Total	ND		mg/l	0.0700	0.0242	1	07/31/18 14:20	08/01/18 15:07	1,6020B	AM
Manganese, Total	ND		mg/l	0.00100	0.00044	1	07/31/18 14:20	08/01/18 15:07	1,6020B	AM
Nickel, Total	ND		mg/l	0.00200	0.00055	1	07/31/18 14:20	08/01/18 15:07	1,6020B	AM
Potassium, Total	ND		mg/l	0.100	0.0309	1	07/31/18 14:20	08/01/18 15:07	1,6020B	AM



Project Name: HYGRADE/STALINGRAD
Project Number: 3612162331

Lab Number: L1828999
Report Date: 08/03/18

Method Blank Analysis Batch Quality Control

Selenium, Total	ND	mg/l	0.00500	0.00173	1	07/31/18 14:20	08/01/18 15:07	1,6020B	AM
Silver, Total	ND	mg/l	0.00040	0.00016	1	07/31/18 14:20	08/01/18 15:07	1,6020B	AM
Sodium, Total	ND	mg/l	0.100	0.0293	1	07/31/18 14:20	08/01/18 15:07	1,6020B	AM
Thallium, Total	ND	mg/l	0.00050	0.00014	1	07/31/18 14:20	08/01/18 15:07	1,6020B	AM
Vanadium, Total	ND	mg/l	0.00500	0.00157	1	07/31/18 14:20	08/01/18 15:07	1,6020B	AM
Zinc, Total	ND	mg/l	0.01000	0.00341	1	07/31/18 14:20	08/01/18 15:07	1,6020B	AM

Prep Information

Digestion Method: EPA 3005A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Dissolved Metals - Mansfield Lab for sample(s): 01-07,09 Batch: WG1141765-1										
Aluminum, Dissolved	ND		mg/l	0.0100	0.00327	1	08/01/18 11:00	08/02/18 11:16	1,6020B	AM
Antimony, Dissolved	0.00151	J	mg/l	0.00400	0.00042	1	08/01/18 11:00	08/02/18 11:16	1,6020B	AM
Arsenic, Dissolved	ND		mg/l	0.00050	0.00016	1	08/01/18 11:00	08/02/18 11:16	1,6020B	AM
Barium, Dissolved	ND		mg/l	0.00050	0.00017	1	08/01/18 11:00	08/02/18 11:16	1,6020B	AM
Beryllium, Dissolved	ND		mg/l	0.00050	0.00010	1	08/01/18 11:00	08/02/18 11:16	1,6020B	AM
Cadmium, Dissolved	ND		mg/l	0.00020	0.00005	1	08/01/18 11:00	08/02/18 11:16	1,6020B	AM
Calcium, Dissolved	ND		mg/l	0.100	0.0394	1	08/01/18 11:00	08/02/18 11:16	1,6020B	AM
Chromium, Dissolved	ND		mg/l	0.00100	0.00017	1	08/01/18 11:00	08/02/18 11:16	1,6020B	AM
Cobalt, Dissolved	ND		mg/l	0.00050	0.00016	1	08/01/18 11:00	08/02/18 11:16	1,6020B	AM
Copper, Dissolved	ND		mg/l	0.00100	0.00038	1	08/01/18 11:00	08/02/18 11:16	1,6020B	AM
Iron, Dissolved	0.0198	J	mg/l	0.0500	0.0191	1	08/01/18 11:00	08/02/18 11:16	1,6020B	AM
Lead, Dissolved	Sub NP		mg/l	0.00100	0.00034	1	08/01/18 11:00	08/02/18 11:16	1,6020B	AM
Magnesium, Dissolved	ND		mg/l	0.0700	0.0242	1	08/01/18 11:00	08/02/18 11:16	1,6020B	AM
Manganese, Dissolved	ND		mg/l	0.00100	0.00044	1	08/01/18 11:00	08/02/18 11:16	1,6020B	AM
Nickel, Dissolved	ND		mg/l	0.00200	0.00055	1	08/01/18 11:00	08/02/18 11:16	1,6020B	AM
Potassium, Dissolved	ND		mg/l	0.100	0.0309	1	08/01/18 11:00	08/02/18 11:16	1,6020B	AM
Selenium, Dissolved	ND		mg/l	0.00500	0.00173	1	08/01/18 11:00	08/02/18 11:16	1,6020B	AM
Silver, Dissolved	ND		mg/l	0.00040	0.00016	1	08/01/18 11:00	08/02/18 11:16	1,6020B	AM
Sodium, Dissolved	> 0.168		mg/l	0.100	0.0293	1	08/01/18 11:00	08/02/18 11:16	1,6020B	AM
Thallium, Dissolved	ND 0.00037	J	mg/l	0.00050	0.00014	1	08/01/18 11:00	08/02/18 11:16	1,6020B	AM
Vanadium, Dissolved	ND		mg/l	0.00500	0.00157	1	08/01/18 11:00	08/02/18 11:16	1,6020B	AM
Zinc, Dissolved	ND		mg/l	0.01000	0.00341	1	08/01/18 11:00	08/02/18 11:16	1,6020B	AM

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Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829077
Report Date: 08/08/18

Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01-02 Batch: WG1142264-1									
Mercury, Total	ND	mg/l	0.00020	0.00006	1	08/02/18 12:02	08/02/18 21:06	1,7470A	EA

Prep Information

Digestion Method: EPA 7470A

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Dissolved Metals - Mansfield Lab for sample(s): 01-02 Batch: WG1142345-1									
Mercury, Dissolved	ND	mg/l	0.00020	0.00006	1	08/02/18 14:58	08/03/18 15:17	1,7470A	KA

Prep Information

Digestion Method: EPA 7470A

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01-02 Batch: WG1143616-1									
Aluminum, Total	ND	mg/l	0.0100	0.00327	1	08/07/18 09:55	08/07/18 14:57	1,6020B	MG
Antimony, Total	h 0.00080 J	mg/l	0.00400	0.00042	1	08/07/18 09:55	08/07/18 14:57	1,6020B	MG
Arsenic, Total	Total ND	mg/l	0.00050	0.00016	1	08/07/18 09:55	08/07/18 14:57	1,6020B	MG
Barium, Total	ND	mg/l	0.00050	0.00017	1	08/07/18 09:55	08/07/18 14:57	1,6020B	MG
Beryllium, Total	ND	mg/l	0.00050	0.00010	1	08/07/18 09:55	08/07/18 14:57	1,6020B	MG
Cadmium, Total	ND	mg/l	0.00020	0.00005	1	08/07/18 09:55	08/07/18 14:57	1,6020B	MG
Calcium, Total	ND	mg/l	0.100	0.0394	1	08/07/18 09:55	08/07/18 14:57	1,6020B	MG
Chromium, Total	ND	mg/l	0.00100	0.00017	1	08/07/18 09:55	08/07/18 14:57	1,6020B	MG
Cobalt, Total	ND	mg/l	0.00050	0.00016	1	08/07/18 09:55	08/07/18 14:57	1,6020B	MG
Copper, Total	ND	mg/l	0.00200	0.00038	1	08/07/18 09:55	08/07/18 14:57	1,6020B	MG
Iron, Total	ND	mg/l	0.0500	0.0191	1	08/07/18 09:55	08/07/18 14:57	1,6020B	MG
Lead, Total	ND	mg/l	0.00100	0.00034	1	08/07/18 09:55	08/07/18 14:57	1,6020B	MG
Magnesium, Total	ND	mg/l	0.0700	0.0242	1	08/07/18 09:55	08/07/18 14:57	1,6020B	MG
Manganese, Total	ND	mg/l	0.00200	0.00044	1	08/07/18 09:55	08/07/18 14:57	1,6020B	MG
Nickel, Total	ND	mg/l	0.00200	0.00055	1	08/07/18 09:55	08/07/18 14:57	1,6020B	MG
Potassium, Total	ND	mg/l	0.100	0.0309	1	08/07/18 09:55	08/07/18 14:57	1,6020B	MG

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Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829077
Report Date: 08/08/18

Method Blank Analysis Batch Quality Control

Selenium, Total	ND	mg/l	0.00500	0.00173	1	08/07/18 09:55	08/07/18 14:57	1,6020B	MG
Silver, Total	ND	mg/l	0.00040	0.00016	1	08/07/18 09:55	08/07/18 14:57	1,6020B	MG
Sodium, Total	ND	mg/l	0.100	0.0293	1	08/07/18 09:55	08/07/18 14:57	1,6020B	MG
Thallium, Total	0.00035	mg/l	0.00050	0.00014	1	08/07/18 09:55	08/07/18 14:57	1,6020B	MG
Vanadium, Total	ND	mg/l	0.00500	0.00157	1	08/07/18 09:55	08/07/18 14:57	1,6020B	MG
Zinc, Total	ND	mg/l	0.01000	0.00341	1	08/07/18 09:55	08/07/18 14:57	1,6020B	MG

Prep Information

Digestion Method: EPA 3005A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Dissolved Metals - Mansfield Lab for sample(s): 01-02 Batch: WG1143665-1										
Aluminum, Dissolved	ND		mg/l	0.0100	0.00327	1	08/07/18 10:40	08/07/18 16:32	1,6020B	MG
Antimony, Dissolved	ND		mg/l	0.00400	0.00042	1	08/07/18 10:40	08/07/18 16:32	1,6020B	MG
Arsenic, Dissolved	ND		mg/l	0.00050	0.00016	1	08/07/18 10:40	08/07/18 16:32	1,6020B	MG
Barium, Dissolved	ND		mg/l	0.00050	0.00017	1	08/07/18 10:40	08/07/18 16:32	1,6020B	MG
Beryllium, Dissolved	ND		mg/l	0.00050	0.00010	1	08/07/18 10:40	08/07/18 16:32	1,6020B	MG
Cadmium, Dissolved	ND		mg/l	0.00020	0.00005	1	08/07/18 10:40	08/07/18 16:32	1,6020B	MG
Calcium, Dissolved	ND		mg/l	0.100	0.0394	1	08/07/18 10:40	08/07/18 16:32	1,6020B	MG
Chromium, Dissolved	ND		mg/l	0.00100	0.00017	1	08/07/18 10:40	08/07/18 16:32	1,6020B	MG
Cobalt, Dissolved	ND		mg/l	0.00050	0.00016	1	08/07/18 10:40	08/07/18 16:32	1,6020B	MG
Copper, Dissolved	0.00145	J	mg/l	0.00200	0.00038	1	08/07/18 10:40	08/07/18 16:32	1,6020B	MG
Iron, Dissolved	0.0398	J	mg/l	0.0500	0.0191	1	08/07/18 10:40	08/07/18 16:32	1,6020B	MG
Lead, Dissolved	0.00099	J	mg/l	0.00100	0.00034	1	08/07/18 10:40	08/07/18 16:32	1,6020B	MG
Magnesium, Dissolved	ND		mg/l	0.0700	0.0242	1	08/07/18 10:40	08/07/18 16:32	1,6020B	MG
Manganese, Dissolved	0.00119	J	mg/l	0.00200	0.00044	1	08/07/18 10:40	08/07/18 16:32	1,6020B	MG
Nickel, Dissolved	ND		mg/l	0.00200	0.00055	1	08/07/18 10:40	08/07/18 16:32	1,6020B	MG
Potassium, Dissolved	ND		mg/l	0.100	0.0309	1	08/07/18 10:40	08/07/18 16:32	1,6020B	MG
Selenium, Dissolved	ND		mg/l	0.00500	0.00173	1	08/07/18 10:40	08/07/18 16:32	1,6020B	MG
Silver, Dissolved	ND		mg/l	0.00040	0.00016	1	08/07/18 10:40	08/07/18 16:32	1,6020B	MG
Sodium, Dissolved	0.0539	J	mg/l	0.100	0.0293	1	08/07/18 10:40	08/07/18 16:32	1,6020B	MG
Thallium, Dissolved	ND		mg/l	0.00050	0.00014	1	08/07/18 10:40	08/07/18 16:32	1,6020B	MG
Vanadium, Dissolved	ND		mg/l	0.00500	0.00157	1	08/07/18 10:40	08/07/18 16:32	1,6020B	MG
Zinc, Dissolved	0.00636	J	mg/l	0.01000	0.00341	1	08/07/18 10:40	08/07/18 16:32	1,6020B	MG

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Project Name: HYGRADE/STALINGRAD
Project Number: 3612162331

Lab Number: L1828999
Report Date: 08/03/18

SAMPLE RESULTS

Lab ID: L1828999-09
Client ID: FB-072618
Sample Location: LONG ISLAND CITY, NY

Date Collected: 07/26/18 13:05
Date Received: 07/26/18
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Field BLANK

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Aluminum, Total	0.00393	(4.5) J	mg/l	0.0100	0.00327	1	07/31/18 14:20	08/01/18 17:38	EPA 3005A	1,6020B	AM
Antimony, Total	ND		mg/l	0.00400	0.00042	1	07/31/18 14:20	08/01/18 17:38	EPA 3005A	1,6020B	AM
Arsenic, Total	ND		mg/l	0.00050	0.00016	1	07/31/18 14:20	08/01/18 17:38	EPA 3005A	1,6020B	AM
Barium, Total	ND		mg/l	0.00050	0.00017	1	07/31/18 14:20	08/01/18 17:38	EPA 3005A	1,6020B	AM
Beryllium, Total	ND		mg/l	0.00050	0.00010	1	07/31/18 14:20	08/01/18 17:38	EPA 3005A	1,6020B	AM
Cadmium, Total	ND		mg/l	0.00020	0.00005	1	07/31/18 14:20	08/01/18 17:38	EPA 3005A	1,6020B	AM
Calcium, Total	0.0536	> J	mg/l	0.100	0.0394	1	07/31/18 14:20	08/01/18 17:38	EPA 3005A	1,6020B	AM
Chromium, Total	0.00025	(4) J	mg/l	0.00100	0.00017	1	07/31/18 14:20	08/01/18 17:38	EPA 3005A	1,6020B	AM
Cobalt, Total	ND		mg/l	0.00050	0.00016	1	07/31/18 14:20	08/01/18 17:38	EPA 3005A	1,6020B	AM
Copper, Total	ND		mg/l	0.00100	0.00038	1	07/31/18 14:20	08/01/18 17:38	EPA 3005A	1,6020B	AM
Iron, Total	ND		mg/l	0.0500	0.0191	1	07/31/18 14:20	08/01/18 17:38	EPA 3005A	1,6020B	AM
Lead, Total	ND		mg/l	0.00100	0.00034	1	07/31/18 14:20	08/01/18 17:38	EPA 3005A	1,6020B	AM
Magnesium, Total	ND		mg/l	0.0700	0.0242	1	07/31/18 14:20	08/01/18 17:38	EPA 3005A	1,6020B	AM
Manganese, Total	ND		mg/l	0.00100	0.00044	1	07/31/18 14:20	08/01/18 17:38	EPA 3005A	1,6020B	AM
Mercury, Total	ND		mg/l	0.00020	0.00006	1	07/30/18 16:50	07/31/18 11:27	EPA 7470A	1,7470A	MG
Nickel, Total	ND		mg/l	0.00200	0.00055	1	07/31/18 14:20	08/01/18 17:38	EPA 3005A	1,6020B	AM
Potassium, Total	ND		mg/l	0.100	0.0309	1	07/31/18 14:20	08/01/18 17:38	EPA 3005A	1,6020B	AM
Selenium, Total	ND		mg/l	0.00500	0.00173	1	07/31/18 14:20	08/01/18 17:38	EPA 3005A	1,6020B	AM
Silver, Total	ND		mg/l	0.00040	0.00016	1	07/31/18 14:20	08/01/18 17:38	EPA 3005A	1,6020B	AM
Sodium, Total	ND		mg/l	0.100	0.0293	1	07/31/18 14:20	08/01/18 17:38	EPA 3005A	1,6020B	AM
Thallium, Total	ND		mg/l	0.00050	0.00014	1	07/31/18 14:20	08/01/18 17:38	EPA 3005A	1,6020B	AM
Vanadium, Total	ND		mg/l	0.00500	0.00157	1	07/31/18 14:20	08/01/18 17:38	EPA 3005A	1,6020B	AM
Zinc, Total	ND		mg/l	0.01000	0.00341	1	07/31/18 14:20	08/01/18 17:38	EPA 3005A	1,6020B	AM

Dissolved Metals - Mansfield Lab

Aluminum, Dissolved	0.00876	(4.5) J	mg/l	0.0100	0.00327	1	08/01/18 11:00	08/02/18 13:21	EPA 3005A	1,6020B	MG
Antimony, Dissolved	ND		mg/l	0.00400	0.00042	1	08/01/18 11:00	08/02/18 13:21	EPA 3005A	1,6020B	MG
Arsenic, Dissolved	ND		mg/l	0.00050	0.00016	1	08/01/18 11:00	08/02/18 13:21	EPA 3005A	1,6020B	MG
Barium, Dissolved	ND		mg/l	0.00050	0.00017	1	08/01/18 11:00	08/02/18 13:21	EPA 3005A	1,6020B	MG
Beryllium, Dissolved	ND		mg/l	0.00050	0.00010	1	08/01/18 11:00	08/02/18 13:21	EPA 3005A	1,6020B	MG

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Project Name: HYGRADE/STALINGRAD
Project Number: 3612162331

Lab Number: L1828999
Report Date: 08/03/18

SAMPLE RESULTS

Lab ID: L1828999-09
Client ID: FB-072618
Sample Location: LONG ISLAND CITY, NY

Date Collected: 07/26/18 13:05
Date Received: 07/26/18
Field Prep: Not Specified

Sample Depth:
Matrix: Water

FIELD BLANK

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Cadmium, Dissolved	ND		mg/l	0.00020	0.00005	1	08/01/18 11:00	08/02/18 13:21	EPA 3005A	1,6020B	MG
✓ Calcium, Dissolved	0.0398	> J	mg/l	0.100	0.0394	1	08/01/18 11:00	08/02/18 13:21	EPA 3005A	1,6020B	MG
Chromium, Dissolved	ND		mg/l	0.00100	0.00017	1	08/01/18 11:00	08/02/18 13:21	EPA 3005A	1,6020B	MG
Cobalt, Dissolved	ND		mg/l	0.00050	0.00016	1	08/01/18 11:00	08/02/18 13:21	EPA 3005A	1,6020B	MG
✓ Copper, Dissolved	0.00066	(J) Subst	mg/l	0.00100	0.00038	1	08/01/18 11:00	08/02/18 13:21	EPA 3005A	1,6020B	MG
✓ Iron, Dissolved	0.0871	(U, J) Subst	mg/l	0.0500	0.0191	1	08/01/18 11:00	08/02/18 13:21	EPA 3005A	1,6020B	MG
Lead, Dissolved	ND		mg/l	0.00100	0.00034	1	08/01/18 11:00	08/02/18 13:21	EPA 3005A	1,6020B	MG
Magnesium, Dissolved	ND		mg/l	0.0700	0.0242	1	08/01/18 11:00	08/02/18 13:21	EPA 3005A	1,6020B	MG
Manganese, Dissolved	ND		mg/l	0.00100	0.00044	1	08/01/18 11:00	08/02/18 13:21	EPA 3005A	1,6020B	MG
Mercury, Dissolved	ND		mg/l	0.00020	0.00006	1	07/30/18 16:50	07/31/18 11:51	EPA 7470A	1,7470A	MG
✓ Nickel, Dissolved	0.00078	(U, J) Subst	mg/l	0.00200	0.00055	1	08/01/18 11:00	08/02/18 13:21	EPA 3005A	1,6020B	MG
Potassium, Dissolved	ND		mg/l	0.100	0.0309	1	08/01/18 11:00	08/02/18 13:21	EPA 3005A	1,6020B	MG
Selenium, Dissolved	ND		mg/l	0.00500	0.00173	1	08/01/18 11:00	08/02/18 13:21	EPA 3005A	1,6020B	MG
Silver, Dissolved	ND		mg/l	0.00040	0.00016	1	08/01/18 11:00	08/02/18 13:21	EPA 3005A	1,6020B	MG
✓ Sodium, Dissolved	0.109	> B	mg/l	0.100	0.0293	1	08/01/18 11:00	08/02/18 13:21	EPA 3005A	1,6020B	MG
Thallium, Dissolved	ND		mg/l	0.00050	0.00014	1	08/01/18 11:00	08/02/18 13:21	EPA 3005A	1,6020B	MG
Vanadium, Dissolved	ND		mg/l	0.00500	0.00157	1	08/01/18 11:00	08/02/18 13:21	EPA 3005A	1,6020B	MG
Zinc, Dissolved	ND		mg/l	0.01000	0.00341	1	08/01/18 11:00	08/02/18 13:21	EPA 3005A	1,6020B	MG

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Lab Control Sample Analysis Batch Quality Control

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829077
Report Date: 08/08/18

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-02 Batch: WG1142264-2								
Mercury, Total	ND	Q	121	Q	80-120	-		
Dissolved Metals - Mansfield Lab Associated sample(s): 01-02 Batch: WG1142345-2								
Mercury, Dissolved			113		80-120	-		

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Matrix Spike Analysis

Batch Quality Control

Project Name: HYGRADE

Project Number: 3612162331

Lab Number: L1829077

Report Date: 08/08/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Found	MSD %Recovery	Recovery Limits	RPD	RPD Limits
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Total Metals - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1143616-3 WG1143616-4 QC Sample: L1829077-01 Client ID: BMW-1-072718

Aluminum, Total	0.0184	2	2.12	105	2.15	106	75-125	1	20
Antimony, Total	0.00197J	0.5	0.6685	134	Q	125	75-125	6	20
Arsenic, Total	0.00100	0.12	0.1337	110	0.1309	108	75-125	2	20
Barium, Total	0.1115	2	2.209	105	2.198	104	75-125	0	20
Beryllium, Total	ND	0.05	0.05375	108	0.05448	109	75-125	1	20
Cadmium, Total	0.00330	0.051	0.05909	109	0.05958	110	75-125	1	20
Calcium, Total	283. ✓	10	297	140	Q	295	75-125	1	20
Chromium, Total	0.00210	0.2	0.2075	103	0.2067	102	75-125	0	20
Cobalt, Total	0.01086	0.5	0.5199	102	0.5221	102	75-125	0	20
Copper, Total	0.00431	0.25	0.2607	102	0.2581	102	75-125	1	20
Iron, Total	0.340	1	1.48	114	1.52	118	75-125	3	20
Lead, Total	ND	0.51	0.5360	105	0.5376	105	75-125	0	20
Magnesium, Total	39.2	10	50.1	109	50.2	110	75-125	0	20
Manganese, Total	8.499 ✓	0.5	8.103	0	Q	8.126	Q	0	20
Nickel, Total	0.09334	0.5	0.6186	105	0.6237	106	75-125	1	20
Potassium, Total	26.6	10	37.3	107	36.3	97	75-125	3	20
Selenium, Total	ND	0.12	0.134	112	0.140	117	75-125	4	20
Silver, Total	ND	0.05	0.05073	101	0.05142	103	75-125	1	20
Sodium, Total	225. ✓	10	222	0	Q	223	Q	0	20
Thallium, Total	0.00067	0.12	0.1251	104	0.1279	106	75-125	2	20
Vanadium, Total	ND	0.5	0.5220	104	0.5191	104	75-125	1	20

Matrix Spike Analysis Batch Quality Control

Project Name: HYGRADE

Project Number: 3612162331

Lab Number: L1829077

Report Date: 08/08/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Found	MSD %Recovery	Recovery Limits	RPD	RPD Limits
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Dissolved Metals - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1143665-3 WG1143665-4 QC Sample: L1829077-01 Client ID: BMW-1-072718

Aluminum, Dissolved	0.00428J	2	2.17	108	2.22	111	75-125	2	20
Antimony, Dissolved	0.00244J	0.5	0.6345	127	Q 0.6126	122	75-125	4	20
Arsenic, Dissolved	0.00091	0.12	0.1285	106	0.1268	105	75-125	1	20
Barium, Dissolved	0.1128	2	2.017	95	2.039	96	75-125	1	20
Beryllium, Dissolved	ND	0.05	0.05186	104	0.05207	104	75-125	0	20
Cadmium, Dissolved	0.00319	0.051	0.05808	108	0.05752	106	75-125	1	20
Calcium, Dissolved	280. ✓	10	299	190	Q 300	200	75-125	0	20
Chromium, Dissolved	0.00095J	0.2	0.2000	100	0.2021	101	75-125	1	20
Cobalt, Dissolved	0.01066	0.5	0.5225	102	0.5302	104	75-125	1	20
Copper, Dissolved	0.00389	0.25	0.2589	102	0.2583	102	75-125	0	20
Iron, Dissolved	0.0660	1	1.15	108	1.21	114	75-125	5	20
Lead, Dissolved	ND	0.51	0.5182	102	0.5169	101	75-125	0	20
Magnesium, Dissolved	39.1	10	51.8	127	Q 52.7	136	75-125	2	20
Manganese, Dissolved	8.269 ✓	0.5	8.205	OK	Q 8.239	OK	75-125	0	20
Nickel, Dissolved	0.09146	0.5	0.6054	103	0.6292	108	75-125	4	20
Potassium, Dissolved	26.5	10	37.3	108	37.8	113	75-125	1	20
Selenium, Dissolved	ND	0.12	0.134	112	0.138	115	75-125	3	20
Silver, Dissolved	ND	0.05	0.05098	102	0.05097	102	75-125	0	20
Sodium, Dissolved	219. ✓	10	234	150	Q 236	170	75-125	1	20
Thallium, Dissolved	0.00062	0.12	0.1229	102	0.1216	101	75-125	1	20
Vanadium, Dissolved	ND	0.5	0.5145	103	0.5052	101	75-125	2	20

Matrix Spike Analysis

Batch Quality Control

Project Name: HYGRADE/STALINGRAD
Project Number: 3612162331

Lab Number: L1828999
Report Date: 08/03/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Found	MSD %Recovery	Recovery Limits	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-07-09 QC Batch ID: WG1141310-3 QC Sample L1828999-01 Client ID: BMW-3-072618								
Aluminum, Total	0.0280	2	2.12	105	-	-	75-125	20
Antimony, Total	0.00083J	0.5	0.5907	118	-	-	75-125	20
Arsenic, Total	0.01819	0.12	0.1463	107	-	-	75-125	20
Barium, Total	0.2706	2	2.363	105	-	-	75-125	20
Beryllium, Total	ND	0.05	0.05284	106	-	-	75-125	20
Cadmium, Total	ND	0.051	0.05529	108	-	-	75-125	20
Calcium, Total	257.✓	10	249	OK 10	-	-	75-125	20
Chromium, Total	0.00270	0.2	0.2075	102	-	-	75-125	20
Cobalt, Total	0.01717	0.5	0.5333	103	-	-	75-125	20
Copper, Total	0.00117	0.25	0.2659	106	-	-	75-125	20
Iron, Total	18.5✓	1	18.6	OK 10	-	-	75-125	20
Lead, Total	ND	0.51	0.5584	109	-	-	75-125	20
Magnesium, Total	46.6	10	56.2	96	-	-	75-125	20
Manganese, Total	3.724✓	0.5	4.025	OK 60	-	-	75-125	20
Nickel, Total	0.4654	0.5	0.9747	102	-	-	75-125	20
Potassium, Total	35.1	10	42.7	76	-	-	75-125	20
Selenium, Total	ND	0.12	0.127	106	-	-	75-125	20
Silver, Total	ND	0.05	0.05254	105	-	-	75-125	20
Sodium, Total	226.✓	10	252	OK 260	-	-	75-125	20
Thallium, Total	ND	0.12	0.1318	110	-	-	75-125	20
Vanadium, Total	0.00174J	0.5	0.5268	105	-	-	75-125	20



Matrix Spike Analysis

Batch Quality Control

Project Name: HYGRADE/STALINGRAD
Project Number: 3612162331

Lab Number: L1828999
Report Date: 08/03/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Found	MSD %Recovery	Recovery Limits	RPD Limits
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Dissolved Metals - Mansfield Lab Associated sample(s): 01-07,09 QC Batch ID: WG1141765-3 QC Sample: L1828999-01 Client ID: BMW-3-072618

Aluminum, Dissolved	ND	2	2.18	109	-	-	75-125	20
Antimony, Dissolved	J+ (u)	0.5	0.6368	127	Q	-	75-125	20
Arsenic, Dissolved	for MB	0.12	0.1366	108	-	-	75-125	20
Barium, Dissolved	0.2019	2	2.401	110	-	-	75-125	20
Beryllium, Dissolved	ND	0.05	0.05511	110	-	-	75-125	20
Cadmium, Dissolved	ND	0.051	0.05779	113	-	-	75-125	20
Calcium, Dissolved	241. ✓	10	267	OK 260	Q	-	75-125	20
Chromium, Dissolved	0.00138	0.2	0.2113	105	-	-	75-125	20
Cobalt, Dissolved	0.01629	0.5	0.5603	109	-	-	75-125	20
Copper, Dissolved	ND	0.25	0.2654	106	-	-	75-125	20
Iron, Dissolved	J+ 0.274	1	1.64	137	Q	-	75-125	20
Lead, Dissolved	ND	0.51	0.5557	109	-	-	75-125	20
Magnesium, Dissolved	48.0 ✓	10	62.7	OK 147	Q	-	75-125	20
Manganese, Dissolved	3.668	0.5	4.142	95	-	-	75-125	20
Nickel, Dissolved	0.4899	0.5	1.061	114	-	-	75-125	20
Potassium, Dissolved	33.4	10	46.6	132	Q	-	75-125	20
Selenium, Dissolved	ND	0.12	0.137	114	-	-	75-125	20
Silver, Dissolved	ND	0.05	0.05673	113	-	-	75-125	20
Sodium, Dissolved	266. ✓	10	300	OK 340	Q	-	75-125	20
Thallium, Dissolved	ND	0.12	0.1305	109	-	-	75-125	20
Vanadium, Dissolved	ND	0.5	0.5358	107	-	-	75-125	20

Alpha ICPMSQ2 Full

8/2/2018 1:05:51 PM



Analysis index: 103
 Analysis label: L1828999-01 6020TL

Analysis started at: 8/1/2018 3:35:47 PM
 User name: ALPHALABmetals-instrument

Rack: 2
 Vial: 12

$C_0 = 257 \frac{\mu g}{L}$ OK

Category	6Li (STD AGD)	6Li (KED AGD)	9Be (STD AGD)	23Na (KED AGD)	24Mg (KED AGD)	27Al (KED AGD)	39K (KED AGD)	44Ca (KED AGD)	45Sc (STD AGD)
Concentration average	104.346 %	101.737 %	0.013 ppb	226.335.132 ppb	46.572.426 ppb	27.960 ppb	35.127.877 ppb	256.809.963 ppb	111.889 %
Concentration per Run 1	104.884 %	105.118 %	0.014 ppb	210.119.428 ppb	42.877.449 ppb	26.662 ppb	32.919.788 ppb	239.836.912 ppb	110.961 %
Concentration per Run 2	103.547 %	103.173 %	0.014 ppb	226.291.885 ppb	46.855.932 ppb	26.769 ppb	35.807.567 ppb	260.489.619 ppb	112.854 %
Concentration per Run 3	104.605 %	96.920 %	0.011 ppb	242.594.083 ppb	49.983.898 ppb	30.449 ppb	36.656.276 ppb	270.103.371 ppb	111.851 %
Concentration RSD	0.7 %	4.2 %	11.5 %	7.2 %	7.6 %	7.7 %	5.6 %	6.0 %	0.8 %

Category	48Ti (KED AGD)	51V (KED AGD)	52Cr (KED AGD)	55Mn (KED AGD)	57Fe (KED AGD)	59Co (KED AGD)	60Ni (KED AGD)	65Cu (KED AGD)	66Zn (KED AGD)
Concentration average	437.521 ppb	1.742 ppb	2.702 ppb	3.723.827 ppb	18.488.366 ppb	17.170 ppb	465.458 ppb	1.179 ppb	1.303 ppb
Concentration per Run 1	410.292 ppb	1.600 ppb	2.507 ppb	3.511.973 ppb	17.195.758 ppb	15.946 ppb	440.579 ppb	1.034 ppb	1.049 ppb
Concentration per Run 2	443.900 ppb	1.702 ppb	2.759 ppb	3.751.878 ppb	18.740.769 ppb	16.939 ppb	473.883 ppb	1.084 ppb	1.427 ppb
Concentration per Run 3	458.372 ppb	1.924 ppb	2.841 ppb	3.907.628 ppb	19.528.571 ppb	18.625 ppb	481.911 ppb	1.417 ppb	1.433 ppb
Concentration RSD	5.6 %	9.5 %	6.5 %	5.4 %	6.4 %	7.9 %	4.7 %	17.7 %	16.9 %

Category	74Ge (KED AGD)	75As (KED AGD)	78Se (KED AGD)	88Sr (KED AGD)	95Mo (KED AGD)	103Rh (KED AGD)	107Ag (KED AGD)	111Cd (KED AGD)	115In (KED AGD)
Concentration average	84.214 %	18.188 ppb	0.415 ppb	1.746.100 ppb	9.586 ppb	83.969 %	0.004 ppb	0.012 ppb	88.589 %
Concentration per Run 1	83.729 %	17.640 ppb	0.576 ppb	1.626.201 ppb	8.632 ppb	85.212 %	0.003 ppb	0.026 ppb	89.486 %
Concentration per Run 2	85.533 %	17.852 ppb	0.392 ppb	1.772.756 ppb	10.288 ppb	84.076 %	0.003 ppb	0.011 ppb	88.400 %
Concentration per Run 3	83.381 %	19.071 ppb	0.278 ppb	1.839.342 ppb	9.779 ppb	82.618 %	0.005 ppb	0.000 ppb	87.882 %
Concentration RSD	1.4 %	4.2 %	36.2 %	6.2 %	8.9 %	1.5 %	28.7 %	107.4 %	0.9 %

Category	118Sn (KED AGD)	121Sb (KED AGD)	137Ba (KED AGD)	159Tb (KED AGD)	175Lu (KED AGD)	183W (KED AGD)	205Tl (KED AGD)	208Pb (KED AGD)	209Bi (KED AGD)
Concentration average	6.128 ppb	0.836 ppb	270.584 ppb	80.616 %	79.348 %	0.633 ppb	0.051 ppb	0.168 ppb	79.549 %
Concentration per Run 1	5.429 ppb	0.772 ppb	253.593 ppb	81.214 %	80.871 %	0.479 ppb	0.045 ppb	0.148 ppb	81.518 %
Concentration per Run 2	6.314 ppb	0.863 ppb	275.657 ppb	80.265 %	78.193 %	0.677 ppb	0.050 ppb	0.178 ppb	78.896 %
Concentration per Run 3	6.641 ppb	0.875 ppb	282.503 ppb	80.369 %	78.979 %	0.744 ppb	0.057 ppb	0.179 ppb	78.232 %
Concentration RSD	10.2 %	6.8 %	5.6 %	0.6 %	1.7 %	21.8 %	11.9 %	10.5 %	2.2 %

Sample Calc

Ricardi, Julie A

From: Nadine Yakes <nyakes@alphalab.com>
Sent: Wednesday, October 17, 2018 11:12 AM
To: julie.ricardi@woodplc.com
Cc: christian.ricardi@woodplc.com
Subject: Re: Hygrade SDGs L1828999 and L1829077 -- Sample Receipt Info
Attachments: image001.png

Hi Julie -

The lab checked LIMS and fixed these errors. I will have the reports re-issued for you.

We apologize for any inconvenience.

Best Regards,
Nadine

On Tue, Oct 16, 2018 at 3:47 PM Ricardi, Julie A <julie.ricardi@woodplc.com> wrote:

Hi Nadine,

I'm reviewing the data packages for Hygrade SDGs L1828999 and L1829077, and there are some pH measurements that I want the lab to check if possible. In the Sample Receipt and Container Information sheets, some of the Initial and Final pH measurements aren't consistent with what would be expected, but the narrative did not mention any problems with sample receipt/sample preservation.

Please see the attached pages from the two data packages, and check the circled entries. I may be misunderstanding the information, but these entries are inconsistent from other samples in the sets (I didn't include pages that made sense to me).

ALSO – Can you give me a summary of which lab analyzed which methods for each of the following four SDGs:

L1828998 --PFAS

L1828999 –Metals, VOCs

L1829069 --PFAS

L1829077 –Metals, VOCs

Thanks very much!

Julie

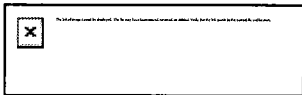
Julie Ricardi

Senior Environmental Scientist

Environment & Infrastructure Solutions

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Mobile: (207) 240-2898
www.woodplc.com



(Formerly Amec Foster Wheeler)

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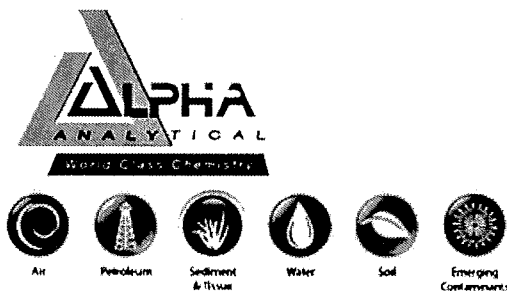
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--
Nadine Yakes
Senior Project Manager

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Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829077
Report Date: 08/08/18

Sample Receipt and Container Information

Were project specific reporting limits specified?

YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information			Initial			Temp			Frozen		
Container ID	Container Type	Cooler	pH	pH	deg C	Pres	Seal	Date/Time	Analysis(*)		
L1829077-01A	Vial HCl preserved	A	N/A	N/A	3.8	Y	Absent		NYTCL-8260(14)		
L1829077-01A1	Vial HCl preserved	A	N/A	N/A	3.8	Y	Absent		NYTCL-8260(14)		
L1829077-01A2	Vial HCl preserved	A	N/A	N/A	3.8	Y	Absent		NYTCL-8260(14)		
L1829077-01B	Vial HCl preserved	A	N/A	N/A	3.8	Y	Absent		NYTCL-8260(14)		
L1829077-01B1	Vial HCl preserved	A	N/A	N/A	3.8	Y	Absent		NYTCL-8260(14)		
L1829077-01B2	Vial HCl preserved	A	N/A	N/A	3.8	Y	Absent		NYTCL-8260(14)		
L1829077-01C	Vial HCl preserved	A	N/A	N/A	3.8	Y	Absent		NYTCL-8260(14)		
L1829077-01C1	Vial HCl preserved	A	N/A	N/A	3.8	Y	Absent		NYTCL-8260(14)		
L1829077-01C2	Vial HCl preserved	A	N/A	N/A	3.8	Y	Absent		NYTCL-8260(14)		
L1829077-01D	Plastic 250ml unpreserved	A	<2	<2	3.8	Y	Absent		-		
L1829077-01D1	Plastic 250ml unpreserved	A	<2	<2	3.8	Y	Absent		-		
L1829077-01D2	Plastic 250ml unpreserved	A	<2	<2	3.8	Y	Absent		-		
L1829077-01E	Plastic 250ml HNO3 preserved	A	<2	<2	3.8	Y	Absent		BA-6020T(180), FE-6020T(180), SE-6020T(180), TL-6020T(180), CA-6020T(180), CR-6020T(180), K-6020T(180), NI-6020T(180), CU-6020T(180), NA-6020T(180), ZN-6020T(180), PB-6020T(180), BE-6020T(180), MN-6020T(180), AS-6020T(180), SB-6020T(180), V-6020T(180), AG-6020T(180), AL-6020T(180), CD-6020T(180), HG-T(28), MG-6020T(180), CO-6020T(180)		
L1829077-01E1	Plastic 250ml HNO3 preserved	A	<2	<2	3.8	Y	Absent		BA-6020T(180), FE-6020T(180), SE-6020T(180), TL-6020T(180), CA-6020T(180), CR-6020T(180), K-6020T(180), NI-6020T(180), CU-6020T(180), NA-6020T(180), ZN-6020T(180), PB-6020T(180), BE-6020T(180), MN-6020T(180), AS-6020T(180), SB-6020T(180), V-6020T(180), AG-6020T(180), AL-6020T(180), CD-6020T(180), HG-T(28), MG-6020T(180), CO-6020T(180)		

2nd cont'd next 2 pages

end control next 2 pages

Project Name: HYGRADE/STALINGRAD
Project Number: 3612162331

Were project specific reporting limits specified?

Cooler Information
Cooler B Custody Seal Absent

Sample Receipt and Container Information

YES

Container Information

Container ID	Container Type
L1828999-01A	Vial HCl preserved
L1828999-01B	Vial HCl preserved
L1828999-01C	Vial HCl preserved
L1828999-01D	Plastic 250ml unpreserved
L1828999-01E	Plastic 250ml HNO3 preserved

Frozen
Date/Time

Initial pH
Cooler

Final pH
Temp deg C

Pres

Seal

Analysis(*)

L1828999-01A	B	NA	3.3	Y	Absent	NYTCL-8260(14)
L1828999-01B	B	NA	3.3	Y	Absent	NYTCL-8260(14)
L1828999-01C	B	NA	3.3	Y	Absent	NYTCL-8260(14)
L1828999-01D	B	7	7	Y	Absent	-
L1828999-01E	B	<2	<2	Y	Absent	BA-6020T(180), FE-6020T(180), SE-6020T(180), TL-6020T(180), CA-6020T(180), CR-6020T(180), K-6020T(180), NI-6020T(180), CU-6020T(180), NA-6020T(180), ZN-6020T(180), PB-6020T(180), BE-6020T(180), MN-6020T(180), AS-6020T(180), SB-6020T(180), V-6020T(180), AG-6020T(180), AL-6020T(180), CD-6020T(180), HG-T(28), MG-6020T(180), CO-6020T(180)
L1828999-01F	B	<2	3.3	Y	Absent	V-6020T(180)
L1828999-01X	B	7	3.3	Y	Absent	CU-6020S(180), K-6020S(180), SE-6020S(180), V-6020S(180), MN-6020S(180), BE-6020S(180), CO-6020S(180), MG-6020S(180), ZN-6020S(180), CA-6020S(180), CR-6020S(180), FE-6020S(180), BA-6020S(180), NA-6020S(180), NI-6020S(180), PB-6020S(180), TL-6020S(180), AG-6020S(180), AS-6020S(180), SB-6020S(180), AL-6020S(180), CD-6020S(180), HG-S(28)
L1828999-02A	B	NA	3.3	Y	Absent	NYTCL-8260(14)
L1828999-02B	B	NA	3.3	Y	Absent	NYTCL-8260(14)
L1828999-02C	B	NA	3.3	Y	Absent	NYTCL-8260(14)
L1828999-02D	B	7	7	Y	Absent	-

Container Information			Initial		Final	Temp	Frozen		Analysis(*)
Container ID	Container Type	Cooler	pH	pH	pH	deg C	Pres	Date/Time	
L1828999-02E	Plastic 250ml HNO3 preserved	B	<2	<2	<2	3.3	Y		BA-6020T(180), FE-6020T(180), SE-6020T(180), TL-6020T(180), CA-6020T(180), CR-6020T(180), K-6020T(180), NI-6020T(180), CU-6020T(180), NA-6020T(180), ZN-6020T(180), PB-6020T(180), BE-6020T(180), MN-6020T(180), AS-6020T(180), SB-6020T(180), V-6020T(180), AG-6020T(180), AL-6020T(180), CD-6020T(180), HG-T(28), MG-6020T(180), CO-6020T(180)
L1828999-02X	Plastic 250ml HNO3 preserved <u>Filtrates</u>	B	7	7	7	3.3	Y		CU-6020S(180), K-6020S(180), SE-6020S(180), V-6020S(180), MN-6020S(180), BE-6020S(180), CO-6020S(180), MG-6020S(180), ZN-6020S(180), CA-6020S(180), CR-6020S(180), FE-6020S(180), NA-6020S(180), NI-6020S(180), PB-6020S(180), TL-6020S(180), AG-6020S(180), AS-6020S(180), SB-6020S(180), AL-6020S(180), CD-6020S(180), HG-S(28)
L1828999-03A	Vial HCl preserved	B	NA			3.3	Y		NYTCL-8260(14)
L1828999-03B	Vial HCl preserved	B	NA			3.3	Y		NYTCL-8260(14)
L1828999-03C	Vial HCl preserved	B	NA			3.3	Y		NYTCL-8260(14)
L1828999-03D	Plastic 250ml unpreserved	B	7	7	7	3.3	Y		
L1828999-03E	Plastic 250ml HNO3 preserved	B	<2	<2	<2	3.3	Y		BA-6020T(180), FE-6020T(180), SE-6020T(180), TL-6020T(180), CA-6020T(180), CR-6020T(180), K-6020T(180), NI-6020T(180), CU-6020T(180), NA-6020T(180), ZN-6020T(180), PB-6020T(180), BE-6020T(180), MN-6020T(180), AS-6020T(180), SB-6020T(180), V-6020T(180), AG-6020T(180), AL-6020T(180), CD-6020T(180), HG-T(28), MG-6020T(180), CO-6020T(180)
L1828999-03X	Plastic 250ml HNO3 preserved <u>Filtrates</u>	B	7	7	7	3.3	Y		CU-6020S(180), K-6020S(180), SE-6020S(180), V-6020S(180), MN-6020S(180), BE-6020S(180), CO-6020S(180), MG-6020S(180), ZN-6020S(180), CA-6020S(180), CR-6020S(180), FE-6020S(180), NA-6020S(180), NI-6020S(180), PB-6020S(180), TL-6020S(180), AG-6020S(180), AS-6020S(180), SB-6020S(180), AL-6020S(180), CD-6020S(180), HG-S(28)
L1828999-04A	Vial HCl preserved	B	NA			3.3	Y		NYTCL-8260(14)
L1828999-04B	Vial HCl preserved	B	NA			3.3	Y		NYTCL-8260(14)
L1828999-04C	Vial HCl preserved	B	NA			3.3	Y		NYTCL-8260(14)
L1828999-04D	Plastic 250ml unpreserved	B	7	7	7	3.3	Y		

Project Name: HYGRADE/STALINGRAD
Project Number: 3612162331

Lab Number: L1828999
Report Date: 08/03/18

Container Information		Initial		Final	Temp	Frozen		Analysis(*)
Container ID	Container Type	Cooler	pH	pH	deg C	Pres	Seal	
L1828999-04E	Plastic 250ml HNO3 preserved	B	<2	<2	3.3	Y	Absent	BA-6020T(180),FE-6020T(180),SE-6020T(180),TL-6020T(180),CA-6020T(180),CR-6020T(180),K-6020T(180),NI-6020T(180),CU-6020T(180),NA-6020T(180),ZN-6020T(180),PB-6020T(180),BE-6020T(180),MN-6020T(180),AS-6020T(180),SB-6020T(180),V-6020T(180),AG-6020T(180),AL-6020T(180),CD-6020T(180),HG-T(28),MG-6020T(180),CO-6020T(180)
L1828999-04X	Plastic 250ml HNO3 preserved <u>Filtrates</u>	B	7	7	3.3	Y	Absent	CU-6020S(180),K-6020S(180),SE-6020S(180),V-6020S(180),MN-6020S(180),BE-6020S(180),CO-6020S(180),MG-6020S(180),ZN-6020S(180),CA-6020S(180),CR-6020S(180),FE-6020S(180),BA-6020S(180),NA-6020S(180),NI-6020S(180),PB-6020S(180),TL-6020S(180),AG-6020S(180),AS-6020S(180),SB-6020S(180),AL-6020S(180),CD-6020S(180),HG-S(28)
L1828999-05A	Vial HCl preserved	B	NA		3.3	Y	Absent	NYTCL-8260(14)
L1828999-05B	Vial HCl preserved	B	NA		3.3	Y	Absent	NYTCL-8260(14)
L1828999-05C	Vial HCl preserved	B	NA		3.3	Y	Absent	NYTCL-8260(14)
L1828999-05D	Plastic 250ml unpreserved	B	7	7	3.3	Y	Absent	-
L1828999-05E	Plastic 250ml HNO3 preserved	B	<2	<2	3.3	Y	Absent	BA-6020T(180),FE-6020T(180),SE-6020T(180),TL-6020T(180),CA-6020T(180),CR-6020T(180),K-6020T(180),NI-6020T(180),CU-6020T(180),NA-6020T(180),ZN-6020T(180),PB-6020T(180),BE-6020T(180),MN-6020T(180),AS-6020T(180),SB-6020T(180),V-6020T(180),AG-6020T(180),AL-6020T(180),CD-6020T(180),HG-T(28),MG-6020T(180),CO-6020T(180)
L1828999-05X	Plastic 250ml HNO3 preserved <u>Filtrates</u>	B	7	7	3.3	Y	Absent	CU-6020S(180),K-6020S(180),SE-6020S(180),V-6020S(180),MN-6020S(180),BE-6020S(180),CO-6020S(180),MG-6020S(180),ZN-6020S(180),CA-6020S(180),CR-6020S(180),FE-6020S(180),BA-6020S(180),NA-6020S(180),NI-6020S(180),PB-6020S(180),TL-6020S(180),AG-6020S(180),AS-6020S(180),SB-6020S(180),AL-6020S(180),CD-6020S(180),HG-S(28)
L1828999-06A	Vial HCl preserved	B	NA		3.3	Y	Absent	NYTCL-8260(14)
L1828999-06B	Vial HCl preserved	B	NA		3.3	Y	Absent	NYTCL-8260(14)
L1828999-06C	Vial HCl preserved	B	NA		3.3	Y	Absent	NYTCL-8260(14)
L1828999-06D	Plastic 250ml unpreserved	B	7	7	3.3	Y	Absent	-

Project Name: HYGRADE/STALINGRAD
Project Number: 3612162331

Lab Number: L1828999
Report Date: 08/03/18

Container Information		Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
Container ID	Container Type								
L1828999-06E	Plastic 250ml HNO3 preserved	B	<2	<2	3.3	Y	Absent		BA-6020T(180), FE-6020T(180), SE-6020T(180), TL-6020T(180), CA-6020T(180), CR-6020T(180), K-6020T(180), NI-6020T(180), CU-6020T(180), NA-6020T(180), ZN-6020T(180), PB-6020T(180), BE-6020T(180), MN-6020T(180), AS-6020T(180), SB-6020T(180), V-6020T(180), AG-6020T(180), AL-6020T(180), CD-6020T(180), HG-T(28), MG-6020T(180), CO-6020T(180)
L1828999-06X	Plastic 250ml HNO3 preserved <u>Filtrates</u>	B	7	7	3.3	Y	Absent		CU-6020S(180), K-6020S(180), SE-6020S(180), V-6020S(180), MN-6020S(180), BE-6020S(180), CO-6020S(180), MG-6020S(180), ZN-6020S(180), CA-6020S(180), CR-6020S(180), FE-6020S(180), NI-6020S(180), BA-6020S(180), NA-6020S(180), AG-6020S(180), PB-6020S(180), TL-6020S(180), SB-6020S(180), AL-6020S(180), AS-6020S(180), HG-S(28), CD-6020S(180), CO-6020S(180)
L1828999-07A	Vial HCl preserved	B	NA		3.3	Y	Absent		NYTCL-8260(14)
L1828999-07B	Vial HCl preserved	B	NA		3.3	Y	Absent		NYTCL-8260(14)
L1828999-07C	Vial HCl preserved	B	NA		3.3	Y	Absent		NYTCL-8260(14)
L1828999-07D	Plastic 250ml unpreserved	B	7	7	3.3	Y	Absent		
L1828999-07E	Plastic 250ml HNO3 preserved	B	<2	<2	3.3	Y	Absent		BA-6020T(180), FE-6020T(180), SE-6020T(180), TL-6020T(180), CA-6020T(180), CR-6020T(180), K-6020T(180), NI-6020T(180), CU-6020T(180), NA-6020T(180), ZN-6020T(180), PB-6020T(180), BE-6020T(180), MN-6020T(180), AS-6020T(180), SB-6020T(180), V-6020T(180), AG-6020T(180), AL-6020T(180), CD-6020T(180), HG-T(28), MG-6020T(180), CO-6020T(180)
L1828999-07X	Plastic 250ml HNO3 preserved <u>Filtrates</u>	B	7	7	3.3	Y	Absent		CU-6020S(180), K-6020S(180), SE-6020S(180), V-6020S(180), MN-6020S(180), BE-6020S(180), CO-6020S(180), MG-6020S(180), ZN-6020S(180), CA-6020S(180), CR-6020S(180), FE-6020S(180), NI-6020S(180), BA-6020S(180), NA-6020S(180), AG-6020S(180), PB-6020S(180), TL-6020S(180), SB-6020S(180), AL-6020S(180), AS-6020S(180), HG-S(28), CD-6020S(180), CO-6020S(180)
L1828999-08A	Vial HCl preserved	B	NA		3.3	Y	Absent		NYTCL-8260(14)
L1828999-08B	Vial HCl preserved	B	NA		3.3	Y	Absent		NYTCL-8260(14)
L1828999-09A	Vial HCl preserved	B	NA		3.3	Y	Absent		NYTCL-8260(14)
L1828999-09B	Vial HCl preserved	B	NA		3.3	Y	Absent		NYTCL-8260(14)

Project Name: HYGRADE/STALINGRAD
Project Number: 3612162331

Lab Number: L1828999
Report Date: 08/03/18

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1828999-09C	Vial HCl preserved	B	NA		3.3	Y	Absent		NYTCL-8260(14)
L1828999-09D	Plastic 250ml unpreserved	B	7	7	3.3	Y	Absent		
L1828999-09E	Plastic 250ml HNO3 preserved	B	<2	<2	3.3	Y	Absent		BA-6020T(180),FE-6020T(180),SE-6020T(180),TL-6020T(180),CA-6020T(180),CR-6020T(180),K-6020T(180),NI-6020T(180),CU-6020T(180),NA-6020T(180),ZN-6020T(180),PB-6020T(180),BE-6020T(180),MN-6020T(180),AS-6020T(180),SB-6020T(180),V-6020T(180),AG-6020T(180),AL-6020T(180),CD-6020T(180),HG-T(28),MG-6020T(180),CO-6020T(180)
L1828999-09X	Plastic 250ml HNO3 preserved <u>Filtrates</u>	B	7	7	3.3	Y	Absent		CU-6020S(180),K-6020S(180),SE-6020S(180),V-6020S(180),MN-6020S(180),BE-6020S(180),CO-6020S(180),MG-6020S(180),ZN-6020S(180),CA-6020S(180),CR-6020S(180),FE-6020S(180),BA-6020S(180),NA-6020S(180),NI-6020S(180),PB-6020S(180),TL-6020S(180),AG-6020S(180),AS-6020S(180),SB-6020S(180),AL-6020S(180),CD-6020S(180),HG-S(28),HG-S(28)



ANALYTICAL REPORT

Lab Number:	L1828998
Client:	Wood Env & Infrastructure Solutions, Inc 214-25 42nd Avenue Suite 3R Bayside, NY 11361
ATTN:	Eric Weinstock
Phone:	(347) 836-4445
Project Name:	HYGRADE
Project Number:	3612162331
Report Date:	08/15/18

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Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com



Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1828998
Report Date: 08/15/18

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1828998-01	BMW-3-072618	WATER	LONG ISLAND CITY, NY	07/26/18 13:50	07/26/18
L1828998-02	BMW-4-072618	WATER	LONG ISLAND CITY, NY	07/26/18 13:25	07/26/18
L1828998-03	MW-5-072618	WATER	LONG ISLAND CITY, NY	07/26/18 10:15	07/26/18
L1828998-04	MW-6S-072618	WATER	LONG ISLAND CITY, NY	07/26/18 10:35	07/26/18
L1828998-05	MW-6D-072618	WATER	LONG ISLAND CITY, NY	07/26/18 09:30	07/26/18
L1828998-06	DUP-072618	WATER	LONG ISLAND CITY, NY	07/26/18 13:25	07/26/18
L1828998-07	MW-E-072618	WATER	LONG ISLAND CITY, NY	07/26/18 11:30	07/26/18
L1828998-08	FB-072618	WATER	LONG ISLAND CITY, NY	07/26/18 13:05	07/26/18

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1828998
Report Date: 08/15/18

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. All specific QC information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY

For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Client Services at 800-624-9220 with any questions.

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1828998
Report Date: 08/15/18

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Perfluorinated Alkyl Acids by Isotope Dilution

L1828998: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

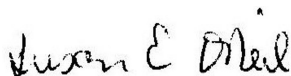
L1828998-01, -02, -04, and -06: The samples were re-extracted on dilution outside of method holding time in order to quantify the results within the calibration range. The result(s) should be considered estimated, and are qualified with an E flag, for any compound(s) that exceeded the calibration range in the initial analysis. The re-analysis was performed only for the compound(s) that exceeded the calibration range.

The WG1146058-1 Method Blank, associated with L1828998-01,-02,-04, and -06, has a concentration above the reporting limit for 6:2FTS. The results of the original analysis are reported and are qualified with a "B" for any associated sample concentrations that are less than 10x the blank concentration for this analyte.

The continuing calibration standard WG1144723-3, associated with L01828998 as well as the associated QC, had the response for Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA) (49%D) above the acceptance criteria for the method. The associated target analytes were within acceptance criteria, therefore no further action was taken.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:



Susan O'Neil

Title: Technical Director/Representative

Date: 08/15/18

ORGANICS

SEMIVOLATILES

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1828998
Report Date: 08/15/18

SAMPLE RESULTS

Lab ID: L1828998-01
Client ID: BMW-3-072618
Sample Location: LONG ISLAND CITY, NY

Date Collected: 07/26/18 13:50
Date Received: 07/26/18
Field Prep: Not Specified

Sample Depth:

Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 08/12/18 17:15
Analyst: PB

Extraction Method: EPA 537
Extraction Date: 08/09/18 09:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	32.4		ng/l	1.92	0.126	1
Perfluoropentanoic Acid (PFPeA)	72.0		ng/l	1.92	0.082	1
Perfluorobutanesulfonic Acid (PFBS)	106		ng/l	1.92	0.106	1
Perfluorohexanoic Acid (PFHxA)	150		ng/l	1.92	0.122	1
Perfluoroheptanoic Acid (PFHpA)	27.7		ng/l	1.92	0.089	1
Perfluorohexanesulfonic Acid (PFHxS)	98.3		ng/l	1.92	0.103	1
Perfluorooctanoic Acid (PFOA)	64.3		ng/l	1.92	0.049	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	2.57		ng/l	1.92	0.186	1
Perfluoroheptanesulfonic Acid (PFHpS)	126		ng/l	1.92	0.149	1
Perfluorononanoic Acid (PFNA)	3.31		ng/l	1.92	0.097	1
Perfluorooctanesulfonic Acid (PFOS)	8080	E	ng/l	1.92	0.107	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.92	0.183	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.92	0.280	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.92	0.241	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.92	0.184	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.92	0.214	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.92	0.218	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	0.612	J	ng/l	1.92	0.358	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.92	0.088	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.92	0.087	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.92	0.069	1

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1828998
Report Date: 08/15/18

SAMPLE RESULTS

Lab ID: L1828998-01
Client ID: BMW-3-072618
Sample Location: LONG ISLAND CITY, NY

Date Collected: 07/26/18 13:50
Date Received: 07/26/18
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	54		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	64		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	174	Q	31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	71		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	83		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	190	Q	47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	89		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	201		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	65		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	84		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	72		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	115		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	63		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	80		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	50		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	74		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	63		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	53		33-143

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1828998
Report Date: 08/15/18

SAMPLE RESULTS

Lab ID: L1828998-01 RE
 Client ID: BMW-3-072618
 Sample Location: LONG ISLAND CITY, NY

Date Collected: 07/26/18 13:50
 Date Received: 07/26/18
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 122,537(M)
 Analytical Date: 08/15/18 08:59
 Analyst: AJ

Extraction Method: EPA 537
 Extraction Date: 08/13/18 17:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctanesulfonic Acid (PFOS)	5970		ng/l	40.0	2.23	1
Surrogate	% Recovery		Qualifier	Acceptance Criteria		
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	138			42-146		

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1828998
Report Date: 08/15/18

SAMPLE RESULTS

Lab ID: L1828998-02
Client ID: BMW-4-072618
Sample Location: LONG ISLAND CITY, NY

Date Collected: 07/26/18 13:25
Date Received: 07/26/18
Field Prep: Not Specified

Sample Depth:

Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 08/12/18 17:32
Analyst: PB

Extraction Method: EPA 537
Extraction Date: 08/09/18 09:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	23.5		ng/l	1.92	0.126	1
Perfluoropentanoic Acid (PFPeA)	71.9		ng/l	1.92	0.082	1
Perfluorobutanesulfonic Acid (PFBS)	148		ng/l	1.92	0.106	1
Perfluorohexanoic Acid (PFHxA)	98.9		ng/l	1.92	0.122	1
Perfluoroheptanoic Acid (PFHpA)	21.1		ng/l	1.92	0.089	1
Perfluorohexanesulfonic Acid (PFHxS)	92.6		ng/l	1.92	0.103	1
Perfluorooctanoic Acid (PFOA)	62.7		ng/l	1.92	0.049	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	2.54		ng/l	1.92	0.186	1
Perfluoroheptanesulfonic Acid (PFHpS)	62.1		ng/l	1.92	0.149	1
Perfluorononanoic Acid (PFNA)	2.92		ng/l	1.92	0.097	1
Perfluorooctanesulfonic Acid (PFOS)	3080	E	ng/l	1.92	0.107	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.92	0.183	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.92	0.280	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.92	0.241	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.92	0.184	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.92	0.214	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.92	0.218	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.92	0.358	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.92	0.088	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.92	0.087	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.92	0.069	1

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1828998
Report Date: 08/15/18

SAMPLE RESULTS

Lab ID: L1828998-02
Client ID: BMW-4-072618
Sample Location: LONG ISLAND CITY, NY

Date Collected: 07/26/18 13:25
Date Received: 07/26/18
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	48		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	65		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	127		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	72		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	75		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	147		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	87		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	139		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	76		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	87		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	74		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	98		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	57		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	71		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	34		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	56		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	53		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	46		33-143

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1828998
Report Date: 08/15/18

SAMPLE RESULTS

Lab ID: L1828998-02 RE
 Client ID: BMW-4-072618
 Sample Location: LONG ISLAND CITY, NY

Date Collected: 07/26/18 13:25
 Date Received: 07/26/18
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 122,537(M)
 Analytical Date: 08/15/18 09:16
 Analyst: AJ

Extraction Method: EPA 537
 Extraction Date: 08/13/18 17:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctanesulfonic Acid (PFOS)	2560		ng/l	10.0	0.558	1
Surrogate	% Recovery		Qualifier	Acceptance Criteria		
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	125			42-146		

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1828998
Report Date: 08/15/18

SAMPLE RESULTS

Lab ID: L1828998-03
Client ID: MW-5-072618
Sample Location: LONG ISLAND CITY, NY

Date Collected: 07/26/18 10:15
Date Received: 07/26/18
Field Prep: Not Specified

Sample Depth:

Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 08/12/18 17:49
Analyst: PB

Extraction Method: EPA 537
Extraction Date: 08/09/18 09:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	9.84		ng/l	1.78	0.117	1
Perfluoropentanoic Acid (PFPeA)	13.3		ng/l	1.78	0.076	1
Perfluorobutanesulfonic Acid (PFBS)	21.4		ng/l	1.78	0.098	1
Perfluorohexanoic Acid (PFHxA)	11.0		ng/l	1.78	0.113	1
Perfluoroheptanoic Acid (PFHpA)	7.35		ng/l	1.78	0.083	1
Perfluorohexanesulfonic Acid (PFHxS)	3.94		ng/l	1.78	0.096	1
Perfluorooctanoic Acid (PFOA)	30.5		ng/l	1.78	0.045	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	4.67		ng/l	1.78	0.173	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.71	J	ng/l	1.78	0.138	1
Perfluorononanoic Acid (PFNA)	0.818	J	ng/l	1.78	0.090	1
Perfluorooctanesulfonic Acid (PFOS)	112		ng/l	1.78	0.100	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.78	0.170	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.78	0.260	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.78	0.224	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.78	0.171	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.78	0.198	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.78	0.202	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.78	0.333	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.78	0.082	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.78	0.081	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.78	0.064	1

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1828998
Report Date: 08/15/18

SAMPLE RESULTS

Lab ID: L1828998-03
Client ID: MW-5-072618
Sample Location: LONG ISLAND CITY, NY

Date Collected: 07/26/18 10:15
Date Received: 07/26/18
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	55		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	68		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	88		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	74		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	80		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	105		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	89		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	99		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	77		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	93		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	78		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	72		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	71		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	83		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	41		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	59		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	59		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	42		33-143

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1828998
Report Date: 08/15/18

SAMPLE RESULTS

Lab ID: L1828998-04
Client ID: MW-6S-072618
Sample Location: LONG ISLAND CITY, NY

Date Collected: 07/26/18 10:35
Date Received: 07/26/18
Field Prep: Not Specified

Sample Depth:

Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 08/12/18 18:22
Analyst: PB

Extraction Method: EPA 537
Extraction Date: 08/09/18 09:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	14.8		ng/l	2.00	0.131	1
Perfluoropentanoic Acid (PFPeA)	10.8		ng/l	2.00	0.086	1
Perfluorobutanesulfonic Acid (PFBS)	22.7		ng/l	2.00	0.110	1
Perfluorohexanoic Acid (PFHxA)	9.08		ng/l	2.00	0.126	1
Perfluoroheptanoic Acid (PFHpA)	6.88		ng/l	2.00	0.092	1
Perfluorohexanesulfonic Acid (PFHxS)	27.2		ng/l	2.00	0.108	1
Perfluorooctanoic Acid (PFOA)	61.4		ng/l	2.00	0.050	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	3.63		ng/l	2.00	0.194	1
Perfluoroheptanesulfonic Acid (PFHpS)	11.1		ng/l	2.00	0.155	1
Perfluorononanoic Acid (PFNA)	2.38		ng/l	2.00	0.101	1
Perfluorooctanesulfonic Acid (PFOS)	547	E	ng/l	2.00	0.112	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.190	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	0.291	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.250	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.191	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.222	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.227	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.373	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.092	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.090	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.072	1

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1828998
Report Date: 08/15/18

SAMPLE RESULTS

Lab ID: L1828998-04
Client ID: MW-6S-072618
Sample Location: LONG ISLAND CITY, NY

Date Collected: 07/26/18 10:35
Date Received: 07/26/18
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	50		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	59		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	90		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	70		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	84		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	108		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	84		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	95		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	71		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	90		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	80		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	69		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	66		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	81		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	40		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	53		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	57		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	46		33-143

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1828998
Report Date: 08/15/18

SAMPLE RESULTS

Lab ID: L1828998-04 RE
 Client ID: MW-6S-072618
 Sample Location: LONG ISLAND CITY, NY

Date Collected: 07/26/18 10:35
 Date Received: 07/26/18
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 122,537(M)
 Analytical Date: 08/15/18 09:32
 Analyst: AJ

Extraction Method: EPA 537
 Extraction Date: 08/13/18 17:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctanesulfonic Acid (PFOS)	541		ng/l	4.00	0.223	1
Surrogate	% Recovery		Qualifier	Acceptance Criteria		
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	130			42-146		

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1828998
Report Date: 08/15/18

SAMPLE RESULTS

Lab ID: L1828998-05
Client ID: MW-6D-072618
Sample Location: LONG ISLAND CITY, NY

Date Collected: 07/26/18 09:30
Date Received: 07/26/18
Field Prep: Not Specified

Sample Depth:

Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 08/12/18 18:38
Analyst: PB

Extraction Method: EPA 537
Extraction Date: 08/09/18 09:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	13.9		ng/l	1.85	0.121	1
Perfluoropentanoic Acid (PFPeA)	12.0		ng/l	1.85	0.079	1
Perfluorobutanesulfonic Acid (PFBS)	27.5		ng/l	1.85	0.102	1
Perfluorohexanoic Acid (PFHxA)	12.1		ng/l	1.85	0.117	1
Perfluoroheptanoic Acid (PFHpA)	6.55		ng/l	1.85	0.086	1
Perfluorohexanesulfonic Acid (PFHxS)	2.41		ng/l	1.85	0.100	1
Perfluorooctanoic Acid (PFOA)	24.6		ng/l	1.85	0.047	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.85	0.180	1
Perfluoroheptanesulfonic Acid (PFHpS)	0.948	J	ng/l	1.85	0.144	1
Perfluorononanoic Acid (PFNA)	1.68	J	ng/l	1.85	0.093	1
Perfluorooctanesulfonic Acid (PFOS)	60.8		ng/l	1.85	0.103	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.85	0.176	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.85	0.269	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.85	0.232	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.85	0.177	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.85	0.206	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.85	0.210	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.85	0.345	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.85	0.085	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.85	0.084	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.85	0.067	1

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1828998
Report Date: 08/15/18

SAMPLE RESULTS

Lab ID: L1828998-05
Client ID: MW-6D-072618
Sample Location: LONG ISLAND CITY, NY

Date Collected: 07/26/18 09:30
Date Received: 07/26/18
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	48		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	65		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	87		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	73		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	73		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	106		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	84		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	79		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	68		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	81		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	76		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	74		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	61		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	74		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	10		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	60		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	58		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	40		33-143

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1828998
Report Date: 08/15/18

SAMPLE RESULTS

Lab ID: L1828998-06
Client ID: DUP-072618
Sample Location: LONG ISLAND CITY, NY

Date Collected: 07/26/18 13:25
Date Received: 07/26/18
Field Prep: Not Specified

Sample Depth:

Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 08/12/18 18:55
Analyst: PB

Extraction Method: EPA 537
Extraction Date: 08/09/18 09:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	23.3		ng/l	1.92	0.126	1
Perfluoropentanoic Acid (PFPeA)	72.3		ng/l	1.92	0.082	1
Perfluorobutanesulfonic Acid (PFBS)	149		ng/l	1.92	0.106	1
Perfluorohexanoic Acid (PFHxA)	99.4		ng/l	1.92	0.122	1
Perfluoroheptanoic Acid (PFHpA)	20.9		ng/l	1.92	0.089	1
Perfluorohexanesulfonic Acid (PFHxS)	95.0		ng/l	1.92	0.103	1
Perfluorooctanoic Acid (PFOA)	66.8		ng/l	1.92	0.049	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	3.37		ng/l	1.92	0.186	1
Perfluoroheptanesulfonic Acid (PFHpS)	60.1		ng/l	1.92	0.149	1
Perfluorononanoic Acid (PFNA)	2.65		ng/l	1.92	0.097	1
Perfluorooctanesulfonic Acid (PFOS)	3010	E	ng/l	1.92	0.107	1
Perfluorodecanoic Acid (PFDA)	0.838	J	ng/l	1.92	0.183	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.92	0.280	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.92	0.241	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.92	0.184	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.92	0.214	1
Perfluorooctanesulfonamide (FOSA)	0.250	J	ng/l	1.92	0.218	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.92	0.358	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.92	0.088	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.92	0.087	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.92	0.069	1

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1828998
Report Date: 08/15/18

SAMPLE RESULTS

Lab ID: L1828998-06
Client ID: DUP-072618
Sample Location: LONG ISLAND CITY, NY

Date Collected: 07/26/18 13:25
Date Received: 07/26/18
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	53		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	64		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	127		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	69		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	73		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	144		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	82		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	137		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	74		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	91		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	79		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	113		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	61		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	82		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	28		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	59		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	66		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	42		33-143

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1828998
Report Date: 08/15/18

SAMPLE RESULTS

Lab ID: L1828998-06 RE
 Client ID: DUP-072618
 Sample Location: LONG ISLAND CITY, NY

Date Collected: 07/26/18 13:25
 Date Received: 07/26/18
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 122,537(M)
 Analytical Date: 08/15/18 09:49
 Analyst: AJ

Extraction Method: EPA 537
 Extraction Date: 08/13/18 17:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctanesulfonic Acid (PFOS)	2640		ng/l	10.0	0.558	1
Surrogate	% Recovery		Qualifier	Acceptance Criteria		
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	123			42-146		

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1828998
Report Date: 08/15/18

SAMPLE RESULTS

Lab ID: L1828998-07
Client ID: MW-E-072618
Sample Location: LONG ISLAND CITY, NY

Date Collected: 07/26/18 11:30
Date Received: 07/26/18
Field Prep: Not Specified

Sample Depth:

Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 08/12/18 19:11
Analyst: PB

Extraction Method: EPA 537
Extraction Date: 08/09/18 09:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	33.3		ng/l	1.92	0.126	1
Perfluoropentanoic Acid (PFPeA)	82.9		ng/l	1.92	0.082	1
Perfluorobutanesulfonic Acid (PFBS)	11.1		ng/l	1.92	0.106	1
Perfluorohexanoic Acid (PFHxA)	102		ng/l	1.92	0.122	1
Perfluoroheptanoic Acid (PFHpA)	18.6		ng/l	1.92	0.089	1
Perfluorohexanesulfonic Acid (PFHxS)	2.71		ng/l	1.92	0.103	1
Perfluorooctanoic Acid (PFOA)	64.1		ng/l	1.92	0.049	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	140		ng/l	1.92	0.186	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.92	0.149	1
Perfluorononanoic Acid (PFNA)	1.33	J	ng/l	1.92	0.097	1
Perfluorooctanesulfonic Acid (PFOS)	9.21		ng/l	1.92	0.107	1
Perfluorodecanoic Acid (PFDA)	6.57		ng/l	1.92	0.183	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.92	0.280	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.92	0.241	1
Perfluoroundecanoic Acid (PFUnA)	0.442	J	ng/l	1.92	0.184	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.92	0.214	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.92	0.218	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.92	0.358	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.92	0.088	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.92	0.087	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.92	0.069	1

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1828998
Report Date: 08/15/18

SAMPLE RESULTS

Lab ID: L1828998-07
Client ID: MW-E-072618
Sample Location: LONG ISLAND CITY, NY

Date Collected: 07/26/18 11:30
Date Received: 07/26/18
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Surrogate	% Recovery			Qualifier	Acceptance Criteria	
Perfluoro[13C4]Butanoic Acid (MPFBA)	82				2-156	
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	69				16-173	
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	89				31-159	
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	77				21-145	
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	76				30-139	
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	102				47-153	
Perfluoro[13C8]Octanoic Acid (M8PFOA)	86				36-149	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	91				1-244	
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	78				34-146	
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	82				42-146	
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	69				38-144	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	70				7-170	
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	47				1-181	
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	65				40-144	
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	4				1-87	
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	50				23-146	
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	42				24-161	
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	23			Q	33-143	

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1828998
Report Date: 08/15/18

SAMPLE RESULTS

Lab ID: L1828998-08
Client ID: FB-072618
Sample Location: LONG ISLAND CITY, NY

Date Collected: 07/26/18 13:05
Date Received: 07/26/18
Field Prep: Not Specified

Sample Depth:

Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 08/12/18 19:28
Analyst: PB

Extraction Method: EPA 537
Extraction Date: 08/09/18 09:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.85	0.121	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.85	0.079	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.85	0.102	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.85	0.117	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.85	0.086	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.85	0.100	1
Perfluorooctanoic Acid (PFOA)	0.670	J	ng/l	1.85	0.047	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.85	0.180	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.85	0.144	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.85	0.093	1
Perfluorooctanesulfonic Acid (PFOS)	0.348	J	ng/l	1.85	0.103	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.85	0.176	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.85	0.269	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.85	0.232	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.85	0.177	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.85	0.206	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.85	0.210	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.85	0.345	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.85	0.085	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.85	0.084	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.85	0.067	1

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1828998
Report Date: 08/15/18

SAMPLE RESULTS

Lab ID: L1828998-08
Client ID: FB-072618
Sample Location: LONG ISLAND CITY, NY

Date Collected: 07/26/18 13:05
Date Received: 07/26/18
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	47		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	65		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	82		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	72		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	65		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	97		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	79		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	59		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	70		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	79		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	72		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	45		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	61		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	77		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	22		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	61		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	59		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	44		33-143

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1828998
Report Date: 08/15/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 122,537(M)
Analytical Date: 08/12/18 12:17
Analyst: PB

Extraction Method: EPA 537
Extraction Date: 08/09/18 09:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-08 Batch: WG1144495-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.131
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.086
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.110
Perfluorohexanoic Acid (PFHxA)	0.160	J	ng/l	2.00	0.126
Perfluoroheptanoic Acid (PFHpA)	0.132	J	ng/l	2.00	0.092
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.108
Perfluorooctanoic Acid (PFOA)	0.720	J	ng/l	2.00	0.050
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	0.194
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.155
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.101
Perfluorooctanesulfonic Acid (PFOS)	0.260	J	ng/l	2.00	0.112
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.190
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	0.291
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.250
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.191
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.222
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.227
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.373
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.092
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.090
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.072

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1828998
Report Date: 08/15/18

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 122,537(M)
Analytical Date: 08/12/18 12:17
Analyst: PB

Extraction Method: EPA 537
Extraction Date: 08/09/18 09:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-08 Batch: WG1144495-1					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	77		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	86		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	104		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	87		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	80		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	114		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	101		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	88		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	85		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	96		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	94		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	72		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	84		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	100		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	43		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	79		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	78		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	47		33-143

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1828998
Report Date: 08/15/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 122,537(M)
Analytical Date: 08/15/18 08:09
Analyst: AJ

Extraction Method: EPA 537
Extraction Date: 08/13/18 17:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-02,04,06 Batch: WG1146058-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.131
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.086
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.110
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.126
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.092
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.108
Perfluorooctanoic Acid (PFOA)	0.280	J	ng/l	2.00	0.050
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	2.31		ng/l	2.00	0.194
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.155
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.101
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.112
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.190
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	0.291
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.250
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.191
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.222
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.227
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.373
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.092
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.090
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.072

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1828998
Report Date: 08/15/18

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 122,537(M)
Analytical Date: 08/15/18 08:09
Analyst: AJ

Extraction Method: EPA 537
Extraction Date: 08/13/18 17:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-02,04,06 Batch: WG1146058-1					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	105		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	121		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	123		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	109		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	101		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	116		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	103		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	101		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	108		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	117		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	99		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	109		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	80		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	108		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	30		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	70		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	102		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	63		33-143

Lab Control Sample Analysis

Batch Quality Control

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1828998
Report Date: 08/15/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-08 Batch: WG1144495-2 WG1144495-3								
Perfluorobutanoic Acid (PFBA)	115		113		67-148	2		30
Perfluoropentanoic Acid (PFPeA)	117		117		63-161	0		30
Perfluorobutanesulfonic Acid (PFBS)	118		119		65-157	1		30
Perfluorohexanoic Acid (PFHxA)	130		129		69-168	1		30
Perfluoroheptanoic Acid (PFHpA)	114		114		58-159	0		30
Perfluorohexanesulfonic Acid (PFHxS)	116		114		69-177	2		30
Perfluorooctanoic Acid (PFOA)	116		122		63-159	5		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	117		132		49-187	12		30
Perfluoroheptanesulfonic Acid (PFHpS)	130		122		61-179	6		30
Perfluorononanoic Acid (PFNA)	116		112		68-171	4		30
Perfluorooctanesulfonic Acid (PFOS)	97		92		52-151	5		30
Perfluorodecanoic Acid (PFDA)	132		130		63-171	2		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	114		113		56-173	1		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	124		106		60-166	16		30
Perfluoroundecanoic Acid (PFUnA)	114		108		60-153	5		30
Perfluorodecanesulfonic Acid (PFDS)	126		135		38-156	7		30
Perfluorooctanesulfonamide (FOSA)	113		121		46-170	7		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	83		85		45-170	2		30
Perfluorododecanoic Acid (PFDoA)	98		113		67-153	14		30
Perfluorotridecanoic Acid (PFTrDA)	103		102		48-158	1		30
Perfluorotetradecanoic Acid (PFTA)	129		122		59-182	6		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1828998
Report Date: 08/15/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
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Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-08 Batch: WG1144495-2 WG1144495-3

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	62		64		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	74		72		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	96		84		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	75		73		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	71		67		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	102		95		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	81		79		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	80		64		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	74		73		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	85		81		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	72		79		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	54		52		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	63		68		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	72		75		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	23		17		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	64		65		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	62		63		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	42		50		33-143

Lab Control Sample Analysis

Batch Quality Control

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1828998
Report Date: 08/15/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02,04,06 Batch: WG1146058-2 WG1146058-3								
Perfluorobutanoic Acid (PFBA)	113		108		67-148	5		30
Perfluoropentanoic Acid (PFPeA)	116		112		63-161	4		30
Perfluorobutanesulfonic Acid (PFBS)	110		108		65-157	2		30
Perfluorohexanoic Acid (PFHxA)	123		112		69-168	9		30
Perfluoroheptanoic Acid (PFHpA)	107		103		58-159	4		30
Perfluorohexanesulfonic Acid (PFHxS)	103		106		69-177	3		30
Perfluorooctanoic Acid (PFOA)	109		109		63-159	0		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	115		104		49-187	10		30
Perfluoroheptanesulfonic Acid (PFHpS)	121		110		61-179	10		30
Perfluorononanoic Acid (PFNA)	125		106		68-171	16		30
Perfluorooctanesulfonic Acid (PFOS)	101		97		52-151	4		30
Perfluorodecanoic Acid (PFDA)	118		112		63-171	5		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	144		119		56-173	19		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	117		105		60-166	11		30
Perfluoroundecanoic Acid (PFUnA)	100		96		60-153	4		30
Perfluorodecanesulfonic Acid (PFDS)	97		95		38-156	2		30
Perfluorooctanesulfonamide (FOSA)	102		104		46-170	2		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	99		126		45-170	24		30
Perfluorododecanoic Acid (PFDoA)	105		104		67-153	1		30
Perfluorotridecanoic Acid (PFTrDA)	72		94		48-158	27		30
Perfluorotetradecanoic Acid (PFTA)	119		136		59-182	13		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1828998
Report Date: 08/15/18

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02,04,06 Batch: WG1146058-2 WG1146058-3								

Surrogate	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	103		110		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	117		126		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	123		135		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	106		118		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	102		114		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	122		136		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	106		114		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	96		114		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	95		113		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	101		125		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	98		111		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	94		108		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	74		75		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	103		109		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	44		45		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	75		69		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	103		102		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	65		79		33-143

Project Name: HYGRADE**Lab Number:** L1828998**Project Number:** 3612162331**Report Date:** 08/15/18**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1828998-01A	Plastic 250ml unpreserved	A	NA		5.0	Y	Absent		A2-NY-537-ISOTOPE(14)
L1828998-01B	Plastic 250ml unpreserved	A	NA		5.0	Y	Absent		A2-NY-537-ISOTOPE(14)
L1828998-01C	Plastic 250ml unpreserved	A	NA		5.0	Y	Absent		A2-NY-537-ISOTOPE(14)
L1828998-02A	Plastic 250ml unpreserved	A	NA		5.0	Y	Absent		A2-NY-537-ISOTOPE(14)
L1828998-02B	Plastic 250ml unpreserved	A	NA		5.0	Y	Absent		A2-NY-537-ISOTOPE(14)
L1828998-02C	Plastic 250ml unpreserved	A	NA		5.0	Y	Absent		A2-NY-537-ISOTOPE(14)
L1828998-03A	Plastic 250ml unpreserved	A	NA		5.0	Y	Absent		A2-NY-537-ISOTOPE(14)
L1828998-03B	Plastic 250ml unpreserved	A	NA		5.0	Y	Absent		A2-NY-537-ISOTOPE(14)
L1828998-03C	Plastic 250ml unpreserved	A	NA		5.0	Y	Absent		A2-NY-537-ISOTOPE(14)
L1828998-04A	Plastic 250ml unpreserved	A	NA		5.0	Y	Absent		A2-NY-537-ISOTOPE(14)
L1828998-04B	Plastic 250ml unpreserved	A	NA		5.0	Y	Absent		A2-NY-537-ISOTOPE(14)
L1828998-04C	Plastic 250ml unpreserved	A	NA		5.0	Y	Absent		A2-NY-537-ISOTOPE(14)
L1828998-05A	Plastic 250ml unpreserved	A	NA		5.0	Y	Absent		A2-NY-537-ISOTOPE(14)
L1828998-05B	Plastic 250ml unpreserved	A	NA		5.0	Y	Absent		A2-NY-537-ISOTOPE(14)
L1828998-05C	Plastic 250ml unpreserved	A	NA		5.0	Y	Absent		A2-NY-537-ISOTOPE(14)
L1828998-06A	Plastic 250ml unpreserved	A	NA		5.0	Y	Absent		A2-NY-537-ISOTOPE(14)
L1828998-06B	Plastic 250ml unpreserved	A	NA		5.0	Y	Absent		A2-NY-537-ISOTOPE(14)
L1828998-06C	Plastic 250ml unpreserved	A	NA		5.0	Y	Absent		A2-NY-537-ISOTOPE(14)
L1828998-07A	Plastic 250ml unpreserved	A	NA		5.0	Y	Absent		A2-NY-537-ISOTOPE(14)
L1828998-07B	Plastic 250ml unpreserved	A	NA		5.0	Y	Absent		A2-NY-537-ISOTOPE(14)
L1828998-07C	Plastic 250ml unpreserved	A	NA		5.0	Y	Absent		A2-NY-537-ISOTOPE(14)
L1828998-08A	Plastic 250ml unpreserved	A	NA		5.0	Y	Absent		A2-NY-537-ISOTOPE(14)
L1828998-08B	Plastic 250ml unpreserved	A	NA		5.0	Y	Absent		A2-NY-537-ISOTOPE(14)

Project Name: HYGRADE
Project Number: 3612162331

Serial_No: 08151815:12
Lab Number: L1828998
Report Date: 08/15/18

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1828998-08C	Plastic 250ml unpreserved	A	NA		5.0	Y	Absent		A2-NY-537-ISOTOPE(14)

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1828998
Report Date: 08/15/18

GLOSSARY

Acronyms

EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Report Format: DU Report with 'J' Qualifiers



Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1828998
Report Date: 08/15/18

Data Qualifiers

- A** - Spectra identified as "Aldol Condensation Product".
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1828998
Report Date: 08/15/18

REFERENCES

- 122 Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS). EPA Method 537, EPA/600/R-08/092. Version 1.1, September 2009.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at its own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility

EPA 624: m/p-xylene, o-xylene

EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270D: NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

EPA 300: DW: Bromide

EPA 6860: SCM: Perchlorate

EPA 9010: NPW and SCM: Amenable Cyanide Distillation

SM4500: NPW: Amenable Cyanide, Dissolved Oxygen; SCM: Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility

SM 2540D: TSS

EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B

EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **EPA 351.1, SM4500P-E, SM4500P-B, E,**

SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D.

EPA 624: Volatile Halocarbons & Aromatics,

EPA 608: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, SM9222D.**

Mansfield Facility:

Drinking Water

EPA 200.7: Al, Ba, Be, Cd, Cr, Cu, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

EPA 522.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn.

EPA 245.1 Hg.

SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

 NEW YORK CHAIN OF CUSTODY		Service Centers Mahwah, NJ 07430: 35 Whitney Rd, Suite 5 Albany, NY 12205: 14 Walker Way Tonawanda, NY 14150: 275 Cooper Ave, Suite 105		Page 1 of 1		Date Rec'd in Lab 7/27/18		ALPHA Job # L1828998																																																																																																																																																																																																	
		Westborough, MA 01581 8 Walkup Dr. TEL: 508-898-9220 FAX: 508-898-9193		Mansfield, MA 02048 320 Forbes Blvd TEL: 508-822-9300 FAX: 508-822-3288																																																																																																																																																																																																					
Client Information Client: <u>Amec E&E</u> Address: <u>214-25 42nd St 3R</u> <u>Bay Side NY 11361</u> Phone: <u>347 836 4345</u> Fax: Email: <u>eric.wainstach@amec.com</u>		Project Information Project Name: <u>Hygrade</u> Project Location: <u>Long Island City, NY</u> Project # <u>3612162331</u> (Use Project name as Project #) ☐		Deliverables ☐ ASP-A ☒ ASP-B ☐ EQUIS (1 File) ☐ EQUIS (4 File) ☐ Other		Billing Information ☒ Same as Client Info PO #																																																																																																																																																																																																			
		Project Manager: <u>E. Wainstach</u> ALPHAQuote #: <u>06019</u> Turn-Around Time Standard ☒ Due Date: Rush (only if pre approved) ☐ # of Days:		Regulatory Requirement ☒ NY TOGS ☐ NY Part 375 ☐ AWQ Standards ☐ NY CP-51 ☐ NY Restricted Use ☐ Other ☐ NY Unrestricted Use ☐ NYC Sewer Discharge		Disposal Site Information Please identify below location of applicable disposal facilities. Disposal Facility: ☐ NJ ☐ NY ☐ Other:																																																																																																																																																																																																			
These samples have been previously analyzed by Alpha ☐ Other project specific requirements/comments:				ANALYSIS		Sample Filtration ☐ Done ☐ Lab to do Preservation ☐ Lab to do (Please Specify below)		Total Bottles																																																																																																																																																																																																	
Please specify Metals or TAL.																																																																																																																																																																																																									
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Preservative Code: A = None B = HCl C = HNO ₃ D = H ₂ SO ₄ E = NaOH F = MeOH G = NaHSO ₄ H = Na ₂ S ₂ O ₃ K/E = Zn Ac/NaOH O = Other		Container Code P = Plastic A = Amber Glass V = Vial G = Glass B = Bacteria Cup C = Cube O = Other E = Encore D = BOD Bottle		Westboro: Certification No: MA935 Mansfield: Certification No: MA015		Container Type <u>P</u> Preservative <u>O</u>		Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY ALPHA'S TERMS & CONDITIONS. (See reverse side.)																																																																																																																																																																																																	
		Relinquished By: <u>Bon Hesse</u> <u>7/26/18</u>		Date/Time: <u>7/26/18 5:45</u> <u>7/26/2000</u> <u>1300</u>		Received By: <u>Primer Jackson</u> <u>7/26/18</u>		Date/Time: <u>7/26/18 1745</u> <u>1230</u> <u>7/27/18 0240</u>																																																																																																																																																																																																	



ANALYTICAL REPORT

Lab Number:	L1828999
Client:	Wood Env & Infrastructure Solutions, Inc 214-25 42nd Avenue Suite 3R Bayside, NY 11361
ATTN:	Eric Weinstock
Phone:	(347) 836-4445
Project Name:	HYGRADE/STALINGRAD
Project Number:	3612162331
Report Date:	08/03/18

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Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com



Project Name: HYGRADE/STALINGRAD
Project Number: 3612162331

Lab Number: L1828999
Report Date: 08/03/18

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1828999-01	BMW-3-072618	WATER	LONG ISLAND CITY, NY	07/26/18 13:50	07/26/18
L1828999-02	BMW-4-072618	WATER	LONG ISLAND CITY, NY	07/26/18 13:25	07/26/18
L1828999-03	MW-5-072618	WATER	LONG ISLAND CITY, NY	07/26/18 10:15	07/26/18
L1828999-04	MW-6S-072618	WATER	LONG ISLAND CITY, NY	07/26/18 10:35	07/26/18
L1828999-05	MW-6D-072618	WATER	LONG ISLAND CITY, NY	07/26/18 09:30	07/26/18
L1828999-06	MW-E-072618	WATER	LONG ISLAND CITY, NY	07/26/18 11:30	07/26/18
L1828999-07	DUP-072618	WATER	LONG ISLAND CITY, NY	07/26/18 13:25	07/26/18
L1828999-08	TB-072418	WATER	LONG ISLAND CITY, NY	07/24/18 00:00	07/26/18
L1828999-09	FB-072618	WATER	LONG ISLAND CITY, NY	07/26/18 13:05	07/26/18

Project Name: HYGRADE/STALINGRAD
Project Number: 3612162331

Lab Number: L1828999
Report Date: 08/03/18

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. All specific QC information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY

For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Client Services at 800-624-9220 with any questions.

Project Name: HYGRADE/STALINGRAD
Project Number: 3612162331

Lab Number: L1828999
Report Date: 08/03/18

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Total Metals

The WG1141310-3 MS recoveries for calcium (0%), iron (10%), manganese (60%), and sodium (260%), performed on L1828999-01, do not apply because the sample concentrations are greater than four times the spike amount added.

Dissolved Metals

L1828999-09: The Field Blank has a concentration above the reporting limit for iron. The result was confirmed. The WG1141765-1 Method Blank, associated with L1828999-01 through -07 and -09, has a concentration above the reporting limit for sodium. L1828999-01 through -07 have concentrations greater than 10x the blank concentration for this analyte, and no corrective action is required. The concentration in L1828999-09 is less than 10x the blank concentration; therefore, the result is qualified with a "B".

The WG1141765-3 MS recovery, performed on L1828999-01, is outside the acceptance criteria for antimony (127%). A post digestion spike was performed and yielded an unacceptable recovery of 72%, and the serial dilution recovery was not applicable; therefore, this element fails the matrix test and the results reported in the native sample should be considered estimated.

The WG1141765-3 MS recoveries for calcium (260%), iron (137%), magnesium (147%), and sodium (340%), performed on L1828999-01, do not apply because the sample concentrations are greater than four times the spike amounts added.

The WG1141765-3 MS recovery, performed on L1828999-01, is outside the acceptance criteria for potassium (132%). A post digestion spike was performed and was within acceptance criteria.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Kelly Stenstrom

Title: Technical Director/Representative

Date: 08/03/18

ORGANICS

VOLATILES

Project Name: HYGRADE/STALINGRAD**Lab Number:** L1828999**Project Number:** 3612162331**Report Date:** 08/03/18**SAMPLE RESULTS**

Lab ID: L1828999-01 D
 Client ID: BMW-3-072618
 Sample Location: LONG ISLAND CITY, NY

Date Collected: 07/26/18 13:50
 Date Received: 07/26/18
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 07/31/18 11:56
 Analyst: KJD

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	5.0	1.4	2
1,1-Dichloroethane	ND		ug/l	5.0	1.4	2
Chloroform	ND		ug/l	5.0	1.4	2
Carbon tetrachloride	ND		ug/l	1.0	0.27	2
1,2-Dichloropropane	ND		ug/l	2.0	0.27	2
Dibromochloromethane	ND		ug/l	1.0	0.30	2
1,1,2-Trichloroethane	ND		ug/l	3.0	1.0	2
Tetrachloroethene	ND		ug/l	1.0	0.36	2
Chlorobenzene	ND		ug/l	5.0	1.4	2
Trichlorofluoromethane	ND		ug/l	5.0	1.4	2
1,2-Dichloroethane	ND		ug/l	1.0	0.26	2
1,1,1-Trichloroethane	ND		ug/l	5.0	1.4	2
Bromodichloromethane	ND		ug/l	1.0	0.38	2
trans-1,3-Dichloropropene	ND		ug/l	1.0	0.33	2
cis-1,3-Dichloropropene	ND		ug/l	1.0	0.29	2
1,3-Dichloropropene, Total	ND		ug/l	1.0	0.29	2
1,1-Dichloropropene	ND		ug/l	5.0	1.4	2
Bromoform	ND		ug/l	4.0	1.3	2
1,1,2,2-Tetrachloroethane	ND		ug/l	1.0	0.33	2
Benzene	5.6		ug/l	1.0	0.32	2
Toluene	ND		ug/l	5.0	1.4	2
Ethylbenzene	ND		ug/l	5.0	1.4	2
Chloromethane	ND		ug/l	5.0	1.4	2
Bromomethane	ND		ug/l	5.0	1.4	2
Vinyl chloride	47		ug/l	2.0	0.14	2
Chloroethane	ND		ug/l	5.0	1.4	2
1,1-Dichloroethene	0.35	J	ug/l	1.0	0.34	2
trans-1,2-Dichloroethene	5.3		ug/l	5.0	1.4	2

Project Name: HYGRADE/STALINGRAD**Lab Number:** L1828999**Project Number:** 3612162331**Report Date:** 08/03/18**SAMPLE RESULTS**

Lab ID: L1828999-01 D
 Client ID: BMW-3-072618
 Sample Location: LONG ISLAND CITY, NY

Date Collected: 07/26/18 13:50
 Date Received: 07/26/18
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Trichloroethene	5.5		ug/l	1.0	0.35	2
1,2-Dichlorobenzene	ND		ug/l	5.0	1.4	2
1,3-Dichlorobenzene	ND		ug/l	5.0	1.4	2
1,4-Dichlorobenzene	ND		ug/l	5.0	1.4	2
Methyl tert butyl ether	ND		ug/l	5.0	1.4	2
p/m-Xylene	ND		ug/l	5.0	1.4	2
o-Xylene	ND		ug/l	5.0	1.4	2
Xylenes, Total	ND		ug/l	5.0	1.4	2
cis-1,2-Dichloroethene	180		ug/l	5.0	1.4	2
1,2-Dichloroethene, Total	190		ug/l	5.0	1.4	2
Dibromomethane	ND		ug/l	10	2.0	2
1,2,3-Trichloropropane	ND		ug/l	5.0	1.4	2
Acrylonitrile	ND		ug/l	10	3.0	2
Styrene	ND		ug/l	5.0	1.4	2
Dichlorodifluoromethane	ND		ug/l	10	2.0	2
Acetone	200		ug/l	10	2.9	2
Carbon disulfide	ND		ug/l	10	2.0	2
2-Butanone	180		ug/l	10	3.9	2
Vinyl acetate	ND		ug/l	10	2.0	2
4-Methyl-2-pentanone	ND		ug/l	10	2.0	2
2-Hexanone	ND		ug/l	10	2.0	2
Bromochloromethane	ND		ug/l	5.0	1.4	2
2,2-Dichloropropane	ND		ug/l	5.0	1.4	2
1,2-Dibromoethane	ND		ug/l	4.0	1.3	2
1,3-Dichloropropane	ND		ug/l	5.0	1.4	2
1,1,1,2-Tetrachloroethane	ND		ug/l	5.0	1.4	2
Bromobenzene	ND		ug/l	5.0	1.4	2
n-Butylbenzene	ND		ug/l	5.0	1.4	2
sec-Butylbenzene	ND		ug/l	5.0	1.4	2
tert-Butylbenzene	ND		ug/l	5.0	1.4	2
o-Chlorotoluene	ND		ug/l	5.0	1.4	2
p-Chlorotoluene	ND		ug/l	5.0	1.4	2
1,2-Dibromo-3-chloropropane	ND		ug/l	5.0	1.4	2
Hexachlorobutadiene	ND		ug/l	5.0	1.4	2
Isopropylbenzene	ND		ug/l	5.0	1.4	2
p-Isopropyltoluene	ND		ug/l	5.0	1.4	2
Naphthalene	ND		ug/l	5.0	1.4	2

Project Name: HYGRADE/STALINGRAD
Project Number: 3612162331

Lab Number: L1828999
Report Date: 08/03/18

SAMPLE RESULTS

Lab ID: L1828999-01 D
Client ID: BMW-3-072618
Sample Location: LONG ISLAND CITY, NY

Date Collected: 07/26/18 13:50
Date Received: 07/26/18
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
n-Propylbenzene	ND		ug/l	5.0	1.4	2
1,2,3-Trichlorobenzene	ND		ug/l	5.0	1.4	2
1,2,4-Trichlorobenzene	ND		ug/l	5.0	1.4	2
1,3,5-Trimethylbenzene	ND		ug/l	5.0	1.4	2
1,2,4-Trimethylbenzene	ND		ug/l	5.0	1.4	2
1,4-Dioxane	ND		ug/l	500	120	2
p-Diethylbenzene	ND		ug/l	4.0	1.4	2
p-Ethyltoluene	ND		ug/l	4.0	1.4	2
1,2,4,5-Tetramethylbenzene	ND		ug/l	4.0	1.1	2
Ethyl ether	ND		ug/l	5.0	1.4	2
trans-1,4-Dichloro-2-butene	ND		ug/l	5.0	1.4	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	119		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	112		70-130
Dibromofluoromethane	109		70-130

Project Name: HYGRADE/STALINGRAD**Lab Number:** L1828999**Project Number:** 3612162331**Report Date:** 08/03/18**SAMPLE RESULTS**

Lab ID: L1828999-02
 Client ID: BMW-4-072618
 Sample Location: LONG ISLAND CITY, NY

Date Collected: 07/26/18 13:25
 Date Received: 07/26/18
 Field Prep: Not Specified

Sample Depth:

Matrix: Water

Analytical Method: 1,8260C

Analytical Date: 07/31/18 13:09

Analyst: KJD

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	2.5	0.70	1
1,1-Dichloroethane	ND		ug/l	2.5	0.70	1
Chloroform	ND		ug/l	2.5	0.70	1
Carbon tetrachloride	ND		ug/l	0.50	0.13	1
1,2-Dichloropropane	ND		ug/l	1.0	0.14	1
Dibromochloromethane	ND		ug/l	0.50	0.15	1
1,1,2-Trichloroethane	ND		ug/l	1.5	0.50	1
Tetrachloroethene	2.2		ug/l	0.50	0.18	1
Chlorobenzene	ND		ug/l	2.5	0.70	1
Trichlorofluoromethane	ND		ug/l	2.5	0.70	1
1,2-Dichloroethane	0.14	J	ug/l	0.50	0.13	1
1,1,1-Trichloroethane	ND		ug/l	2.5	0.70	1
Bromodichloromethane	ND		ug/l	0.50	0.19	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14	1
1,3-Dichloropropene, Total	ND		ug/l	0.50	0.14	1
1,1-Dichloropropene	ND		ug/l	2.5	0.70	1
Bromoform	ND		ug/l	2.0	0.65	1
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.17	1
Benzene	3.9		ug/l	0.50	0.16	1
Toluene	8.2		ug/l	2.5	0.70	1
Ethylbenzene	ND		ug/l	2.5	0.70	1
Chloromethane	ND		ug/l	2.5	0.70	1
Bromomethane	ND		ug/l	2.5	0.70	1
Vinyl chloride	3.1		ug/l	1.0	0.07	1
Chloroethane	ND		ug/l	2.5	0.70	1
1,1-Dichloroethene	ND		ug/l	0.50	0.17	1
trans-1,2-Dichloroethene	4.8		ug/l	2.5	0.70	1

Project Name: HYGRADE/STALINGRAD**Lab Number:** L1828999**Project Number:** 3612162331**Report Date:** 08/03/18**SAMPLE RESULTS**

Lab ID: L1828999-02
 Client ID: BMW-4-072618
 Sample Location: LONG ISLAND CITY, NY

Date Collected: 07/26/18 13:25
 Date Received: 07/26/18
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Trichloroethene	2.7		ug/l	0.50	0.18	1
1,2-Dichlorobenzene	ND		ug/l	2.5	0.70	1
1,3-Dichlorobenzene	ND		ug/l	2.5	0.70	1
1,4-Dichlorobenzene	ND		ug/l	2.5	0.70	1
Methyl tert butyl ether	1.6	J	ug/l	2.5	0.70	1
p/m-Xylene	ND		ug/l	2.5	0.70	1
o-Xylene	0.76	J	ug/l	2.5	0.70	1
Xylenes, Total	0.76	J	ug/l	2.5	0.70	1
cis-1,2-Dichloroethene	6.3		ug/l	2.5	0.70	1
1,2-Dichloroethene, Total	11		ug/l	2.5	0.70	1
Dibromomethane	ND		ug/l	5.0	1.0	1
1,2,3-Trichloropropane	ND		ug/l	2.5	0.70	1
Acrylonitrile	ND		ug/l	5.0	1.5	1
Styrene	ND		ug/l	2.5	0.70	1
Dichlorodifluoromethane	ND		ug/l	5.0	1.0	1
Acetone	2.7	J	ug/l	5.0	1.5	1
Carbon disulfide	ND		ug/l	5.0	1.0	1
2-Butanone	ND		ug/l	5.0	1.9	1
Vinyl acetate	ND		ug/l	5.0	1.0	1
4-Methyl-2-pentanone	ND		ug/l	5.0	1.0	1
2-Hexanone	ND		ug/l	5.0	1.0	1
Bromochloromethane	ND		ug/l	2.5	0.70	1
2,2-Dichloropropane	ND		ug/l	2.5	0.70	1
1,2-Dibromoethane	ND		ug/l	2.0	0.65	1
1,3-Dichloropropane	ND		ug/l	2.5	0.70	1
1,1,1,2-Tetrachloroethane	ND		ug/l	2.5	0.70	1
Bromobenzene	ND		ug/l	2.5	0.70	1
n-Butylbenzene	ND		ug/l	2.5	0.70	1
sec-Butylbenzene	ND		ug/l	2.5	0.70	1
tert-Butylbenzene	ND		ug/l	2.5	0.70	1
o-Chlorotoluene	ND		ug/l	2.5	0.70	1
p-Chlorotoluene	ND		ug/l	2.5	0.70	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.70	1
Hexachlorobutadiene	ND		ug/l	2.5	0.70	1
Isopropylbenzene	ND		ug/l	2.5	0.70	1
p-Isopropyltoluene	ND		ug/l	2.5	0.70	1
Naphthalene	ND		ug/l	2.5	0.70	1

Project Name: HYGRADE/STALINGRAD
Project Number: 3612162331

Lab Number: L1828999
Report Date: 08/03/18

SAMPLE RESULTS

Lab ID: L1828999-02
Client ID: BMW-4-072618
Sample Location: LONG ISLAND CITY, NY

Date Collected: 07/26/18 13:25
Date Received: 07/26/18
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
n-Propylbenzene	ND		ug/l	2.5	0.70	1
1,2,3-Trichlorobenzene	ND		ug/l	2.5	0.70	1
1,2,4-Trichlorobenzene	ND		ug/l	2.5	0.70	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.70	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.70	1
1,4-Dioxane	ND		ug/l	250	61.	1
p-Diethylbenzene	ND		ug/l	2.0	0.70	1
p-Ethyltoluene	ND		ug/l	2.0	0.70	1
1,2,4,5-Tetramethylbenzene	ND		ug/l	2.0	0.54	1
Ethyl ether	ND		ug/l	2.5	0.70	1
trans-1,4-Dichloro-2-butene	ND		ug/l	2.5	0.70	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	117		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	110		70-130
Dibromofluoromethane	108		70-130

Project Name: HYGRADE/STALINGRAD**Lab Number:** L1828999**Project Number:** 3612162331**Report Date:** 08/03/18**SAMPLE RESULTS**

Lab ID: L1828999-03
 Client ID: MW-5-072618
 Sample Location: LONG ISLAND CITY, NY

Date Collected: 07/26/18 10:15
 Date Received: 07/26/18
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 07/31/18 13:45
 Analyst: KJD

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	2.5	0.70	1
1,1-Dichloroethane	ND		ug/l	2.5	0.70	1
Chloroform	ND		ug/l	2.5	0.70	1
Carbon tetrachloride	ND		ug/l	0.50	0.13	1
1,2-Dichloropropane	ND		ug/l	1.0	0.14	1
Dibromochloromethane	ND		ug/l	0.50	0.15	1
1,1,2-Trichloroethane	ND		ug/l	1.5	0.50	1
Tetrachloroethene	0.57		ug/l	0.50	0.18	1
Chlorobenzene	ND		ug/l	2.5	0.70	1
Trichlorofluoromethane	ND		ug/l	2.5	0.70	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
1,1,1-Trichloroethane	ND		ug/l	2.5	0.70	1
Bromodichloromethane	ND		ug/l	0.50	0.19	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14	1
1,3-Dichloropropene, Total	ND		ug/l	0.50	0.14	1
1,1-Dichloropropene	ND		ug/l	2.5	0.70	1
Bromoform	ND		ug/l	2.0	0.65	1
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
Toluene	ND		ug/l	2.5	0.70	1
Ethylbenzene	ND		ug/l	2.5	0.70	1
Chloromethane	ND		ug/l	2.5	0.70	1
Bromomethane	ND		ug/l	2.5	0.70	1
Vinyl chloride	ND		ug/l	1.0	0.07	1
Chloroethane	ND		ug/l	2.5	0.70	1
1,1-Dichloroethene	ND		ug/l	0.50	0.17	1
trans-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1

Project Name: HYGRADE/STALINGRAD**Lab Number:** L1828999**Project Number:** 3612162331**Report Date:** 08/03/18**SAMPLE RESULTS**

Lab ID: L1828999-03
 Client ID: MW-5-072618
 Sample Location: LONG ISLAND CITY, NY

Date Collected: 07/26/18 10:15
 Date Received: 07/26/18
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Trichloroethene	4.6		ug/l	0.50	0.18	1
1,2-Dichlorobenzene	ND		ug/l	2.5	0.70	1
1,3-Dichlorobenzene	ND		ug/l	2.5	0.70	1
1,4-Dichlorobenzene	ND		ug/l	2.5	0.70	1
Methyl tert butyl ether	ND		ug/l	2.5	0.70	1
p/m-Xylene	ND		ug/l	2.5	0.70	1
o-Xylene	ND		ug/l	2.5	0.70	1
Xylenes, Total	ND		ug/l	2.5	0.70	1
cis-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1
1,2-Dichloroethene, Total	ND		ug/l	2.5	0.70	1
Dibromomethane	ND		ug/l	5.0	1.0	1
1,2,3-Trichloropropane	ND		ug/l	2.5	0.70	1
Acrylonitrile	ND		ug/l	5.0	1.5	1
Styrene	ND		ug/l	2.5	0.70	1
Dichlorodifluoromethane	ND		ug/l	5.0	1.0	1
Acetone	2.3	J	ug/l	5.0	1.5	1
Carbon disulfide	ND		ug/l	5.0	1.0	1
2-Butanone	ND		ug/l	5.0	1.9	1
Vinyl acetate	ND		ug/l	5.0	1.0	1
4-Methyl-2-pentanone	ND		ug/l	5.0	1.0	1
2-Hexanone	ND		ug/l	5.0	1.0	1
Bromochloromethane	ND		ug/l	2.5	0.70	1
2,2-Dichloropropane	ND		ug/l	2.5	0.70	1
1,2-Dibromoethane	ND		ug/l	2.0	0.65	1
1,3-Dichloropropane	ND		ug/l	2.5	0.70	1
1,1,1,2-Tetrachloroethane	ND		ug/l	2.5	0.70	1
Bromobenzene	ND		ug/l	2.5	0.70	1
n-Butylbenzene	ND		ug/l	2.5	0.70	1
sec-Butylbenzene	ND		ug/l	2.5	0.70	1
tert-Butylbenzene	ND		ug/l	2.5	0.70	1
o-Chlorotoluene	ND		ug/l	2.5	0.70	1
p-Chlorotoluene	ND		ug/l	2.5	0.70	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.70	1
Hexachlorobutadiene	ND		ug/l	2.5	0.70	1
Isopropylbenzene	ND		ug/l	2.5	0.70	1
p-Isopropyltoluene	ND		ug/l	2.5	0.70	1
Naphthalene	ND		ug/l	2.5	0.70	1

Project Name: HYGRADE/STALINGRAD**Lab Number:** L1828999**Project Number:** 3612162331**Report Date:** 08/03/18**SAMPLE RESULTS****Lab ID:** L1828999-03**Date Collected:** 07/26/18 10:15**Client ID:** MW-5-072618**Date Received:** 07/26/18**Sample Location:** LONG ISLAND CITY, NY**Field Prep:** Not Specified**Sample Depth:**

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
n-Propylbenzene	ND		ug/l	2.5	0.70	1
1,2,3-Trichlorobenzene	ND		ug/l	2.5	0.70	1
1,2,4-Trichlorobenzene	ND		ug/l	2.5	0.70	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.70	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.70	1
1,4-Dioxane	ND		ug/l	250	61.	1
p-Diethylbenzene	ND		ug/l	2.0	0.70	1
p-Ethyltoluene	ND		ug/l	2.0	0.70	1
1,2,4,5-Tetramethylbenzene	ND		ug/l	2.0	0.54	1
Ethyl ether	ND		ug/l	2.5	0.70	1
trans-1,4-Dichloro-2-butene	ND		ug/l	2.5	0.70	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	120		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	110		70-130
Dibromofluoromethane	109		70-130

Project Name: HYGRADE/STALINGRAD**Lab Number:** L1828999**Project Number:** 3612162331**Report Date:** 08/03/18**SAMPLE RESULTS**

Lab ID: L1828999-04 D
 Client ID: MW-6S-072618
 Sample Location: LONG ISLAND CITY, NY

Date Collected: 07/26/18 10:35
 Date Received: 07/26/18
 Field Prep: Not Specified

Sample Depth:

Matrix: Water

Analytical Method: 1,8260C

Analytical Date: 07/31/18 12:32

Analyst: KJD

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	12	3.5	5
1,1-Dichloroethane	ND		ug/l	12	3.5	5
Chloroform	ND		ug/l	12	3.5	5
Carbon tetrachloride	ND		ug/l	2.5	0.67	5
1,2-Dichloropropane	ND		ug/l	5.0	0.68	5
Dibromochloromethane	ND		ug/l	2.5	0.74	5
1,1,2-Trichloroethane	ND		ug/l	7.5	2.5	5
Tetrachloroethene	13		ug/l	2.5	0.90	5
Chlorobenzene	ND		ug/l	12	3.5	5
Trichlorofluoromethane	ND		ug/l	12	3.5	5
1,2-Dichloroethane	0.82	J	ug/l	2.5	0.66	5
1,1,1-Trichloroethane	ND		ug/l	12	3.5	5
Bromodichloromethane	ND		ug/l	2.5	0.96	5
trans-1,3-Dichloropropene	ND		ug/l	2.5	0.82	5
cis-1,3-Dichloropropene	ND		ug/l	2.5	0.72	5
1,3-Dichloropropene, Total	ND		ug/l	2.5	0.72	5
1,1-Dichloropropene	ND		ug/l	12	3.5	5
Bromoform	ND		ug/l	10	3.2	5
1,1,2,2-Tetrachloroethane	ND		ug/l	2.5	0.84	5
Benzene	ND		ug/l	2.5	0.80	5
Toluene	ND		ug/l	12	3.5	5
Ethylbenzene	ND		ug/l	12	3.5	5
Chloromethane	ND		ug/l	12	3.5	5
Bromomethane	ND		ug/l	12	3.5	5
Vinyl chloride	1.2	J	ug/l	5.0	0.36	5
Chloroethane	ND		ug/l	12	3.5	5
1,1-Dichloroethene	ND		ug/l	2.5	0.84	5
trans-1,2-Dichloroethene	ND		ug/l	12	3.5	5

Project Name: HYGRADE/STALINGRAD**Lab Number:** L1828999**Project Number:** 3612162331**Report Date:** 08/03/18**SAMPLE RESULTS**

Lab ID: L1828999-04 D
 Client ID: MW-6S-072618
 Sample Location: LONG ISLAND CITY, NY

Date Collected: 07/26/18 10:35
 Date Received: 07/26/18
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Trichloroethene	6.4		ug/l	2.5	0.88	5
1,2-Dichlorobenzene	ND		ug/l	12	3.5	5
1,3-Dichlorobenzene	ND		ug/l	12	3.5	5
1,4-Dichlorobenzene	ND		ug/l	12	3.5	5
Methyl tert butyl ether	1000		ug/l	12	3.5	5
p/m-Xylene	ND		ug/l	12	3.5	5
o-Xylene	ND		ug/l	12	3.5	5
Xylenes, Total	ND		ug/l	12	3.5	5
cis-1,2-Dichloroethene	33		ug/l	12	3.5	5
1,2-Dichloroethene, Total	33		ug/l	12	3.5	5
Dibromomethane	ND		ug/l	25	5.0	5
1,2,3-Trichloropropane	ND		ug/l	12	3.5	5
Acrylonitrile	82		ug/l	25	7.5	5
Styrene	ND		ug/l	12	3.5	5
Dichlorodifluoromethane	ND		ug/l	25	5.0	5
Acetone	9.7	J	ug/l	25	7.3	5
Carbon disulfide	ND		ug/l	25	5.0	5
2-Butanone	ND		ug/l	25	9.7	5
Vinyl acetate	ND		ug/l	25	5.0	5
4-Methyl-2-pentanone	ND		ug/l	25	5.0	5
2-Hexanone	ND		ug/l	25	5.0	5
Bromochloromethane	ND		ug/l	12	3.5	5
2,2-Dichloropropane	ND		ug/l	12	3.5	5
1,2-Dibromoethane	ND		ug/l	10	3.2	5
1,3-Dichloropropane	ND		ug/l	12	3.5	5
1,1,1,2-Tetrachloroethane	ND		ug/l	12	3.5	5
Bromobenzene	ND		ug/l	12	3.5	5
n-Butylbenzene	ND		ug/l	12	3.5	5
sec-Butylbenzene	ND		ug/l	12	3.5	5
tert-Butylbenzene	ND		ug/l	12	3.5	5
o-Chlorotoluene	ND		ug/l	12	3.5	5
p-Chlorotoluene	ND		ug/l	12	3.5	5
1,2-Dibromo-3-chloropropane	ND		ug/l	12	3.5	5
Hexachlorobutadiene	ND		ug/l	12	3.5	5
Isopropylbenzene	ND		ug/l	12	3.5	5
p-Isopropyltoluene	ND		ug/l	12	3.5	5
Naphthalene	ND		ug/l	12	3.5	5

Project Name: HYGRADE/STALINGRAD**Lab Number:** L1828999**Project Number:** 3612162331**Report Date:** 08/03/18**SAMPLE RESULTS**

Lab ID: L1828999-04 D

Date Collected: 07/26/18 10:35

Client ID: MW-6S-072618

Date Received: 07/26/18

Sample Location: LONG ISLAND CITY, NY

Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
n-Propylbenzene	ND		ug/l	12	3.5	5
1,2,3-Trichlorobenzene	ND		ug/l	12	3.5	5
1,2,4-Trichlorobenzene	ND		ug/l	12	3.5	5
1,3,5-Trimethylbenzene	ND		ug/l	12	3.5	5
1,2,4-Trimethylbenzene	ND		ug/l	12	3.5	5
1,4-Dioxane	ND		ug/l	1200	300	5
p-Diethylbenzene	ND		ug/l	10	3.5	5
p-Ethyltoluene	ND		ug/l	10	3.5	5
1,2,4,5-Tetramethylbenzene	ND		ug/l	10	2.7	5
Ethyl ether	ND		ug/l	12	3.5	5
trans-1,4-Dichloro-2-butene	ND		ug/l	12	3.5	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	117		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	112		70-130
Dibromofluoromethane	108		70-130

Project Name: HYGRADE/STALINGRAD**Lab Number:** L1828999**Project Number:** 3612162331**Report Date:** 08/03/18**SAMPLE RESULTS**

Lab ID: L1828999-05
 Client ID: MW-6D-072618
 Sample Location: LONG ISLAND CITY, NY

Date Collected: 07/26/18 09:30
 Date Received: 07/26/18
 Field Prep: Not Specified

Sample Depth:

Matrix: Water

Analytical Method: 1,8260C

Analytical Date: 07/31/18 14:22

Analyst: KJD

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	2.5	0.70	1
1,1-Dichloroethane	ND		ug/l	2.5	0.70	1
Chloroform	ND		ug/l	2.5	0.70	1
Carbon tetrachloride	ND		ug/l	0.50	0.13	1
1,2-Dichloropropane	ND		ug/l	1.0	0.14	1
Dibromochloromethane	ND		ug/l	0.50	0.15	1
1,1,2-Trichloroethane	ND		ug/l	1.5	0.50	1
Tetrachloroethene	0.49	J	ug/l	0.50	0.18	1
Chlorobenzene	ND		ug/l	2.5	0.70	1
Trichlorofluoromethane	ND		ug/l	2.5	0.70	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
1,1,1-Trichloroethane	ND		ug/l	2.5	0.70	1
Bromodichloromethane	ND		ug/l	0.50	0.19	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14	1
1,3-Dichloropropene, Total	ND		ug/l	0.50	0.14	1
1,1-Dichloropropene	ND		ug/l	2.5	0.70	1
Bromoform	ND		ug/l	2.0	0.65	1
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
Toluene	ND		ug/l	2.5	0.70	1
Ethylbenzene	ND		ug/l	2.5	0.70	1
Chloromethane	ND		ug/l	2.5	0.70	1
Bromomethane	ND		ug/l	2.5	0.70	1
Vinyl chloride	0.08	J	ug/l	1.0	0.07	1
Chloroethane	ND		ug/l	2.5	0.70	1
1,1-Dichloroethene	ND		ug/l	0.50	0.17	1
trans-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1

Project Name: HYGRADE/STALINGRAD

Lab Number: L1828999

Project Number: 3612162331

Report Date: 08/03/18

SAMPLE RESULTS

Lab ID: L1828999-05
 Client ID: MW-6D-072618
 Sample Location: LONG ISLAND CITY, NY

Date Collected: 07/26/18 09:30
 Date Received: 07/26/18
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Trichloroethene	1.1		ug/l	0.50	0.18	1
1,2-Dichlorobenzene	ND		ug/l	2.5	0.70	1
1,3-Dichlorobenzene	ND		ug/l	2.5	0.70	1
1,4-Dichlorobenzene	ND		ug/l	2.5	0.70	1
Methyl tert butyl ether	ND		ug/l	2.5	0.70	1
p/m-Xylene	ND		ug/l	2.5	0.70	1
o-Xylene	ND		ug/l	2.5	0.70	1
Xylenes, Total	ND		ug/l	2.5	0.70	1
cis-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1
1,2-Dichloroethene, Total	ND		ug/l	2.5	0.70	1
Dibromomethane	ND		ug/l	5.0	1.0	1
1,2,3-Trichloropropane	ND		ug/l	2.5	0.70	1
Acrylonitrile	ND		ug/l	5.0	1.5	1
Styrene	ND		ug/l	2.5	0.70	1
Dichlorodifluoromethane	ND		ug/l	5.0	1.0	1
Acetone	2.2	J	ug/l	5.0	1.5	1
Carbon disulfide	ND		ug/l	5.0	1.0	1
2-Butanone	ND		ug/l	5.0	1.9	1
Vinyl acetate	ND		ug/l	5.0	1.0	1
4-Methyl-2-pentanone	ND		ug/l	5.0	1.0	1
2-Hexanone	ND		ug/l	5.0	1.0	1
Bromochloromethane	ND		ug/l	2.5	0.70	1
2,2-Dichloropropane	ND		ug/l	2.5	0.70	1
1,2-Dibromoethane	ND		ug/l	2.0	0.65	1
1,3-Dichloropropane	ND		ug/l	2.5	0.70	1
1,1,1,2-Tetrachloroethane	ND		ug/l	2.5	0.70	1
Bromobenzene	ND		ug/l	2.5	0.70	1
n-Butylbenzene	ND		ug/l	2.5	0.70	1
sec-Butylbenzene	ND		ug/l	2.5	0.70	1
tert-Butylbenzene	ND		ug/l	2.5	0.70	1
o-Chlorotoluene	ND		ug/l	2.5	0.70	1
p-Chlorotoluene	ND		ug/l	2.5	0.70	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.70	1
Hexachlorobutadiene	ND		ug/l	2.5	0.70	1
Isopropylbenzene	ND		ug/l	2.5	0.70	1
p-Isopropyltoluene	ND		ug/l	2.5	0.70	1
Naphthalene	ND		ug/l	2.5	0.70	1

Project Name: HYGRADE/STALINGRAD
Project Number: 3612162331

Lab Number: L1828999
Report Date: 08/03/18

SAMPLE RESULTS

Lab ID: L1828999-05
Client ID: MW-6D-072618
Sample Location: LONG ISLAND CITY, NY

Date Collected: 07/26/18 09:30
Date Received: 07/26/18
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
n-Propylbenzene	ND		ug/l	2.5	0.70	1
1,2,3-Trichlorobenzene	ND		ug/l	2.5	0.70	1
1,2,4-Trichlorobenzene	ND		ug/l	2.5	0.70	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.70	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.70	1
1,4-Dioxane	ND		ug/l	250	61.	1
p-Diethylbenzene	ND		ug/l	2.0	0.70	1
p-Ethyltoluene	ND		ug/l	2.0	0.70	1
1,2,4,5-Tetramethylbenzene	ND		ug/l	2.0	0.54	1
Ethyl ether	ND		ug/l	2.5	0.70	1
trans-1,4-Dichloro-2-butene	ND		ug/l	2.5	0.70	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	116		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	111		70-130
Dibromofluoromethane	110		70-130

Project Name: HYGRADE/STALINGRAD**Lab Number:** L1828999**Project Number:** 3612162331**Report Date:** 08/03/18**SAMPLE RESULTS**

Lab ID: L1828999-06
 Client ID: MW-E-072618
 Sample Location: LONG ISLAND CITY, NY

Date Collected: 07/26/18 11:30
 Date Received: 07/26/18
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 07/31/18 14:59
 Analyst: KJD

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	2.5	0.70	1
1,1-Dichloroethane	ND		ug/l	2.5	0.70	1
Chloroform	ND		ug/l	2.5	0.70	1
Carbon tetrachloride	ND		ug/l	0.50	0.13	1
1,2-Dichloropropane	ND		ug/l	1.0	0.14	1
Dibromochloromethane	ND		ug/l	0.50	0.15	1
1,1,2-Trichloroethane	ND		ug/l	1.5	0.50	1
Tetrachloroethene	ND		ug/l	0.50	0.18	1
Chlorobenzene	ND		ug/l	2.5	0.70	1
Trichlorofluoromethane	ND		ug/l	2.5	0.70	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
1,1,1-Trichloroethane	ND		ug/l	2.5	0.70	1
Bromodichloromethane	ND		ug/l	0.50	0.19	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14	1
1,3-Dichloropropene, Total	ND		ug/l	0.50	0.14	1
1,1-Dichloropropene	ND		ug/l	2.5	0.70	1
Bromoform	ND		ug/l	2.0	0.65	1
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
Toluene	ND		ug/l	2.5	0.70	1
Ethylbenzene	ND		ug/l	2.5	0.70	1
Chloromethane	ND		ug/l	2.5	0.70	1
Bromomethane	ND		ug/l	2.5	0.70	1
Vinyl chloride	ND		ug/l	1.0	0.07	1
Chloroethane	ND		ug/l	2.5	0.70	1
1,1-Dichloroethene	ND		ug/l	0.50	0.17	1
trans-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1

Project Name: HYGRADE/STALINGRAD**Lab Number:** L1828999**Project Number:** 3612162331**Report Date:** 08/03/18**SAMPLE RESULTS**

Lab ID: L1828999-06
 Client ID: MW-E-072618
 Sample Location: LONG ISLAND CITY, NY

Date Collected: 07/26/18 11:30
 Date Received: 07/26/18
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Trichloroethene	ND		ug/l	0.50	0.18	1
1,2-Dichlorobenzene	ND		ug/l	2.5	0.70	1
1,3-Dichlorobenzene	ND		ug/l	2.5	0.70	1
1,4-Dichlorobenzene	ND		ug/l	2.5	0.70	1
Methyl tert butyl ether	ND		ug/l	2.5	0.70	1
p/m-Xylene	ND		ug/l	2.5	0.70	1
o-Xylene	ND		ug/l	2.5	0.70	1
Xylenes, Total	ND		ug/l	2.5	0.70	1
cis-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1
1,2-Dichloroethene, Total	ND		ug/l	2.5	0.70	1
Dibromomethane	ND		ug/l	5.0	1.0	1
1,2,3-Trichloropropane	ND		ug/l	2.5	0.70	1
Acrylonitrile	ND		ug/l	5.0	1.5	1
Styrene	ND		ug/l	2.5	0.70	1
Dichlorodifluoromethane	ND		ug/l	5.0	1.0	1
Acetone	3.0	J	ug/l	5.0	1.5	1
Carbon disulfide	ND		ug/l	5.0	1.0	1
2-Butanone	ND		ug/l	5.0	1.9	1
Vinyl acetate	ND		ug/l	5.0	1.0	1
4-Methyl-2-pentanone	ND		ug/l	5.0	1.0	1
2-Hexanone	ND		ug/l	5.0	1.0	1
Bromochloromethane	ND		ug/l	2.5	0.70	1
2,2-Dichloropropane	ND		ug/l	2.5	0.70	1
1,2-Dibromoethane	ND		ug/l	2.0	0.65	1
1,3-Dichloropropane	ND		ug/l	2.5	0.70	1
1,1,1,2-Tetrachloroethane	ND		ug/l	2.5	0.70	1
Bromobenzene	ND		ug/l	2.5	0.70	1
n-Butylbenzene	ND		ug/l	2.5	0.70	1
sec-Butylbenzene	ND		ug/l	2.5	0.70	1
tert-Butylbenzene	ND		ug/l	2.5	0.70	1
o-Chlorotoluene	ND		ug/l	2.5	0.70	1
p-Chlorotoluene	ND		ug/l	2.5	0.70	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.70	1
Hexachlorobutadiene	ND		ug/l	2.5	0.70	1
Isopropylbenzene	ND		ug/l	2.5	0.70	1
p-Isopropyltoluene	ND		ug/l	2.5	0.70	1
Naphthalene	ND		ug/l	2.5	0.70	1

Project Name: HYGRADE/STALINGRAD
Project Number: 3612162331

Lab Number: L1828999
Report Date: 08/03/18

SAMPLE RESULTS

Lab ID: L1828999-06
Client ID: MW-E-072618
Sample Location: LONG ISLAND CITY, NY

Date Collected: 07/26/18 11:30
Date Received: 07/26/18
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
n-Propylbenzene	ND		ug/l	2.5	0.70	1
1,2,3-Trichlorobenzene	ND		ug/l	2.5	0.70	1
1,2,4-Trichlorobenzene	ND		ug/l	2.5	0.70	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.70	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.70	1
1,4-Dioxane	ND		ug/l	250	61.	1
p-Diethylbenzene	ND		ug/l	2.0	0.70	1
p-Ethyltoluene	ND		ug/l	2.0	0.70	1
1,2,4,5-Tetramethylbenzene	ND		ug/l	2.0	0.54	1
Ethyl ether	ND		ug/l	2.5	0.70	1
trans-1,4-Dichloro-2-butene	ND		ug/l	2.5	0.70	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	118		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	111		70-130
Dibromofluoromethane	107		70-130

Project Name: HYGRADE/STALINGRAD**Lab Number:** L1828999**Project Number:** 3612162331**Report Date:** 08/03/18**SAMPLE RESULTS**

Lab ID: L1828999-07
 Client ID: DUP-072618
 Sample Location: LONG ISLAND CITY, NY

Date Collected: 07/26/18 13:25
 Date Received: 07/26/18
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 07/31/18 15:36
 Analyst: KJD

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	2.5	0.70	1
1,1-Dichloroethane	ND		ug/l	2.5	0.70	1
Chloroform	ND		ug/l	2.5	0.70	1
Carbon tetrachloride	ND		ug/l	0.50	0.13	1
1,2-Dichloropropane	ND		ug/l	1.0	0.14	1
Dibromochloromethane	ND		ug/l	0.50	0.15	1
1,1,2-Trichloroethane	ND		ug/l	1.5	0.50	1
Tetrachloroethene	2.4		ug/l	0.50	0.18	1
Chlorobenzene	ND		ug/l	2.5	0.70	1
Trichlorofluoromethane	ND		ug/l	2.5	0.70	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
1,1,1-Trichloroethane	ND		ug/l	2.5	0.70	1
Bromodichloromethane	ND		ug/l	0.50	0.19	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14	1
1,3-Dichloropropene, Total	ND		ug/l	0.50	0.14	1
1,1-Dichloropropene	ND		ug/l	2.5	0.70	1
Bromoform	ND		ug/l	2.0	0.65	1
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.17	1
Benzene	3.9		ug/l	0.50	0.16	1
Toluene	8.4		ug/l	2.5	0.70	1
Ethylbenzene	ND		ug/l	2.5	0.70	1
Chloromethane	ND		ug/l	2.5	0.70	1
Bromomethane	ND		ug/l	2.5	0.70	1
Vinyl chloride	3.0		ug/l	1.0	0.07	1
Chloroethane	ND		ug/l	2.5	0.70	1
1,1-Dichloroethene	ND		ug/l	0.50	0.17	1
trans-1,2-Dichloroethene	5.1		ug/l	2.5	0.70	1

Project Name: HYGRADE/STALINGRAD**Lab Number:** L1828999**Project Number:** 3612162331**Report Date:** 08/03/18**SAMPLE RESULTS**

Lab ID: L1828999-07
 Client ID: DUP-072618
 Sample Location: LONG ISLAND CITY, NY

Date Collected: 07/26/18 13:25
 Date Received: 07/26/18
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Trichloroethene	2.9		ug/l	0.50	0.18	1
1,2-Dichlorobenzene	ND		ug/l	2.5	0.70	1
1,3-Dichlorobenzene	ND		ug/l	2.5	0.70	1
1,4-Dichlorobenzene	ND		ug/l	2.5	0.70	1
Methyl tert butyl ether	1.6	J	ug/l	2.5	0.70	1
p/m-Xylene	ND		ug/l	2.5	0.70	1
o-Xylene	0.76	J	ug/l	2.5	0.70	1
Xylenes, Total	0.76	J	ug/l	2.5	0.70	1
cis-1,2-Dichloroethene	6.4		ug/l	2.5	0.70	1
1,2-Dichloroethene, Total	12		ug/l	2.5	0.70	1
Dibromomethane	ND		ug/l	5.0	1.0	1
1,2,3-Trichloropropane	ND		ug/l	2.5	0.70	1
Acrylonitrile	ND		ug/l	5.0	1.5	1
Styrene	ND		ug/l	2.5	0.70	1
Dichlorodifluoromethane	ND		ug/l	5.0	1.0	1
Acetone	2.6	J	ug/l	5.0	1.5	1
Carbon disulfide	ND		ug/l	5.0	1.0	1
2-Butanone	ND		ug/l	5.0	1.9	1
Vinyl acetate	ND		ug/l	5.0	1.0	1
4-Methyl-2-pentanone	ND		ug/l	5.0	1.0	1
2-Hexanone	ND		ug/l	5.0	1.0	1
Bromochloromethane	ND		ug/l	2.5	0.70	1
2,2-Dichloropropane	ND		ug/l	2.5	0.70	1
1,2-Dibromoethane	ND		ug/l	2.0	0.65	1
1,3-Dichloropropane	ND		ug/l	2.5	0.70	1
1,1,1,2-Tetrachloroethane	ND		ug/l	2.5	0.70	1
Bromobenzene	ND		ug/l	2.5	0.70	1
n-Butylbenzene	ND		ug/l	2.5	0.70	1
sec-Butylbenzene	ND		ug/l	2.5	0.70	1
tert-Butylbenzene	ND		ug/l	2.5	0.70	1
o-Chlorotoluene	ND		ug/l	2.5	0.70	1
p-Chlorotoluene	ND		ug/l	2.5	0.70	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.70	1
Hexachlorobutadiene	ND		ug/l	2.5	0.70	1
Isopropylbenzene	ND		ug/l	2.5	0.70	1
p-Isopropyltoluene	ND		ug/l	2.5	0.70	1
Naphthalene	ND		ug/l	2.5	0.70	1

Project Name: HYGRADE/STALINGRAD
Project Number: 3612162331

Lab Number: L1828999
Report Date: 08/03/18

SAMPLE RESULTS

Lab ID: L1828999-07
Client ID: DUP-072618
Sample Location: LONG ISLAND CITY, NY

Date Collected: 07/26/18 13:25
Date Received: 07/26/18
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
n-Propylbenzene	ND		ug/l	2.5	0.70	1
1,2,3-Trichlorobenzene	ND		ug/l	2.5	0.70	1
1,2,4-Trichlorobenzene	ND		ug/l	2.5	0.70	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.70	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.70	1
1,4-Dioxane	ND		ug/l	250	61.	1
p-Diethylbenzene	ND		ug/l	2.0	0.70	1
p-Ethyltoluene	ND		ug/l	2.0	0.70	1
1,2,4,5-Tetramethylbenzene	ND		ug/l	2.0	0.54	1
Ethyl ether	ND		ug/l	2.5	0.70	1
trans-1,4-Dichloro-2-butene	ND		ug/l	2.5	0.70	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	118		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	110		70-130
Dibromofluoromethane	110		70-130

Project Name: HYGRADE/STALINGRAD**Lab Number:** L1828999**Project Number:** 3612162331**Report Date:** 08/03/18**SAMPLE RESULTS**

Lab ID: L1828999-08
 Client ID: TB-072418
 Sample Location: LONG ISLAND CITY, NY

Date Collected: 07/24/18 00:00
 Date Received: 07/26/18
 Field Prep: Not Specified

Sample Depth:

Matrix: Water

Analytical Method: 1,8260C

Analytical Date: 07/31/18 16:12

Analyst: KJD

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	2.5	0.70	1
1,1-Dichloroethane	ND		ug/l	2.5	0.70	1
Chloroform	ND		ug/l	2.5	0.70	1
Carbon tetrachloride	ND		ug/l	0.50	0.13	1
1,2-Dichloropropane	ND		ug/l	1.0	0.14	1
Dibromochloromethane	ND		ug/l	0.50	0.15	1
1,1,2-Trichloroethane	ND		ug/l	1.5	0.50	1
Tetrachloroethene	ND		ug/l	0.50	0.18	1
Chlorobenzene	ND		ug/l	2.5	0.70	1
Trichlorofluoromethane	ND		ug/l	2.5	0.70	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
1,1,1-Trichloroethane	ND		ug/l	2.5	0.70	1
Bromodichloromethane	ND		ug/l	0.50	0.19	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14	1
1,3-Dichloropropene, Total	ND		ug/l	0.50	0.14	1
1,1-Dichloropropene	ND		ug/l	2.5	0.70	1
Bromoform	ND		ug/l	2.0	0.65	1
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
Toluene	ND		ug/l	2.5	0.70	1
Ethylbenzene	ND		ug/l	2.5	0.70	1
Chloromethane	ND		ug/l	2.5	0.70	1
Bromomethane	ND		ug/l	2.5	0.70	1
Vinyl chloride	ND		ug/l	1.0	0.07	1
Chloroethane	ND		ug/l	2.5	0.70	1
1,1-Dichloroethene	ND		ug/l	0.50	0.17	1
trans-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1

Project Name: HYGRADE/STALINGRAD**Lab Number:** L1828999**Project Number:** 3612162331**Report Date:** 08/03/18**SAMPLE RESULTS****Lab ID:** L1828999-08**Date Collected:** 07/24/18 00:00**Client ID:** TB-072418**Date Received:** 07/26/18**Sample Location:** LONG ISLAND CITY, NY**Field Prep:** Not Specified**Sample Depth:**

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Trichloroethene	ND		ug/l	0.50	0.18	1
1,2-Dichlorobenzene	ND		ug/l	2.5	0.70	1
1,3-Dichlorobenzene	ND		ug/l	2.5	0.70	1
1,4-Dichlorobenzene	ND		ug/l	2.5	0.70	1
Methyl tert butyl ether	ND		ug/l	2.5	0.70	1
p/m-Xylene	ND		ug/l	2.5	0.70	1
o-Xylene	ND		ug/l	2.5	0.70	1
Xylenes, Total	ND		ug/l	2.5	0.70	1
cis-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1
1,2-Dichloroethene, Total	ND		ug/l	2.5	0.70	1
Dibromomethane	ND		ug/l	5.0	1.0	1
1,2,3-Trichloropropane	ND		ug/l	2.5	0.70	1
Acrylonitrile	ND		ug/l	5.0	1.5	1
Styrene	ND		ug/l	2.5	0.70	1
Dichlorodifluoromethane	ND		ug/l	5.0	1.0	1
Acetone	2.5	J	ug/l	5.0	1.5	1
Carbon disulfide	ND		ug/l	5.0	1.0	1
2-Butanone	ND		ug/l	5.0	1.9	1
Vinyl acetate	ND		ug/l	5.0	1.0	1
4-Methyl-2-pentanone	ND		ug/l	5.0	1.0	1
2-Hexanone	ND		ug/l	5.0	1.0	1
Bromochloromethane	ND		ug/l	2.5	0.70	1
2,2-Dichloropropane	ND		ug/l	2.5	0.70	1
1,2-Dibromoethane	ND		ug/l	2.0	0.65	1
1,3-Dichloropropane	ND		ug/l	2.5	0.70	1
1,1,1,2-Tetrachloroethane	ND		ug/l	2.5	0.70	1
Bromobenzene	ND		ug/l	2.5	0.70	1
n-Butylbenzene	ND		ug/l	2.5	0.70	1
sec-Butylbenzene	ND		ug/l	2.5	0.70	1
tert-Butylbenzene	ND		ug/l	2.5	0.70	1
o-Chlorotoluene	ND		ug/l	2.5	0.70	1
p-Chlorotoluene	ND		ug/l	2.5	0.70	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.70	1
Hexachlorobutadiene	ND		ug/l	2.5	0.70	1
Isopropylbenzene	ND		ug/l	2.5	0.70	1
p-Isopropyltoluene	ND		ug/l	2.5	0.70	1
Naphthalene	ND		ug/l	2.5	0.70	1

Project Name: HYGRADE/STALINGRAD
Project Number: 3612162331

Lab Number: L1828999
Report Date: 08/03/18

SAMPLE RESULTS

Lab ID: L1828999-08
Client ID: TB-072418
Sample Location: LONG ISLAND CITY, NY

Date Collected: 07/24/18 00:00
Date Received: 07/26/18
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
n-Propylbenzene	ND		ug/l	2.5	0.70	1
1,2,3-Trichlorobenzene	ND		ug/l	2.5	0.70	1
1,2,4-Trichlorobenzene	ND		ug/l	2.5	0.70	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.70	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.70	1
1,4-Dioxane	ND		ug/l	250	61.	1
p-Diethylbenzene	ND		ug/l	2.0	0.70	1
p-Ethyltoluene	ND		ug/l	2.0	0.70	1
1,2,4,5-Tetramethylbenzene	ND		ug/l	2.0	0.54	1
Ethyl ether	ND		ug/l	2.5	0.70	1
trans-1,4-Dichloro-2-butene	ND		ug/l	2.5	0.70	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	114		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	111		70-130
Dibromofluoromethane	108		70-130

Project Name: HYGRADE/STALINGRAD**Lab Number:** L1828999**Project Number:** 3612162331**Report Date:** 08/03/18**SAMPLE RESULTS**

Lab ID: L1828999-09
 Client ID: FB-072618
 Sample Location: LONG ISLAND CITY, NY

Date Collected: 07/26/18 13:05
 Date Received: 07/26/18
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 07/31/18 16:49
 Analyst: KJD

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	2.5	0.70	1
1,1-Dichloroethane	ND		ug/l	2.5	0.70	1
Chloroform	ND		ug/l	2.5	0.70	1
Carbon tetrachloride	ND		ug/l	0.50	0.13	1
1,2-Dichloropropane	ND		ug/l	1.0	0.14	1
Dibromochloromethane	ND		ug/l	0.50	0.15	1
1,1,2-Trichloroethane	ND		ug/l	1.5	0.50	1
Tetrachloroethene	ND		ug/l	0.50	0.18	1
Chlorobenzene	ND		ug/l	2.5	0.70	1
Trichlorofluoromethane	ND		ug/l	2.5	0.70	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
1,1,1-Trichloroethane	ND		ug/l	2.5	0.70	1
Bromodichloromethane	ND		ug/l	0.50	0.19	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14	1
1,3-Dichloropropene, Total	ND		ug/l	0.50	0.14	1
1,1-Dichloropropene	ND		ug/l	2.5	0.70	1
Bromoform	ND		ug/l	2.0	0.65	1
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
Toluene	ND		ug/l	2.5	0.70	1
Ethylbenzene	ND		ug/l	2.5	0.70	1
Chloromethane	ND		ug/l	2.5	0.70	1
Bromomethane	ND		ug/l	2.5	0.70	1
Vinyl chloride	ND		ug/l	1.0	0.07	1
Chloroethane	ND		ug/l	2.5	0.70	1
1,1-Dichloroethene	ND		ug/l	0.50	0.17	1
trans-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1

Project Name: HYGRADE/STALINGRAD**Lab Number:** L1828999**Project Number:** 3612162331**Report Date:** 08/03/18**SAMPLE RESULTS****Lab ID:** L1828999-09**Date Collected:** 07/26/18 13:05**Client ID:** FB-072618**Date Received:** 07/26/18**Sample Location:** LONG ISLAND CITY, NY**Field Prep:** Not Specified**Sample Depth:**

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Trichloroethene	ND		ug/l	0.50	0.18	1
1,2-Dichlorobenzene	ND		ug/l	2.5	0.70	1
1,3-Dichlorobenzene	ND		ug/l	2.5	0.70	1
1,4-Dichlorobenzene	ND		ug/l	2.5	0.70	1
Methyl tert butyl ether	ND		ug/l	2.5	0.70	1
p/m-Xylene	ND		ug/l	2.5	0.70	1
o-Xylene	ND		ug/l	2.5	0.70	1
Xylenes, Total	ND		ug/l	2.5	0.70	1
cis-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1
1,2-Dichloroethene, Total	ND		ug/l	2.5	0.70	1
Dibromomethane	ND		ug/l	5.0	1.0	1
1,2,3-Trichloropropane	ND		ug/l	2.5	0.70	1
Acrylonitrile	ND		ug/l	5.0	1.5	1
Styrene	ND		ug/l	2.5	0.70	1
Dichlorodifluoromethane	ND		ug/l	5.0	1.0	1
Acetone	2.4	J	ug/l	5.0	1.5	1
Carbon disulfide	ND		ug/l	5.0	1.0	1
2-Butanone	ND		ug/l	5.0	1.9	1
Vinyl acetate	ND		ug/l	5.0	1.0	1
4-Methyl-2-pentanone	ND		ug/l	5.0	1.0	1
2-Hexanone	ND		ug/l	5.0	1.0	1
Bromochloromethane	ND		ug/l	2.5	0.70	1
2,2-Dichloropropane	ND		ug/l	2.5	0.70	1
1,2-Dibromoethane	ND		ug/l	2.0	0.65	1
1,3-Dichloropropane	ND		ug/l	2.5	0.70	1
1,1,1,2-Tetrachloroethane	ND		ug/l	2.5	0.70	1
Bromobenzene	ND		ug/l	2.5	0.70	1
n-Butylbenzene	ND		ug/l	2.5	0.70	1
sec-Butylbenzene	ND		ug/l	2.5	0.70	1
tert-Butylbenzene	ND		ug/l	2.5	0.70	1
o-Chlorotoluene	ND		ug/l	2.5	0.70	1
p-Chlorotoluene	ND		ug/l	2.5	0.70	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.70	1
Hexachlorobutadiene	ND		ug/l	2.5	0.70	1
Isopropylbenzene	ND		ug/l	2.5	0.70	1
p-Isopropyltoluene	ND		ug/l	2.5	0.70	1
Naphthalene	ND		ug/l	2.5	0.70	1

Project Name: HYGRADE/STALINGRAD**Lab Number:** L1828999**Project Number:** 3612162331**Report Date:** 08/03/18**SAMPLE RESULTS****Lab ID:** L1828999-09**Date Collected:** 07/26/18 13:05**Client ID:** FB-072618**Date Received:** 07/26/18**Sample Location:** LONG ISLAND CITY, NY**Field Prep:** Not Specified**Sample Depth:**

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
n-Propylbenzene	ND		ug/l	2.5	0.70	1
1,2,3-Trichlorobenzene	ND		ug/l	2.5	0.70	1
1,2,4-Trichlorobenzene	ND		ug/l	2.5	0.70	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.70	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.70	1
1,4-Dioxane	ND		ug/l	250	61.	1
p-Diethylbenzene	ND		ug/l	2.0	0.70	1
p-Ethyltoluene	ND		ug/l	2.0	0.70	1
1,2,4,5-Tetramethylbenzene	ND		ug/l	2.0	0.54	1
Ethyl ether	ND		ug/l	2.5	0.70	1
trans-1,4-Dichloro-2-butene	ND		ug/l	2.5	0.70	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	116		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	110		70-130
Dibromofluoromethane	108		70-130

Project Name: HYGRADE/STALINGRAD

Lab Number: L1828999

Project Number: 3612162331

Report Date: 08/03/18

Method Blank Analysis Batch Quality Control

Analytical Method: 1,8260C
 Analytical Date: 07/31/18 10:07
 Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01-09 Batch: WG1141394-5					
Methylene chloride	ND		ug/l	2.5	0.70
1,1-Dichloroethane	ND		ug/l	2.5	0.70
Chloroform	ND		ug/l	2.5	0.70
Carbon tetrachloride	ND		ug/l	0.50	0.13
1,2-Dichloropropane	ND		ug/l	1.0	0.14
Dibromochloromethane	ND		ug/l	0.50	0.15
1,1,2-Trichloroethane	ND		ug/l	1.5	0.50
Tetrachloroethene	ND		ug/l	0.50	0.18
Chlorobenzene	ND		ug/l	2.5	0.70
Trichlorofluoromethane	ND		ug/l	2.5	0.70
1,2-Dichloroethane	ND		ug/l	0.50	0.13
1,1,1-Trichloroethane	ND		ug/l	2.5	0.70
Bromodichloromethane	ND		ug/l	0.50	0.19
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14
1,3-Dichloropropene, Total	ND		ug/l	0.50	0.14
1,1-Dichloropropene	ND		ug/l	2.5	0.70
Bromoform	ND		ug/l	2.0	0.65
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.17
Benzene	ND		ug/l	0.50	0.16
Toluene	ND		ug/l	2.5	0.70
Ethylbenzene	ND		ug/l	2.5	0.70
Chloromethane	ND		ug/l	2.5	0.70
Bromomethane	ND		ug/l	2.5	0.70
Vinyl chloride	ND		ug/l	1.0	0.07
Chloroethane	ND		ug/l	2.5	0.70
1,1-Dichloroethene	ND		ug/l	0.50	0.17
trans-1,2-Dichloroethene	ND		ug/l	2.5	0.70
Trichloroethene	ND		ug/l	0.50	0.18

Project Name: HYGRADE/STALINGRAD

Lab Number: L1828999

Project Number: 3612162331

Report Date: 08/03/18

Method Blank Analysis Batch Quality Control

Analytical Method: 1,8260C
 Analytical Date: 07/31/18 10:07
 Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01-09 Batch: WG1141394-5					
1,2-Dichlorobenzene	ND		ug/l	2.5	0.70
1,3-Dichlorobenzene	ND		ug/l	2.5	0.70
1,4-Dichlorobenzene	ND		ug/l	2.5	0.70
Methyl tert butyl ether	ND		ug/l	2.5	0.70
p/m-Xylene	ND		ug/l	2.5	0.70
o-Xylene	ND		ug/l	2.5	0.70
Xylenes, Total	ND		ug/l	2.5	0.70
cis-1,2-Dichloroethene	ND		ug/l	2.5	0.70
1,2-Dichloroethene, Total	ND		ug/l	2.5	0.70
Dibromomethane	ND		ug/l	5.0	1.0
1,2,3-Trichloropropane	ND		ug/l	2.5	0.70
Acrylonitrile	ND		ug/l	5.0	1.5
Styrene	ND		ug/l	2.5	0.70
Dichlorodifluoromethane	ND		ug/l	5.0	1.0
Acetone	ND		ug/l	5.0	1.5
Carbon disulfide	ND		ug/l	5.0	1.0
2-Butanone	ND		ug/l	5.0	1.9
Vinyl acetate	ND		ug/l	5.0	1.0
4-Methyl-2-pentanone	ND		ug/l	5.0	1.0
2-Hexanone	ND		ug/l	5.0	1.0
Bromochloromethane	ND		ug/l	2.5	0.70
2,2-Dichloropropane	ND		ug/l	2.5	0.70
1,2-Dibromoethane	ND		ug/l	2.0	0.65
1,3-Dichloropropane	ND		ug/l	2.5	0.70
1,1,1,2-Tetrachloroethane	ND		ug/l	2.5	0.70
Bromobenzene	ND		ug/l	2.5	0.70
n-Butylbenzene	ND		ug/l	2.5	0.70
sec-Butylbenzene	ND		ug/l	2.5	0.70
tert-Butylbenzene	ND		ug/l	2.5	0.70

Project Name: HYGRADE/STALINGRAD

Lab Number: L1828999

Project Number: 3612162331

Report Date: 08/03/18

Method Blank Analysis Batch Quality Control

Analytical Method: 1,8260C
 Analytical Date: 07/31/18 10:07
 Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01-09 Batch: WG1141394-5					
o-Chlorotoluene	ND		ug/l	2.5	0.70
p-Chlorotoluene	ND		ug/l	2.5	0.70
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.70
Hexachlorobutadiene	ND		ug/l	2.5	0.70
Isopropylbenzene	ND		ug/l	2.5	0.70
p-Isopropyltoluene	ND		ug/l	2.5	0.70
Naphthalene	ND		ug/l	2.5	0.70
n-Propylbenzene	ND		ug/l	2.5	0.70
1,2,3-Trichlorobenzene	ND		ug/l	2.5	0.70
1,2,4-Trichlorobenzene	ND		ug/l	2.5	0.70
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.70
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.70
1,4-Dioxane	ND		ug/l	250	61.
p-Diethylbenzene	ND		ug/l	2.0	0.70
p-Ethyltoluene	ND		ug/l	2.0	0.70
1,2,4,5-Tetramethylbenzene	ND		ug/l	2.0	0.54
Ethyl ether	ND		ug/l	2.5	0.70
trans-1,4-Dichloro-2-butene	ND		ug/l	2.5	0.70

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	114		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	112		70-130
Dibromofluoromethane	107		70-130

Lab Control Sample Analysis Batch Quality Control

Project Name: HYGRADE/STALINGRAD

Lab Number: L1828999

Project Number: 3612162331

Report Date: 08/03/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-09 Batch: WG1141394-3 WG1141394-4								
Methylene chloride	98		100		70-130	2		20
1,1-Dichloroethane	85		88		70-130	3		20
Chloroform	94		95		70-130	1		20
Carbon tetrachloride	83		88		63-132	6		20
1,2-Dichloropropane	85		90		70-130	6		20
Dibromochloromethane	88		89		63-130	1		20
1,1,2-Trichloroethane	98		99		70-130	1		20
Tetrachloroethene	75		78		70-130	4		20
Chlorobenzene	87		90		75-130	3		20
Trichlorofluoromethane	78		82		62-150	5		20
1,2-Dichloroethane	99		99		70-130	0		20
1,1,1-Trichloroethane	86		91		67-130	6		20
Bromodichloromethane	97		99		67-130	2		20
trans-1,3-Dichloropropene	94		94		70-130	0		20
cis-1,3-Dichloropropene	95		96		70-130	1		20
1,1-Dichloropropene	84		87		70-130	4		20
Bromoform	92		91		54-136	1		20
1,1,2,2-Tetrachloroethane	110		110		67-130	0		20
Benzene	90		93		70-130	3		20
Toluene	85		88		70-130	3		20
Ethylbenzene	92		95		70-130	3		20
Chloromethane	88		87		64-130	1		20
Bromomethane	100		110		39-139	10		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: HYGRADE/STALINGRAD

Lab Number: L1828999

Project Number: 3612162331

Report Date: 08/03/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-09 Batch: WG1141394-3 WG1141394-4								
Vinyl chloride	74		75		55-140	1		20
Chloroethane	87		88		55-138	1		20
1,1-Dichloroethene	79		82		61-145	4		20
trans-1,2-Dichloroethene	89		90		70-130	1		20
Trichloroethene	91		92		70-130	1		20
1,2-Dichlorobenzene	91		93		70-130	2		20
1,3-Dichlorobenzene	88		93		70-130	6		20
1,4-Dichlorobenzene	88		92		70-130	4		20
Methyl tert butyl ether	100		100		63-130	0		20
p/m-Xylene	90		95		70-130	5		20
o-Xylene	95		100		70-130	5		20
cis-1,2-Dichloroethene	92		92		70-130	0		20
Dibromomethane	99		100		70-130	1		20
1,2,3-Trichloropropane	100		100		64-130	0		20
Acrylonitrile	110		110		70-130	0		20
Styrene	100		100		70-130	0		20
Dichlorodifluoromethane	76		77		36-147	1		20
Acetone	120		120		58-148	0		20
Carbon disulfide	94		94		51-130	0		20
2-Butanone	130		130		63-138	0		20
Vinyl acetate	110		110		70-130	0		20
4-Methyl-2-pentanone	100		95		59-130	5		20
2-Hexanone	110		110		57-130	0		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: HYGRADE/STALINGRAD

Project Number: 3612162331

Lab Number: L1828999

Report Date: 08/03/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-09 Batch: WG1141394-3 WG1141394-4								
Bromochloromethane	88		91		70-130	3		20
2,2-Dichloropropane	88		92		63-133	4		20
1,2-Dibromoethane	98		96		70-130	2		20
1,3-Dichloropropane	96		97		70-130	1		20
1,1,1,2-Tetrachloroethane	86		89		64-130	3		20
Bromobenzene	82		85		70-130	4		20
n-Butylbenzene	97		100		53-136	3		20
sec-Butylbenzene	92		97		70-130	5		20
tert-Butylbenzene	88		93		70-130	6		20
o-Chlorotoluene	94		99		70-130	5		20
p-Chlorotoluene	98		100		70-130	2		20
1,2-Dibromo-3-chloropropane	89		98		41-144	10		20
Hexachlorobutadiene	110		120		63-130	9		20
Isopropylbenzene	93		97		70-130	4		20
p-Isopropyltoluene	90		97		70-130	7		20
Naphthalene	150	Q	160	Q	70-130	6		20
n-Propylbenzene	94		100		69-130	6		20
1,2,3-Trichlorobenzene	220	Q	240	Q	70-130	9		20
1,2,4-Trichlorobenzene	110		120		70-130	9		20
1,3,5-Trimethylbenzene	95		100		64-130	5		20
1,2,4-Trimethylbenzene	100		100		70-130	0		20
1,4-Dioxane	148		160		56-162	8		20
p-Diethylbenzene	93		100		70-130	7		20

Lab Control Sample Analysis Batch Quality Control

Project Name: HYGRADE/STALINGRAD

Lab Number: L1828999

Project Number: 3612162331

Report Date: 08/03/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-09 Batch: WG1141394-3 WG1141394-4								
p-Ethyltoluene	96		100		70-130	4		20
1,2,4,5-Tetramethylbenzene	96		100		70-130	4		20
Ethyl ether	95		99		59-134	4		20
trans-1,4-Dichloro-2-butene	100		96		70-130	4		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	115		111		70-130
Toluene-d8	101		102		70-130
4-Bromofluorobenzene	114		114		70-130
Dibromofluoromethane	107		106		70-130

METALS

Project Name: HYGRADE/STALINGRAD**Lab Number:** L1828999**Project Number:** 3612162331**Report Date:** 08/03/18**SAMPLE RESULTS**

Lab ID: L1828999-01

Date Collected: 07/26/18 13:50

Client ID: BMW-3-072618

Date Received: 07/26/18

Sample Location: LONG ISLAND CITY, NY

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Aluminum, Total	0.0280		mg/l	0.0100	0.00327	1	07/31/18 14:20	08/01/18 15:35	EPA 3005A	1,6020B	AM
Antimony, Total	0.00083	J	mg/l	0.00400	0.00042	1	07/31/18 14:20	08/01/18 15:35	EPA 3005A	1,6020B	AM
Arsenic, Total	0.01819		mg/l	0.00050	0.00016	1	07/31/18 14:20	08/01/18 15:35	EPA 3005A	1,6020B	AM
Barium, Total	0.2706		mg/l	0.00050	0.00017	1	07/31/18 14:20	08/01/18 15:35	EPA 3005A	1,6020B	AM
Beryllium, Total	ND		mg/l	0.00050	0.00010	1	07/31/18 14:20	08/01/18 15:35	EPA 3005A	1,6020B	AM
Cadmium, Total	ND		mg/l	0.00020	0.00005	1	07/31/18 14:20	08/01/18 15:35	EPA 3005A	1,6020B	AM
Calcium, Total	257.		mg/l	0.100	0.0394	1	07/31/18 14:20	08/01/18 15:35	EPA 3005A	1,6020B	AM
Chromium, Total	0.00270		mg/l	0.00100	0.00017	1	07/31/18 14:20	08/01/18 15:35	EPA 3005A	1,6020B	AM
Cobalt, Total	0.01717		mg/l	0.00050	0.00016	1	07/31/18 14:20	08/01/18 15:35	EPA 3005A	1,6020B	AM
Copper, Total	0.00117		mg/l	0.00100	0.00038	1	07/31/18 14:20	08/01/18 15:35	EPA 3005A	1,6020B	AM
Iron, Total	18.5		mg/l	0.0500	0.0191	1	07/31/18 14:20	08/01/18 15:35	EPA 3005A	1,6020B	AM
Lead, Total	ND		mg/l	0.00100	0.00034	1	07/31/18 14:20	08/01/18 15:35	EPA 3005A	1,6020B	AM
Magnesium, Total	46.6		mg/l	0.0700	0.0242	1	07/31/18 14:20	08/01/18 15:35	EPA 3005A	1,6020B	AM
Manganese, Total	3.724		mg/l	0.00100	0.00044	1	07/31/18 14:20	08/01/18 15:35	EPA 3005A	1,6020B	AM
Mercury, Total	ND		mg/l	0.00020	0.00006	1	07/30/18 16:50	07/31/18 11:08	EPA 7470A	1,7470A	MG
Nickel, Total	0.4654		mg/l	0.00200	0.00055	1	07/31/18 14:20	08/01/18 15:35	EPA 3005A	1,6020B	AM
Potassium, Total	35.1		mg/l	0.100	0.0309	1	07/31/18 14:20	08/01/18 15:35	EPA 3005A	1,6020B	AM
Selenium, Total	ND		mg/l	0.00500	0.00173	1	07/31/18 14:20	08/01/18 15:35	EPA 3005A	1,6020B	AM
Silver, Total	ND		mg/l	0.00040	0.00016	1	07/31/18 14:20	08/01/18 15:35	EPA 3005A	1,6020B	AM
Sodium, Total	226.		mg/l	0.100	0.0293	1	07/31/18 14:20	08/01/18 15:35	EPA 3005A	1,6020B	AM
Thallium, Total	ND		mg/l	0.00050	0.00014	1	07/31/18 14:20	08/01/18 15:35	EPA 3005A	1,6020B	AM
Vanadium, Total	0.00174	J	mg/l	0.00500	0.00157	1	07/31/18 14:20	08/01/18 15:35	EPA 3005A	1,6020B	AM
Zinc, Total	ND		mg/l	0.01000	0.00341	1	07/31/18 14:20	08/01/18 15:35	EPA 3005A	1,6020B	AM

Dissolved Metals - Mansfield Lab

Aluminum, Dissolved	ND		mg/l	0.0100	0.00327	1	08/01/18 11:00	08/02/18 11:38	EPA 3005A	1,6020B	AM
Antimony, Dissolved	0.00224	J	mg/l	0.00400	0.00042	1	08/01/18 11:00	08/02/18 11:38	EPA 3005A	1,6020B	AM
Arsenic, Dissolved	0.00714		mg/l	0.00050	0.00016	1	08/01/18 11:00	08/02/18 11:38	EPA 3005A	1,6020B	AM
Barium, Dissolved	0.2019		mg/l	0.00050	0.00017	1	08/01/18 11:00	08/02/18 11:38	EPA 3005A	1,6020B	AM
Beryllium, Dissolved	ND		mg/l	0.00050	0.00010	1	08/01/18 11:00	08/02/18 11:38	EPA 3005A	1,6020B	AM



Project Name: HYGRADE/STALINGRAD**Lab Number:** L1828999**Project Number:** 3612162331**Report Date:** 08/03/18**SAMPLE RESULTS**

Lab ID: L1828999-01

Date Collected: 07/26/18 13:50

Client ID: BMW-3-072618

Date Received: 07/26/18

Sample Location: LONG ISLAND CITY, NY

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Cadmium, Dissolved	ND		mg/l	0.00020	0.00005	1	08/01/18 11:00	08/02/18 11:38	EPA 3005A	1,6020B	AM
Calcium, Dissolved	241.		mg/l	0.100	0.0394	1	08/01/18 11:00	08/02/18 11:38	EPA 3005A	1,6020B	AM
Chromium, Dissolved	0.00138		mg/l	0.00100	0.00017	1	08/01/18 11:00	08/02/18 11:38	EPA 3005A	1,6020B	AM
Cobalt, Dissolved	0.01629		mg/l	0.00050	0.00016	1	08/01/18 11:00	08/02/18 11:38	EPA 3005A	1,6020B	AM
Copper, Dissolved	ND		mg/l	0.00100	0.00038	1	08/01/18 11:00	08/02/18 11:38	EPA 3005A	1,6020B	AM
Iron, Dissolved	0.274		mg/l	0.0500	0.0191	1	08/01/18 11:00	08/02/18 11:38	EPA 3005A	1,6020B	AM
Lead, Dissolved	ND		mg/l	0.00100	0.00034	1	08/01/18 11:00	08/02/18 11:38	EPA 3005A	1,6020B	AM
Magnesium, Dissolved	48.0		mg/l	0.0700	0.0242	1	08/01/18 11:00	08/02/18 11:38	EPA 3005A	1,6020B	AM
Manganese, Dissolved	3.668		mg/l	0.00100	0.00044	1	08/01/18 11:00	08/02/18 11:38	EPA 3005A	1,6020B	AM
Mercury, Dissolved	ND		mg/l	0.00020	0.00006	1	07/30/18 16:50	07/31/18 11:33	EPA 7470A	1,7470A	MG
Nickel, Dissolved	0.4899		mg/l	0.00200	0.00055	1	08/01/18 11:00	08/02/18 11:38	EPA 3005A	1,6020B	AM
Potassium, Dissolved	33.4		mg/l	0.100	0.0309	1	08/01/18 11:00	08/02/18 11:38	EPA 3005A	1,6020B	AM
Selenium, Dissolved	ND		mg/l	0.00500	0.00173	1	08/01/18 11:00	08/02/18 11:38	EPA 3005A	1,6020B	AM
Silver, Dissolved	ND		mg/l	0.00040	0.00016	1	08/01/18 11:00	08/02/18 11:38	EPA 3005A	1,6020B	AM
Sodium, Dissolved	266.		mg/l	0.100	0.0293	1	08/01/18 11:00	08/02/18 11:38	EPA 3005A	1,6020B	AM
Thallium, Dissolved	ND		mg/l	0.00050	0.00014	1	08/01/18 11:00	08/02/18 11:38	EPA 3005A	1,6020B	AM
Vanadium, Dissolved	ND		mg/l	0.00500	0.00157	1	08/01/18 11:00	08/02/18 11:38	EPA 3005A	1,6020B	AM
Zinc, Dissolved	ND		mg/l	0.01000	0.00341	1	08/01/18 11:00	08/02/18 11:38	EPA 3005A	1,6020B	AM



Project Name: HYGRADE/STALINGRAD**Lab Number:** L1828999**Project Number:** 3612162331**Report Date:** 08/03/18**SAMPLE RESULTS**

Lab ID: L1828999-02

Date Collected: 07/26/18 13:25

Client ID: BMW-4-072618

Date Received: 07/26/18

Sample Location: LONG ISLAND CITY, NY

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Aluminum, Total	0.0353		mg/l	0.0100	0.00327	1	07/31/18 14:20	08/01/18 17:06	EPA 3005A	1,6020B	AM
Antimony, Total	ND		mg/l	0.00400	0.00042	1	07/31/18 14:20	08/01/18 17:06	EPA 3005A	1,6020B	AM
Arsenic, Total	0.04666		mg/l	0.00050	0.00016	1	07/31/18 14:20	08/01/18 17:06	EPA 3005A	1,6020B	AM
Barium, Total	0.2649		mg/l	0.00050	0.00017	1	07/31/18 14:20	08/01/18 17:06	EPA 3005A	1,6020B	AM
Beryllium, Total	ND		mg/l	0.00050	0.00010	1	07/31/18 14:20	08/01/18 17:06	EPA 3005A	1,6020B	AM
Cadmium, Total	ND		mg/l	0.00020	0.00005	1	07/31/18 14:20	08/01/18 17:06	EPA 3005A	1,6020B	AM
Calcium, Total	221.		mg/l	0.100	0.0394	1	07/31/18 14:20	08/01/18 17:06	EPA 3005A	1,6020B	AM
Chromium, Total	0.00188		mg/l	0.00100	0.00017	1	07/31/18 14:20	08/01/18 17:06	EPA 3005A	1,6020B	AM
Cobalt, Total	0.01518		mg/l	0.00050	0.00016	1	07/31/18 14:20	08/01/18 17:06	EPA 3005A	1,6020B	AM
Copper, Total	ND		mg/l	0.00100	0.00038	1	07/31/18 14:20	08/01/18 17:06	EPA 3005A	1,6020B	AM
Iron, Total	45.7		mg/l	0.0500	0.0191	1	07/31/18 14:20	08/01/18 17:06	EPA 3005A	1,6020B	AM
Lead, Total	ND		mg/l	0.00100	0.00034	1	07/31/18 14:20	08/01/18 17:06	EPA 3005A	1,6020B	AM
Magnesium, Total	34.0		mg/l	0.0700	0.0242	1	07/31/18 14:20	08/01/18 17:06	EPA 3005A	1,6020B	AM
Manganese, Total	3.342		mg/l	0.00100	0.00044	1	07/31/18 14:20	08/01/18 17:06	EPA 3005A	1,6020B	AM
Mercury, Total	ND		mg/l	0.00020	0.00006	1	07/30/18 16:50	07/31/18 11:14	EPA 7470A	1,7470A	MG
Nickel, Total	0.09660		mg/l	0.00200	0.00055	1	07/31/18 14:20	08/01/18 17:06	EPA 3005A	1,6020B	AM
Potassium, Total	57.3		mg/l	0.100	0.0309	1	07/31/18 14:20	08/01/18 17:06	EPA 3005A	1,6020B	AM
Selenium, Total	ND		mg/l	0.00500	0.00173	1	07/31/18 14:20	08/01/18 17:06	EPA 3005A	1,6020B	AM
Silver, Total	ND		mg/l	0.00040	0.00016	1	07/31/18 14:20	08/01/18 17:06	EPA 3005A	1,6020B	AM
Sodium, Total	183.		mg/l	0.100	0.0293	1	07/31/18 14:20	08/01/18 17:06	EPA 3005A	1,6020B	AM
Thallium, Total	ND		mg/l	0.00050	0.00014	1	07/31/18 14:20	08/01/18 17:06	EPA 3005A	1,6020B	AM
Vanadium, Total	ND		mg/l	0.00500	0.00157	1	07/31/18 14:20	08/01/18 17:06	EPA 3005A	1,6020B	AM
Zinc, Total	ND		mg/l	0.01000	0.00341	1	07/31/18 14:20	08/01/18 17:06	EPA 3005A	1,6020B	AM
Dissolved Metals - Mansfield Lab											
Aluminum, Dissolved	ND		mg/l	0.0100	0.00327	1	08/01/18 11:00	08/02/18 11:46	EPA 3005A	1,6020B	AM
Antimony, Dissolved	0.00092	J	mg/l	0.00400	0.00042	1	08/01/18 11:00	08/02/18 11:46	EPA 3005A	1,6020B	AM
Arsenic, Dissolved	0.01175		mg/l	0.00050	0.00016	1	08/01/18 11:00	08/02/18 11:46	EPA 3005A	1,6020B	AM
Barium, Dissolved	0.1404		mg/l	0.00050	0.00017	1	08/01/18 11:00	08/02/18 11:46	EPA 3005A	1,6020B	AM
Beryllium, Dissolved	ND		mg/l	0.00050	0.00010	1	08/01/18 11:00	08/02/18 11:46	EPA 3005A	1,6020B	AM



Project Name: HYGRADE/STALINGRAD**Lab Number:** L1828999**Project Number:** 3612162331**Report Date:** 08/03/18**SAMPLE RESULTS**

Lab ID: L1828999-02

Date Collected: 07/26/18 13:25

Client ID: BMW-4-072618

Date Received: 07/26/18

Sample Location: LONG ISLAND CITY, NY

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Cadmium, Dissolved	ND		mg/l	0.00020	0.00005	1	08/01/18 11:00	08/02/18 11:46	EPA 3005A	1,6020B	AM
Calcium, Dissolved	203.		mg/l	0.100	0.0394	1	08/01/18 11:00	08/02/18 11:46	EPA 3005A	1,6020B	AM
Chromium, Dissolved	0.00072	J	mg/l	0.00100	0.00017	1	08/01/18 11:00	08/02/18 11:46	EPA 3005A	1,6020B	AM
Cobalt, Dissolved	0.01340		mg/l	0.00050	0.00016	1	08/01/18 11:00	08/02/18 11:46	EPA 3005A	1,6020B	AM
Copper, Dissolved	ND		mg/l	0.00100	0.00038	1	08/01/18 11:00	08/02/18 11:46	EPA 3005A	1,6020B	AM
Iron, Dissolved	8.46		mg/l	0.0500	0.0191	1	08/01/18 11:00	08/02/18 11:46	EPA 3005A	1,6020B	AM
Lead, Dissolved	ND		mg/l	0.00100	0.00034	1	08/01/18 11:00	08/02/18 11:46	EPA 3005A	1,6020B	AM
Magnesium, Dissolved	31.7		mg/l	0.0700	0.0242	1	08/01/18 11:00	08/02/18 11:46	EPA 3005A	1,6020B	AM
Manganese, Dissolved	3.037		mg/l	0.00100	0.00044	1	08/01/18 11:00	08/02/18 11:46	EPA 3005A	1,6020B	AM
Mercury, Dissolved	ND		mg/l	0.00020	0.00006	1	07/30/18 16:50	07/31/18 11:38	EPA 7470A	1,7470A	MG
Nickel, Dissolved	0.09069		mg/l	0.00200	0.00055	1	08/01/18 11:00	08/02/18 11:46	EPA 3005A	1,6020B	AM
Potassium, Dissolved	53.2		mg/l	0.100	0.0309	1	08/01/18 11:00	08/02/18 11:46	EPA 3005A	1,6020B	AM
Selenium, Dissolved	ND		mg/l	0.00500	0.00173	1	08/01/18 11:00	08/02/18 11:46	EPA 3005A	1,6020B	AM
Silver, Dissolved	ND		mg/l	0.00040	0.00016	1	08/01/18 11:00	08/02/18 11:46	EPA 3005A	1,6020B	AM
Sodium, Dissolved	199.		mg/l	0.100	0.0293	1	08/01/18 11:00	08/02/18 11:46	EPA 3005A	1,6020B	AM
Thallium, Dissolved	ND		mg/l	0.00050	0.00014	1	08/01/18 11:00	08/02/18 11:46	EPA 3005A	1,6020B	AM
Vanadium, Dissolved	ND		mg/l	0.00500	0.00157	1	08/01/18 11:00	08/02/18 11:46	EPA 3005A	1,6020B	AM
Zinc, Dissolved	ND		mg/l	0.01000	0.00341	1	08/01/18 11:00	08/02/18 11:46	EPA 3005A	1,6020B	AM



Project Name: HYGRADE/STALINGRAD

Lab Number: L1828999

Project Number: 3612162331

Report Date: 08/03/18

SAMPLE RESULTS

Lab ID: L1828999-03

Date Collected: 07/26/18 10:15

Client ID: MW-5-072618

Date Received: 07/26/18

Sample Location: LONG ISLAND CITY, NY

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Aluminum, Total	0.0726		mg/l	0.0100	0.00327	1	07/31/18 14:20	08/01/18 17:10	EPA 3005A	1,6020B	AM
Antimony, Total	0.00084	J	mg/l	0.00400	0.00042	1	07/31/18 14:20	08/01/18 17:10	EPA 3005A	1,6020B	AM
Arsenic, Total	0.00029	J	mg/l	0.00050	0.00016	1	07/31/18 14:20	08/01/18 17:10	EPA 3005A	1,6020B	AM
Barium, Total	0.09278		mg/l	0.00050	0.00017	1	07/31/18 14:20	08/01/18 17:10	EPA 3005A	1,6020B	AM
Beryllium, Total	ND		mg/l	0.00050	0.00010	1	07/31/18 14:20	08/01/18 17:10	EPA 3005A	1,6020B	AM
Cadmium, Total	0.00007	J	mg/l	0.00020	0.00005	1	07/31/18 14:20	08/01/18 17:10	EPA 3005A	1,6020B	AM
Calcium, Total	163.		mg/l	0.100	0.0394	1	07/31/18 14:20	08/01/18 17:10	EPA 3005A	1,6020B	AM
Chromium, Total	0.00677		mg/l	0.00100	0.00017	1	07/31/18 14:20	08/01/18 17:10	EPA 3005A	1,6020B	AM
Cobalt, Total	0.00055		mg/l	0.00050	0.00016	1	07/31/18 14:20	08/01/18 17:10	EPA 3005A	1,6020B	AM
Copper, Total	0.00119		mg/l	0.00100	0.00038	1	07/31/18 14:20	08/01/18 17:10	EPA 3005A	1,6020B	AM
Iron, Total	0.232		mg/l	0.0500	0.0191	1	07/31/18 14:20	08/01/18 17:10	EPA 3005A	1,6020B	AM
Lead, Total	0.00083	J	mg/l	0.00100	0.00034	1	07/31/18 14:20	08/01/18 17:10	EPA 3005A	1,6020B	AM
Magnesium, Total	12.4		mg/l	0.0700	0.0242	1	07/31/18 14:20	08/01/18 17:10	EPA 3005A	1,6020B	AM
Manganese, Total	0.02182		mg/l	0.00100	0.00044	1	07/31/18 14:20	08/01/18 17:10	EPA 3005A	1,6020B	AM
Mercury, Total	ND		mg/l	0.00020	0.00006	1	07/30/18 16:50	07/31/18 11:15	EPA 7470A	1,7470A	MG
Nickel, Total	0.00345		mg/l	0.00200	0.00055	1	07/31/18 14:20	08/01/18 17:10	EPA 3005A	1,6020B	AM
Potassium, Total	23.0		mg/l	0.100	0.0309	1	07/31/18 14:20	08/01/18 17:10	EPA 3005A	1,6020B	AM
Selenium, Total	0.00680		mg/l	0.00500	0.00173	1	07/31/18 14:20	08/01/18 17:10	EPA 3005A	1,6020B	AM
Silver, Total	ND		mg/l	0.00040	0.00016	1	07/31/18 14:20	08/01/18 17:10	EPA 3005A	1,6020B	AM
Sodium, Total	97.9		mg/l	0.100	0.0293	1	07/31/18 14:20	08/01/18 17:10	EPA 3005A	1,6020B	AM
Thallium, Total	ND		mg/l	0.00050	0.00014	1	07/31/18 14:20	08/01/18 17:10	EPA 3005A	1,6020B	AM
Vanadium, Total	ND		mg/l	0.00500	0.00157	1	07/31/18 14:20	08/01/18 17:10	EPA 3005A	1,6020B	AM
Zinc, Total	ND		mg/l	0.01000	0.00341	1	07/31/18 14:20	08/01/18 17:10	EPA 3005A	1,6020B	AM
Dissolved Metals - Mansfield Lab											
Aluminum, Dissolved	0.00469	J	mg/l	0.0100	0.00327	1	08/01/18 11:00	08/02/18 11:51	EPA 3005A	1,6020B	AM
Antimony, Dissolved	0.00136	J	mg/l	0.00400	0.00042	1	08/01/18 11:00	08/02/18 11:51	EPA 3005A	1,6020B	AM
Arsenic, Dissolved	0.00017	J	mg/l	0.00050	0.00016	1	08/01/18 11:00	08/02/18 11:51	EPA 3005A	1,6020B	AM
Barium, Dissolved	0.08723		mg/l	0.00050	0.00017	1	08/01/18 11:00	08/02/18 11:51	EPA 3005A	1,6020B	AM
Beryllium, Dissolved	ND		mg/l	0.00050	0.00010	1	08/01/18 11:00	08/02/18 11:51	EPA 3005A	1,6020B	AM



Project Name: HYGRADE/STALINGRAD**Lab Number:** L1828999**Project Number:** 3612162331**Report Date:** 08/03/18**SAMPLE RESULTS**

Lab ID: L1828999-03

Date Collected: 07/26/18 10:15

Client ID: MW-5-072618

Date Received: 07/26/18

Sample Location: LONG ISLAND CITY, NY

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Cadmium, Dissolved	0.00010	J	mg/l	0.00020	0.00005	1	08/01/18 11:00	08/02/18 11:51	EPA 3005A	1,6020B	AM
Calcium, Dissolved	176.		mg/l	0.100	0.0394	1	08/01/18 11:00	08/02/18 11:51	EPA 3005A	1,6020B	AM
Chromium, Dissolved	0.00567		mg/l	0.00100	0.00017	1	08/01/18 11:00	08/02/18 11:51	EPA 3005A	1,6020B	AM
Cobalt, Dissolved	0.00060		mg/l	0.00050	0.00016	1	08/01/18 11:00	08/02/18 11:51	EPA 3005A	1,6020B	AM
Copper, Dissolved	0.00101		mg/l	0.00100	0.00038	1	08/01/18 11:00	08/02/18 11:51	EPA 3005A	1,6020B	AM
Iron, Dissolved	0.0585		mg/l	0.0500	0.0191	1	08/01/18 11:00	08/02/18 11:51	EPA 3005A	1,6020B	AM
Lead, Dissolved	ND		mg/l	0.00100	0.00034	1	08/01/18 11:00	08/02/18 11:51	EPA 3005A	1,6020B	AM
Magnesium, Dissolved	12.6		mg/l	0.0700	0.0242	1	08/01/18 11:00	08/02/18 11:51	EPA 3005A	1,6020B	AM
Manganese, Dissolved	0.02158		mg/l	0.00100	0.00044	1	08/01/18 11:00	08/02/18 11:51	EPA 3005A	1,6020B	AM
Mercury, Dissolved	ND		mg/l	0.00020	0.00006	1	07/30/18 16:50	07/31/18 11:39	EPA 7470A	1,7470A	MG
Nickel, Dissolved	0.00382		mg/l	0.00200	0.00055	1	08/01/18 11:00	08/02/18 11:51	EPA 3005A	1,6020B	AM
Potassium, Dissolved	24.2		mg/l	0.100	0.0309	1	08/01/18 11:00	08/02/18 11:51	EPA 3005A	1,6020B	AM
Selenium, Dissolved	0.00726		mg/l	0.00500	0.00173	1	08/01/18 11:00	08/02/18 11:51	EPA 3005A	1,6020B	AM
Silver, Dissolved	ND		mg/l	0.00040	0.00016	1	08/01/18 11:00	08/02/18 11:51	EPA 3005A	1,6020B	AM
Sodium, Dissolved	118.		mg/l	0.100	0.0293	1	08/01/18 11:00	08/02/18 11:51	EPA 3005A	1,6020B	AM
Thallium, Dissolved	ND		mg/l	0.00050	0.00014	1	08/01/18 11:00	08/02/18 11:51	EPA 3005A	1,6020B	AM
Vanadium, Dissolved	ND		mg/l	0.00500	0.00157	1	08/01/18 11:00	08/02/18 11:51	EPA 3005A	1,6020B	AM
Zinc, Dissolved	ND		mg/l	0.01000	0.00341	1	08/01/18 11:00	08/02/18 11:51	EPA 3005A	1,6020B	AM



Project Name: HYGRADE/STALINGRAD

Lab Number: L1828999

Project Number: 3612162331

Report Date: 08/03/18

SAMPLE RESULTS

Lab ID: L1828999-04

Date Collected: 07/26/18 10:35

Client ID: MW-6S-072618

Date Received: 07/26/18

Sample Location: LONG ISLAND CITY, NY

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Aluminum, Total	0.0229		mg/l	0.0100	0.00327	1	07/31/18 14:20	08/01/18 17:14	EPA 3005A	1,6020B	AM
Antimony, Total	ND		mg/l	0.00400	0.00042	1	07/31/18 14:20	08/01/18 17:14	EPA 3005A	1,6020B	AM
Arsenic, Total	0.00188		mg/l	0.00050	0.00016	1	07/31/18 14:20	08/01/18 17:14	EPA 3005A	1,6020B	AM
Barium, Total	0.1353		mg/l	0.00050	0.00017	1	07/31/18 14:20	08/01/18 17:14	EPA 3005A	1,6020B	AM
Beryllium, Total	ND		mg/l	0.00050	0.00010	1	07/31/18 14:20	08/01/18 17:14	EPA 3005A	1,6020B	AM
Cadmium, Total	ND		mg/l	0.00020	0.00005	1	07/31/18 14:20	08/01/18 17:14	EPA 3005A	1,6020B	AM
Calcium, Total	304.		mg/l	0.100	0.0394	1	07/31/18 14:20	08/01/18 17:14	EPA 3005A	1,6020B	AM
Chromium, Total	0.00060	J	mg/l	0.00100	0.00017	1	07/31/18 14:20	08/01/18 17:14	EPA 3005A	1,6020B	AM
Cobalt, Total	0.00349		mg/l	0.00050	0.00016	1	07/31/18 14:20	08/01/18 17:14	EPA 3005A	1,6020B	AM
Copper, Total	0.00077	J	mg/l	0.00100	0.00038	1	07/31/18 14:20	08/01/18 17:14	EPA 3005A	1,6020B	AM
Iron, Total	1.39		mg/l	0.0500	0.0191	1	07/31/18 14:20	08/01/18 17:14	EPA 3005A	1,6020B	AM
Lead, Total	0.00046	J	mg/l	0.00100	0.00034	1	07/31/18 14:20	08/01/18 17:14	EPA 3005A	1,6020B	AM
Magnesium, Total	119.		mg/l	0.0700	0.0242	1	07/31/18 14:20	08/01/18 17:14	EPA 3005A	1,6020B	AM
Manganese, Total	3.799		mg/l	0.00100	0.00044	1	07/31/18 14:20	08/01/18 17:14	EPA 3005A	1,6020B	AM
Mercury, Total	ND		mg/l	0.00020	0.00006	1	07/30/18 16:50	07/31/18 11:17	EPA 7470A	1,7470A	MG
Nickel, Total	0.03050		mg/l	0.00200	0.00055	1	07/31/18 14:20	08/01/18 17:14	EPA 3005A	1,6020B	AM
Potassium, Total	16.2		mg/l	0.100	0.0309	1	07/31/18 14:20	08/01/18 17:14	EPA 3005A	1,6020B	AM
Selenium, Total	ND		mg/l	0.00500	0.00173	1	07/31/18 14:20	08/01/18 17:14	EPA 3005A	1,6020B	AM
Silver, Total	ND		mg/l	0.00040	0.00016	1	07/31/18 14:20	08/01/18 17:14	EPA 3005A	1,6020B	AM
Sodium, Total	143.		mg/l	0.100	0.0293	1	07/31/18 14:20	08/01/18 17:14	EPA 3005A	1,6020B	AM
Thallium, Total	ND		mg/l	0.00050	0.00014	1	07/31/18 14:20	08/01/18 17:14	EPA 3005A	1,6020B	AM
Vanadium, Total	ND		mg/l	0.00500	0.00157	1	07/31/18 14:20	08/01/18 17:14	EPA 3005A	1,6020B	AM
Zinc, Total	0.00440	J	mg/l	0.01000	0.00341	1	07/31/18 14:20	08/01/18 17:14	EPA 3005A	1,6020B	AM
Dissolved Metals - Mansfield Lab											
Aluminum, Dissolved	ND		mg/l	0.0100	0.00327	1	08/01/18 11:00	08/02/18 11:55	EPA 3005A	1,6020B	AM
Antimony, Dissolved	0.00063	J	mg/l	0.00400	0.00042	1	08/01/18 11:00	08/02/18 11:55	EPA 3005A	1,6020B	AM
Arsenic, Dissolved	0.00130		mg/l	0.00050	0.00016	1	08/01/18 11:00	08/02/18 11:55	EPA 3005A	1,6020B	AM
Barium, Dissolved	0.1146		mg/l	0.00050	0.00017	1	08/01/18 11:00	08/02/18 11:55	EPA 3005A	1,6020B	AM
Beryllium, Dissolved	ND		mg/l	0.00050	0.00010	1	08/01/18 11:00	08/02/18 11:55	EPA 3005A	1,6020B	AM



Project Name: HYGRADE/STALINGRAD**Lab Number:** L1828999**Project Number:** 3612162331**Report Date:** 08/03/18**SAMPLE RESULTS**

Lab ID: L1828999-04

Date Collected: 07/26/18 10:35

Client ID: MW-6S-072618

Date Received: 07/26/18

Sample Location: LONG ISLAND CITY, NY

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Cadmium, Dissolved	ND		mg/l	0.00020	0.00005	1	08/01/18 11:00	08/02/18 11:55	EPA 3005A	1,6020B	AM
Calcium, Dissolved	302.		mg/l	0.100	0.0394	1	08/01/18 11:00	08/02/18 11:55	EPA 3005A	1,6020B	AM
Chromium, Dissolved	0.00018	J	mg/l	0.00100	0.00017	1	08/01/18 11:00	08/02/18 11:55	EPA 3005A	1,6020B	AM
Cobalt, Dissolved	0.00329		mg/l	0.00050	0.00016	1	08/01/18 11:00	08/02/18 11:55	EPA 3005A	1,6020B	AM
Copper, Dissolved	ND		mg/l	0.00100	0.00038	1	08/01/18 11:00	08/02/18 11:55	EPA 3005A	1,6020B	AM
Iron, Dissolved	0.0807		mg/l	0.0500	0.0191	1	08/01/18 11:00	08/02/18 11:55	EPA 3005A	1,6020B	AM
Lead, Dissolved	ND		mg/l	0.00100	0.00034	1	08/01/18 11:00	08/02/18 11:55	EPA 3005A	1,6020B	AM
Magnesium, Dissolved	113.		mg/l	0.0700	0.0242	1	08/01/18 11:00	08/02/18 11:55	EPA 3005A	1,6020B	AM
Manganese, Dissolved	3.922		mg/l	0.00100	0.00044	1	08/01/18 11:00	08/02/18 11:55	EPA 3005A	1,6020B	AM
Mercury, Dissolved	ND		mg/l	0.00020	0.00006	1	07/30/18 16:50	07/31/18 11:41	EPA 7470A	1,7470A	MG
Nickel, Dissolved	0.02947		mg/l	0.00200	0.00055	1	08/01/18 11:00	08/02/18 11:55	EPA 3005A	1,6020B	AM
Potassium, Dissolved	15.9		mg/l	0.100	0.0309	1	08/01/18 11:00	08/02/18 11:55	EPA 3005A	1,6020B	AM
Selenium, Dissolved	ND		mg/l	0.00500	0.00173	1	08/01/18 11:00	08/02/18 11:55	EPA 3005A	1,6020B	AM
Silver, Dissolved	ND		mg/l	0.00040	0.00016	1	08/01/18 11:00	08/02/18 11:55	EPA 3005A	1,6020B	AM
Sodium, Dissolved	160.		mg/l	0.100	0.0293	1	08/01/18 11:00	08/02/18 11:55	EPA 3005A	1,6020B	AM
Thallium, Dissolved	ND		mg/l	0.00050	0.00014	1	08/01/18 11:00	08/02/18 11:55	EPA 3005A	1,6020B	AM
Vanadium, Dissolved	ND		mg/l	0.00500	0.00157	1	08/01/18 11:00	08/02/18 11:55	EPA 3005A	1,6020B	AM
Zinc, Dissolved	ND		mg/l	0.01000	0.00341	1	08/01/18 11:00	08/02/18 11:55	EPA 3005A	1,6020B	AM



Project Name: HYGRADE/STALINGRAD**Lab Number:** L1828999**Project Number:** 3612162331**Report Date:** 08/03/18**SAMPLE RESULTS**

Lab ID: L1828999-05

Date Collected: 07/26/18 09:30

Client ID: MW-6D-072618

Date Received: 07/26/18

Sample Location: LONG ISLAND CITY, NY

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Aluminum, Total	0.0274		mg/l	0.0100	0.00327	1	07/31/18 14:20	08/01/18 17:18	EPA 3005A	1,6020B	AM
Antimony, Total	0.00092	J	mg/l	0.00400	0.00042	1	07/31/18 14:20	08/01/18 17:18	EPA 3005A	1,6020B	AM
Arsenic, Total	0.00027	J	mg/l	0.00050	0.00016	1	07/31/18 14:20	08/01/18 17:18	EPA 3005A	1,6020B	AM
Barium, Total	0.1029		mg/l	0.00050	0.00017	1	07/31/18 14:20	08/01/18 17:18	EPA 3005A	1,6020B	AM
Beryllium, Total	ND		mg/l	0.00050	0.00010	1	07/31/18 14:20	08/01/18 17:18	EPA 3005A	1,6020B	AM
Cadmium, Total	0.00010	J	mg/l	0.00020	0.00005	1	07/31/18 14:20	08/01/18 17:18	EPA 3005A	1,6020B	AM
Calcium, Total	139.		mg/l	0.100	0.0394	1	07/31/18 14:20	08/01/18 17:18	EPA 3005A	1,6020B	AM
Chromium, Total	0.00096	J	mg/l	0.00100	0.00017	1	07/31/18 14:20	08/01/18 17:18	EPA 3005A	1,6020B	AM
Cobalt, Total	0.00039	J	mg/l	0.00050	0.00016	1	07/31/18 14:20	08/01/18 17:18	EPA 3005A	1,6020B	AM
Copper, Total	0.00233		mg/l	0.00100	0.00038	1	07/31/18 14:20	08/01/18 17:18	EPA 3005A	1,6020B	AM
Iron, Total	0.0910		mg/l	0.0500	0.0191	1	07/31/18 14:20	08/01/18 17:18	EPA 3005A	1,6020B	AM
Lead, Total	ND		mg/l	0.00100	0.00034	1	07/31/18 14:20	08/01/18 17:18	EPA 3005A	1,6020B	AM
Magnesium, Total	12.4		mg/l	0.0700	0.0242	1	07/31/18 14:20	08/01/18 17:18	EPA 3005A	1,6020B	AM
Manganese, Total	0.1858		mg/l	0.00100	0.00044	1	07/31/18 14:20	08/01/18 17:18	EPA 3005A	1,6020B	AM
Mercury, Total	ND		mg/l	0.00020	0.00006	1	07/30/18 16:50	07/31/18 11:19	EPA 7470A	1,7470A	MG
Nickel, Total	0.00280		mg/l	0.00200	0.00055	1	07/31/18 14:20	08/01/18 17:18	EPA 3005A	1,6020B	AM
Potassium, Total	24.5		mg/l	0.100	0.0309	1	07/31/18 14:20	08/01/18 17:18	EPA 3005A	1,6020B	AM
Selenium, Total	0.00528		mg/l	0.00500	0.00173	1	07/31/18 14:20	08/01/18 17:18	EPA 3005A	1,6020B	AM
Silver, Total	ND		mg/l	0.00040	0.00016	1	07/31/18 14:20	08/01/18 17:18	EPA 3005A	1,6020B	AM
Sodium, Total	135.		mg/l	0.100	0.0293	1	07/31/18 14:20	08/01/18 17:18	EPA 3005A	1,6020B	AM
Thallium, Total	ND		mg/l	0.00050	0.00014	1	07/31/18 14:20	08/01/18 17:18	EPA 3005A	1,6020B	AM
Vanadium, Total	0.00276	J	mg/l	0.00500	0.00157	1	07/31/18 14:20	08/01/18 17:18	EPA 3005A	1,6020B	AM
Zinc, Total	ND		mg/l	0.01000	0.00341	1	07/31/18 14:20	08/01/18 17:18	EPA 3005A	1,6020B	AM
Dissolved Metals - Mansfield Lab											
Aluminum, Dissolved	0.0103		mg/l	0.0100	0.00327	1	08/01/18 11:00	08/02/18 13:08	EPA 3005A	1,6020B	MG
Antimony, Dissolved	0.00118	J	mg/l	0.00400	0.00042	1	08/01/18 11:00	08/02/18 13:08	EPA 3005A	1,6020B	MG
Arsenic, Dissolved	0.00025	J	mg/l	0.00050	0.00016	1	08/01/18 11:00	08/02/18 13:08	EPA 3005A	1,6020B	MG
Barium, Dissolved	0.09888		mg/l	0.00050	0.00017	1	08/01/18 11:00	08/02/18 13:08	EPA 3005A	1,6020B	MG
Beryllium, Dissolved	ND		mg/l	0.00050	0.00010	1	08/01/18 11:00	08/02/18 13:08	EPA 3005A	1,6020B	MG



Project Name: HYGRADE/STALINGRAD**Lab Number:** L1828999**Project Number:** 3612162331**Report Date:** 08/03/18**SAMPLE RESULTS**

Lab ID: L1828999-05

Date Collected: 07/26/18 09:30

Client ID: MW-6D-072618

Date Received: 07/26/18

Sample Location: LONG ISLAND CITY, NY

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Cadmium, Dissolved	0.00011	J	mg/l	0.00020	0.00005	1	08/01/18 11:00	08/02/18 13:08	EPA 3005A	1,6020B	MG
Calcium, Dissolved	142.		mg/l	0.100	0.0394	1	08/01/18 11:00	08/02/18 13:08	EPA 3005A	1,6020B	MG
Chromium, Dissolved	0.00071	J	mg/l	0.00100	0.00017	1	08/01/18 11:00	08/02/18 13:08	EPA 3005A	1,6020B	MG
Cobalt, Dissolved	0.00035	J	mg/l	0.00050	0.00016	1	08/01/18 11:00	08/02/18 13:08	EPA 3005A	1,6020B	MG
Copper, Dissolved	0.00258		mg/l	0.00100	0.00038	1	08/01/18 11:00	08/02/18 13:08	EPA 3005A	1,6020B	MG
Iron, Dissolved	0.0646		mg/l	0.0500	0.0191	1	08/01/18 11:00	08/02/18 13:08	EPA 3005A	1,6020B	MG
Lead, Dissolved	ND		mg/l	0.00100	0.00034	1	08/01/18 11:00	08/02/18 13:08	EPA 3005A	1,6020B	MG
Magnesium, Dissolved	12.2		mg/l	0.0700	0.0242	1	08/01/18 11:00	08/02/18 13:08	EPA 3005A	1,6020B	MG
Manganese, Dissolved	0.1825		mg/l	0.00100	0.00044	1	08/01/18 11:00	08/02/18 13:08	EPA 3005A	1,6020B	MG
Mercury, Dissolved	ND		mg/l	0.00020	0.00006	1	07/30/18 16:50	07/31/18 11:46	EPA 7470A	1,7470A	MG
Nickel, Dissolved	0.00268		mg/l	0.00200	0.00055	1	08/01/18 11:00	08/02/18 13:08	EPA 3005A	1,6020B	MG
Potassium, Dissolved	24.3		mg/l	0.100	0.0309	1	08/01/18 11:00	08/02/18 13:08	EPA 3005A	1,6020B	MG
Selenium, Dissolved	0.00520		mg/l	0.00500	0.00173	1	08/01/18 11:00	08/02/18 13:08	EPA 3005A	1,6020B	MG
Silver, Dissolved	ND		mg/l	0.00040	0.00016	1	08/01/18 11:00	08/02/18 13:08	EPA 3005A	1,6020B	MG
Sodium, Dissolved	159.		mg/l	0.100	0.0293	1	08/01/18 11:00	08/02/18 13:08	EPA 3005A	1,6020B	MG
Thallium, Dissolved	ND		mg/l	0.00050	0.00014	1	08/01/18 11:00	08/02/18 13:08	EPA 3005A	1,6020B	MG
Vanadium, Dissolved	0.00260	J	mg/l	0.00500	0.00157	1	08/01/18 11:00	08/02/18 13:08	EPA 3005A	1,6020B	MG
Zinc, Dissolved	ND		mg/l	0.01000	0.00341	1	08/01/18 11:00	08/02/18 13:08	EPA 3005A	1,6020B	MG



Project Name: HYGRADE/STALINGRAD**Lab Number:** L1828999**Project Number:** 3612162331**Report Date:** 08/03/18**SAMPLE RESULTS**

Lab ID: L1828999-06

Date Collected: 07/26/18 11:30

Client ID: MW-E-072618

Date Received: 07/26/18

Sample Location: LONG ISLAND CITY, NY

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Aluminum, Total	15.1		mg/l	0.0100	0.00327	1	07/31/18 14:20	08/01/18 16:50	EPA 3005A	1,6020B	AM
Antimony, Total	0.00089	J	mg/l	0.00400	0.00042	1	07/31/18 14:20	08/01/18 16:50	EPA 3005A	1,6020B	AM
Arsenic, Total	0.01372		mg/l	0.00050	0.00016	1	07/31/18 14:20	08/01/18 16:50	EPA 3005A	1,6020B	AM
Barium, Total	0.2608		mg/l	0.00050	0.00017	1	07/31/18 14:20	08/01/18 16:50	EPA 3005A	1,6020B	AM
Beryllium, Total	0.00082		mg/l	0.00050	0.00010	1	07/31/18 14:20	08/01/18 16:50	EPA 3005A	1,6020B	AM
Cadmium, Total	0.00012	J	mg/l	0.00020	0.00005	1	07/31/18 14:20	08/01/18 16:50	EPA 3005A	1,6020B	AM
Calcium, Total	87.9		mg/l	0.100	0.0394	1	07/31/18 14:20	08/01/18 16:50	EPA 3005A	1,6020B	AM
Chromium, Total	0.04510		mg/l	0.00100	0.00017	1	07/31/18 14:20	08/01/18 16:50	EPA 3005A	1,6020B	AM
Cobalt, Total	0.01371		mg/l	0.00050	0.00016	1	07/31/18 14:20	08/01/18 16:50	EPA 3005A	1,6020B	AM
Copper, Total	0.04177		mg/l	0.00100	0.00038	1	07/31/18 14:20	08/01/18 16:50	EPA 3005A	1,6020B	AM
Iron, Total	33.5		mg/l	0.0500	0.0191	1	07/31/18 14:20	08/01/18 16:50	EPA 3005A	1,6020B	AM
Lead, Total	0.01824		mg/l	0.00100	0.00034	1	07/31/18 14:20	08/01/18 16:50	EPA 3005A	1,6020B	AM
Magnesium, Total	21.2		mg/l	0.0700	0.0242	1	07/31/18 14:20	08/01/18 16:50	EPA 3005A	1,6020B	AM
Manganese, Total	1.540		mg/l	0.00100	0.00044	1	07/31/18 14:20	08/01/18 16:50	EPA 3005A	1,6020B	AM
Mercury, Total	ND		mg/l	0.00020	0.00006	1	07/30/18 16:50	07/31/18 11:20	EPA 7470A	1,7470A	MG
Nickel, Total	0.03469		mg/l	0.00200	0.00055	1	07/31/18 14:20	08/01/18 16:50	EPA 3005A	1,6020B	AM
Potassium, Total	26.8		mg/l	0.100	0.0309	1	07/31/18 14:20	08/01/18 16:50	EPA 3005A	1,6020B	AM
Selenium, Total	0.00735		mg/l	0.00500	0.00173	1	07/31/18 14:20	08/01/18 16:50	EPA 3005A	1,6020B	AM
Silver, Total	ND		mg/l	0.00040	0.00016	1	07/31/18 14:20	08/01/18 16:50	EPA 3005A	1,6020B	AM
Sodium, Total	104.		mg/l	0.100	0.0293	1	07/31/18 14:20	08/01/18 16:50	EPA 3005A	1,6020B	AM
Thallium, Total	0.00038	J	mg/l	0.00050	0.00014	1	07/31/18 14:20	08/01/18 16:50	EPA 3005A	1,6020B	AM
Vanadium, Total	0.05097		mg/l	0.00500	0.00157	1	07/31/18 14:20	08/01/18 16:50	EPA 3005A	1,6020B	AM
Zinc, Total	0.09505		mg/l	0.01000	0.00341	1	07/31/18 14:20	08/01/18 16:50	EPA 3005A	1,6020B	AM
Dissolved Metals - Mansfield Lab											
Aluminum, Dissolved	0.00526	J	mg/l	0.0100	0.00327	1	08/01/18 11:00	08/02/18 13:12	EPA 3005A	1,6020B	MG
Antimony, Dissolved	0.00089	J	mg/l	0.00400	0.00042	1	08/01/18 11:00	08/02/18 13:12	EPA 3005A	1,6020B	MG
Arsenic, Dissolved	0.00057		mg/l	0.00050	0.00016	1	08/01/18 11:00	08/02/18 13:12	EPA 3005A	1,6020B	MG
Barium, Dissolved	0.08579		mg/l	0.00050	0.00017	1	08/01/18 11:00	08/02/18 13:12	EPA 3005A	1,6020B	MG
Beryllium, Dissolved	ND		mg/l	0.00050	0.00010	1	08/01/18 11:00	08/02/18 13:12	EPA 3005A	1,6020B	MG



Project Name: HYGRADE/STALINGRAD**Lab Number:** L1828999**Project Number:** 3612162331**Report Date:** 08/03/18**SAMPLE RESULTS**

Lab ID: L1828999-06

Date Collected: 07/26/18 11:30

Client ID: MW-E-072618

Date Received: 07/26/18

Sample Location: LONG ISLAND CITY, NY

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Cadmium, Dissolved	ND		mg/l	0.00020	0.00005	1	08/01/18 11:00	08/02/18 13:12	EPA 3005A	1,6020B	MG
Calcium, Dissolved	81.8		mg/l	0.100	0.0394	1	08/01/18 11:00	08/02/18 13:12	EPA 3005A	1,6020B	MG
Chromium, Dissolved	0.00107		mg/l	0.00100	0.00017	1	08/01/18 11:00	08/02/18 13:12	EPA 3005A	1,6020B	MG
Cobalt, Dissolved	ND		mg/l	0.00050	0.00016	1	08/01/18 11:00	08/02/18 13:12	EPA 3005A	1,6020B	MG
Copper, Dissolved	0.00112		mg/l	0.00100	0.00038	1	08/01/18 11:00	08/02/18 13:12	EPA 3005A	1,6020B	MG
Iron, Dissolved	0.0293	J	mg/l	0.0500	0.0191	1	08/01/18 11:00	08/02/18 13:12	EPA 3005A	1,6020B	MG
Lead, Dissolved	ND		mg/l	0.00100	0.00034	1	08/01/18 11:00	08/02/18 13:12	EPA 3005A	1,6020B	MG
Magnesium, Dissolved	11.4		mg/l	0.0700	0.0242	1	08/01/18 11:00	08/02/18 13:12	EPA 3005A	1,6020B	MG
Manganese, Dissolved	0.05728		mg/l	0.00100	0.00044	1	08/01/18 11:00	08/02/18 13:12	EPA 3005A	1,6020B	MG
Mercury, Dissolved	ND		mg/l	0.00020	0.00006	1	07/30/18 16:50	07/31/18 11:48	EPA 7470A	1,7470A	MG
Nickel, Dissolved	0.00060	J	mg/l	0.00200	0.00055	1	08/01/18 11:00	08/02/18 13:12	EPA 3005A	1,6020B	MG
Potassium, Dissolved	21.3		mg/l	0.100	0.0309	1	08/01/18 11:00	08/02/18 13:12	EPA 3005A	1,6020B	MG
Selenium, Dissolved	0.00376	J	mg/l	0.00500	0.00173	1	08/01/18 11:00	08/02/18 13:12	EPA 3005A	1,6020B	MG
Silver, Dissolved	ND		mg/l	0.00040	0.00016	1	08/01/18 11:00	08/02/18 13:12	EPA 3005A	1,6020B	MG
Sodium, Dissolved	123.		mg/l	0.100	0.0293	1	08/01/18 11:00	08/02/18 13:12	EPA 3005A	1,6020B	MG
Thallium, Dissolved	ND		mg/l	0.00050	0.00014	1	08/01/18 11:00	08/02/18 13:12	EPA 3005A	1,6020B	MG
Vanadium, Dissolved	ND		mg/l	0.00500	0.00157	1	08/01/18 11:00	08/02/18 13:12	EPA 3005A	1,6020B	MG
Zinc, Dissolved	ND		mg/l	0.01000	0.00341	1	08/01/18 11:00	08/02/18 13:12	EPA 3005A	1,6020B	MG



Project Name: HYGRADE/STALINGRAD

Lab Number: L1828999

Project Number: 3612162331

Report Date: 08/03/18

SAMPLE RESULTS

Lab ID: L1828999-07

Date Collected: 07/26/18 13:25

Client ID: DUP-072618

Date Received: 07/26/18

Sample Location: LONG ISLAND CITY, NY

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Aluminum, Total	0.00885	J	mg/l	0.0100	0.00327	1	07/31/18 14:20	08/01/18 16:54	EPA 3005A	1,6020B	AM
Antimony, Total	ND		mg/l	0.00400	0.00042	1	07/31/18 14:20	08/01/18 16:54	EPA 3005A	1,6020B	AM
Arsenic, Total	0.04676		mg/l	0.00050	0.00016	1	07/31/18 14:20	08/01/18 16:54	EPA 3005A	1,6020B	AM
Barium, Total	0.2576		mg/l	0.00050	0.00017	1	07/31/18 14:20	08/01/18 16:54	EPA 3005A	1,6020B	AM
Beryllium, Total	ND		mg/l	0.00050	0.00010	1	07/31/18 14:20	08/01/18 16:54	EPA 3005A	1,6020B	AM
Cadmium, Total	ND		mg/l	0.00020	0.00005	1	07/31/18 14:20	08/01/18 16:54	EPA 3005A	1,6020B	AM
Calcium, Total	215.		mg/l	0.100	0.0394	1	07/31/18 14:20	08/01/18 16:54	EPA 3005A	1,6020B	AM
Chromium, Total	0.00176		mg/l	0.00100	0.00017	1	07/31/18 14:20	08/01/18 16:54	EPA 3005A	1,6020B	AM
Cobalt, Total	0.01487		mg/l	0.00050	0.00016	1	07/31/18 14:20	08/01/18 16:54	EPA 3005A	1,6020B	AM
Copper, Total	ND		mg/l	0.00100	0.00038	1	07/31/18 14:20	08/01/18 16:54	EPA 3005A	1,6020B	AM
Iron, Total	44.9		mg/l	0.0500	0.0191	1	07/31/18 14:20	08/01/18 16:54	EPA 3005A	1,6020B	AM
Lead, Total	ND		mg/l	0.00100	0.00034	1	07/31/18 14:20	08/01/18 16:54	EPA 3005A	1,6020B	AM
Magnesium, Total	33.2		mg/l	0.0700	0.0242	1	07/31/18 14:20	08/01/18 16:54	EPA 3005A	1,6020B	AM
Manganese, Total	3.306		mg/l	0.00100	0.00044	1	07/31/18 14:20	08/01/18 16:54	EPA 3005A	1,6020B	AM
Mercury, Total	ND		mg/l	0.00020	0.00006	1	07/30/18 16:50	07/31/18 11:26	EPA 7470A	1,7470A	MG
Nickel, Total	0.09603		mg/l	0.00200	0.00055	1	07/31/18 14:20	08/01/18 16:54	EPA 3005A	1,6020B	AM
Potassium, Total	56.3		mg/l	0.100	0.0309	1	07/31/18 14:20	08/01/18 16:54	EPA 3005A	1,6020B	AM
Selenium, Total	ND		mg/l	0.00500	0.00173	1	07/31/18 14:20	08/01/18 16:54	EPA 3005A	1,6020B	AM
Silver, Total	ND		mg/l	0.00040	0.00016	1	07/31/18 14:20	08/01/18 16:54	EPA 3005A	1,6020B	AM
Sodium, Total	179.		mg/l	0.100	0.0293	1	07/31/18 14:20	08/01/18 16:54	EPA 3005A	1,6020B	AM
Thallium, Total	ND		mg/l	0.00050	0.00014	1	07/31/18 14:20	08/01/18 16:54	EPA 3005A	1,6020B	AM
Vanadium, Total	ND		mg/l	0.00500	0.00157	1	07/31/18 14:20	08/01/18 16:54	EPA 3005A	1,6020B	AM
Zinc, Total	ND		mg/l	0.01000	0.00341	1	07/31/18 14:20	08/01/18 16:54	EPA 3005A	1,6020B	AM
Dissolved Metals - Mansfield Lab											
Aluminum, Dissolved	ND		mg/l	0.0100	0.00327	1	08/01/18 11:00	08/02/18 13:16	EPA 3005A	1,6020B	MG
Antimony, Dissolved	0.00043	J	mg/l	0.00400	0.00042	1	08/01/18 11:00	08/02/18 13:16	EPA 3005A	1,6020B	MG
Arsenic, Dissolved	0.01095		mg/l	0.00050	0.00016	1	08/01/18 11:00	08/02/18 13:16	EPA 3005A	1,6020B	MG
Barium, Dissolved	0.1460		mg/l	0.00050	0.00017	1	08/01/18 11:00	08/02/18 13:16	EPA 3005A	1,6020B	MG
Beryllium, Dissolved	ND		mg/l	0.00050	0.00010	1	08/01/18 11:00	08/02/18 13:16	EPA 3005A	1,6020B	MG



Project Name: HYGRADE/STALINGRAD**Lab Number:** L1828999**Project Number:** 3612162331**Report Date:** 08/03/18**SAMPLE RESULTS**

Lab ID: L1828999-07

Date Collected: 07/26/18 13:25

Client ID: DUP-072618

Date Received: 07/26/18

Sample Location: LONG ISLAND CITY, NY

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Cadmium, Dissolved	ND		mg/l	0.00020	0.00005	1	08/01/18 11:00	08/02/18 13:16	EPA 3005A	1,6020B	MG
Calcium, Dissolved	207.		mg/l	0.100	0.0394	1	08/01/18 11:00	08/02/18 13:16	EPA 3005A	1,6020B	MG
Chromium, Dissolved	0.00070	J	mg/l	0.00100	0.00017	1	08/01/18 11:00	08/02/18 13:16	EPA 3005A	1,6020B	MG
Cobalt, Dissolved	0.01336		mg/l	0.00050	0.00016	1	08/01/18 11:00	08/02/18 13:16	EPA 3005A	1,6020B	MG
Copper, Dissolved	ND		mg/l	0.00100	0.00038	1	08/01/18 11:00	08/02/18 13:16	EPA 3005A	1,6020B	MG
Iron, Dissolved	7.23		mg/l	0.0500	0.0191	1	08/01/18 11:00	08/02/18 13:16	EPA 3005A	1,6020B	MG
Lead, Dissolved	ND		mg/l	0.00100	0.00034	1	08/01/18 11:00	08/02/18 13:16	EPA 3005A	1,6020B	MG
Magnesium, Dissolved	31.3		mg/l	0.0700	0.0242	1	08/01/18 11:00	08/02/18 13:16	EPA 3005A	1,6020B	MG
Manganese, Dissolved	2.989		mg/l	0.00100	0.00044	1	08/01/18 11:00	08/02/18 13:16	EPA 3005A	1,6020B	MG
Mercury, Dissolved	ND		mg/l	0.00020	0.00006	1	07/30/18 16:50	07/31/18 11:50	EPA 7470A	1,7470A	MG
Nickel, Dissolved	0.09311		mg/l	0.00200	0.00055	1	08/01/18 11:00	08/02/18 13:16	EPA 3005A	1,6020B	MG
Potassium, Dissolved	53.2		mg/l	0.100	0.0309	1	08/01/18 11:00	08/02/18 13:16	EPA 3005A	1,6020B	MG
Selenium, Dissolved	ND		mg/l	0.00500	0.00173	1	08/01/18 11:00	08/02/18 13:16	EPA 3005A	1,6020B	MG
Silver, Dissolved	ND		mg/l	0.00040	0.00016	1	08/01/18 11:00	08/02/18 13:16	EPA 3005A	1,6020B	MG
Sodium, Dissolved	199.		mg/l	0.100	0.0293	1	08/01/18 11:00	08/02/18 13:16	EPA 3005A	1,6020B	MG
Thallium, Dissolved	ND		mg/l	0.00050	0.00014	1	08/01/18 11:00	08/02/18 13:16	EPA 3005A	1,6020B	MG
Vanadium, Dissolved	ND		mg/l	0.00500	0.00157	1	08/01/18 11:00	08/02/18 13:16	EPA 3005A	1,6020B	MG
Zinc, Dissolved	ND		mg/l	0.01000	0.00341	1	08/01/18 11:00	08/02/18 13:16	EPA 3005A	1,6020B	MG



Project Name: HYGRADE/STALINGRAD**Lab Number:** L1828999**Project Number:** 3612162331**Report Date:** 08/03/18**SAMPLE RESULTS**

Lab ID: L1828999-09

Date Collected: 07/26/18 13:05

Client ID: FB-072618

Date Received: 07/26/18

Sample Location: LONG ISLAND CITY, NY

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Aluminum, Total	0.00393	J	mg/l	0.0100	0.00327	1	07/31/18 14:20	08/01/18 17:38	EPA 3005A	1,6020B	AM
Antimony, Total	ND		mg/l	0.00400	0.00042	1	07/31/18 14:20	08/01/18 17:38	EPA 3005A	1,6020B	AM
Arsenic, Total	ND		mg/l	0.00050	0.00016	1	07/31/18 14:20	08/01/18 17:38	EPA 3005A	1,6020B	AM
Barium, Total	ND		mg/l	0.00050	0.00017	1	07/31/18 14:20	08/01/18 17:38	EPA 3005A	1,6020B	AM
Beryllium, Total	ND		mg/l	0.00050	0.00010	1	07/31/18 14:20	08/01/18 17:38	EPA 3005A	1,6020B	AM
Cadmium, Total	ND		mg/l	0.00020	0.00005	1	07/31/18 14:20	08/01/18 17:38	EPA 3005A	1,6020B	AM
Calcium, Total	0.0536	J	mg/l	0.100	0.0394	1	07/31/18 14:20	08/01/18 17:38	EPA 3005A	1,6020B	AM
Chromium, Total	0.00025	J	mg/l	0.00100	0.00017	1	07/31/18 14:20	08/01/18 17:38	EPA 3005A	1,6020B	AM
Cobalt, Total	ND		mg/l	0.00050	0.00016	1	07/31/18 14:20	08/01/18 17:38	EPA 3005A	1,6020B	AM
Copper, Total	ND		mg/l	0.00100	0.00038	1	07/31/18 14:20	08/01/18 17:38	EPA 3005A	1,6020B	AM
Iron, Total	ND		mg/l	0.0500	0.0191	1	07/31/18 14:20	08/01/18 17:38	EPA 3005A	1,6020B	AM
Lead, Total	ND		mg/l	0.00100	0.00034	1	07/31/18 14:20	08/01/18 17:38	EPA 3005A	1,6020B	AM
Magnesium, Total	ND		mg/l	0.0700	0.0242	1	07/31/18 14:20	08/01/18 17:38	EPA 3005A	1,6020B	AM
Manganese, Total	ND		mg/l	0.00100	0.00044	1	07/31/18 14:20	08/01/18 17:38	EPA 3005A	1,6020B	AM
Mercury, Total	ND		mg/l	0.00020	0.00006	1	07/30/18 16:50	07/31/18 11:27	EPA 7470A	1,7470A	MG
Nickel, Total	ND		mg/l	0.00200	0.00055	1	07/31/18 14:20	08/01/18 17:38	EPA 3005A	1,6020B	AM
Potassium, Total	ND		mg/l	0.100	0.0309	1	07/31/18 14:20	08/01/18 17:38	EPA 3005A	1,6020B	AM
Selenium, Total	ND		mg/l	0.00500	0.00173	1	07/31/18 14:20	08/01/18 17:38	EPA 3005A	1,6020B	AM
Silver, Total	ND		mg/l	0.00040	0.00016	1	07/31/18 14:20	08/01/18 17:38	EPA 3005A	1,6020B	AM
Sodium, Total	ND		mg/l	0.100	0.0293	1	07/31/18 14:20	08/01/18 17:38	EPA 3005A	1,6020B	AM
Thallium, Total	ND		mg/l	0.00050	0.00014	1	07/31/18 14:20	08/01/18 17:38	EPA 3005A	1,6020B	AM
Vanadium, Total	ND		mg/l	0.00500	0.00157	1	07/31/18 14:20	08/01/18 17:38	EPA 3005A	1,6020B	AM
Zinc, Total	ND		mg/l	0.01000	0.00341	1	07/31/18 14:20	08/01/18 17:38	EPA 3005A	1,6020B	AM
Dissolved Metals - Mansfield Lab											
Aluminum, Dissolved	0.00876	J	mg/l	0.0100	0.00327	1	08/01/18 11:00	08/02/18 13:21	EPA 3005A	1,6020B	MG
Antimony, Dissolved	ND		mg/l	0.00400	0.00042	1	08/01/18 11:00	08/02/18 13:21	EPA 3005A	1,6020B	MG
Arsenic, Dissolved	ND		mg/l	0.00050	0.00016	1	08/01/18 11:00	08/02/18 13:21	EPA 3005A	1,6020B	MG
Barium, Dissolved	ND		mg/l	0.00050	0.00017	1	08/01/18 11:00	08/02/18 13:21	EPA 3005A	1,6020B	MG
Beryllium, Dissolved	ND		mg/l	0.00050	0.00010	1	08/01/18 11:00	08/02/18 13:21	EPA 3005A	1,6020B	MG



Project Name: HYGRADE/STALINGRAD**Lab Number:** L1828999**Project Number:** 3612162331**Report Date:** 08/03/18**SAMPLE RESULTS**

Lab ID: L1828999-09

Date Collected: 07/26/18 13:05

Client ID: FB-072618

Date Received: 07/26/18

Sample Location: LONG ISLAND CITY, NY

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Cadmium, Dissolved	ND		mg/l	0.00020	0.00005	1	08/01/18 11:00	08/02/18 13:21	EPA 3005A	1,6020B	MG
Calcium, Dissolved	0.0398	J	mg/l	0.100	0.0394	1	08/01/18 11:00	08/02/18 13:21	EPA 3005A	1,6020B	MG
Chromium, Dissolved	ND		mg/l	0.00100	0.00017	1	08/01/18 11:00	08/02/18 13:21	EPA 3005A	1,6020B	MG
Cobalt, Dissolved	ND		mg/l	0.00050	0.00016	1	08/01/18 11:00	08/02/18 13:21	EPA 3005A	1,6020B	MG
Copper, Dissolved	0.00066	J	mg/l	0.00100	0.00038	1	08/01/18 11:00	08/02/18 13:21	EPA 3005A	1,6020B	MG
Iron, Dissolved	0.0871		mg/l	0.0500	0.0191	1	08/01/18 11:00	08/02/18 13:21	EPA 3005A	1,6020B	MG
Lead, Dissolved	ND		mg/l	0.00100	0.00034	1	08/01/18 11:00	08/02/18 13:21	EPA 3005A	1,6020B	MG
Magnesium, Dissolved	ND		mg/l	0.0700	0.0242	1	08/01/18 11:00	08/02/18 13:21	EPA 3005A	1,6020B	MG
Manganese, Dissolved	ND		mg/l	0.00100	0.00044	1	08/01/18 11:00	08/02/18 13:21	EPA 3005A	1,6020B	MG
Mercury, Dissolved	ND		mg/l	0.00020	0.00006	1	07/30/18 16:50	07/31/18 11:51	EPA 7470A	1,7470A	MG
Nickel, Dissolved	0.00078	J	mg/l	0.00200	0.00055	1	08/01/18 11:00	08/02/18 13:21	EPA 3005A	1,6020B	MG
Potassium, Dissolved	ND		mg/l	0.100	0.0309	1	08/01/18 11:00	08/02/18 13:21	EPA 3005A	1,6020B	MG
Selenium, Dissolved	ND		mg/l	0.00500	0.00173	1	08/01/18 11:00	08/02/18 13:21	EPA 3005A	1,6020B	MG
Silver, Dissolved	ND		mg/l	0.00040	0.00016	1	08/01/18 11:00	08/02/18 13:21	EPA 3005A	1,6020B	MG
Sodium, Dissolved	0.109	B	mg/l	0.100	0.0293	1	08/01/18 11:00	08/02/18 13:21	EPA 3005A	1,6020B	MG
Thallium, Dissolved	ND		mg/l	0.00050	0.00014	1	08/01/18 11:00	08/02/18 13:21	EPA 3005A	1,6020B	MG
Vanadium, Dissolved	ND		mg/l	0.00500	0.00157	1	08/01/18 11:00	08/02/18 13:21	EPA 3005A	1,6020B	MG
Zinc, Dissolved	ND		mg/l	0.01000	0.00341	1	08/01/18 11:00	08/02/18 13:21	EPA 3005A	1,6020B	MG



Project Name: HYGRADE/STALINGRAD

Lab Number: L1828999

Project Number: 3612162331

Report Date: 08/03/18

Method Blank Analysis Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Dissolved Metals - Mansfield Lab for sample(s): 01-07,09 Batch: WG1141015-1										
Mercury, Dissolved	ND		mg/l	0.00020	0.00006	1	07/30/18 16:50	07/31/18 11:29	1,7470A	MG

Prep Information

Digestion Method: EPA 7470A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01-07,09 Batch: WG1141016-1										
Mercury, Total	ND		mg/l	0.00020	0.00006	1	07/30/18 16:50	07/31/18 11:05	1,7470A	MG

Prep Information

Digestion Method: EPA 7470A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01-07,09 Batch: WG1141310-1										
Aluminum, Total	ND		mg/l	0.0100	0.00327	1	07/31/18 14:20	08/01/18 15:07	1,6020B	AM
Antimony, Total	0.00043	J	mg/l	0.00400	0.00042	1	07/31/18 14:20	08/01/18 15:07	1,6020B	AM
Arsenic, Total	ND		mg/l	0.00050	0.00016	1	07/31/18 14:20	08/01/18 15:07	1,6020B	AM
Barium, Total	ND		mg/l	0.00050	0.00017	1	07/31/18 14:20	08/01/18 15:07	1,6020B	AM
Beryllium, Total	ND		mg/l	0.00050	0.00010	1	07/31/18 14:20	08/01/18 15:07	1,6020B	AM
Cadmium, Total	ND		mg/l	0.00020	0.00005	1	07/31/18 14:20	08/01/18 15:07	1,6020B	AM
Calcium, Total	ND		mg/l	0.100	0.0394	1	07/31/18 14:20	08/01/18 15:07	1,6020B	AM
Chromium, Total	ND		mg/l	0.00100	0.00017	1	07/31/18 14:20	08/01/18 15:07	1,6020B	AM
Cobalt, Total	ND		mg/l	0.00050	0.00016	1	07/31/18 14:20	08/01/18 15:07	1,6020B	AM
Copper, Total	ND		mg/l	0.00100	0.00038	1	07/31/18 14:20	08/01/18 15:07	1,6020B	AM
Iron, Total	0.0282	J	mg/l	0.0500	0.0191	1	07/31/18 14:20	08/01/18 15:07	1,6020B	AM
Lead, Total	ND		mg/l	0.00100	0.00034	1	07/31/18 14:20	08/01/18 15:07	1,6020B	AM
Magnesium, Total	ND		mg/l	0.0700	0.0242	1	07/31/18 14:20	08/01/18 15:07	1,6020B	AM
Manganese, Total	ND		mg/l	0.00100	0.00044	1	07/31/18 14:20	08/01/18 15:07	1,6020B	AM
Nickel, Total	ND		mg/l	0.00200	0.00055	1	07/31/18 14:20	08/01/18 15:07	1,6020B	AM
Potassium, Total	ND		mg/l	0.100	0.0309	1	07/31/18 14:20	08/01/18 15:07	1,6020B	AM



Project Name: HYGRADE/STALINGRAD

Lab Number: L1828999

Project Number: 3612162331

Report Date: 08/03/18

Method Blank Analysis Batch Quality Control

Selenium, Total	ND	mg/l	0.00500	0.00173	1	07/31/18 14:20	08/01/18 15:07	1,6020B	AM
Silver, Total	ND	mg/l	0.00040	0.00016	1	07/31/18 14:20	08/01/18 15:07	1,6020B	AM
Sodium, Total	ND	mg/l	0.100	0.0293	1	07/31/18 14:20	08/01/18 15:07	1,6020B	AM
Thallium, Total	ND	mg/l	0.00050	0.00014	1	07/31/18 14:20	08/01/18 15:07	1,6020B	AM
Vanadium, Total	ND	mg/l	0.00500	0.00157	1	07/31/18 14:20	08/01/18 15:07	1,6020B	AM
Zinc, Total	ND	mg/l	0.01000	0.00341	1	07/31/18 14:20	08/01/18 15:07	1,6020B	AM

Prep Information

Digestion Method: EPA 3005A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Dissolved Metals - Mansfield Lab for sample(s): 01-07,09 Batch: WG1141765-1										
Aluminum, Dissolved	ND		mg/l	0.0100	0.00327	1	08/01/18 11:00	08/02/18 11:16	1,6020B	AM
Antimony, Dissolved	0.00151	J	mg/l	0.00400	0.00042	1	08/01/18 11:00	08/02/18 11:16	1,6020B	AM
Arsenic, Dissolved	ND		mg/l	0.00050	0.00016	1	08/01/18 11:00	08/02/18 11:16	1,6020B	AM
Barium, Dissolved	ND		mg/l	0.00050	0.00017	1	08/01/18 11:00	08/02/18 11:16	1,6020B	AM
Beryllium, Dissolved	ND		mg/l	0.00050	0.00010	1	08/01/18 11:00	08/02/18 11:16	1,6020B	AM
Cadmium, Dissolved	ND		mg/l	0.00020	0.00005	1	08/01/18 11:00	08/02/18 11:16	1,6020B	AM
Calcium, Dissolved	ND		mg/l	0.100	0.0394	1	08/01/18 11:00	08/02/18 11:16	1,6020B	AM
Chromium, Dissolved	ND		mg/l	0.00100	0.00017	1	08/01/18 11:00	08/02/18 11:16	1,6020B	AM
Cobalt, Dissolved	ND		mg/l	0.00050	0.00016	1	08/01/18 11:00	08/02/18 11:16	1,6020B	AM
Copper, Dissolved	ND		mg/l	0.00100	0.00038	1	08/01/18 11:00	08/02/18 11:16	1,6020B	AM
Iron, Dissolved	0.0198	J	mg/l	0.0500	0.0191	1	08/01/18 11:00	08/02/18 11:16	1,6020B	AM
Lead, Dissolved	ND		mg/l	0.00100	0.00034	1	08/01/18 11:00	08/02/18 11:16	1,6020B	AM
Magnesium, Dissolved	ND		mg/l	0.0700	0.0242	1	08/01/18 11:00	08/02/18 11:16	1,6020B	AM
Manganese, Dissolved	ND		mg/l	0.00100	0.00044	1	08/01/18 11:00	08/02/18 11:16	1,6020B	AM
Nickel, Dissolved	ND		mg/l	0.00200	0.00055	1	08/01/18 11:00	08/02/18 11:16	1,6020B	AM
Potassium, Dissolved	ND		mg/l	0.100	0.0309	1	08/01/18 11:00	08/02/18 11:16	1,6020B	AM
Selenium, Dissolved	ND		mg/l	0.00500	0.00173	1	08/01/18 11:00	08/02/18 11:16	1,6020B	AM
Silver, Dissolved	ND		mg/l	0.00040	0.00016	1	08/01/18 11:00	08/02/18 11:16	1,6020B	AM
Sodium, Dissolved	0.168		mg/l	0.100	0.0293	1	08/01/18 11:00	08/02/18 11:16	1,6020B	AM
Thallium, Dissolved	0.00037	J	mg/l	0.00050	0.00014	1	08/01/18 11:00	08/02/18 11:16	1,6020B	AM
Vanadium, Dissolved	ND		mg/l	0.00500	0.00157	1	08/01/18 11:00	08/02/18 11:16	1,6020B	AM
Zinc, Dissolved	ND		mg/l	0.01000	0.00341	1	08/01/18 11:00	08/02/18 11:16	1,6020B	AM



Project Name: HYGRADE/STALINGRAD

Lab Number: L1828999

Project Number: 3612162331

Report Date: 08/03/18

Method Blank Analysis Batch Quality Control

Prep Information

Digestion Method: EPA 3005A

Lab Control Sample Analysis

Batch Quality Control

Project Name: HYGRADE/STALINGRAD

Project Number: 3612162331

Lab Number: L1828999

Report Date: 08/03/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Dissolved Metals - Mansfield Lab Associated sample(s): 01-07,09 Batch: WG1141015-2								
Mercury, Dissolved	102		-		80-120	-		
Total Metals - Mansfield Lab Associated sample(s): 01-07,09 Batch: WG1141016-2								
Mercury, Total	105		-		80-120	-		

Lab Control Sample Analysis

Batch Quality Control

Project Name: HYGRADE/STALINGRAD

Lab Number: L1828999

Project Number: 3612162331

Report Date: 08/03/18

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-07,09 Batch: WG1141310-2					
Aluminum, Total	112	-	80-120	-	
Antimony, Total	100	-	80-120	-	
Arsenic, Total	108	-	80-120	-	
Barium, Total	111	-	80-120	-	
Beryllium, Total	110	-	80-120	-	
Cadmium, Total	120	-	80-120	-	
Calcium, Total	104	-	80-120	-	
Chromium, Total	104	-	80-120	-	
Cobalt, Total	104	-	80-120	-	
Copper, Total	108	-	80-120	-	
Iron, Total	117	-	80-120	-	
Lead, Total	116	-	80-120	-	
Magnesium, Total	112	-	80-120	-	
Manganese, Total	104	-	80-120	-	
Nickel, Total	106	-	80-120	-	
Potassium, Total	99	-	80-120	-	
Selenium, Total	114	-	80-120	-	
Silver, Total	109	-	80-120	-	
Sodium, Total	111	-	80-120	-	
Thallium, Total	113	-	80-120	-	
Vanadium, Total	105	-	80-120	-	

Lab Control Sample Analysis
Batch Quality Control**Project Name:** HYGRADE/STALINGRAD**Project Number:** 3612162331**Lab Number:** L1828999**Report Date:** 08/03/18

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-07,09 Batch: WG1141310-2					
Zinc, Total	113	-	80-120	-	

Lab Control Sample Analysis

Batch Quality Control

Project Name: HYGRADE/STALINGRAD

Project Number: 3612162331

Lab Number: L1828999

Report Date: 08/03/18

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Dissolved Metals - Mansfield Lab Associated sample(s): 01-07,09 Batch: WG1141765-2					
Aluminum, Dissolved	102	-	80-120	-	
Antimony, Dissolved	103	-	80-120	-	
Arsenic, Dissolved	103	-	80-120	-	
Barium, Dissolved	104	-	80-120	-	
Beryllium, Dissolved	107	-	80-120	-	
Cadmium, Dissolved	108	-	80-120	-	
Calcium, Dissolved	107	-	80-120	-	
Chromium, Dissolved	102	-	80-120	-	
Cobalt, Dissolved	104	-	80-120	-	
Copper, Dissolved	102	-	80-120	-	
Iron, Dissolved	120	-	80-120	-	
Lead, Dissolved	110	-	80-120	-	
Magnesium, Dissolved	111	-	80-120	-	
Manganese, Dissolved	103	-	80-120	-	
Nickel, Dissolved	108	-	80-120	-	
Potassium, Dissolved	105	-	80-120	-	
Selenium, Dissolved	104	-	80-120	-	
Silver, Dissolved	111	-	80-120	-	
Sodium, Dissolved	112	-	80-120	-	
Thallium, Dissolved	105	-	80-120	-	
Vanadium, Dissolved	103	-	80-120	-	

Lab Control Sample Analysis
Batch Quality Control**Project Name:** HYGRADE/STALINGRAD**Project Number:** 3612162331**Lab Number:** L1828999**Report Date:** 08/03/18

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Dissolved Metals - Mansfield Lab Associated sample(s): 01-07,09 Batch: WG1141765-2					
Zinc, Dissolved	107	-	80-120	-	

Matrix Spike Analysis Batch Quality Control

Project Name: HYGRADE/STALINGRAD

Lab Number: L1828999

Project Number: 3612162331

Report Date: 08/03/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Dissolved Metals - Mansfield Lab Associated sample(s): 01-07,09 QC Batch ID: WG1141015-3 QC Sample: L1828999-01 Client ID: BMW-3-072618												
Mercury, Dissolved	ND	0.005	0.00425	85		-	-		75-125	-		20
Total Metals - Mansfield Lab Associated sample(s): 01-07,09 QC Batch ID: WG1141016-3 QC Sample: L1828999-01 Client ID: BMW-3-072618												
Mercury, Total	ND	0.005	0.00419	84		-	-		75-125	-		20

Matrix Spike Analysis

Batch Quality Control

Project Name: HYGRADE/STALINGRAD

Project Number: 3612162331

Lab Number: L1828999

Report Date: 08/03/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Found	MSD %Recovery	Recovery Limits	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-07,09 QC Batch ID: WG1141310-3 QC Sample: L1828999-01 Client ID: BMW-3-072618									
Aluminum, Total	0.0280	2	2.12	105	-	-	75-125	-	20
Antimony, Total	0.00083J	0.5	0.5907	118	-	-	75-125	-	20
Arsenic, Total	0.01819	0.12	0.1463	107	-	-	75-125	-	20
Barium, Total	0.2706	2	2.363	105	-	-	75-125	-	20
Beryllium, Total	ND	0.05	0.05284	106	-	-	75-125	-	20
Cadmium, Total	ND	0.051	0.05529	108	-	-	75-125	-	20
Calcium, Total	257.	10	249	0	Q	-	75-125	-	20
Chromium, Total	0.00270	0.2	0.2075	102	-	-	75-125	-	20
Cobalt, Total	0.01717	0.5	0.5333	103	-	-	75-125	-	20
Copper, Total	0.00117	0.25	0.2659	106	-	-	75-125	-	20
Iron, Total	18.5	1	18.6	10	Q	-	75-125	-	20
Lead, Total	ND	0.51	0.5584	109	-	-	75-125	-	20
Magnesium, Total	46.6	10	56.2	96	-	-	75-125	-	20
Manganese, Total	3.724	0.5	4.025	60	Q	-	75-125	-	20
Nickel, Total	0.4654	0.5	0.9747	102	-	-	75-125	-	20
Potassium, Total	35.1	10	42.7	76	-	-	75-125	-	20
Selenium, Total	ND	0.12	0.127	106	-	-	75-125	-	20
Silver, Total	ND	0.05	0.05254	105	-	-	75-125	-	20
Sodium, Total	226.	10	252	260	Q	-	75-125	-	20
Thallium, Total	ND	0.12	0.1318	110	-	-	75-125	-	20
Vanadium, Total	0.00174J	0.5	0.5268	105	-	-	75-125	-	20

Matrix Spike Analysis Batch Quality Control

Project Name: HYGRADE/STALINGRAD

Lab Number: L1828999

Project Number: 3612162331

Report Date: 08/03/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Found	MSD %Recovery	Recovery Limits	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-07,09 QC Batch ID: WG1141310-3 QC Sample: L1828999-01 Client ID: BMW-3-072618									
Zinc, Total	ND	0.5	0.5357	107	-	-	75-125	-	20

Matrix Spike Analysis **Batch Quality Control**

Project Name: HYGRADE/STALINGRAD

Project Number: 3612162331

Lab Number: L1828999

Report Date: 08/03/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Found	MSD %Recovery	Recovery Limits	RPD	RPD Limits
Dissolved Metals - Mansfield Lab Associated sample(s): 01-07,09 QC Batch ID: WG1141765-3 QC Sample: L1828999-01 Client ID: BMW-3-072618									
Aluminum, Dissolved	ND	2	2.18	109	-	-	75-125	-	20
Antimony, Dissolved	0.00224J	0.5	0.6368	127	Q	-	75-125	-	20
Arsenic, Dissolved	0.00714	0.12	0.1366	108	-	-	75-125	-	20
Barium, Dissolved	0.2019	2	2.401	110	-	-	75-125	-	20
Beryllium, Dissolved	ND	0.05	0.05511	110	-	-	75-125	-	20
Cadmium, Dissolved	ND	0.051	0.05779	113	-	-	75-125	-	20
Calcium, Dissolved	241.	10	267	260	Q	-	75-125	-	20
Chromium, Dissolved	0.00138	0.2	0.2113	105	-	-	75-125	-	20
Cobalt, Dissolved	0.01629	0.5	0.5603	109	-	-	75-125	-	20
Copper, Dissolved	ND	0.25	0.2654	106	-	-	75-125	-	20
Iron, Dissolved	0.274	1	1.64	137	Q	-	75-125	-	20
Lead, Dissolved	ND	0.51	0.5557	109	-	-	75-125	-	20
Magnesium, Dissolved	48.0	10	62.7	147	Q	-	75-125	-	20
Manganese, Dissolved	3.668	0.5	4.142	95	-	-	75-125	-	20
Nickel, Dissolved	0.4899	0.5	1.061	114	-	-	75-125	-	20
Potassium, Dissolved	33.4	10	46.6	132	Q	-	75-125	-	20
Selenium, Dissolved	ND	0.12	0.137	114	-	-	75-125	-	20
Silver, Dissolved	ND	0.05	0.05673	113	-	-	75-125	-	20
Sodium, Dissolved	266.	10	300	340	Q	-	75-125	-	20
Thallium, Dissolved	ND	0.12	0.1305	109	-	-	75-125	-	20
Vanadium, Dissolved	ND	0.5	0.5358	107	-	-	75-125	-	20

Matrix Spike Analysis
Batch Quality Control**Project Name:** HYGRADE/STALINGRAD**Project Number:** 3612162331**Lab Number:** L1828999**Report Date:** 08/03/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Found	MSD %Recovery	Recovery Limits	RPD	RPD Limits
Dissolved Metals - Mansfield Lab Associated sample(s): 01-07,09 QC Batch ID: WG1141765-3 QC Sample: L1828999-01 Client ID: BMW-3-072618									
Zinc, Dissolved	ND	0.5	0.5793	116	-	-	75-125	-	20

Lab Duplicate Analysis *Batch Quality Control*

Project Name: HYGRADE/STALINGRAD

Project Number: 3612162331

Lab Number: L1828999

Report Date: 08/03/18

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Dissolved Metals - Mansfield Lab Associated sample(s): 01-07,09 QC Batch ID: WG1141015-4 QC Sample: L1828999-01 Client ID: BMW-3-072618						
Mercury, Dissolved	ND	0.00007J	mg/l	NC		20
Total Metals - Mansfield Lab Associated sample(s): 01-07,09 QC Batch ID: WG1141016-4 QC Sample: L1828999-01 Client ID: BMW-3-072618						
Mercury, Total	ND	ND	mg/l	NC		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: HYGRADE/STALINGRAD

Project Number: 3612162331

Lab Number: L1828999

Report Date: 08/03/18

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-07,09 QC Batch ID: WG1141310-4 QC Sample: L1828999-01 Client ID: BMW-3-072618					
Aluminum, Total	0.0280	0.0258	mg/l	8	20
Antimony, Total	0.00083J	0.00177J	mg/l	NC	20
Arsenic, Total	0.01819	0.01830	mg/l	1	20
Barium, Total	0.2706	0.2760	mg/l	2	20
Beryllium, Total	ND	ND	mg/l	NC	20
Cadmium, Total	ND	ND	mg/l	NC	20
Calcium, Total	257.	251	mg/l	2	20
Chromium, Total	0.00270	0.00238	mg/l	12	20
Cobalt, Total	0.01717	0.01672	mg/l	3	20
Copper, Total	0.00117	0.00100	mg/l	16	20
Iron, Total	18.5	18.1	mg/l	2	20
Lead, Total	ND	ND	mg/l	NC	20
Magnesium, Total	46.6	45.5	mg/l	2	20
Manganese, Total	3.724	3.690	mg/l	1	20
Nickel, Total	0.4654	0.4637	mg/l	0	20
Potassium, Total	35.1	34.0	mg/l	3	20
Selenium, Total	ND	ND	mg/l	NC	20
Silver, Total	ND	ND	mg/l	NC	20
Sodium, Total	226.	220	mg/l	3	20

Lab Duplicate Analysis

Batch Quality Control

Project Name: HYGRADE/STALINGRAD

Project Number: 3612162331

Lab Number: L1828999

Report Date: 08/03/18

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-07,09 QC Batch ID: WG1141310-4 QC Sample: L1828999-01 Client ID: BMW-3-072618					
Thallium, Total	ND	0.00019J	mg/l	NC	20
Vanadium, Total	0.00174J	0.00182J	mg/l	NC	20
Zinc, Total	ND	ND	mg/l	NC	20

Project Name: HYGRADE/STALINGRAD
Project Number: 3612162331

Lab Duplicate Analysis
Batch Quality Control

Lab Number: L1828999
Report Date: 08/03/18

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
Dissolved Metals - Mansfield Lab Associated sample(s): 01-07,09 QC Batch ID: WG1141765-4 QC Sample: L1828999-01 Client ID: BMW-3-072618					
Aluminum, Dissolved	ND	ND	mg/l	NC	20
Antimony, Dissolved	0.00224J	0.00684	mg/l	NC	20
Arsenic, Dissolved	0.00714	0.00745	mg/l	4	20
Barium, Dissolved	0.2019	0.2061	mg/l	2	20
Beryllium, Dissolved	ND	ND	mg/l	NC	20
Cadmium, Dissolved	ND	ND	mg/l	NC	20
Calcium, Dissolved	241.	248	mg/l	3	20
Chromium, Dissolved	0.00138	0.00144	mg/l	4	20
Cobalt, Dissolved	0.01629	0.01580	mg/l	3	20
Copper, Dissolved	ND	ND	mg/l	NC	20
Iron, Dissolved	0.274	0.306	mg/l	11	20
Lead, Dissolved	ND	ND	mg/l	NC	20
Magnesium, Dissolved	48.0	48.3	mg/l	1	20
Manganese, Dissolved	3.668	3.847	mg/l	5	20
Nickel, Dissolved	0.4899	0.4961	mg/l	1	20
Potassium, Dissolved	33.4	33.9	mg/l	1	20
Selenium, Dissolved	ND	ND	mg/l	NC	20
Silver, Dissolved	ND	ND	mg/l	NC	20
Sodium, Dissolved	266.	271	mg/l	2	20

Lab Duplicate Analysis

Batch Quality Control

Project Name: HYGRADE/STALINGRAD

Project Number: 3612162331

Lab Number: L1828999

Report Date: 08/03/18

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
Dissolved Metals - Mansfield Lab Associated sample(s): 01-07,09 QC Batch ID: WG1141765-4 QC Sample: L1828999-01 Client ID: BMW-3-072618					
Thallium, Dissolved	ND	0.00030J	mg/l	NC	20
Vanadium, Dissolved	ND	ND	mg/l	NC	20
Zinc, Dissolved	ND	ND	mg/l	NC	20

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Sample Receipt and Container Information

Were project specific reporting limits specified?

YES

Cooler Information

Cooler	Custody Seal
B	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1828999-01A	Vial HCl preserved	B	NA		3.3	Y	Absent		NYTCL-8260(14)
L1828999-01B	Vial HCl preserved	B	NA		3.3	Y	Absent		NYTCL-8260(14)
L1828999-01C	Vial HCl preserved	B	NA		3.3	Y	Absent		NYTCL-8260(14)
L1828999-01D	Plastic 250ml unpreserved	B	7	7	3.3	Y	Absent		-
L1828999-01E	Plastic 250ml HNO3 preserved	B	<2	<2	3.3	Y	Absent		BA-6020T(180),FE-6020T(180),SE-6020T(180),TL-6020T(180),CA-6020T(180),CR-6020T(180),K-6020T(180),NI-6020T(180),CU-6020T(180),NA-6020T(180),ZN-6020T(180),PB-6020T(180),BE-6020T(180),MN-6020T(180),AS-6020T(180),SB-6020T(180),V-6020T(180),AG-6020T(180),AL-6020T(180),CD-6020T(180),HG-T(28),MG-6020T(180),CO-6020T(180)
L1828999-01F	Plastic 250ml HNO3 preserved	B	<2	<2	3.3	Y	Absent		V-6020T(180)
L1828999-01X	Plastic 250ml HNO3 preserved Filtrates	B	7	7	3.3	Y	Absent		CU-6020S(180),K-6020S(180),SE-6020S(180),V-6020S(180),MN-6020S(180),BE-6020S(180),CO-6020S(180),MG-6020S(180),ZN-6020S(180),CA-6020S(180),CR-6020S(180),FE-6020S(180),BA-6020S(180),NA-6020S(180),NI-6020S(180),PB-6020S(180),TL-6020S(180),AG-6020S(180),AS-6020S(180),SB-6020S(180),AL-6020S(180),CD-6020S(180),HG-S(28)
L1828999-02A	Vial HCl preserved	B	NA		3.3	Y	Absent		NYTCL-8260(14)
L1828999-02B	Vial HCl preserved	B	NA		3.3	Y	Absent		NYTCL-8260(14)
L1828999-02C	Vial HCl preserved	B	NA		3.3	Y	Absent		NYTCL-8260(14)
L1828999-02D	Plastic 250ml unpreserved	B	7	7	3.3	Y	Absent		-

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Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1828999-02E	Plastic 250ml HNO3 preserved	B	<2	<2	3.3	Y	Absent		BA-6020T(180),FE-6020T(180),SE-6020T(180),TL-6020T(180),CA-6020T(180),CR-6020T(180),K-6020T(180),NI-6020T(180),CU-6020T(180),NA-6020T(180),ZN-6020T(180),PB-6020T(180),BE-6020T(180),MN-6020T(180),AS-6020T(180),SB-6020T(180),V-6020T(180),AG-6020T(180),AL-6020T(180),CD-6020T(180),HG-T(28),MG-6020T(180),CO-6020T(180)
L1828999-02X	Plastic 250ml HNO3 preserved Filtrates	B	7	7	3.3	Y	Absent		CU-6020S(180),K-6020S(180),SE-6020S(180),V-6020S(180),MN-6020S(180),BE-6020S(180),CO-6020S(180),MG-6020S(180),ZN-6020S(180),CA-6020S(180),CR-6020S(180),FE-6020S(180),BA-6020S(180),NA-6020S(180),NI-6020S(180),PB-6020S(180),TL-6020S(180),AG-6020S(180),AS-6020S(180),SB-6020S(180),AL-6020S(180),CD-6020S(180),HG-S(28)
L1828999-03A	Vial HCl preserved	B	NA		3.3	Y	Absent		NYTCL-8260(14)
L1828999-03B	Vial HCl preserved	B	NA		3.3	Y	Absent		NYTCL-8260(14)
L1828999-03C	Vial HCl preserved	B	NA		3.3	Y	Absent		NYTCL-8260(14)
L1828999-03D	Plastic 250ml unpreserved	B	7	7	3.3	Y	Absent		-
L1828999-03E	Plastic 250ml HNO3 preserved	B	<2	<2	3.3	Y	Absent		BA-6020T(180),FE-6020T(180),SE-6020T(180),TL-6020T(180),CA-6020T(180),CR-6020T(180),K-6020T(180),NI-6020T(180),CU-6020T(180),NA-6020T(180),ZN-6020T(180),PB-6020T(180),BE-6020T(180),MN-6020T(180),AS-6020T(180),SB-6020T(180),V-6020T(180),AG-6020T(180),AL-6020T(180),CD-6020T(180),HG-T(28),MG-6020T(180),CO-6020T(180)
L1828999-03X	Plastic 250ml HNO3 preserved Filtrates	B	7	7	3.3	Y	Absent		CU-6020S(180),K-6020S(180),SE-6020S(180),V-6020S(180),MN-6020S(180),BE-6020S(180),CO-6020S(180),MG-6020S(180),ZN-6020S(180),CA-6020S(180),CR-6020S(180),FE-6020S(180),BA-6020S(180),NA-6020S(180),NI-6020S(180),PB-6020S(180),TL-6020S(180),AG-6020S(180),AS-6020S(180),SB-6020S(180),AL-6020S(180),CD-6020S(180),HG-S(28)
L1828999-04A	Vial HCl preserved	B	NA		3.3	Y	Absent		NYTCL-8260(14)
L1828999-04B	Vial HCl preserved	B	NA		3.3	Y	Absent		NYTCL-8260(14)
L1828999-04C	Vial HCl preserved	B	NA		3.3	Y	Absent		NYTCL-8260(14)
L1828999-04D	Plastic 250ml unpreserved	B	7	7	3.3	Y	Absent		-

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Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1828999-04E	Plastic 250ml HNO3 preserved	B	<2	<2	3.3	Y	Absent		BA-6020T(180),FE-6020T(180),SE-6020T(180),TL-6020T(180),CA-6020T(180),CR-6020T(180),K-6020T(180),NI-6020T(180),CU-6020T(180),NA-6020T(180),ZN-6020T(180),PB-6020T(180),BE-6020T(180),MN-6020T(180),AS-6020T(180),SB-6020T(180),V-6020T(180),AG-6020T(180),AL-6020T(180),CD-6020T(180),HG-T(28),MG-6020T(180),CO-6020T(180)
L1828999-04X	Plastic 250ml HNO3 preserved Filtrates	B	7	7	3.3	Y	Absent		CU-6020S(180),K-6020S(180),SE-6020S(180),V-6020S(180),MN-6020S(180),BE-6020S(180),CO-6020S(180),MG-6020S(180),ZN-6020S(180),CA-6020S(180),CR-6020S(180),FE-6020S(180),BA-6020S(180),NA-6020S(180),NI-6020S(180),PB-6020S(180),TL-6020S(180),AG-6020S(180),AS-6020S(180),SB-6020S(180),AL-6020S(180),CD-6020S(180),HG-S(28)
L1828999-05A	Vial HCl preserved	B	NA		3.3	Y	Absent		NYTCL-8260(14)
L1828999-05B	Vial HCl preserved	B	NA		3.3	Y	Absent		NYTCL-8260(14)
L1828999-05C	Vial HCl preserved	B	NA		3.3	Y	Absent		NYTCL-8260(14)
L1828999-05D	Plastic 250ml unpreserved	B	7	7	3.3	Y	Absent		-
L1828999-05E	Plastic 250ml HNO3 preserved	B	<2	<2	3.3	Y	Absent		BA-6020T(180),FE-6020T(180),SE-6020T(180),TL-6020T(180),CA-6020T(180),CR-6020T(180),K-6020T(180),NI-6020T(180),CU-6020T(180),NA-6020T(180),ZN-6020T(180),PB-6020T(180),BE-6020T(180),MN-6020T(180),AS-6020T(180),SB-6020T(180),V-6020T(180),AG-6020T(180),AL-6020T(180),CD-6020T(180),HG-T(28),MG-6020T(180),CO-6020T(180)
L1828999-05X	Plastic 250ml HNO3 preserved Filtrates	B	7	7	3.3	Y	Absent		CU-6020S(180),K-6020S(180),SE-6020S(180),V-6020S(180),MN-6020S(180),BE-6020S(180),CO-6020S(180),MG-6020S(180),ZN-6020S(180),CA-6020S(180),CR-6020S(180),FE-6020S(180),BA-6020S(180),NA-6020S(180),NI-6020S(180),PB-6020S(180),TL-6020S(180),AG-6020S(180),AS-6020S(180),SB-6020S(180),AL-6020S(180),CD-6020S(180),HG-S(28)
L1828999-06A	Vial HCl preserved	B	NA		3.3	Y	Absent		NYTCL-8260(14)
L1828999-06B	Vial HCl preserved	B	NA		3.3	Y	Absent		NYTCL-8260(14)
L1828999-06C	Vial HCl preserved	B	NA		3.3	Y	Absent		NYTCL-8260(14)
L1828999-06D	Plastic 250ml unpreserved	B	7	7	3.3	Y	Absent		-

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Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1828999-06E	Plastic 250ml HNO3 preserved	B	<2	<2	3.3	Y	Absent		BA-6020T(180),FE-6020T(180),SE-6020T(180),TL-6020T(180),CA-6020T(180),CR-6020T(180),K-6020T(180),NI-6020T(180),CU-6020T(180),NA-6020T(180),ZN-6020T(180),PB-6020T(180),BE-6020T(180),MN-6020T(180),AS-6020T(180),SB-6020T(180),V-6020T(180),AG-6020T(180),AL-6020T(180),CD-6020T(180),HG-T(28),MG-6020T(180),CO-6020T(180)
L1828999-06X	Plastic 250ml HNO3 preserved Filtrates	B	7	7	3.3	Y	Absent		CU-6020S(180),K-6020S(180),SE-6020S(180),V-6020S(180),MN-6020S(180),BE-6020S(180),CO-6020S(180),MG-6020S(180),ZN-6020S(180),CA-6020S(180),CR-6020S(180),FE-6020S(180),BA-6020S(180),NA-6020S(180),NI-6020S(180),PB-6020S(180),TL-6020S(180),AG-6020S(180),AS-6020S(180),SB-6020S(180),AL-6020S(180),CD-6020S(180),HG-S(28)
L1828999-07A	Vial HCl preserved	B	NA		3.3	Y	Absent		NYTCL-8260(14)
L1828999-07B	Vial HCl preserved	B	NA		3.3	Y	Absent		NYTCL-8260(14)
L1828999-07C	Vial HCl preserved	B	NA		3.3	Y	Absent		NYTCL-8260(14)
L1828999-07D	Plastic 250ml unpreserved	B	7	7	3.3	Y	Absent		-
L1828999-07E	Plastic 250ml HNO3 preserved	B	<2	<2	3.3	Y	Absent		BA-6020T(180),FE-6020T(180),SE-6020T(180),TL-6020T(180),CA-6020T(180),CR-6020T(180),K-6020T(180),NI-6020T(180),CU-6020T(180),NA-6020T(180),ZN-6020T(180),PB-6020T(180),BE-6020T(180),MN-6020T(180),AS-6020T(180),SB-6020T(180),V-6020T(180),AG-6020T(180),AL-6020T(180),CD-6020T(180),HG-T(28),MG-6020T(180),CO-6020T(180)
L1828999-07X	Plastic 250ml HNO3 preserved Filtrates	B	7	7	3.3	Y	Absent		CU-6020S(180),K-6020S(180),SE-6020S(180),V-6020S(180),MN-6020S(180),BE-6020S(180),CO-6020S(180),MG-6020S(180),ZN-6020S(180),CA-6020S(180),CR-6020S(180),FE-6020S(180),BA-6020S(180),NA-6020S(180),NI-6020S(180),PB-6020S(180),TL-6020S(180),AG-6020S(180),AS-6020S(180),SB-6020S(180),AL-6020S(180),CD-6020S(180),HG-S(28)
L1828999-08A	Vial HCl preserved	B	NA		3.3	Y	Absent		NYTCL-8260(14)
L1828999-08B	Vial HCl preserved	B	NA		3.3	Y	Absent		NYTCL-8260(14)
L1828999-09A	Vial HCl preserved	B	NA		3.3	Y	Absent		NYTCL-8260(14)
L1828999-09B	Vial HCl preserved	B	NA		3.3	Y	Absent		NYTCL-8260(14)

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Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1828999-09C	Vial HCl preserved	B	NA		3.3	Y	Absent		NYTCL-8260(14)
L1828999-09D	Plastic 250ml unpreserved	B	7	7	3.3	Y	Absent		-
L1828999-09E	Plastic 250ml HNO3 preserved	B	<2	<2	3.3	Y	Absent		BA-6020T(180),FE-6020T(180),SE-6020T(180),TL-6020T(180),CA-6020T(180),CR-6020T(180),K-6020T(180),NI-6020T(180),CU-6020T(180),NA-6020T(180),ZN-6020T(180),PB-6020T(180),BE-6020T(180),MN-6020T(180),AS-6020T(180),SB-6020T(180),V-6020T(180),AG-6020T(180),AL-6020T(180),CD-6020T(180),HG-T(28),MG-6020T(180),CO-6020T(180)
L1828999-09X	Plastic 250ml HNO3 preserved Filtrates	B	7	7	3.3	Y	Absent		CU-6020S(180),K-6020S(180),SE-6020S(180),V-6020S(180),MN-6020S(180),BE-6020S(180),CO-6020S(180),MG-6020S(180),ZN-6020S(180),CA-6020S(180),CR-6020S(180),FE-6020S(180),BA-6020S(180),NA-6020S(180),NI-6020S(180),PB-6020S(180),TL-6020S(180),AG-6020S(180),AS-6020S(180),SB-6020S(180),AL-6020S(180),CD-6020S(180),HG-S(28)

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GLOSSARY

Acronyms

EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Report Format: DU Report with 'J' Qualifiers



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Data Qualifiers

- A** - Spectra identified as "Aldol Condensation Product".
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers



Project Name: HYGRADE/STALINGRAD
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Lab Number: L1828999
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REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IV, 2007.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility

EPA 624: m/p-xylene, o-xylene

EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270D: NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

EPA 300: DW: Bromide

EPA 6860: SCM: Perchlorate

EPA 9010: NPW and SCM: Amenable Cyanide Distillation

SM4500: NPW: Amenable Cyanide, Dissolved Oxygen; SCM: Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility

SM 2540D: TSS

EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B

EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **EPA 351.1, SM4500P-E, SM4500P-B, E,**

SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D.

EPA 624: Volatile Halocarbons & Aromatics,

EPA 608: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, SM9222D.**

Mansfield Facility:

Drinking Water

EPA 200.7: Al, Ba, Be, Cd, Cr, Cu, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

EPA 522.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn.

EPA 245.1 Hg.

SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

 NEW YORK CHAIN OF CUSTODY		Service Centers Mahwah, NJ 07430: 35 Whitney Rd, Suite 5 Albany, NY 12205: 14 Walker Way Tonawanda, NY 14150: 275 Cooper Ave, Suite 105		Page 1 of 1		Date Rec'd In Lab 7/27/18		ALPHA Job # 4828999			
Westborough, MA 01581 8 Walkup Dr. TEL: 508-898-9220 FAX: 508-898-9193		Mansfield, MA 02048 320 Forbes Blvd TEL: 508-822-9300 FAX: 508-822-3288		Project Information Project Name: Hygrade/Stalingrad Project Location: Long Island City, NY Project # 3612162331 (Use Project name as Project #) ☐		Deliverables ☐ ASP-A ☒ ASP-B ☐ EQulS (1 File) ☐ EQulS (4 File) ☐ Other		Billing Information ☒ Same as Client Info PO #			
Client Information Client: Amec E&E Address: 21425 42nd Ave, Suite 37 Bayside NY 11361 Phone: 347-836-4445 Fax: Email: eric.weinstock@amec.com		Project Manager: Eric Weinstock ALPHAQuote #: Q60919 Turn-Around Time Standard ☒ Due Date: Rush (only if pre approved) ☐ # of Days:		Regulatory Requirement ☒ NY TOGS ☐ NY Part 375 ☐ AWQ Standards ☐ NY CP-51 ☐ NY Restricted Use ☐ Other ☐ NY Unrestricted Use ☐ NYC Sewer Discharge		Disposal Site Information Please identify below location of applicable disposal facilities. Disposal Facility: ☐ NJ ☐ NY ☐ Other:					
These samples have been previously analyzed by Alpha ☐ Other project specific requirements/comments:				ANALYSIS		Sample Filtration ☐ Done ☒ Lab to do Preservation ☐ Lab to do (Please Specify below)		Total Bottles			
Please specify Metals or TAL.				VOCs 8260C Dissolved Metals 6020 Total Metals 6090		5 5 5 5 5 5 5 5 2 5		Sample Specific Comments			
ALPHA Lab ID (Lab Use Only)		Sample ID		Collection Date Time		Sample Matrix		Sampler's Initials			
48999 -01 -02 -03 -04 -05 -06 -07 -08 -09		BMW-3-072618 BMW-4-072618 MW-5-072618 MW-6S-072618 MW-6D-072618 MW-E-072618 DUP-072618 TB-072418 FB-072618		07/26/18 1350 07/26/18 1325 07/26/18 1015 07/26/18 1035 07/26/18 0930 07/26/18 1130 07/26/18 1325 07/24/18 07/26/18 1305		GW GW GW GW GW GW GW QC QC		JL OH BH JL JL BH BH JL		X X X X X X X X X X X X X X X X X X	
Preservative Code: A = None B = HCl C = HNO ₃ D = H ₂ SO ₄ E = NaOH F = MeOH G = NaHSO ₄ H = Na ₂ S ₂ O ₃ K/E = Zn Ac/NaOH O = Other		Container Code P = Plastic A = Amber Glass V = Vial G = Glass B = Bacteria Cup C = Cube O = Other E = Encore D = BOD Bottle		Westboro: Certification No: MA935 Mansfield: Certification No: MA015		Container Type Preservative		J P M B AL			
Form No: 01-25 HC (rev. 30-Sept-2013)		Relinquished By:		Date/Time		Received By:		Date/Time			
Ben Hys 7/26/18 5:45 7/26/2000 0300		7/26/18 5:45 7/26/2000 0300		Primer Jackson 7/26/18 1745 7/26/2000 0300		7/26/18 1745 7/26/2000 0300		7/27/18 0240			



ANALYTICAL REPORT

Lab Number:	L1829069
Client:	Wood Env & Infrastructure Solutions, Inc 214-25 42nd Avenue Suite 3R Bayside, NY 11361
ATTN:	Eric Weinstock
Phone:	(347) 836-4445
Project Name:	HYGRADE
Project Number:	3612162331
Report Date:	08/20/18

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com



Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829069
Report Date: 08/20/18

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1829069-01	BMW-1-072718	WATER	LONG ISLAND CITY, NY	07/27/18 09:20	07/27/18
L1829069-02	BMW-2-072718	WATER	LONG ISLAND CITY, NY	07/27/18 10:45	07/27/18

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829069
Report Date: 08/20/18

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. All specific QC information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY

For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Client Services at 800-624-9220 with any questions.

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829069
Report Date: 08/20/18

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Perfluorinated Alkyl Acids by Isotope Dilution

L1829069-01 and -02: The samples were re-extracted on dilution out of method holding time in order to quantify the results within the calibration range. The result(s) should be considered estimated, and are qualified with an E flag, for any compound(s) that exceeded the calibration range in the initial analysis. The re-analysis was performed only for the compound(s) that exceeded the calibration range.

The WG1144996-1 Method Blank, associated with L1829069-01 and -02, has a concentration above the reporting limit for 6:2FTS. The results of the original analysis are reported and are qualified with a "B" for any associated sample concentrations that are less than 10x the blank concentration for this analyte.

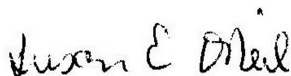
The WG1144996-4/-5 MS/MSD recoveries, performed on L1829069-01, are outside the acceptance criteria for perfluorobutanesulfonic acid (pfbs) (286% MSD only) and perfluorooctanesulfonic acid (pfos) (0%/299%). The unacceptable percent recoveries are attributed to the elevated concentrations of target compounds present in the native sample.

The WG1147316-4/-5 MS/MSD recoveries, performed on L1829069-01, are outside the acceptance criteria for perfluorobutanesulfonic acid (pfbs) (180%/180%) and perfluorooctanesulfonic acid (pfos) (201% MS only). The unacceptable percent recoveries are attributed to the elevated concentrations of target compounds present in the native sample.

The continuing calibration standard WG1145801-1, associated with L1829069 as well as the associated QC, had the response for the extracted internal standard Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA) (44.5%D) below the acceptance criteria for the method. The associated target analyte was within acceptance criteria, therefore no further action was taken.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:



Susan O'Neil

Title: Technical Director/Representative

Date: 08/20/18

ORGANICS

SEMIVOLATILES

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829069
Report Date: 08/20/18

SAMPLE RESULTS

Lab ID: L1829069-01
Client ID: BMW-1-072718
Sample Location: LONG ISLAND CITY, NY

Date Collected: 07/27/18 09:20
Date Received: 07/27/18
Field Prep: Not Specified

Sample Depth:

Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 08/14/18 10:56
Analyst: AJ

Extraction Method: EPA 537
Extraction Date: 08/10/18 07:57

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	31.0		ng/l	1.85	0.121	1
Perfluoropentanoic Acid (PFPeA)	59.6		ng/l	1.85	0.079	1
Perfluorobutanesulfonic Acid (PFBS)	1460	E	ng/l	1.85	0.102	1
Perfluorohexanoic Acid (PFHxA)	61.2		ng/l	1.85	0.117	1
Perfluoroheptanoic Acid (PFHpA)	27.8		ng/l	1.85	0.086	1
Perfluorohexanesulfonic Acid (PFHxS)	211		ng/l	1.85	0.100	1
Perfluorooctanoic Acid (PFOA)	92.6		ng/l	1.85	0.047	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	15.2	B	ng/l	1.85	0.180	1
Perfluoroheptanesulfonic Acid (PFHpS)	56.0		ng/l	1.85	0.144	1
Perfluorononanoic Acid (PFNA)	6.17		ng/l	1.85	0.093	1
Perfluorooctanesulfonic Acid (PFOS)	885	E	ng/l	1.85	0.103	1
Perfluorodecanoic Acid (PFDA)	2.40		ng/l	1.85	0.176	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.85	0.269	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.85	0.232	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.85	0.177	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.85	0.206	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.85	0.210	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.85	0.345	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.85	0.085	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.85	0.084	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.85	0.067	1

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829069
Report Date: 08/20/18

SAMPLE RESULTS

Lab ID: L1829069-01
Client ID: BMW-1-072718
Sample Location: LONG ISLAND CITY, NY

Date Collected: 07/27/18 09:20
Date Received: 07/27/18
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	93		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	71		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	72		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	65		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	80		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	111		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	87		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	95		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	81		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	87		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	81		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	76		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	58		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	80		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	68		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	51		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	61		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	45		33-143

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829069
Report Date: 08/20/18

SAMPLE RESULTS

Lab ID: L1829069-01 RE
Client ID: BMW-1-072718
Sample Location: LONG ISLAND CITY, NY

Date Collected: 07/27/18 09:20
Date Received: 07/27/18
Field Prep: Not Specified

Sample Depth:

Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 08/18/18 01:23
Analyst: AJ

Extraction Method: EPA 537
Extraction Date: 08/16/18 14:12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanesulfonic Acid (PFBS)	1340		ng/l	10.0	0.550	1
Perfluorooctanesulfonic Acid (PFOS)	739		ng/l	10.0	0.558	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	138		31-159
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	128		42-146

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829069
Report Date: 08/20/18

SAMPLE RESULTS

Lab ID: L1829069-02
Client ID: BMW-2-072718
Sample Location: LONG ISLAND CITY, NY

Date Collected: 07/27/18 10:45
Date Received: 07/27/18
Field Prep: Not Specified

Sample Depth:

Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 08/14/18 11:46
Analyst: AJ

Extraction Method: EPA 537
Extraction Date: 08/10/18 07:57

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	28.6		ng/l	1.85	0.121	1
Perfluoropentanoic Acid (PFPeA)	47.9		ng/l	1.85	0.079	1
Perfluorobutanesulfonic Acid (PFBS)	1700	E	ng/l	1.85	0.102	1
Perfluorohexanoic Acid (PFHxA)	43.8		ng/l	1.85	0.117	1
Perfluoroheptanoic Acid (PFHpA)	21.5		ng/l	1.85	0.086	1
Perfluorohexanesulfonic Acid (PFHxS)	464		ng/l	1.85	0.100	1
Perfluorooctanoic Acid (PFOA)	91.4		ng/l	1.85	0.047	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	17.2	B	ng/l	1.85	0.180	1
Perfluoroheptanesulfonic Acid (PFHpS)	124		ng/l	1.85	0.144	1
Perfluorononanoic Acid (PFNA)	3.25		ng/l	1.85	0.093	1
Perfluorooctanesulfonic Acid (PFOS)	2340	E	ng/l	1.85	0.103	1
Perfluorodecanoic Acid (PFDA)	1.37	J	ng/l	1.85	0.176	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.85	0.269	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.85	0.232	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.85	0.177	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.85	0.206	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.85	0.210	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.85	0.345	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.85	0.085	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.85	0.084	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.85	0.067	1

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829069
Report Date: 08/20/18

SAMPLE RESULTS

Lab ID: L1829069-02
Client ID: BMW-2-072718
Sample Location: LONG ISLAND CITY, NY

Date Collected: 07/27/18 10:45
Date Received: 07/27/18
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	110		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	83		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	88		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	77		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	91		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	130		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	103		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	99		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	86		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	103		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	94		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	98		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	63		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	89		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	67		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	54		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	67		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	35		33-143

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829069
Report Date: 08/20/18

SAMPLE RESULTS

Lab ID: L1829069-02 RE
Client ID: BMW-2-072718
Sample Location: LONG ISLAND CITY, NY

Date Collected: 07/27/18 10:45
Date Received: 07/27/18
Field Prep: Not Specified

Sample Depth:

Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 08/18/18 01:39
Analyst: AJ

Extraction Method: EPA 537
Extraction Date: 08/16/18 14:12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanesulfonic Acid (PFBS)	2070		ng/l	10.0	0.550	1
Perfluorooctanesulfonic Acid (PFOS)	2950		ng/l	10.0	0.558	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	117		31-159
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	110		42-146

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829069
Report Date: 08/20/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 122,537(M)
Analytical Date: 08/14/18 07:53
Analyst: AJ

Extraction Method: EPA 537
Extraction Date: 08/10/18 07:57

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-02 Batch: WG1144996-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.131
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.086
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.110
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.126
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.092
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.108
Perfluorooctanoic Acid (PFOA)	0.192	J	ng/l	2.00	0.050
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	13.4		ng/l	2.00	0.194
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.155
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.101
Perfluorooctanesulfonic Acid (PFOS)	0.140	J	ng/l	2.00	0.112
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.190
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	0.291
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.250
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.191
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.222
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.227
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.373
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.092
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.090
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.072

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829069
Report Date: 08/20/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 122,537(M)
Analytical Date: 08/14/18 07:53
Analyst: AJ

Extraction Method: EPA 537
Extraction Date: 08/10/18 07:57

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-02 Batch: WG1144996-1					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	104		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	114		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	112		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	86		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	81		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	123		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	100		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	83		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	88		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	102		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	92		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	58		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	65		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	98		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	29		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	63		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	90		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	46		33-143

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829069
Report Date: 08/20/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 122,537(M)
Analytical Date: 08/18/18 00:00
Analyst: AJ

Extraction Method: EPA 537
Extraction Date: 08/16/18 14:12

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-02 Batch: WG1147316-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.131
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.086
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.110
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.126
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.092
Perfluorohexanesulfonic Acid (PFHxS)	0.240	J	ng/l	2.00	0.108
Perfluorooctanoic Acid (PFOA)	0.208	J	ng/l	2.00	0.050
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	0.194
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.155
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.101
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.112
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.190
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	0.291
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.250
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.191
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.222
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.227
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.373
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.092
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.090
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.072

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829069
Report Date: 08/20/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 122,537(M)
Analytical Date: 08/18/18 00:00
Analyst: AJ

Extraction Method: EPA 537
Extraction Date: 08/16/18 14:12

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-02 Batch: WG1147316-1					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	88		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	92		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	110		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	94		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	94		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	110		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	87		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	75		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	84		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	103		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	85		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	61		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	84		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	87		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	20		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	76		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	77		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	59		33-143

Lab Control Sample Analysis Batch Quality Control

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829069
Report Date: 08/20/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02 Batch: WG1144996-2 WG1144996-3								
Perfluorobutanoic Acid (PFBA)	96		100		67-148	4		30
Perfluoropentanoic Acid (PFPeA)	100		101		63-161	3		30
Perfluorobutanesulfonic Acid (PFBS)	99		101		65-157	2		30
Perfluorohexanoic Acid (PFHxA)	110		112		69-168	3		30
Perfluoroheptanoic Acid (PFHpA)	91		97		58-159	1		30
Perfluorohexanesulfonic Acid (PFHxS)	98		102		69-177	7		30
Perfluorooctanoic Acid (PFOA)	94		102		63-159	4		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	140		153		49-187	13		30
Perfluoroheptanesulfonic Acid (PFHpS)	114		111		61-179	5		30
Perfluorononanoic Acid (PFNA)	98		103		68-171	3		30
Perfluorooctanesulfonic Acid (PFOS)	86		85		52-151	11		30
Perfluorodecanoic Acid (PFDA)	114		103		63-171	7		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	101		75		56-173	26		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	110		101		60-166	12		30
Perfluoroundecanoic Acid (PFUnA)	85		93		60-153	3		30
Perfluorodecanesulfonic Acid (PFDS)	92		103		38-156	5		30
Perfluorooctanesulfonamide (FOSA)	75		92		46-170	4		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	77		90		45-170	3		30
Perfluorododecanoic Acid (PFDoA)	88		91		67-153	0		30
Perfluorotridecanoic Acid (PFTrDA)	85		91		48-158	12		30
Perfluorotetradecanoic Acid (PFTA)	114		115		59-182	13		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829069
Report Date: 08/20/18

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02 Batch: WG1144996-2 WG1144996-3								

Surrogate	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	101		99		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	108		106		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	110		103		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	81		82		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	81		84		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	127		117		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	103		95		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	77		64		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	85		84		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	100		93		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	92		91		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	62		61		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	60		60		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	95		82		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	13		9		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	62		52		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	82		62		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	53		38		33-143

Lab Control Sample Analysis **Batch Quality Control**

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829069
Report Date: 08/20/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02 Batch: WG1147316-2 WG1147316-3								
Perfluorobutanoic Acid (PFBA)	104		99		67-148	5		30
Perfluoropentanoic Acid (PFPeA)	111		103		63-161	7		30
Perfluorobutanesulfonic Acid (PFBS)	100		101		65-157	1		30
Perfluorohexanoic Acid (PFHxA)	113		106		69-168	6		30
Perfluoroheptanoic Acid (PFHpA)	99		98		58-159	1		30
Perfluorohexanesulfonic Acid (PFHxS)	102		95		69-177	7		30
Perfluorooctanoic Acid (PFOA)	107		108		63-159	1		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	117		123		49-187	5		30
Perfluoroheptanesulfonic Acid (PFHpS)	108		91		61-179	17		30
Perfluorononanoic Acid (PFNA)	109		104		68-171	5		30
Perfluorooctanesulfonic Acid (PFOS)	88		89		52-151	1		30
Perfluorodecanoic Acid (PFDA)	112		104		63-171	7		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	109		89		56-173	20		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	100		93		60-166	7		30
Perfluoroundecanoic Acid (PFUnA)	88		98		60-153	11		30
Perfluorodecanesulfonic Acid (PFDS)	85		85		38-156	0		30
Perfluorooctanesulfonamide (FOSA)	104		102		46-170	2		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	79		96		45-170	19		30
Perfluorododecanoic Acid (PFDoA)	108		107		67-153	1		30
Perfluorotridecanoic Acid (PFTrDA)	96		88		48-158	9		30
Perfluorotetradecanoic Acid (PFTA)	113		96		59-182	16		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829069
Report Date: 08/20/18

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
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Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02 Batch: WG1147316-2 WG1147316-3

Surrogate	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	102		104		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	105		109		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	131		129		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	112		118		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	109		112		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	119		126		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	101		102		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	82		69		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	99		106		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	111		113		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	105		109		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	80		95		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	72		88		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	100		105		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	30		35		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	78		71		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	78		85		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	63		79		33-143

Matrix Spike Analysis

Batch Quality Control

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829069
Report Date: 08/20/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1144996-4 WG1144996-5 QC Sample: L1829069-01 Client ID: BMW-1-072718												
Perfluorobutanoic Acid (PFBA)	31.0	37	66.5	96		71.9	106		67-148	8		30
Perfluoropentanoic Acid (PFPeA)	59.6	37	96.6	100		105	118		63-161	8		30
Perfluorobutanesulfonic Acid (PFBS)	1460E	37	1500E	108		1570E	286	Q	65-157	5		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	37	34.4	93		39.4	102		37-219	14		30
Perfluorohexanoic Acid (PFHxA)	61.2	37	103	113		109	124		69-168	6		30
Perfluoropentanesulfonic Acid (PFPeS)	44.6	37	83.4	105		90.7	120		52-156	8		30
Perfluoroheptanoic Acid (PFHpA)	27.8	37	62.5	94		69.4	108		58-159	10		30
Perfluorohexanesulfonic Acid (PFHxS)	211	37	256	122		264	138		69-177	3		30
Perfluorooctanoic Acid (PFOA)	92.6	37	131	104		141	126		63-159	7		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	15.2B	37	55.1	108		63.4	125		49-187	14		30
Perfluoroheptanesulfonic Acid (PFHpS)	56.0	37	98.4	114		114	151		61-179	15		30
Perfluorononanoic Acid (PFNA)	6.17	37	45.3	106		49.2	112		68-171	8		30
Perfluorooctanesulfonic Acid (PFOS)	885E	37	884E	0	Q	1000E	299	Q	52-151	12		30
Perfluorodecanoic Acid (PFDA)	2.40	37	43.3	110		50.0	124		63-171	14		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	37	28.4	77		29.0	75		56-173	2		30
Perfluorononanesulfonic Acid (PFNS)	ND	37	35.2	95		41.2	107		48-150	16		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	37	32.6	88		40.8	106		60-166	22		30
Perfluoroundecanoic Acid (PFUnA)	ND	37	31.9	86		35.1	91		60-153	10		30
Perfluorodecanesulfonic Acid (PFDS)	ND	37	30.5	82		38.5	100		38-156	23		30
Perfluorooctanesulfonamide (FOSA)	ND	37	32.0	86		37.6	98		46-170	16		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	37	23.2	63		30.8	80		45-170	28		30
Perfluorododecanoic Acid (PFDoA)	ND	37	33.8	91		37.8	98		67-153	11		30

Matrix Spike Analysis

Batch Quality Control

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829069
Report Date: 08/20/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1144996-4 WG1144996-5 QC Sample: L1829069-01 Client ID: BMW-1-072718												
Perfluorotridecanoic Acid (PFTrDA)	ND	37	28.1	76		34.5	90		48-158	20		30
Perfluorotetradecanoic Acid (PFTA)	ND	37	42.0	113		41.3	107		59-182	2		30

Surrogate	MS % Recovery	Qualifier	MSD % Recovery	Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	92		80		7-170
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	155		135		1-313
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	106		78		1-244
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	60		54		23-146
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	68		50		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	86		73		40-144
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	93		77		38-144
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	71		63		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	87		74		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	124		108		47-153
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	77		52		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	43		37		33-143
Perfluoro[13C4]Butanoic Acid (MPFBA)	103		93		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	77		68		16-173
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	77		61		1-87
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	105		84		42-146
Perfluoro[13C8]Octanoic Acid (M8PFOA)	98		86		36-149
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	84		74		34-146
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	84		73		31-159

Matrix Spike Analysis

Batch Quality Control

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829069
Report Date: 08/20/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1147316-4 WG1147316-5 QC Sample: L1829069-01 Client ID: BMW-1-072718												
Perfluorobutanoic Acid (PFBA)	ND	200	245	108		240	105		67-148	2		30
Perfluoropentanoic Acid (PFPeA)	ND	200	280	110		275	107		63-161	2		30
Perfluorobutanesulfonic Acid (PFBS)	1340	200	1700	180	Q	1700	180	Q	65-157	0		30
Perfluorohexanoic Acid (PFHxA)	ND	200	284	114		272	108		69-168	4		30
Perfluoroheptanoic Acid (PFHpA)	ND	200	231	103		230	102		58-159	0		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	200	426	107		413	100		69-177	3		30
Perfluorooctanoic Acid (PFOA)	ND	200	308	112		308	112		63-159	0		30
Perfluorononanoic Acid (PFNA)	ND	200	230	115		233	117		68-171	1		30
Perfluorooctanesulfonic Acid (PFOS)	739	200	1140	201	Q	964	113		52-151	17		30

Surrogate	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	101		111		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	105		110		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	118		119		47-153
Perfluoro[13C4]Butanoic Acid (MPFBA)	97		98		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	94		95		16-173
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	105		121		42-146
Perfluoro[13C8]Octanoic Acid (M8PFOA)	93		96		36-149
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	91		99		34-146
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	119		120		31-159

Project Name: HYGRADE**Lab Number:** L1829069**Project Number:** 3612162331**Report Date:** 08/20/18**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

Cooler Information**Cooler** **Custody Seal**

A Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1829069-01A	3 Plastic Trizma/1 Plastic/1 H2O+Trizma	A	NA		3.9	Y	Absent		A2-NY-537-ISOTOPE(14)
L1829069-01A1	3 Plastic Trizma/1 Plastic/1 H2O+Trizma	A	NA		3.9	Y	Absent		A2-NY-537-ISOTOPE(14)
L1829069-01A2	3 Plastic Trizma/1 Plastic/1 H2O+Trizma	A	NA		3.9	Y	Absent		A2-NY-537-ISOTOPE(14)
L1829069-01B	3 Plastic Trizma/1 Plastic/1 H2O+Trizma	A	NA		3.9	Y	Absent		A2-NY-537-ISOTOPE(14)
L1829069-01B1	3 Plastic Trizma/1 Plastic/1 H2O+Trizma	A	NA		3.9	Y	Absent		A2-NY-537-ISOTOPE(14)
L1829069-01B2	3 Plastic Trizma/1 Plastic/1 H2O+Trizma	A	NA		3.9	Y	Absent		A2-NY-537-ISOTOPE(14)
L1829069-01C	3 Plastic Trizma/1 Plastic/1 H2O+Trizma	A	NA		3.9	Y	Absent		A2-NY-537-ISOTOPE(14)
L1829069-01C1	3 Plastic Trizma/1 Plastic/1 H2O+Trizma	A	NA		3.9	Y	Absent		A2-NY-537-ISOTOPE(14)
L1829069-01C2	3 Plastic Trizma/1 Plastic/1 H2O+Trizma	A	NA		3.9	Y	Absent		A2-NY-537-ISOTOPE(14)
L1829069-02A	3 Plastic Trizma/1 Plastic/1 H2O+Trizma	A	NA		3.9	Y	Absent		A2-NY-537-ISOTOPE(14)
L1829069-02B	3 Plastic Trizma/1 Plastic/1 H2O+Trizma	A	NA		3.9	Y	Absent		A2-NY-537-ISOTOPE(14)
L1829069-02C	3 Plastic Trizma/1 Plastic/1 H2O+Trizma	A	NA		3.9	Y	Absent		A2-NY-537-ISOTOPE(14)

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829069
Report Date: 08/20/18

GLOSSARY

Acronyms

EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Report Format: DU Report with 'J' Qualifiers



Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829069
Report Date: 08/20/18

Data Qualifiers

- A** - Spectra identified as "Aldol Condensation Product".
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829069
Report Date: 08/20/18

REFERENCES

- 122 Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS). EPA Method 537, EPA/600/R-08/092. Version 1.1, September 2009.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at its own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility

EPA 624: m/p-xylene, o-xylene

EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270D: NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

EPA 300: DW: Bromide

EPA 6860: SCM: Perchlorate

EPA 9010: NPW and SCM: Amenable Cyanide Distillation

SM4500: NPW: Amenable Cyanide, Dissolved Oxygen; SCM: Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility

SM 2540D: TSS

EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B

EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **EPA 351.1, SM4500P-E, SM4500P-B, E,**

SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D.

EPA 624: Volatile Halocarbons & Aromatics,

EPA 608: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, SM9222D.**

Mansfield Facility:

Drinking Water

EPA 200.7: Al, Ba, Be, Cd, Cr, Cu, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

EPA 522.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn.

EPA 245.1 Hg.

SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

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ANALYTICAL REPORT

Lab Number:	L1829077
Client:	Wood Env & Infrastructure Solutions, Inc 214-25 42nd Avenue Suite 3R Bayside, NY 11361
ATTN:	Eric Weinstock
Phone:	(347) 836-4445
Project Name:	HYGRADE
Project Number:	3612162331
Report Date:	08/08/18

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com



Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829077
Report Date: 08/08/18

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1829077-01	BMW-1-072718	WATER	LONG ISLAND CITY, NY	07/27/18 09:20	07/27/18
L1829077-02	BMW-2-072718	WATER	LONG ISLAND CITY, NY	07/27/18 10:45	07/27/18
L1829077-03	TRIP BLANK-07218	WATER	LONG ISLAND CITY, NY	07/27/18 11:10	07/27/18

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829077
Report Date: 08/08/18

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. All specific QC information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY

For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Client Services at 800-624-9220 with any questions.

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829077
Report Date: 08/08/18

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Total Metals

The WG1142264-2 LCS recovery, associated with L1829077-01 and -02, is above the acceptance criteria for mercury (121%); however, the associated samples are non-detect to the RL for this target analyte. The results of the original analysis are reported.

The WG1143616-3/-4 MS/MSD recoveries for calcium (MS at 140%), manganese (0%/0%) and sodium (0%/0%), performed on L1829077-01, do not apply because the sample concentrations are greater than four times the spike amounts added.

The WG1143616-3 MS recovery for antimony (134%), performed on L1829077-01, does not apply because the sample concentration is greater than four times the spike amount added.

Dissolved Metals

The WG1143665-3/-4 MS/MSD recoveries for calcium (190%/200%), manganese (0%/0%) and sodium (150%/170%), performed on L1829077-01, do not apply because the sample concentrations are greater than four times the spike amounts added.

The WG1143665-3/-4 MS/MSD recoveries, performed on L1829077-01, are outside the acceptance criteria for antimony (MS at 127%) and magnesium (127%/136%). A post digestion spike was performed and was within acceptance criteria.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:



Cristin Walker

Title: Technical Director/Representative

Date: 08/08/18

ORGANICS

VOLATILES

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829077
Report Date: 08/08/18

SAMPLE RESULTS

Lab ID: L1829077-01
Client ID: BMW-1-072718
Sample Location: LONG ISLAND CITY, NY

Date Collected: 07/27/18 09:20
Date Received: 07/27/18
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8260C
Analytical Date: 07/31/18 18:01
Analyst: AD

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	2.5	0.70	1
1,1-Dichloroethane	ND		ug/l	2.5	0.70	1
Chloroform	ND		ug/l	2.5	0.70	1
Carbon tetrachloride	ND		ug/l	0.50	0.13	1
1,2-Dichloropropane	ND		ug/l	1.0	0.14	1
Dibromochloromethane	ND		ug/l	0.50	0.15	1
1,1,2-Trichloroethane	ND		ug/l	1.5	0.50	1
Tetrachloroethene	0.70		ug/l	0.50	0.18	1
Chlorobenzene	ND		ug/l	2.5	0.70	1
Trichlorofluoromethane	ND		ug/l	2.5	0.70	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
1,1,1-Trichloroethane	ND		ug/l	2.5	0.70	1
Bromodichloromethane	ND		ug/l	0.50	0.19	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14	1
1,3-Dichloropropene, Total	ND		ug/l	0.50	0.14	1
1,1-Dichloropropene	ND		ug/l	2.5	0.70	1
Bromoform	ND		ug/l	2.0	0.65	1
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
Toluene	ND		ug/l	2.5	0.70	1
Ethylbenzene	ND		ug/l	2.5	0.70	1
Chloromethane	ND		ug/l	2.5	0.70	1
Bromomethane	ND		ug/l	2.5	0.70	1
Vinyl chloride	0.22	J	ug/l	1.0	0.07	1
Chloroethane	ND		ug/l	2.5	0.70	1
1,1-Dichloroethene	ND		ug/l	0.50	0.17	1
trans-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829077
Report Date: 08/08/18

SAMPLE RESULTS

Lab ID: L1829077-01
Client ID: BMW-1-072718
Sample Location: LONG ISLAND CITY, NY

Date Collected: 07/27/18 09:20
Date Received: 07/27/18
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Trichloroethene	2.2		ug/l	0.50	0.18	1
1,2-Dichlorobenzene	ND		ug/l	2.5	0.70	1
1,3-Dichlorobenzene	ND		ug/l	2.5	0.70	1
1,4-Dichlorobenzene	ND		ug/l	2.5	0.70	1
Methyl tert butyl ether	ND		ug/l	2.5	0.70	1
p/m-Xylene	ND		ug/l	2.5	0.70	1
o-Xylene	ND		ug/l	2.5	0.70	1
Xylenes, Total	ND		ug/l	2.5	0.70	1
cis-1,2-Dichloroethene	4.5		ug/l	2.5	0.70	1
1,2-Dichloroethene, Total	4.5		ug/l	2.5	0.70	1
Dibromomethane	ND		ug/l	5.0	1.0	1
1,2,3-Trichloropropane	ND		ug/l	2.5	0.70	1
Acrylonitrile	ND		ug/l	5.0	1.5	1
Styrene	ND		ug/l	2.5	0.70	1
Dichlorodifluoromethane	ND		ug/l	5.0	1.0	1
Acetone	ND		ug/l	5.0	1.5	1
Carbon disulfide	ND		ug/l	5.0	1.0	1
2-Butanone	ND		ug/l	5.0	1.9	1
Vinyl acetate	ND		ug/l	5.0	1.0	1
4-Methyl-2-pentanone	ND		ug/l	5.0	1.0	1
2-Hexanone	ND		ug/l	5.0	1.0	1
Bromochloromethane	ND		ug/l	2.5	0.70	1
2,2-Dichloropropane	ND		ug/l	2.5	0.70	1
1,2-Dibromoethane	ND		ug/l	2.0	0.65	1
1,3-Dichloropropane	ND		ug/l	2.5	0.70	1
1,1,1,2-Tetrachloroethane	ND		ug/l	2.5	0.70	1
Bromobenzene	ND		ug/l	2.5	0.70	1
n-Butylbenzene	ND		ug/l	2.5	0.70	1
sec-Butylbenzene	ND		ug/l	2.5	0.70	1
tert-Butylbenzene	ND		ug/l	2.5	0.70	1
o-Chlorotoluene	ND		ug/l	2.5	0.70	1
p-Chlorotoluene	ND		ug/l	2.5	0.70	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.70	1
Hexachlorobutadiene	ND		ug/l	2.5	0.70	1
Isopropylbenzene	ND		ug/l	2.5	0.70	1
p-Isopropyltoluene	ND		ug/l	2.5	0.70	1
Naphthalene	ND		ug/l	2.5	0.70	1

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829077
Report Date: 08/08/18

SAMPLE RESULTS

Lab ID: L1829077-01
Client ID: BMW-1-072718
Sample Location: LONG ISLAND CITY, NY

Date Collected: 07/27/18 09:20
Date Received: 07/27/18
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
n-Propylbenzene	ND		ug/l	2.5	0.70	1
1,2,3-Trichlorobenzene	ND		ug/l	2.5	0.70	1
1,2,4-Trichlorobenzene	ND		ug/l	2.5	0.70	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.70	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.70	1
1,4-Dioxane	ND		ug/l	250	61.	1
p-Diethylbenzene	ND		ug/l	2.0	0.70	1
p-Ethyltoluene	ND		ug/l	2.0	0.70	1
1,2,4,5-Tetramethylbenzene	ND		ug/l	2.0	0.54	1
Ethyl ether	ND		ug/l	2.5	0.70	1
trans-1,4-Dichloro-2-butene	ND		ug/l	2.5	0.70	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	113		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	110		70-130
Dibromofluoromethane	100		70-130

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829077
Report Date: 08/08/18

SAMPLE RESULTS

Lab ID: L1829077-02
Client ID: BMW-2-072718
Sample Location: LONG ISLAND CITY, NY

Date Collected: 07/27/18 10:45
Date Received: 07/27/18
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8260C
Analytical Date: 07/31/18 17:32
Analyst: AD

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	2.5	0.70	1
1,1-Dichloroethane	ND		ug/l	2.5	0.70	1
Chloroform	ND		ug/l	2.5	0.70	1
Carbon tetrachloride	ND		ug/l	0.50	0.13	1
1,2-Dichloropropane	ND		ug/l	1.0	0.14	1
Dibromochloromethane	ND		ug/l	0.50	0.15	1
1,1,2-Trichloroethane	ND		ug/l	1.5	0.50	1
Tetrachloroethene	1.6		ug/l	0.50	0.18	1
Chlorobenzene	ND		ug/l	2.5	0.70	1
Trichlorofluoromethane	ND		ug/l	2.5	0.70	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
1,1,1-Trichloroethane	ND		ug/l	2.5	0.70	1
Bromodichloromethane	ND		ug/l	0.50	0.19	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14	1
1,3-Dichloropropene, Total	ND		ug/l	0.50	0.14	1
1,1-Dichloropropene	ND		ug/l	2.5	0.70	1
Bromoform	ND		ug/l	2.0	0.65	1
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.17	1
Benzene	0.16	J	ug/l	0.50	0.16	1
Toluene	ND		ug/l	2.5	0.70	1
Ethylbenzene	ND		ug/l	2.5	0.70	1
Chloromethane	ND		ug/l	2.5	0.70	1
Bromomethane	ND		ug/l	2.5	0.70	1
Vinyl chloride	0.30	J	ug/l	1.0	0.07	1
Chloroethane	ND		ug/l	2.5	0.70	1
1,1-Dichloroethene	ND		ug/l	0.50	0.17	1
trans-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829077
Report Date: 08/08/18

SAMPLE RESULTS

Lab ID: L1829077-02
Client ID: BMW-2-072718
Sample Location: LONG ISLAND CITY, NY

Date Collected: 07/27/18 10:45
Date Received: 07/27/18
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Trichloroethene	3.7		ug/l	0.50	0.18	1
1,2-Dichlorobenzene	ND		ug/l	2.5	0.70	1
1,3-Dichlorobenzene	ND		ug/l	2.5	0.70	1
1,4-Dichlorobenzene	ND		ug/l	2.5	0.70	1
Methyl tert butyl ether	ND		ug/l	2.5	0.70	1
p/m-Xylene	ND		ug/l	2.5	0.70	1
o-Xylene	ND		ug/l	2.5	0.70	1
Xylenes, Total	ND		ug/l	2.5	0.70	1
cis-1,2-Dichloroethene	4.3		ug/l	2.5	0.70	1
1,2-Dichloroethene, Total	4.3		ug/l	2.5	0.70	1
Dibromomethane	ND		ug/l	5.0	1.0	1
1,2,3-Trichloropropane	ND		ug/l	2.5	0.70	1
Acrylonitrile	ND		ug/l	5.0	1.5	1
Styrene	ND		ug/l	2.5	0.70	1
Dichlorodifluoromethane	ND		ug/l	5.0	1.0	1
Acetone	ND		ug/l	5.0	1.5	1
Carbon disulfide	ND		ug/l	5.0	1.0	1
2-Butanone	ND		ug/l	5.0	1.9	1
Vinyl acetate	ND		ug/l	5.0	1.0	1
4-Methyl-2-pentanone	ND		ug/l	5.0	1.0	1
2-Hexanone	ND		ug/l	5.0	1.0	1
Bromochloromethane	ND		ug/l	2.5	0.70	1
2,2-Dichloropropane	ND		ug/l	2.5	0.70	1
1,2-Dibromoethane	ND		ug/l	2.0	0.65	1
1,3-Dichloropropane	ND		ug/l	2.5	0.70	1
1,1,1,2-Tetrachloroethane	ND		ug/l	2.5	0.70	1
Bromobenzene	ND		ug/l	2.5	0.70	1
n-Butylbenzene	ND		ug/l	2.5	0.70	1
sec-Butylbenzene	ND		ug/l	2.5	0.70	1
tert-Butylbenzene	ND		ug/l	2.5	0.70	1
o-Chlorotoluene	ND		ug/l	2.5	0.70	1
p-Chlorotoluene	ND		ug/l	2.5	0.70	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.70	1
Hexachlorobutadiene	ND		ug/l	2.5	0.70	1
Isopropylbenzene	ND		ug/l	2.5	0.70	1
p-Isopropyltoluene	ND		ug/l	2.5	0.70	1
Naphthalene	ND		ug/l	2.5	0.70	1

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829077
Report Date: 08/08/18

SAMPLE RESULTS

Lab ID: L1829077-02
Client ID: BMW-2-072718
Sample Location: LONG ISLAND CITY, NY

Date Collected: 07/27/18 10:45
Date Received: 07/27/18
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
n-Propylbenzene	ND		ug/l	2.5	0.70	1
1,2,3-Trichlorobenzene	ND		ug/l	2.5	0.70	1
1,2,4-Trichlorobenzene	ND		ug/l	2.5	0.70	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.70	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.70	1
1,4-Dioxane	ND		ug/l	250	61.	1
p-Diethylbenzene	ND		ug/l	2.0	0.70	1
p-Ethyltoluene	ND		ug/l	2.0	0.70	1
1,2,4,5-Tetramethylbenzene	ND		ug/l	2.0	0.54	1
Ethyl ether	ND		ug/l	2.5	0.70	1
trans-1,4-Dichloro-2-butene	ND		ug/l	2.5	0.70	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	110		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	112		70-130
Dibromofluoromethane	99		70-130

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829077
Report Date: 08/08/18

SAMPLE RESULTS

Lab ID: L1829077-03
Client ID: TRIP BLANK-07218
Sample Location: LONG ISLAND CITY, NY

Date Collected: 07/27/18 11:10
Date Received: 07/27/18
Field Prep: Not Specified

Sample Depth:

Matrix: Water
Analytical Method: 1,8260C
Analytical Date: 07/31/18 18:29
Analyst: AD

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	2.5	0.70	1
1,1-Dichloroethane	ND		ug/l	2.5	0.70	1
Chloroform	ND		ug/l	2.5	0.70	1
Carbon tetrachloride	ND		ug/l	0.50	0.13	1
1,2-Dichloropropane	ND		ug/l	1.0	0.14	1
Dibromochloromethane	ND		ug/l	0.50	0.15	1
1,1,2-Trichloroethane	ND		ug/l	1.5	0.50	1
Tetrachloroethene	ND		ug/l	0.50	0.18	1
Chlorobenzene	ND		ug/l	2.5	0.70	1
Trichlorofluoromethane	ND		ug/l	2.5	0.70	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
1,1,1-Trichloroethane	ND		ug/l	2.5	0.70	1
Bromodichloromethane	ND		ug/l	0.50	0.19	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14	1
1,3-Dichloropropene, Total	ND		ug/l	0.50	0.14	1
1,1-Dichloropropene	ND		ug/l	2.5	0.70	1
Bromoform	ND		ug/l	2.0	0.65	1
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
Toluene	ND		ug/l	2.5	0.70	1
Ethylbenzene	ND		ug/l	2.5	0.70	1
Chloromethane	ND		ug/l	2.5	0.70	1
Bromomethane	ND		ug/l	2.5	0.70	1
Vinyl chloride	ND		ug/l	1.0	0.07	1
Chloroethane	ND		ug/l	2.5	0.70	1
1,1-Dichloroethene	ND		ug/l	0.50	0.17	1
trans-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829077
Report Date: 08/08/18

SAMPLE RESULTS

Lab ID: L1829077-03
Client ID: TRIP BLANK-07218
Sample Location: LONG ISLAND CITY, NY

Date Collected: 07/27/18 11:10
Date Received: 07/27/18
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Trichloroethene	ND		ug/l	0.50	0.18	1
1,2-Dichlorobenzene	ND		ug/l	2.5	0.70	1
1,3-Dichlorobenzene	ND		ug/l	2.5	0.70	1
1,4-Dichlorobenzene	ND		ug/l	2.5	0.70	1
Methyl tert butyl ether	ND		ug/l	2.5	0.70	1
p/m-Xylene	ND		ug/l	2.5	0.70	1
o-Xylene	ND		ug/l	2.5	0.70	1
Xylenes, Total	ND		ug/l	2.5	0.70	1
cis-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1
1,2-Dichloroethene, Total	ND		ug/l	2.5	0.70	1
Dibromomethane	ND		ug/l	5.0	1.0	1
1,2,3-Trichloropropane	ND		ug/l	2.5	0.70	1
Acrylonitrile	ND		ug/l	5.0	1.5	1
Styrene	ND		ug/l	2.5	0.70	1
Dichlorodifluoromethane	ND		ug/l	5.0	1.0	1
Acetone	ND		ug/l	5.0	1.5	1
Carbon disulfide	ND		ug/l	5.0	1.0	1
2-Butanone	ND		ug/l	5.0	1.9	1
Vinyl acetate	ND		ug/l	5.0	1.0	1
4-Methyl-2-pentanone	ND		ug/l	5.0	1.0	1
2-Hexanone	ND		ug/l	5.0	1.0	1
Bromochloromethane	ND		ug/l	2.5	0.70	1
2,2-Dichloropropane	ND		ug/l	2.5	0.70	1
1,2-Dibromoethane	ND		ug/l	2.0	0.65	1
1,3-Dichloropropane	ND		ug/l	2.5	0.70	1
1,1,1,2-Tetrachloroethane	ND		ug/l	2.5	0.70	1
Bromobenzene	ND		ug/l	2.5	0.70	1
n-Butylbenzene	ND		ug/l	2.5	0.70	1
sec-Butylbenzene	ND		ug/l	2.5	0.70	1
tert-Butylbenzene	ND		ug/l	2.5	0.70	1
o-Chlorotoluene	ND		ug/l	2.5	0.70	1
p-Chlorotoluene	ND		ug/l	2.5	0.70	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.70	1
Hexachlorobutadiene	ND		ug/l	2.5	0.70	1
Isopropylbenzene	ND		ug/l	2.5	0.70	1
p-Isopropyltoluene	ND		ug/l	2.5	0.70	1
Naphthalene	ND		ug/l	2.5	0.70	1

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829077
Report Date: 08/08/18

SAMPLE RESULTS

Lab ID: L1829077-03
Client ID: TRIP BLANK-07218
Sample Location: LONG ISLAND CITY, NY

Date Collected: 07/27/18 11:10
Date Received: 07/27/18
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
n-Propylbenzene	ND		ug/l	2.5	0.70	1
1,2,3-Trichlorobenzene	ND		ug/l	2.5	0.70	1
1,2,4-Trichlorobenzene	ND		ug/l	2.5	0.70	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.70	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.70	1
1,4-Dioxane	ND		ug/l	250	61.	1
p-Diethylbenzene	ND		ug/l	2.0	0.70	1
p-Ethyltoluene	ND		ug/l	2.0	0.70	1
1,2,4,5-Tetramethylbenzene	ND		ug/l	2.0	0.54	1
Ethyl ether	ND		ug/l	2.5	0.70	1
trans-1,4-Dichloro-2-butene	ND		ug/l	2.5	0.70	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	113		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	111		70-130
Dibromofluoromethane	99		70-130

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829077
Report Date: 08/08/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 07/31/18 10:26
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01-03 Batch: WG1141450-5					
Methylene chloride	ND		ug/l	2.5	0.70
1,1-Dichloroethane	ND		ug/l	2.5	0.70
Chloroform	ND		ug/l	2.5	0.70
Carbon tetrachloride	ND		ug/l	0.50	0.13
1,2-Dichloropropane	ND		ug/l	1.0	0.14
Dibromochloromethane	ND		ug/l	0.50	0.15
1,1,2-Trichloroethane	ND		ug/l	1.5	0.50
Tetrachloroethene	ND		ug/l	0.50	0.18
Chlorobenzene	ND		ug/l	2.5	0.70
Trichlorofluoromethane	ND		ug/l	2.5	0.70
1,2-Dichloroethane	ND		ug/l	0.50	0.13
1,1,1-Trichloroethane	ND		ug/l	2.5	0.70
Bromodichloromethane	ND		ug/l	0.50	0.19
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14
1,3-Dichloropropene, Total	ND		ug/l	0.50	0.14
1,1-Dichloropropene	ND		ug/l	2.5	0.70
Bromoform	ND		ug/l	2.0	0.65
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.17
Benzene	ND		ug/l	0.50	0.16
Toluene	ND		ug/l	2.5	0.70
Ethylbenzene	ND		ug/l	2.5	0.70
Chloromethane	ND		ug/l	2.5	0.70
Bromomethane	ND		ug/l	2.5	0.70
Vinyl chloride	ND		ug/l	1.0	0.07
Chloroethane	ND		ug/l	2.5	0.70
1,1-Dichloroethene	ND		ug/l	0.50	0.17
trans-1,2-Dichloroethene	ND		ug/l	2.5	0.70
Trichloroethene	ND		ug/l	0.50	0.18

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829077
Report Date: 08/08/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 07/31/18 10:26
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01-03 Batch: WG1141450-5					
1,2-Dichlorobenzene	ND		ug/l	2.5	0.70
1,3-Dichlorobenzene	ND		ug/l	2.5	0.70
1,4-Dichlorobenzene	ND		ug/l	2.5	0.70
Methyl tert butyl ether	ND		ug/l	2.5	0.70
p/m-Xylene	ND		ug/l	2.5	0.70
o-Xylene	ND		ug/l	2.5	0.70
Xylenes, Total	ND		ug/l	2.5	0.70
cis-1,2-Dichloroethene	ND		ug/l	2.5	0.70
1,2-Dichloroethene, Total	ND		ug/l	2.5	0.70
Dibromomethane	ND		ug/l	5.0	1.0
1,2,3-Trichloropropane	ND		ug/l	2.5	0.70
Acrylonitrile	ND		ug/l	5.0	1.5
Styrene	ND		ug/l	2.5	0.70
Dichlorodifluoromethane	ND		ug/l	5.0	1.0
Acetone	ND		ug/l	5.0	1.5
Carbon disulfide	ND		ug/l	5.0	1.0
2-Butanone	ND		ug/l	5.0	1.9
Vinyl acetate	ND		ug/l	5.0	1.0
4-Methyl-2-pentanone	ND		ug/l	5.0	1.0
2-Hexanone	ND		ug/l	5.0	1.0
Bromochloromethane	ND		ug/l	2.5	0.70
2,2-Dichloropropane	ND		ug/l	2.5	0.70
1,2-Dibromoethane	ND		ug/l	2.0	0.65
1,3-Dichloropropane	ND		ug/l	2.5	0.70
1,1,1,2-Tetrachloroethane	ND		ug/l	2.5	0.70
Bromobenzene	ND		ug/l	2.5	0.70
n-Butylbenzene	ND		ug/l	2.5	0.70
sec-Butylbenzene	ND		ug/l	2.5	0.70
tert-Butylbenzene	ND		ug/l	2.5	0.70

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829077
Report Date: 08/08/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 07/31/18 10:26
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01-03 Batch: WG1141450-5					
o-Chlorotoluene	ND		ug/l	2.5	0.70
p-Chlorotoluene	ND		ug/l	2.5	0.70
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.70
Hexachlorobutadiene	ND		ug/l	2.5	0.70
Isopropylbenzene	ND		ug/l	2.5	0.70
p-Isopropyltoluene	ND		ug/l	2.5	0.70
Naphthalene	ND		ug/l	2.5	0.70
n-Propylbenzene	ND		ug/l	2.5	0.70
1,2,3-Trichlorobenzene	ND		ug/l	2.5	0.70
1,2,4-Trichlorobenzene	ND		ug/l	2.5	0.70
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.70
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.70
1,4-Dioxane	ND		ug/l	250	61.
p-Diethylbenzene	ND		ug/l	2.0	0.70
p-Ethyltoluene	ND		ug/l	2.0	0.70
1,2,4,5-Tetramethylbenzene	ND		ug/l	2.0	0.54
Ethyl ether	ND		ug/l	2.5	0.70
trans-1,4-Dichloro-2-butene	ND		ug/l	2.5	0.70

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	110		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	111		70-130
Dibromofluoromethane	99		70-130

Lab Control Sample Analysis Batch Quality Control

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829077
Report Date: 08/08/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-03 Batch: WG1141450-3 WG1141450-4								
Methylene chloride	86		92		70-130	7		20
1,1-Dichloroethane	89		96		70-130	8		20
Chloroform	86		92		70-130	7		20
Carbon tetrachloride	86		93		63-132	8		20
1,2-Dichloropropane	86		92		70-130	7		20
Dibromochloromethane	80		87		63-130	8		20
1,1,2-Trichloroethane	85		92		70-130	8		20
Tetrachloroethene	85		92		70-130	8		20
Chlorobenzene	87		93		75-130	7		20
Trichlorofluoromethane	93		100		62-150	7		20
1,2-Dichloroethane	93		99		70-130	6		20
1,1,1-Trichloroethane	90		96		67-130	6		20
Bromodichloromethane	88		93		67-130	6		20
trans-1,3-Dichloropropene	87		94		70-130	8		20
cis-1,3-Dichloropropene	84		89		70-130	6		20
1,1-Dichloropropene	89		96		70-130	8		20
Bromoform	78		83		54-136	6		20
1,1,2,2-Tetrachloroethane	86		92		67-130	7		20
Benzene	84		91		70-130	8		20
Toluene	89		96		70-130	8		20
Ethylbenzene	91		97		70-130	6		20
Chloromethane	84		90		64-130	7		20
Bromomethane	56		68		39-139	19		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829077
Report Date: 08/08/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-03 Batch: WG1141450-3 WG1141450-4								
Vinyl chloride	100		110		55-140	10		20
Chloroethane	100		110		55-138	10		20
1,1-Dichloroethene	82		90		61-145	9		20
trans-1,2-Dichloroethene	81		89		70-130	9		20
Trichloroethene	86		93		70-130	8		20
1,2-Dichlorobenzene	85		90		70-130	6		20
1,3-Dichlorobenzene	88		93		70-130	6		20
1,4-Dichlorobenzene	86		91		70-130	6		20
Methyl tert butyl ether	83		90		63-130	8		20
p/m-Xylene	90		95		70-130	5		20
o-Xylene	90		95		70-130	5		20
cis-1,2-Dichloroethene	79		86		70-130	8		20
Dibromomethane	84		89		70-130	6		20
1,2,3-Trichloropropane	96		100		64-130	4		20
Acrylonitrile	81		90		70-130	11		20
Styrene	85		90		70-130	6		20
Dichlorodifluoromethane	110		120		36-147	9		20
Acetone	120		100		58-148	18		20
Carbon disulfide	91		96		51-130	5		20
2-Butanone	82		92		63-138	11		20
Vinyl acetate	87		95		70-130	9		20
4-Methyl-2-pentanone	84		91		59-130	8		20
2-Hexanone	76		83		57-130	9		20

Lab Control Sample Analysis Batch Quality Control

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829077
Report Date: 08/08/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-03 Batch: WG1141450-3 WG1141450-4								
Bromochloromethane	82		87		70-130	6		20
2,2-Dichloropropane	95		100		63-133	5		20
1,2-Dibromoethane	83		88		70-130	6		20
1,3-Dichloropropane	86		94		70-130	9		20
1,1,1,2-Tetrachloroethane	84		90		64-130	7		20
Bromobenzene	84		89		70-130	6		20
n-Butylbenzene	100		110		53-136	10		20
sec-Butylbenzene	98		100		70-130	2		20
tert-Butylbenzene	97		100		70-130	3		20
o-Chlorotoluene	98		100		70-130	2		20
p-Chlorotoluene	98		100		70-130	2		20
1,2-Dibromo-3-chloropropane	73		81		41-144	10		20
Hexachlorobutadiene	90		96		63-130	6		20
Isopropylbenzene	96		100		70-130	4		20
p-Isopropyltoluene	100		100		70-130	0		20
Naphthalene	74		81		70-130	9		20
n-Propylbenzene	99		100		69-130	1		20
1,2,3-Trichlorobenzene	71		80		70-130	12		20
1,2,4-Trichlorobenzene	78		85		70-130	9		20
1,3,5-Trimethylbenzene	97		100		64-130	3		20
1,2,4-Trimethylbenzene	99		100		70-130	1		20
1,4-Dioxane	80		96		56-162	18		20
p-Diethylbenzene	99		100		70-130	1		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829077
Report Date: 08/08/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-03 Batch: WG1141450-3 WG1141450-4								
p-Ethyltoluene	97		100		70-130	3		20
1,2,4,5-Tetramethylbenzene	92		97		70-130	5		20
Ethyl ether	83		90		59-134	8		20
trans-1,4-Dichloro-2-butene	98		110		70-130	12		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	110		109		70-130
Toluene-d8	105		105		70-130
4-Bromofluorobenzene	111		111		70-130
Dibromofluoromethane	100		100		70-130

Matrix Spike Analysis

Batch Quality Control

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829077
Report Date: 08/08/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-03 QC Batch ID: WG1141450-6 WG1141450-7 QC Sample: L1829077-01 Client ID: BMW-1-072718												
Methylene chloride	ND	10	9.8	98		9.8	98		70-130	0		20
1,1-Dichloroethane	ND	10	11	110		11	110		70-130	0		20
Chloroform	ND	10	10	100		10	100		70-130	0		20
Carbon tetrachloride	ND	10	10	100		10	100		63-132	0		20
1,2-Dichloropropane	ND	10	10	100		10	100		70-130	0		20
Dibromochloromethane	ND	10	9.3	93		9.4	94		63-130	1		20
1,1,2-Trichloroethane	ND	10	10	100		10	100		70-130	0		20
Tetrachloroethene	0.70	10	10	93		10	93		70-130	0		20
Chlorobenzene	ND	10	10	100		9.9	99		75-130	1		20
Trichlorofluoromethane	ND	10	12	120		11	110		62-150	9		20
1,2-Dichloroethane	ND	10	11	110		11	110		70-130	0		20
1,1,1-Trichloroethane	ND	10	11	110		11	110		67-130	0		20
Bromodichloromethane	ND	10	9.9	99		10	100		67-130	1		20
trans-1,3-Dichloropropene	ND	10	9.6	96		9.5	95		70-130	1		20
cis-1,3-Dichloropropene	ND	10	9.1	91		9.2	92		70-130	1		20
1,1-Dichloropropene	ND	10	11	110		10	100		70-130	10		20
Bromoform	ND	10	8.8	88		8.9	89		54-136	1		20
1,1,2,2-Tetrachloroethane	ND	10	10	100		10	100		67-130	0		20
Benzene	ND	10	10	100		10	100		70-130	0		20
Toluene	ND	10	10	100		10	100		70-130	0		20
Ethylbenzene	ND	10	10	100		10	100		70-130	0		20
Chloromethane	ND	10	10	100		10	100		64-130	0		20
Bromomethane	ND	10	4.5	45		5.6	56		39-139	22	Q	20

Matrix Spike Analysis

Batch Quality Control

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829077
Report Date: 08/08/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-03 QC Batch ID: WG1141450-6 WG1141450-7 QC Sample: L1829077-01 Client ID: BMW-1-072718												
Vinyl chloride	0.22J	10	14	140		13	130		55-140	7		20
Chloroethane	ND	10	13	130		13	130		55-138	0		20
1,1-Dichloroethene	ND	10	10	100		10	100		61-145	0		20
trans-1,2-Dichloroethene	ND	10	10	100		10	100		70-130	0		20
Trichloroethene	2.2	10	12	98		12	98		70-130	0		20
1,2-Dichlorobenzene	ND	10	9.8	98		9.8	98		70-130	0		20
1,3-Dichlorobenzene	ND	10	9.8	98		9.7	97		70-130	1		20
1,4-Dichlorobenzene	ND	10	9.6	96		9.6	96		70-130	0		20
Methyl tert butyl ether	ND	10	10	100		10	100		63-130	0		20
p/m-Xylene	ND	20	20	100		20	100		70-130	0		20
o-Xylene	ND	20	20	100		20	100		70-130	0		20
cis-1,2-Dichloroethene	4.5	10	15	105		14	95		70-130	7		20
Dibromomethane	ND	10	9.8	98		9.6	96		70-130	2		20
1,2,3-Trichloropropane	ND	10	11	110		11	110		64-130	0		20
Acrylonitrile	ND	10	9.6	96		9.8	98		70-130	2		20
Styrene	ND	20	20	100		20	100		70-130	0		20
Dichlorodifluoromethane	ND	10	14	140		13	130		36-147	7		20
Acetone	ND	10	11	110		12	120		58-148	9		20
Carbon disulfide	ND	10	11	110		10	100		51-130	10		20
2-Butanone	ND	10	8.7	87		8.9	89		63-138	2		20
Vinyl acetate	ND	10	9.6	96		9.5	95		70-130	1		20
4-Methyl-2-pentanone	ND	10	9.9	99		10	100		59-130	1		20
2-Hexanone	ND	10	8.5	85		8.8	88		57-130	3		20

Matrix Spike Analysis

Batch Quality Control

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829077
Report Date: 08/08/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-03 QC Batch ID: WG1141450-6 WG1141450-7 QC Sample: L1829077-01 Client ID: BMW-1-072718												
Bromochloromethane	ND	10	9.5	95		9.8	98		70-130	3		20
2,2-Dichloropropane	ND	10	9.3	93		9.3	93		63-133	0		20
1,2-Dibromoethane	ND	10	9.5	95		9.4	94		70-130	1		20
1,3-Dichloropropane	ND	10	10	100		10	100		70-130	0		20
1,1,1,2-Tetrachloroethane	ND	10	9.8	98		9.7	97		64-130	1		20
Bromobenzene	ND	10	9.7	97		9.6	96		70-130	1		20
n-Butylbenzene	ND	10	11	110		11	110		53-136	0		20
sec-Butylbenzene	ND	10	11	110		11	110		70-130	0		20
tert-Butylbenzene	ND	10	11	110		11	110		70-130	0		20
o-Chlorotoluene	ND	10	11	110		11	110		70-130	0		20
p-Chlorotoluene	ND	10	11	110		11	110		70-130	0		20
1,2-Dibromo-3-chloropropane	ND	10	8.0	80		8.5	85		41-144	6		20
Hexachlorobutadiene	ND	10	9.2	92		9.4	94		63-130	2		20
Isopropylbenzene	ND	10	11	110		11	110		70-130	0		20
p-Isopropyltoluene	ND	10	11	110		11	110		70-130	0		20
Naphthalene	ND	10	8.4	84		8.9	89		70-130	6		20
n-Propylbenzene	ND	10	11	110		11	110		69-130	0		20
1,2,3-Trichlorobenzene	ND	10	8.2	82		8.6	86		70-130	5		20
1,2,4-Trichlorobenzene	ND	10	8.6	86		9.0	90		70-130	5		20
1,3,5-Trimethylbenzene	ND	10	11	110		11	110		64-130	0		20
1,2,4-Trimethylbenzene	ND	10	11	110		11	110		70-130	0		20
1,4-Dioxane	ND	500	350	70		450	90		56-162	25	Q	20
p-Diethylbenzene	ND	10	11	110		11	110		70-130	0		20

Matrix Spike Analysis

Batch Quality Control

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829077
Report Date: 08/08/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-03 QC Batch ID: WG1141450-6 WG1141450-7 QC Sample: L1829077-01 Client ID: BMW-1-072718												
p-Ethyltoluene	ND	10	11	110		11	110		70-130	0		20
1,2,4,5-Tetramethylbenzene	ND	10	10	100		10	100		70-130	0		20
Ethyl ether	ND	10	10	100		10	100		59-134	0		20
trans-1,4-Dichloro-2-butene	ND	10	9.0	90		11	110		70-130	20		20

Surrogate	MS % Recovery	Qualifier	MSD % Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	111		110		70-130
4-Bromofluorobenzene	111		113		70-130
Dibromofluoromethane	100		101		70-130
Toluene-d8	104		104		70-130

METALS

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829077
Report Date: 08/08/18

SAMPLE RESULTS

Lab ID: L1829077-01
 Client ID: BMW-1-072718
 Sample Location: LONG ISLAND CITY, NY

Date Collected: 07/27/18 09:20
 Date Received: 07/27/18
 Field Prep: Not Specified

Sample Depth:
 Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Aluminum, Total	0.0184		mg/l	0.0100	0.00327	1	08/07/18 09:55	08/07/18 15:52	EPA 3005A	1,6020B	MG
Antimony, Total	0.00197	J	mg/l	0.00400	0.00042	1	08/07/18 09:55	08/07/18 15:52	EPA 3005A	1,6020B	MG
Arsenic, Total	0.00100		mg/l	0.00050	0.00016	1	08/07/18 09:55	08/07/18 15:52	EPA 3005A	1,6020B	MG
Barium, Total	0.1115		mg/l	0.00050	0.00017	1	08/07/18 09:55	08/07/18 15:52	EPA 3005A	1,6020B	MG
Beryllium, Total	ND		mg/l	0.00050	0.00010	1	08/07/18 09:55	08/07/18 15:52	EPA 3005A	1,6020B	MG
Cadmium, Total	0.00330		mg/l	0.00020	0.00005	1	08/07/18 09:55	08/07/18 15:52	EPA 3005A	1,6020B	MG
Calcium, Total	283.		mg/l	0.100	0.0394	1	08/07/18 09:55	08/07/18 15:52	EPA 3005A	1,6020B	MG
Chromium, Total	0.00210		mg/l	0.00100	0.00017	1	08/07/18 09:55	08/07/18 15:52	EPA 3005A	1,6020B	MG
Cobalt, Total	0.01086		mg/l	0.00050	0.00016	1	08/07/18 09:55	08/07/18 15:52	EPA 3005A	1,6020B	MG
Copper, Total	0.00431		mg/l	0.00200	0.00038	1	08/07/18 09:55	08/07/18 15:52	EPA 3005A	1,6020B	MG
Iron, Total	0.340		mg/l	0.0500	0.0191	1	08/07/18 09:55	08/07/18 15:52	EPA 3005A	1,6020B	MG
Lead, Total	ND		mg/l	0.00100	0.00034	1	08/07/18 09:55	08/07/18 15:52	EPA 3005A	1,6020B	MG
Magnesium, Total	39.2		mg/l	0.0700	0.0242	1	08/07/18 09:55	08/07/18 15:52	EPA 3005A	1,6020B	MG
Manganese, Total	8.499		mg/l	0.00200	0.00044	1	08/07/18 09:55	08/07/18 15:52	EPA 3005A	1,6020B	MG
Mercury, Total	ND		mg/l	0.00020	0.00006	1	08/02/18 12:02	08/02/18 21:10	EPA 7470A	1,7470A	EA
Nickel, Total	0.09334		mg/l	0.00200	0.00055	1	08/07/18 09:55	08/07/18 15:52	EPA 3005A	1,6020B	MG
Potassium, Total	26.6		mg/l	0.100	0.0309	1	08/07/18 09:55	08/07/18 15:52	EPA 3005A	1,6020B	MG
Selenium, Total	ND		mg/l	0.00500	0.00173	1	08/07/18 09:55	08/07/18 15:52	EPA 3005A	1,6020B	MG
Silver, Total	ND		mg/l	0.00040	0.00016	1	08/07/18 09:55	08/07/18 15:52	EPA 3005A	1,6020B	MG
Sodium, Total	225.		mg/l	0.100	0.0293	1	08/07/18 09:55	08/07/18 15:52	EPA 3005A	1,6020B	MG
Thallium, Total	0.00067		mg/l	0.00050	0.00014	1	08/07/18 09:55	08/07/18 15:52	EPA 3005A	1,6020B	MG
Vanadium, Total	ND		mg/l	0.00500	0.00157	1	08/07/18 09:55	08/07/18 15:52	EPA 3005A	1,6020B	MG
Zinc, Total	0.00914	J	mg/l	0.01000	0.00341	1	08/07/18 09:55	08/07/18 15:52	EPA 3005A	1,6020B	MG
Dissolved Metals - Mansfield Lab											
Aluminum, Dissolved	0.00428	J	mg/l	0.0100	0.00327	1	08/07/18 10:40	08/07/18 17:10	EPA 3005A	1,6020B	MG
Antimony, Dissolved	0.00244	J	mg/l	0.00400	0.00042	1	08/07/18 10:40	08/07/18 17:10	EPA 3005A	1,6020B	MG
Arsenic, Dissolved	0.00091		mg/l	0.00050	0.00016	1	08/07/18 10:40	08/07/18 17:10	EPA 3005A	1,6020B	MG
Barium, Dissolved	0.1128		mg/l	0.00050	0.00017	1	08/07/18 10:40	08/07/18 17:10	EPA 3005A	1,6020B	MG
Beryllium, Dissolved	ND		mg/l	0.00050	0.00010	1	08/07/18 10:40	08/07/18 17:10	EPA 3005A	1,6020B	MG



Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829077
Report Date: 08/08/18

SAMPLE RESULTS

Lab ID: L1829077-01
Client ID: BMW-1-072718
Sample Location: LONG ISLAND CITY, NY

Date Collected: 07/27/18 09:20
Date Received: 07/27/18
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Cadmium, Dissolved	0.00319		mg/l	0.00020	0.00005	1	08/07/18 10:40	08/07/18 17:10	EPA 3005A	1,6020B	MG
Calcium, Dissolved	280.		mg/l	0.100	0.0394	1	08/07/18 10:40	08/07/18 17:10	EPA 3005A	1,6020B	MG
Chromium, Dissolved	0.00095	J	mg/l	0.00100	0.00017	1	08/07/18 10:40	08/07/18 17:10	EPA 3005A	1,6020B	MG
Cobalt, Dissolved	0.01066		mg/l	0.00050	0.00016	1	08/07/18 10:40	08/07/18 17:10	EPA 3005A	1,6020B	MG
Copper, Dissolved	0.00389		mg/l	0.00200	0.00038	1	08/07/18 10:40	08/07/18 17:10	EPA 3005A	1,6020B	MG
Iron, Dissolved	0.0660		mg/l	0.0500	0.0191	1	08/07/18 10:40	08/07/18 17:10	EPA 3005A	1,6020B	MG
Lead, Dissolved	ND		mg/l	0.00100	0.00034	1	08/07/18 10:40	08/07/18 17:10	EPA 3005A	1,6020B	MG
Magnesium, Dissolved	39.1		mg/l	0.0700	0.0242	1	08/07/18 10:40	08/07/18 17:10	EPA 3005A	1,6020B	MG
Manganese, Dissolved	8.269		mg/l	0.00200	0.00044	1	08/07/18 10:40	08/07/18 17:10	EPA 3005A	1,6020B	MG
Mercury, Dissolved	ND		mg/l	0.00020	0.00006	1	08/02/18 14:58	08/03/18 15:27	EPA 7470A	1,7470A	KA
Nickel, Dissolved	0.09146		mg/l	0.00200	0.00055	1	08/07/18 10:40	08/07/18 17:10	EPA 3005A	1,6020B	MG
Potassium, Dissolved	26.5		mg/l	0.100	0.0309	1	08/07/18 10:40	08/07/18 17:10	EPA 3005A	1,6020B	MG
Selenium, Dissolved	ND		mg/l	0.00500	0.00173	1	08/07/18 10:40	08/07/18 17:10	EPA 3005A	1,6020B	MG
Silver, Dissolved	ND		mg/l	0.00040	0.00016	1	08/07/18 10:40	08/07/18 17:10	EPA 3005A	1,6020B	MG
Sodium, Dissolved	219.		mg/l	0.100	0.0293	1	08/07/18 10:40	08/07/18 17:10	EPA 3005A	1,6020B	MG
Thallium, Dissolved	0.00062		mg/l	0.00050	0.00014	1	08/07/18 10:40	08/07/18 17:10	EPA 3005A	1,6020B	MG
Vanadium, Dissolved	ND		mg/l	0.00500	0.00157	1	08/07/18 10:40	08/07/18 17:10	EPA 3005A	1,6020B	MG
Zinc, Dissolved	0.00739	J	mg/l	0.01000	0.00341	1	08/07/18 10:40	08/07/18 17:10	EPA 3005A	1,6020B	MG



Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829077
Report Date: 08/08/18

SAMPLE RESULTS

Lab ID: L1829077-02
 Client ID: BMW-2-072718
 Sample Location: LONG ISLAND CITY, NY

Date Collected: 07/27/18 10:45
 Date Received: 07/27/18
 Field Prep: Not Specified

Sample Depth:
 Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Aluminum, Total	0.0157		mg/l	0.0100	0.00327	1	08/07/18 09:55	08/07/18 15:57	EPA 3005A	1,6020B	MG
Antimony, Total	0.00109	J	mg/l	0.00400	0.00042	1	08/07/18 09:55	08/07/18 15:57	EPA 3005A	1,6020B	MG
Arsenic, Total	0.00089		mg/l	0.00050	0.00016	1	08/07/18 09:55	08/07/18 15:57	EPA 3005A	1,6020B	MG
Barium, Total	0.1096		mg/l	0.00050	0.00017	1	08/07/18 09:55	08/07/18 15:57	EPA 3005A	1,6020B	MG
Beryllium, Total	ND		mg/l	0.00050	0.00010	1	08/07/18 09:55	08/07/18 15:57	EPA 3005A	1,6020B	MG
Cadmium, Total	0.01045		mg/l	0.00020	0.00005	1	08/07/18 09:55	08/07/18 15:57	EPA 3005A	1,6020B	MG
Calcium, Total	258.		mg/l	0.100	0.0394	1	08/07/18 09:55	08/07/18 15:57	EPA 3005A	1,6020B	MG
Chromium, Total	0.00244		mg/l	0.00100	0.00017	1	08/07/18 09:55	08/07/18 15:57	EPA 3005A	1,6020B	MG
Cobalt, Total	0.01312		mg/l	0.00050	0.00016	1	08/07/18 09:55	08/07/18 15:57	EPA 3005A	1,6020B	MG
Copper, Total	0.00415		mg/l	0.00200	0.00038	1	08/07/18 09:55	08/07/18 15:57	EPA 3005A	1,6020B	MG
Iron, Total	0.824		mg/l	0.0500	0.0191	1	08/07/18 09:55	08/07/18 15:57	EPA 3005A	1,6020B	MG
Lead, Total	ND		mg/l	0.00100	0.00034	1	08/07/18 09:55	08/07/18 15:57	EPA 3005A	1,6020B	MG
Magnesium, Total	33.0		mg/l	0.0700	0.0242	1	08/07/18 09:55	08/07/18 15:57	EPA 3005A	1,6020B	MG
Manganese, Total	7.225		mg/l	0.00200	0.00044	1	08/07/18 09:55	08/07/18 15:57	EPA 3005A	1,6020B	MG
Mercury, Total	ND		mg/l	0.00020	0.00006	1	08/02/18 12:02	08/02/18 21:19	EPA 7470A	1,7470A	EA
Nickel, Total	0.1593		mg/l	0.00200	0.00055	1	08/07/18 09:55	08/07/18 15:57	EPA 3005A	1,6020B	MG
Potassium, Total	33.4		mg/l	0.100	0.0309	1	08/07/18 09:55	08/07/18 15:57	EPA 3005A	1,6020B	MG
Selenium, Total	ND		mg/l	0.00500	0.00173	1	08/07/18 09:55	08/07/18 15:57	EPA 3005A	1,6020B	MG
Silver, Total	ND		mg/l	0.00040	0.00016	1	08/07/18 09:55	08/07/18 15:57	EPA 3005A	1,6020B	MG
Sodium, Total	206.		mg/l	0.100	0.0293	1	08/07/18 09:55	08/07/18 15:57	EPA 3005A	1,6020B	MG
Thallium, Total	0.00018	J	mg/l	0.00050	0.00014	1	08/07/18 09:55	08/07/18 15:57	EPA 3005A	1,6020B	MG
Vanadium, Total	ND		mg/l	0.00500	0.00157	1	08/07/18 09:55	08/07/18 15:57	EPA 3005A	1,6020B	MG
Zinc, Total	0.00627	J	mg/l	0.01000	0.00341	1	08/07/18 09:55	08/07/18 15:57	EPA 3005A	1,6020B	MG
Dissolved Metals - Mansfield Lab											
Aluminum, Dissolved	0.00341	J	mg/l	0.0100	0.00327	1	08/07/18 10:40	08/07/18 17:15	EPA 3005A	1,6020B	MG
Antimony, Dissolved	0.00130	J	mg/l	0.00400	0.00042	1	08/07/18 10:40	08/07/18 17:15	EPA 3005A	1,6020B	MG
Arsenic, Dissolved	0.00065		mg/l	0.00050	0.00016	1	08/07/18 10:40	08/07/18 17:15	EPA 3005A	1,6020B	MG
Barium, Dissolved	0.1086		mg/l	0.00050	0.00017	1	08/07/18 10:40	08/07/18 17:15	EPA 3005A	1,6020B	MG
Beryllium, Dissolved	ND		mg/l	0.00050	0.00010	1	08/07/18 10:40	08/07/18 17:15	EPA 3005A	1,6020B	MG



Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829077
Report Date: 08/08/18

SAMPLE RESULTS

Lab ID: L1829077-02
 Client ID: BMW-2-072718
 Sample Location: LONG ISLAND CITY, NY

Date Collected: 07/27/18 10:45
 Date Received: 07/27/18
 Field Prep: Not Specified

Sample Depth:
 Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Cadmium, Dissolved	0.01161		mg/l	0.00020	0.00005	1	08/07/18 10:40	08/07/18 17:15	EPA 3005A	1,6020B	MG
Calcium, Dissolved	266.		mg/l	0.100	0.0394	1	08/07/18 10:40	08/07/18 17:15	EPA 3005A	1,6020B	MG
Chromium, Dissolved	0.00185		mg/l	0.00100	0.00017	1	08/07/18 10:40	08/07/18 17:15	EPA 3005A	1,6020B	MG
Cobalt, Dissolved	0.01331		mg/l	0.00050	0.00016	1	08/07/18 10:40	08/07/18 17:15	EPA 3005A	1,6020B	MG
Copper, Dissolved	0.00441		mg/l	0.00200	0.00038	1	08/07/18 10:40	08/07/18 17:15	EPA 3005A	1,6020B	MG
Iron, Dissolved	0.0611		mg/l	0.0500	0.0191	1	08/07/18 10:40	08/07/18 17:15	EPA 3005A	1,6020B	MG
Lead, Dissolved	ND		mg/l	0.00100	0.00034	1	08/07/18 10:40	08/07/18 17:15	EPA 3005A	1,6020B	MG
Magnesium, Dissolved	35.9		mg/l	0.0700	0.0242	1	08/07/18 10:40	08/07/18 17:15	EPA 3005A	1,6020B	MG
Manganese, Dissolved	7.002		mg/l	0.00200	0.00044	1	08/07/18 10:40	08/07/18 17:15	EPA 3005A	1,6020B	MG
Mercury, Dissolved	ND		mg/l	0.00020	0.00006	1	08/02/18 14:58	08/03/18 15:32	EPA 7470A	1,7470A	KA
Nickel, Dissolved	0.1727		mg/l	0.00200	0.00055	1	08/07/18 10:40	08/07/18 17:15	EPA 3005A	1,6020B	MG
Potassium, Dissolved	34.9		mg/l	0.100	0.0309	1	08/07/18 10:40	08/07/18 17:15	EPA 3005A	1,6020B	MG
Selenium, Dissolved	ND		mg/l	0.00500	0.00173	1	08/07/18 10:40	08/07/18 17:15	EPA 3005A	1,6020B	MG
Silver, Dissolved	ND		mg/l	0.00040	0.00016	1	08/07/18 10:40	08/07/18 17:15	EPA 3005A	1,6020B	MG
Sodium, Dissolved	213.		mg/l	0.100	0.0293	1	08/07/18 10:40	08/07/18 17:15	EPA 3005A	1,6020B	MG
Thallium, Dissolved	0.00018	J	mg/l	0.00050	0.00014	1	08/07/18 10:40	08/07/18 17:15	EPA 3005A	1,6020B	MG
Vanadium, Dissolved	ND		mg/l	0.00500	0.00157	1	08/07/18 10:40	08/07/18 17:15	EPA 3005A	1,6020B	MG
Zinc, Dissolved	0.00397	J	mg/l	0.01000	0.00341	1	08/07/18 10:40	08/07/18 17:15	EPA 3005A	1,6020B	MG



Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829077
Report Date: 08/08/18

Method Blank Analysis Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01-02 Batch: WG1142264-1										
Mercury, Total	ND		mg/l	0.00020	0.00006	1	08/02/18 12:02	08/02/18 21:06	1,7470A	EA

Prep Information

Digestion Method: EPA 7470A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Dissolved Metals - Mansfield Lab for sample(s): 01-02 Batch: WG1142345-1										
Mercury, Dissolved	ND		mg/l	0.00020	0.00006	1	08/02/18 14:58	08/03/18 15:17	1,7470A	KA

Prep Information

Digestion Method: EPA 7470A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01-02 Batch: WG1143616-1										
Aluminum, Total	ND		mg/l	0.0100	0.00327	1	08/07/18 09:55	08/07/18 14:57	1,6020B	MG
Antimony, Total	0.00080	J	mg/l	0.00400	0.00042	1	08/07/18 09:55	08/07/18 14:57	1,6020B	MG
Arsenic, Total	ND		mg/l	0.00050	0.00016	1	08/07/18 09:55	08/07/18 14:57	1,6020B	MG
Barium, Total	ND		mg/l	0.00050	0.00017	1	08/07/18 09:55	08/07/18 14:57	1,6020B	MG
Beryllium, Total	ND		mg/l	0.00050	0.00010	1	08/07/18 09:55	08/07/18 14:57	1,6020B	MG
Cadmium, Total	ND		mg/l	0.00020	0.00005	1	08/07/18 09:55	08/07/18 14:57	1,6020B	MG
Calcium, Total	ND		mg/l	0.100	0.0394	1	08/07/18 09:55	08/07/18 14:57	1,6020B	MG
Chromium, Total	ND		mg/l	0.00100	0.00017	1	08/07/18 09:55	08/07/18 14:57	1,6020B	MG
Cobalt, Total	ND		mg/l	0.00050	0.00016	1	08/07/18 09:55	08/07/18 14:57	1,6020B	MG
Copper, Total	ND		mg/l	0.00200	0.00038	1	08/07/18 09:55	08/07/18 14:57	1,6020B	MG
Iron, Total	ND		mg/l	0.0500	0.0191	1	08/07/18 09:55	08/07/18 14:57	1,6020B	MG
Lead, Total	ND		mg/l	0.00100	0.00034	1	08/07/18 09:55	08/07/18 14:57	1,6020B	MG
Magnesium, Total	ND		mg/l	0.0700	0.0242	1	08/07/18 09:55	08/07/18 14:57	1,6020B	MG
Manganese, Total	ND		mg/l	0.00200	0.00044	1	08/07/18 09:55	08/07/18 14:57	1,6020B	MG
Nickel, Total	ND		mg/l	0.00200	0.00055	1	08/07/18 09:55	08/07/18 14:57	1,6020B	MG
Potassium, Total	ND		mg/l	0.100	0.0309	1	08/07/18 09:55	08/07/18 14:57	1,6020B	MG



Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829077
Report Date: 08/08/18

Method Blank Analysis Batch Quality Control

Selenium, Total	ND	mg/l	0.00500	0.00173	1	08/07/18 09:55	08/07/18 14:57	1,6020B	MG
Silver, Total	ND	mg/l	0.00040	0.00016	1	08/07/18 09:55	08/07/18 14:57	1,6020B	MG
Sodium, Total	ND	mg/l	0.100	0.0293	1	08/07/18 09:55	08/07/18 14:57	1,6020B	MG
Thallium, Total	0.00035 J	mg/l	0.00050	0.00014	1	08/07/18 09:55	08/07/18 14:57	1,6020B	MG
Vanadium, Total	ND	mg/l	0.00500	0.00157	1	08/07/18 09:55	08/07/18 14:57	1,6020B	MG
Zinc, Total	ND	mg/l	0.01000	0.00341	1	08/07/18 09:55	08/07/18 14:57	1,6020B	MG

Prep Information

Digestion Method: EPA 3005A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Dissolved Metals - Mansfield Lab for sample(s): 01-02 Batch: WG1143665-1										
Aluminum, Dissolved	ND		mg/l	0.0100	0.00327	1	08/07/18 10:40	08/07/18 16:32	1,6020B	MG
Antimony, Dissolved	ND		mg/l	0.00400	0.00042	1	08/07/18 10:40	08/07/18 16:32	1,6020B	MG
Arsenic, Dissolved	ND		mg/l	0.00050	0.00016	1	08/07/18 10:40	08/07/18 16:32	1,6020B	MG
Barium, Dissolved	ND		mg/l	0.00050	0.00017	1	08/07/18 10:40	08/07/18 16:32	1,6020B	MG
Beryllium, Dissolved	ND		mg/l	0.00050	0.00010	1	08/07/18 10:40	08/07/18 16:32	1,6020B	MG
Cadmium, Dissolved	ND		mg/l	0.00020	0.00005	1	08/07/18 10:40	08/07/18 16:32	1,6020B	MG
Calcium, Dissolved	ND		mg/l	0.100	0.0394	1	08/07/18 10:40	08/07/18 16:32	1,6020B	MG
Chromium, Dissolved	ND		mg/l	0.00100	0.00017	1	08/07/18 10:40	08/07/18 16:32	1,6020B	MG
Cobalt, Dissolved	ND		mg/l	0.00050	0.00016	1	08/07/18 10:40	08/07/18 16:32	1,6020B	MG
Copper, Dissolved	0.00145	J	mg/l	0.00200	0.00038	1	08/07/18 10:40	08/07/18 16:32	1,6020B	MG
Iron, Dissolved	0.0398	J	mg/l	0.0500	0.0191	1	08/07/18 10:40	08/07/18 16:32	1,6020B	MG
Lead, Dissolved	0.00099	J	mg/l	0.00100	0.00034	1	08/07/18 10:40	08/07/18 16:32	1,6020B	MG
Magnesium, Dissolved	ND		mg/l	0.0700	0.0242	1	08/07/18 10:40	08/07/18 16:32	1,6020B	MG
Manganese, Dissolved	0.00119	J	mg/l	0.00200	0.00044	1	08/07/18 10:40	08/07/18 16:32	1,6020B	MG
Nickel, Dissolved	ND		mg/l	0.00200	0.00055	1	08/07/18 10:40	08/07/18 16:32	1,6020B	MG
Potassium, Dissolved	ND		mg/l	0.100	0.0309	1	08/07/18 10:40	08/07/18 16:32	1,6020B	MG
Selenium, Dissolved	ND		mg/l	0.00500	0.00173	1	08/07/18 10:40	08/07/18 16:32	1,6020B	MG
Silver, Dissolved	ND		mg/l	0.00040	0.00016	1	08/07/18 10:40	08/07/18 16:32	1,6020B	MG
Sodium, Dissolved	0.0539	J	mg/l	0.100	0.0293	1	08/07/18 10:40	08/07/18 16:32	1,6020B	MG
Thallium, Dissolved	ND		mg/l	0.00050	0.00014	1	08/07/18 10:40	08/07/18 16:32	1,6020B	MG
Vanadium, Dissolved	ND		mg/l	0.00500	0.00157	1	08/07/18 10:40	08/07/18 16:32	1,6020B	MG
Zinc, Dissolved	0.00636	J	mg/l	0.01000	0.00341	1	08/07/18 10:40	08/07/18 16:32	1,6020B	MG

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829077
Report Date: 08/08/18

Method Blank Analysis Batch Quality Control

Prep Information

Digestion Method: EPA 3005A

Lab Control Sample Analysis

Batch Quality Control

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829077
Report Date: 08/08/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-02 Batch: WG1142264-2								
Mercury, Total	121	Q	-		80-120	-		
Dissolved Metals - Mansfield Lab Associated sample(s): 01-02 Batch: WG1142345-2								
Mercury, Dissolved	113		-		80-120	-		

Lab Control Sample Analysis

Batch Quality Control

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829077
Report Date: 08/08/18

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-02 Batch: WG1143616-2					
Aluminum, Total	114	-	80-120	-	
Antimony, Total	104	-	80-120	-	
Arsenic, Total	105	-	80-120	-	
Barium, Total	105	-	80-120	-	
Beryllium, Total	110	-	80-120	-	
Cadmium, Total	109	-	80-120	-	
Calcium, Total	102	-	80-120	-	
Chromium, Total	105	-	80-120	-	
Cobalt, Total	106	-	80-120	-	
Copper, Total	106	-	80-120	-	
Iron, Total	114	-	80-120	-	
Lead, Total	109	-	80-120	-	
Magnesium, Total	110	-	80-120	-	
Manganese, Total	106	-	80-120	-	
Nickel, Total	106	-	80-120	-	
Potassium, Total	110	-	80-120	-	
Selenium, Total	116	-	80-120	-	
Silver, Total	104	-	80-120	-	
Sodium, Total	106	-	80-120	-	
Thallium, Total	106	-	80-120	-	
Vanadium, Total	105	-	80-120	-	

Lab Control Sample Analysis
Batch Quality Control

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829077
Report Date: 08/08/18

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-02 Batch: WG1143616-2					
Zinc, Total	108	-	80-120	-	

Lab Control Sample Analysis

Batch Quality Control

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829077
Report Date: 08/08/18

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Dissolved Metals - Mansfield Lab Associated sample(s): 01-02 Batch: WG1143665-2					
Aluminum, Dissolved	110	-	80-120	-	
Antimony, Dissolved	115	-	80-120	-	
Arsenic, Dissolved	102	-	80-120	-	
Barium, Dissolved	94	-	80-120	-	
Beryllium, Dissolved	100	-	80-120	-	
Cadmium, Dissolved	104	-	80-120	-	
Calcium, Dissolved	100	-	80-120	-	
Chromium, Dissolved	101	-	80-120	-	
Cobalt, Dissolved	102	-	80-120	-	
Copper, Dissolved	101	-	80-120	-	
Iron, Dissolved	119	-	80-120	-	
Lead, Dissolved	102	-	80-120	-	
Magnesium, Dissolved	108	-	80-120	-	
Manganese, Dissolved	104	-	80-120	-	
Nickel, Dissolved	104	-	80-120	-	
Potassium, Dissolved	105	-	80-120	-	
Selenium, Dissolved	100	-	80-120	-	
Silver, Dissolved	101	-	80-120	-	
Sodium, Dissolved	108	-	80-120	-	
Thallium, Dissolved	98	-	80-120	-	
Vanadium, Dissolved	101	-	80-120	-	

Lab Control Sample Analysis
Batch Quality Control

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829077
Report Date: 08/08/18

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Dissolved Metals - Mansfield Lab Associated sample(s): 01-02 Batch: WG1143665-2					
Zinc, Dissolved	105	-	80-120	-	

Matrix Spike Analysis Batch Quality Control

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829077
Report Date: 08/08/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1142264-3 WG1142264-4 QC Sample: L1829077-01 Client ID: BMW-1-072718												
Mercury, Total	ND	0.005	0.00515	103		0.00510	102		75-125	1		20
Dissolved Metals - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1142345-3 WG1142345-4 QC Sample: L1829077-01 Client ID: BMW-1-072718												
Mercury, Dissolved	ND	0.005	0.00495	99		0.00481	96		75-125	3		20

Matrix Spike Analysis

Batch Quality Control

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829077
Report Date: 08/08/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Found	MSD %Recovery	Recovery Limits	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-02 072718 QC Batch ID: WG1143616-3 WG1143616-4 QC Sample: L1829077-01 Client ID: BMW-1-									
Aluminum, Total	0.0184	2	2.12	105	2.15	106	75-125	1	20
Antimony, Total	0.00197J	0.5	0.6685	134	Q 0.6266	125	75-125	6	20
Arsenic, Total	0.00100	0.12	0.1337	110	0.1309	108	75-125	2	20
Barium, Total	0.1115	2	2.209	105	2.198	104	75-125	0	20
Beryllium, Total	ND	0.05	0.05375	108	0.05448	109	75-125	1	20
Cadmium, Total	0.00330	0.051	0.05909	109	0.05958	110	75-125	1	20
Calcium, Total	283.	10	297	140	Q 295	120	75-125	1	20
Chromium, Total	0.00210	0.2	0.2075	103	0.2067	102	75-125	0	20
Cobalt, Total	0.01086	0.5	0.5199	102	0.5221	102	75-125	0	20
Copper, Total	0.00431	0.25	0.2607	102	0.2581	102	75-125	1	20
Iron, Total	0.340	1	1.48	114	1.52	118	75-125	3	20
Lead, Total	ND	0.51	0.5360	105	0.5376	105	75-125	0	20
Magnesium, Total	39.2	10	50.1	109	50.2	110	75-125	0	20
Manganese, Total	8.499	0.5	8.103	0	Q 8.126	0	Q 75-125	0	20
Nickel, Total	0.09334	0.5	0.6186	105	0.6237	106	75-125	1	20
Potassium, Total	26.6	10	37.3	107	36.3	97	75-125	3	20
Selenium, Total	ND	0.12	0.134	112	0.140	117	75-125	4	20
Silver, Total	ND	0.05	0.05073	101	0.05142	103	75-125	1	20
Sodium, Total	225.	10	222	0	Q 223	0	Q 75-125	0	20
Thallium, Total	0.00067	0.12	0.1251	104	0.1279	106	75-125	2	20
Vanadium, Total	ND	0.5	0.5220	104	0.5191	104	75-125	1	20

Matrix Spike Analysis

Batch Quality Control

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829077
Report Date: 08/08/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Found	MSD %Recovery	Recovery Limits	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-02 072718 QC Batch ID: WG1143616-3 WG1143616-4 QC Sample: L1829077-01 Client ID: BMW-1-									
Zinc, Total	0.00914J	0.5	0.5554	111	0.5467	109	75-125	2	20

Matrix Spike Analysis **Batch Quality Control**

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829077
Report Date: 08/08/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery		MSD Found	MSD %Recovery		Recovery Limits	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-02			QC Batch ID: WG1143616-7		WG1143616-8	QC Sample: L1829170-05			Client ID: MS Sample		
Aluminum, Total	0.00430J	2	2.08	104		2.11	106		75-125	1	20
Antimony, Total	0.00390J	0.5	0.6597	132	Q	0.6557	131	Q	75-125	1	20
Arsenic, Total	0.00519	0.12	0.1452	117		0.1468	118		75-125	1	20
Barium, Total	0.2390	2	2.332	105		2.335	105		75-125	0	20
Beryllium, Total	ND	0.05	0.05825	116		0.05708	114		75-125	2	20
Cadmium, Total	ND	0.051	0.05766	113		0.05920	116		75-125	3	20
Calcium, Total	205.	10	414	2090	Q	420	2150	Q	75-125	1	20
Chromium, Total	0.00021J	0.2	0.1991	100		0.1973	99		75-125	1	20
Cobalt, Total	0.00084	0.5	0.5139	103		0.5116	102		75-125	0	20
Copper, Total	ND	0.25	0.2585	103		0.2573	103		75-125	0	20
Iron, Total	8.14	1	9.81	167	Q	9.66	152	Q	75-125	2	20
Lead, Total	ND	0.51	0.5166	101		0.5272	103		75-125	2	20
Magnesium, Total	487.	10	515	280	Q	534	470	Q	75-125	4	20
Manganese, Total	0.9630	0.5	1.657	139	Q	1.640	135	Q	75-125	1	20
Nickel, Total	0.00109J	0.5	0.5243	105		0.5273	105		75-125	1	20
Potassium, Total	130.	10	191	610	Q	193	630	Q	75-125	1	20
Selenium, Total	ND	0.12	0.146	122		0.148	123		75-125	1	20
Silver, Total	ND	0.05	0.04954	99		0.04919	98		75-125	1	20
Sodium, Total	5720	10	5200	0	Q	5400	0	Q	75-125	4	20
Thallium, Total	ND	0.12	0.1048	87		0.1113	93		75-125	6	20
Vanadium, Total	ND	0.5	0.4903	98		0.4919	98		75-125	0	20

Matrix Spike Analysis

Batch Quality Control

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829077
Report Date: 08/08/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Found	MSD %Recovery	Recovery Limits	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1143616-7 WG1143616-8 QC Sample: L1829170-05 Client ID: MS Sample									
Zinc, Total	ND	0.5	0.6008	120	0.5957	119	75-125	1	20

Matrix Spike Analysis

Batch Quality Control

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829077
Report Date: 08/08/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery		MSD Found	MSD %Recovery		Recovery Limits	RPD	RPD Limits
Dissolved Metals - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1143665-3 WG1143665-4 QC Sample: L1829077-01 Client ID: BMW-1-072718											
Aluminum, Dissolved	0.00428J	2	2.17	108		2.22	111		75-125	2	20
Antimony, Dissolved	0.00244J	0.5	0.6345	127	Q	0.6126	122		75-125	4	20
Arsenic, Dissolved	0.00091	0.12	0.1285	106		0.1268	105		75-125	1	20
Barium, Dissolved	0.1128	2	2.017	95		2.039	96		75-125	1	20
Beryllium, Dissolved	ND	0.05	0.05186	104		0.05207	104		75-125	0	20
Cadmium, Dissolved	0.00319	0.051	0.05808	108		0.05752	106		75-125	1	20
Calcium, Dissolved	280.	10	299	190	Q	300	200	Q	75-125	0	20
Chromium, Dissolved	0.00095J	0.2	0.2000	100		0.2021	101		75-125	1	20
Cobalt, Dissolved	0.01066	0.5	0.5225	102		0.5302	104		75-125	1	20
Copper, Dissolved	0.00389	0.25	0.2589	102		0.2583	102		75-125	0	20
Iron, Dissolved	0.0660	1	1.15	108		1.21	114		75-125	5	20
Lead, Dissolved	ND	0.51	0.5182	102		0.5169	101		75-125	0	20
Magnesium, Dissolved	39.1	10	51.8	127	Q	52.7	136	Q	75-125	2	20
Manganese, Dissolved	8.269	0.5	8.205	0	Q	8.239	0	Q	75-125	0	20
Nickel, Dissolved	0.09146	0.5	0.6054	103		0.6292	108		75-125	4	20
Potassium, Dissolved	26.5	10	37.3	108		37.8	113		75-125	1	20
Selenium, Dissolved	ND	0.12	0.134	112		0.138	115		75-125	3	20
Silver, Dissolved	ND	0.05	0.05098	102		0.05097	102		75-125	0	20
Sodium, Dissolved	219.	10	234	150	Q	236	170	Q	75-125	1	20
Thallium, Dissolved	0.00062	0.12	0.1229	102		0.1216	101		75-125	1	20
Vanadium, Dissolved	ND	0.5	0.5145	103		0.5052	101		75-125	2	20

Matrix Spike Analysis

Batch Quality Control

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829077
Report Date: 08/08/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Found	MSD %Recovery	Recovery Limits	RPD	RPD Limits
Dissolved Metals - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1143665-3 WG1143665-4 QC Sample: L1829077-01 Client ID: BMW-1-072718									
Zinc, Dissolved	0.00739J	0.5	0.5451	109	0.5597	112	75-125	3	20

Project Name: HYGRADE**Lab Number:** L1829077**Project Number:** 3612162331**Report Date:** 08/08/18**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1829077-01A	Vial HCl preserved	A	N/A	N/A	3.8	Y	Absent		NYTCL-8260(14)
L1829077-01A1	Vial HCl preserved	A	N/A	N/A	3.8	Y	Absent		NYTCL-8260(14)
L1829077-01A2	Vial HCl preserved	A	N/A	N/A	3.8	Y	Absent		NYTCL-8260(14)
L1829077-01B	Vial HCl preserved	A	N/A	N/A	3.8	Y	Absent		NYTCL-8260(14)
L1829077-01B1	Vial HCl preserved	A	N/A	N/A	3.8	Y	Absent		NYTCL-8260(14)
L1829077-01B2	Vial HCl preserved	A	N/A	N/A	3.8	Y	Absent		NYTCL-8260(14)
L1829077-01C	Vial HCl preserved	A	N/A	N/A	3.8	Y	Absent		NYTCL-8260(14)
L1829077-01C1	Vial HCl preserved	A	N/A	N/A	3.8	Y	Absent		NYTCL-8260(14)
L1829077-01C2	Vial HCl preserved	A	N/A	N/A	3.8	Y	Absent		NYTCL-8260(14)
L1829077-01D	Plastic 250ml unpreserved	A	<2	<2	3.8	Y	Absent		-
L1829077-01D1	Plastic 250ml unpreserved	A	<2	<2	3.8	Y	Absent		-
L1829077-01D2	Plastic 250ml unpreserved	A	<2	<2	3.8	Y	Absent		-
L1829077-01E	Plastic 250ml HNO3 preserved	A	<2	<2	3.8	Y	Absent		BA-6020T(180),FE-6020T(180),SE-6020T(180),TL-6020T(180),CA-6020T(180),CR-6020T(180),K-6020T(180),NI-6020T(180),CU-6020T(180),NA-6020T(180),ZN-6020T(180),PB-6020T(180),BE-6020T(180),MN-6020T(180),AS-6020T(180),SB-6020T(180),V-6020T(180),AG-6020T(180),AL-6020T(180),CD-6020T(180),HG-T(28),MG-6020T(180),CO-6020T(180)
L1829077-01E1	Plastic 250ml HNO3 preserved	A	<2	<2	3.8	Y	Absent		BA-6020T(180),FE-6020T(180),SE-6020T(180),TL-6020T(180),CA-6020T(180),CR-6020T(180),K-6020T(180),NI-6020T(180),CU-6020T(180),NA-6020T(180),ZN-6020T(180),PB-6020T(180),BE-6020T(180),MN-6020T(180),AS-6020T(180),SB-6020T(180),V-6020T(180),AG-6020T(180),AL-6020T(180),CD-6020T(180),HG-T(28),MG-6020T(180),CO-6020T(180)

Project Name: HYGRADE
Project Number: 3612162331

Serial_No: 08081813:54
Lab Number: L1829077
Report Date: 08/08/18

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1829077-01E2	Plastic 250ml HNO3 preserved	A	<2	<2	3.8	Y	Absent		BA-6020T(180),FE-6020T(180),SE-6020T(180),TL-6020T(180),CA-6020T(180),CR-6020T(180),K-6020T(180),NI-6020T(180),CU-6020T(180),NA-6020T(180),ZN-6020T(180),PB-6020T(180),BE-6020T(180),MN-6020T(180),AS-6020T(180),SB-6020T(180),V-6020T(180),AG-6020T(180),AL-6020T(180),CD-6020T(180),HG-T(28),MG-6020T(180),CO-6020T(180)
L1829077-01X	Plastic 120ml HNO3 preserved Filtrates	A	<2	<2	3.8	Y	Absent		CU-6020S(180),K-6020S(180),SE-6020S(180),V-6020S(180),MN-6020S(180),BE-6020S(180),CO-6020S(180),MG-6020S(180),ZN-6020S(180),CA-6020S(180),CR-6020S(180),FE-6020S(180),BA-6020S(180),NA-6020S(180),NI-6020S(180),PB-6020S(180),TL-6020S(180),AG-6020S(180),AS-6020S(180),SB-6020S(180),AL-6020S(180),CD-6020S(180),HG-S(28)
L1829077-01X1	Plastic 120ml HNO3 preserved Filtrates	A	<2	<2	3.8	Y	Absent		CU-6020S(180),K-6020S(180),SE-6020S(180),V-6020S(180),MN-6020S(180),BE-6020S(180),CO-6020S(180),MG-6020S(180),ZN-6020S(180),CA-6020S(180),CR-6020S(180),FE-6020S(180),BA-6020S(180),NA-6020S(180),NI-6020S(180),PB-6020S(180),TL-6020S(180),AG-6020S(180),AS-6020S(180),SB-6020S(180),AL-6020S(180),CD-6020S(180),HG-S(28)
L1829077-01X2	Plastic 120ml HNO3 preserved Filtrates	A	<2	<2	3.8	Y	Absent		CU-6020S(180),K-6020S(180),SE-6020S(180),V-6020S(180),MN-6020S(180),BE-6020S(180),CO-6020S(180),MG-6020S(180),ZN-6020S(180),CA-6020S(180),CR-6020S(180),FE-6020S(180),BA-6020S(180),NA-6020S(180),NI-6020S(180),PB-6020S(180),TL-6020S(180),AG-6020S(180),AS-6020S(180),SB-6020S(180),AL-6020S(180),CD-6020S(180),HG-S(28)
L1829077-02A	Vial HCl preserved	A	N/A	N/A	3.8	Y	Absent		NYTCL-8260(14)
L1829077-02B	Vial HCl preserved	A	N/A	N/A	3.8	Y	Absent		NYTCL-8260(14)
L1829077-02C	Vial HCl preserved	A	N/A	N/A	3.8	Y	Absent		NYTCL-8260(14)
L1829077-02D	Plastic 250ml HNO3 preserved	A	<2	<2	3.8	Y	Absent		BA-6020T(180),FE-6020T(180),SE-6020T(180),TL-6020T(180),CA-6020T(180),CR-6020T(180),K-6020T(180),NI-6020T(180),CU-6020T(180),NA-6020T(180),ZN-6020T(180),PB-6020T(180),BE-6020T(180),MN-6020T(180),AS-6020T(180),SB-6020T(180),V-6020T(180),AG-6020T(180),AL-6020T(180),CD-6020T(180),HG-T(28),MG-6020T(180),CO-6020T(180)

Project Name: HYGRADE
Project Number: 3612162331

Serial_No: 08081813:54
Lab Number: L1829077
Report Date: 08/08/18

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1829077-02E	Plastic 250ml unpreserved	A	7	7	3.8	Y	Absent		-
L1829077-02X	Plastic 120ml HNO3 preserved Filtrates	A	<2	<2	3.8	Y	Absent		CU-6020S(180),K-6020S(180),SE-6020S(180),V-6020S(180),MN-6020S(180),BE-6020S(180),CO-6020S(180),MG-6020S(180),ZN-6020S(180),CA-6020S(180),CR-6020S(180),FE-6020S(180),BA-6020S(180),NA-6020S(180),NI-6020S(180),PB-6020S(180),TL-6020S(180),AG-6020S(180),AS-6020S(180),SB-6020S(180),AL-6020S(180),CD-6020S(180),HG-S(28)
L1829077-03A	Vial HCl preserved	A	N/A	N/A	3.8	Y	Absent		NYTCL-8260(14)
L1829077-03B	Vial HCl preserved	A	N/A	N/A	3.8	Y	Absent		NYTCL-8260(14)

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829077
Report Date: 08/08/18

GLOSSARY

Acronyms

EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Report Format: DU Report with 'J' Qualifiers



Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829077
Report Date: 08/08/18

Data Qualifiers

- A** - Spectra identified as "Aldol Condensation Product".
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829077
Report Date: 08/08/18

REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IV, 2007.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility

EPA 624: m/p-xylene, o-xylene

EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270D: NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

EPA 300: DW: Bromide

EPA 6860: SCM: Perchlorate

EPA 9010: NPW and SCM: Amenable Cyanide Distillation

SM4500: NPW: Amenable Cyanide, Dissolved Oxygen; SCM: Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility

SM 2540D: TSS

EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B

EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **EPA 351.1, SM4500P-E, SM4500P-B, E,**

SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D.

EPA 624: Volatile Halocarbons & Aromatics,

EPA 608: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, SM9222D.**

Mansfield Facility:

Drinking Water

EPA 200.7: Al, Ba, Be, Cd, Cr, Cu, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

EPA 522.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn.

EPA 245.1 Hg.

SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.



ANALYTICAL REPORT

Lab Number:	L1829000
Client:	Wood Env & Infrastructure Solutions, Inc 214-25 42nd Avenue Suite 3R Bayside, NY 11361
ATTN:	Eric Weinstock
Phone:	(347) 836-4445
Project Name:	HYGRADE
Project Number:	3612162331
Report Date:	08/14/18

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com



Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829000
Report Date: 08/14/18

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1829000-01	BMW-3-072618	WATER	LONG ISLAND CITY, NY	07/26/18 13:50	07/26/18

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829000
Report Date: 08/14/18

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. All specific QC information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY

For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Client Services at 800-624-9220 with any questions.

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829000
Report Date: 08/14/18

Case Narrative (continued)

Report Submission

August 14, 2018: This final report includes the results of all requested analyses.

August 02, 2018: This is a preliminary report.

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

The analysis of Volatile Fatty Acids was subcontracted. A copy of the laboratory report is included as an addendum. Please note: This data is only available in PDF format and is not available on Data Merger.

Dissolved Organic Carbon

The samples were field filtered; a filter blank was not received.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Kelly Stenstrom

Title: Technical Director/Representative

Date: 08/14/18

ORGANICS

VOLATILES

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829000
Report Date: 08/14/18

SAMPLE RESULTS

Lab ID: L1829000-01
Client ID: BMW-3-072618
Sample Location: LONG ISLAND CITY, NY

Date Collected: 07/26/18 13:50
Date Received: 07/26/18
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 117,-
Analytical Date: 07/28/18 14:58
Analyst: GJ

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Dissolved Gases by GC - Mansfield Lab							
Methane	788		ug/l	1.00	1.00	1	A
Ethene	10.1		ug/l	0.500	0.500	1	A
Ethane	0.807		ug/l	0.500	0.500	1	A

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829000
Report Date: 08/14/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 117,-
Analytical Date: 07/28/18 10:18
Analyst: GJ

Parameter	Result	Qualifier	Units	RL	MDL
Dissolved Gases by GC - Mansfield Lab for sample(s): 01 Batch: WG1140528-3					
Methane	ND		ug/l	1.00	1.00 A
Ethene	ND		ug/l	0.500	0.500 A
Ethane	ND		ug/l	0.500	0.500 A

Lab Control Sample Analysis

Batch Quality Control

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829000
Report Date: 08/14/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Dissolved Gases by GC - Mansfield Lab Associated sample(s): 01 Batch: WG1140528-2									
Methane	96		-		80-120	-		25	A
Ethene	102		-		80-120	-		25	A
Ethane	100		-		80-120	-		25	A

INORGANICS & MISCELLANEOUS

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829000
Report Date: 08/14/18

SAMPLE RESULTS

Lab ID: L1829000-01
Client ID: BMW-3-072618
Sample Location: LONG ISLAND CITY, NY

Date Collected: 07/26/18 13:50
Date Received: 07/26/18
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Alkalinity, Total	649.		mg CaCO3/L	5.00	NA	2.5	-	07/31/18 09:27	121,2320B	BR
Total Organic Carbon	50		mg/l	5.0	1.1	10	-	07/30/18 16:41	1,9060A	DW
Dissolved Organic Carbon	50		mg/l	10	0.43	10	-	07/30/18 17:13	1,9060A	DW
Anions by Ion Chromatography - Westborough Lab										
Chloride	190.		mg/l	12.5	2.10	25	-	07/27/18 20:27	44,300.0	JR
Nitrogen, Nitrate	0.029	J	mg/l	0.050	0.012	1	-	07/27/18 17:15	44,300.0	JR
Sulfate	600.		mg/l	25.0	4.00	25	-	07/27/18 20:27	44,300.0	JR



Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829000
Report Date: 08/14/18

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Anions by Ion Chromatography - Westborough Lab for sample(s): 01 Batch: WG1140610-1										
Chloride	ND		mg/l	0.500	0.083	1	-	07/27/18 16:51	44,300.0	JR
Nitrogen, Nitrate	0.015	J	mg/l	0.050	0.012	1	-	07/27/18 16:51	44,300.0	JR
Sulfate	ND		mg/l	1.00	0.160	1	-	07/27/18 16:51	44,300.0	JR
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1140771-1										
Total Organic Carbon	ND		mg/l	0.50	0.11	1	-	07/30/18 09:09	1,9060A	DW
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1140776-1										
Dissolved Organic Carbon	0.05	J	mg/l	1.0	0.04	1	-	07/30/18 09:09	1,9060A	DW
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1141220-1										
Alkalinity, Total	ND		mg CaCO3/L	2.00	NA	1	-	07/31/18 09:27	121,2320B	BR

Lab Control Sample Analysis

Batch Quality Control

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829000
Report Date: 08/14/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Anions by Ion Chromatography - Westborough Lab Associated sample(s): 01 Batch: WG1140610-2								
Chloride	104		-		90-110	-		
Nitrogen, Nitrate	100		-		90-110	-		
Sulfate	101		-		90-110	-		
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1140771-2								
Total Organic Carbon	102		-		90-110	-		
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1140776-2								
Dissolved Organic Carbon	102		-		90-110	-		
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1141220-2								
Alkalinity, Total	100		-		90-110	-		10

Matrix Spike Analysis **Batch Quality Control**

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829000
Report Date: 08/14/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Anions by Ion Chromatography - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1140610-3 QC Sample: L1829000-01 Client ID: BMW-3-072618												
Chloride	190.	100	293	103		-	-		90-110	-		18
Nitrogen, Nitrate	0.029J	0.4	0.394	98		-	-		90-110	-		15
Sulfate	600.	200	813	106		-	-		90-110	-		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1140771-4 QC Sample: L1828711-04 Client ID: MS Sample												
Total Organic Carbon	27.	40	68	102		-	-		80-120	-		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1140776-4 QC Sample: L1829000-01 Client ID: BMW-3-072618												
Dissolved Organic Carbon	50.	80	130	100		-	-		80-120	-		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1141220-4 QC Sample: L1828809-01 Client ID: MS Sample												
Alkalinity, Total	46.3	100	156	110		-	-		86-116	-		10

Lab Duplicate Analysis

Batch Quality Control

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829000
Report Date: 08/14/18

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Anions by Ion Chromatography - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1140610-4 QC Sample: L1829000-01 Client ID: BMW-3-072618						
Nitrogen, Nitrate	0.029J	0.026J	mg/l	NC		15
Anions by Ion Chromatography - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1140610-4 QC Sample: L1829000-01 Client ID: BMW-3-072618						
Chloride	190.	190	mg/l	0		18
Sulfate	600.	599	mg/l	0		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1140771-3 QC Sample: L1828711-04 Client ID: DUP Sample						
Total Organic Carbon	27.	28	mg/l	4		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1140776-3 QC Sample: L1829000-01 Client ID: BMW-3-072618						
Dissolved Organic Carbon	50.	50	mg/l	0		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1141220-3 QC Sample: L1828809-01 Client ID: DUP Sample						
Alkalinity, Total	46.3	40.5	mg CaCO3/L	13	Q	10

Project Name: HYGRADE**Lab Number:** L1829000**Project Number:** 3612162331**Report Date:** 08/14/18**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

Cooler Information**Cooler** **Custody Seal**

B Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1829000-01A	Vial other preserved	B	NA		3.3	Y	Absent		SUB-VFA(14)
L1829000-01B	Vial other preserved	B	NA		3.3	Y	Absent		SUB-VFA(14)
L1829000-01C	Vial other preserved	B	NA		3.3	Y	Absent		SUB-VFA(14)
L1829000-01D	20ml Vial HCl preserved	B	NA		3.3	Y	Absent		DISSGAS(14)
L1829000-01E	20ml Vial HCl preserved	B	NA		3.3	Y	Absent		DISSGAS(14)
L1829000-01F	Vial H2SO4 preserved	B	NA		3.3	Y	Absent		DOC-9060(28)
L1829000-01G	Vial H2SO4 preserved	B	NA		3.3	Y	Absent		DOC-9060(28)
L1829000-01H	Vial H2SO4 preserved	B	NA		3.3	Y	Absent		DOC-9060(28)
L1829000-01I	Vial H2SO4 preserved	B	NA		3.3	Y	Absent		TOC-9060(28)
L1829000-01J	Vial H2SO4 preserved	B	NA		3.3	Y	Absent		TOC-9060(28)
L1829000-01K	Vial H2SO4 preserved	B	NA		3.3	Y	Absent		TOC-9060(28)
L1829000-01L	Plastic 250ml unpreserved/No Headspace	B	NA		3.3	Y	Absent		ALK-T-2320(14)
L1829000-01M	Plastic 250ml unpreserved	B	NA		3.3	Y	Absent		SO4-300(28),CL-300(28),NO3-300(2)
L1829000-01O	Vial H2SO4 preserved	B	NA		3.3	Y	Absent		-
L1829000-01P	Plastic 250ml unpreserved/No Headspace	B	NA		3.3	Y	Absent		-
L1829000-01Q	Plastic 250ml unpreserved	B	NA		3.3	Y	Absent		-

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829000
Report Date: 08/14/18

GLOSSARY

Acronyms

EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Report Format: DU Report with 'J' Qualifiers



Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829000
Report Date: 08/14/18

Data Qualifiers

- A** - Spectra identified as "Aldol Condensation Product".
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829000
Report Date: 08/14/18

REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IV, 2007.
- 44 Methods for the Determination of Inorganic Substances in Environmental Samples, EPA/600/R-93/100, August 1993.
- 117 Technical Guidance for the Natural Attenuation Indicators: Methane, Ethane, and Ethene, EPA-NE, Revision 1, February 21, 2002 and Sample Preparation & Calculations for Dissolved Gas Analysis in Water Samples using a GC Headspace Equilibration Technique, EPA RSKSOP-175, Revision 2, May 2004.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility

EPA 624: m/p-xylene, o-xylene

EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270D: NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

EPA 300: DW: Bromide

EPA 6860: SCM: Perchlorate

EPA 9010: NPW and SCM: Amenable Cyanide Distillation

SM4500: NPW: Amenable Cyanide, Dissolved Oxygen; SCM: Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility

SM 2540D: TSS

EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B

EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **EPA 351.1, SM4500P-E, SM4500P-B, E,**

SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D.

EPA 624: Volatile Halocarbons & Aromatics,

EPA 608: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, SM9222D.**

Mansfield Facility:

Drinking Water

EPA 200.7: Al, Ba, Be, Cd, Cr, Cu, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

EPA 522.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

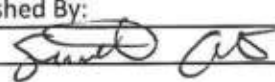
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn.

EPA 245.1 Hg.

SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

[illegible]

		Subcontract Chain of Custody PACE Analytical Energy Services, LLC 220 William Pitt Way Pittsburgh, PA 15238		Alpha Job Number L1829000	
Client Information		Project Information		Regulatory Requirements/Report Limits	
Client: Alpha Analytical Labs Address: Eight Walkup Drive Westborough, MA 01581-1019 Phone: 201.812.9037 Email: nyakes@alphalab.com		Project Location: NY Project Manager: Nadine Yakes Turnaround & Deliverables Information Due Date: Deliverables:		State/Federal Program: Regulatory Criteria:	
Project Specific Requirements and/or Report Requirements					
Reference following Alpha Job Number on final report/deliverables: L1829000				Report to include Method Blank, LCS/LCSD:	
Additional Comments: Send all results/reports to subreports@alphalab.com **Standard TAT** VFAs with the lower detection limit (AM23G)					
Lab ID	Client ID	Collection Date/Time	Sample Matrix	Analysis	Batch QC
	BMW-3-072618	07-26-18 13:50	WATER	Volatile Fatty Acids	
Relinquished By: 		Date/Time:	Received By:		Date/Time:
		7/30/18			
Form No: AL_subcoc					



August 13, 2018

Nadine Yakes
Alpha Analytical Labs
Eight Walkup Drive
Westborough, MA 01581
USA

RE: **L1829000**

Pace Workorder: 27607

Dear Nadine Yakes:

Enclosed are the analytical results for sample(s) received by the laboratory on Tuesday, July 31, 2018. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

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

Sincerely,

A handwritten signature in black ink that reads "Ruth Welsh".

Ruth Welsh 08/13/2018
Ruth.Welsh@pacelabs.com

Customer Service Representative

Enclosures

As a valued client we would appreciate your comments on our service.
Please email PAESfeedback@pacelabs.com.

Total Number of Pages 12

Report ID: 27607 - 1081882

Page 1 of 10



CERTIFICATE OF ANALYSIS

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LABORATORY ACCREDITATIONS & CERTIFICATIONS

Accreditor:	Pennsylvania Department of Environmental Protection, Bureau of Laboratories
Accreditation ID:	02-00538
Scope:	NELAP Non-Potable Water
Accreditor:	West Virginia Department of Environmental Protection, Division of Water and Waste Management
Accreditation ID:	395
Scope:	Non-Potable Water
Accreditor:	South Carolina Department of Health and Environmental Control, Office of Environmental Laboratory Certification
Accreditation ID:	89009003
Scope:	Clean Water Act (CWA); Resource Conservation and Recovery Act (RCRA)
Accreditor:	State of Virginia
Accreditation ID:	460201
Scope:	Non-Potable Water
Accreditor:	NELAP: New Jersey, Department of Environmental Protection
Accreditation ID:	PA026
Scope:	Non-Potable Water
Accreditor:	NELAP: New York, Department of Health Wadsworth Center
Accreditation ID:	11815
Scope:	Non-Potable Water
Accreditor:	State of Connecticut, Department of Public Health, Division of Environmental Health
Accreditation ID:	PH-0263
Scope:	Clean Water Act (CWA) Resource Conservation and Recovery Act (RCRA)
Accreditor:	NELAP: Texas, Commission on Environmental Quality
Accreditation ID:	T104704453-09-TX
Scope:	Non-Potable Water
Accreditor:	State of New Hampshire
Accreditation ID:	299409
Scope:	Non-potable water
Accreditor:	State of Georgia
Accreditation ID:	Chapter 391-3-26
Scope:	As per the Georgia EPD Rules and Regulations for Commercial Laboratories, PAES is accredited by the Pennsylvania Department of Environmental Protection Bureau of Laboratories under the National Environmental Laboratory Approval Program (NELAC).



Serial_No:08141813:52

Pace Analytical Energy Services LLC

220 William Pitt Way

Pittsburgh, PA 15238

Phone: (412) 826-5245

Fax: (412) 826-3433

SAMPLE SUMMARY

Workorder: 27607 L1829000

Lab ID	Sample ID	Matrix	Date Collected	Date Received
276070001	BMW-3-072618	Water	7/26/2018 13:50	7/31/2018 11:55

Report ID: 27607 - 1081882

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**ANALYTICAL RESULTS**

Workorder: 27607 L1829000

Lab ID: **276070001**

Date Received: 7/31/2018 11:55 Matrix: Water

Sample ID: **BMW-3-072618**

Date Collected: 7/26/2018 13:50

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
------------	---------	-------	-----	-----	----	----------	----	------------

EDonors - PAES

Analysis Desc: AM23G

Analytical Method: AM23G

Lactic Acid	<0.20	mg/l	0.20	0.014	1	8/3/2018 02:56	MD	
Acetic Acid	50	mg/l	10	2.4	100	8/4/2018 05:44	MD	d,B
Propionic Acid	6.1	mg/l	1.0	0.044	10	8/4/2018 04:47	MD	d,B
Formic Acid	2.0	mg/l	0.20	0.048	1	8/3/2018 02:56	MD	
Butyric Acid	6.6	mg/l	1.0	0.047	10	8/4/2018 04:47	MD	d
Pyruvic Acid	0.57	mg/l	0.10	0.0057	1	8/3/2018 02:56	MD	
i-Pentanoic Acid	0.77	mg/l	0.10	0.0075	1	8/3/2018 02:56	MD	
Pentanoic Acid	0.72	mg/l	0.10	0.012	1	8/3/2018 02:56	MD	
i-Hexanoic Acid	<0.20	mg/l	0.20	0.0049	1	8/3/2018 02:56	MD	
Hexanoic Acid	0.75	mg/l	0.20	0.012	1	8/3/2018 02:56	MD	

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**ANALYTICAL RESULTS QUALIFIERS**Workorder: 27607 L1829000

DEFINITIONS/QUALIFIERS

MDL	Method Detection Limit. Can be used synonymously with LOD; Limit Of Detection.
PQL	Practical Quantitation Limit. Can be used synonymously with LOQ; Limit Of Quantitation.
ND	Not detected at or above reporting limit.
DF	Dilution Factor.
S	Surrogate.
RPD	Relative Percent Difference.
% Rec	Percent Recovery.
U	Indicates the compound was analyzed for, but not detected at or above the noted concentration.
J	Estimated concentration greater than the set method detection limit (MDL) and less than the set reporting limit (PQL).
B	The analyte was detected in the associated blank.
d	The analyte concentration was determined from a dilution.

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**QUALITY CONTROL DATA**

Workorder: 27607 L1829000

QC Batch: EDON/3826 Analysis Method: AM23G
QC Batch Method: AM23G
Associated Lab Samples: 276070001

METHOD BLANK: 56757

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
EDonors				
Lactic Acid	mg/l	<0.20	0.20	
Formic Acid	mg/l	<0.20	0.20	
Pyruvic Acid	mg/l	<0.10	0.10	
i-Pentanoic Acid	mg/l	<0.10	0.10	
Pentanoic Acid	mg/l	<0.10	0.10	
i-Hexanoic Acid	mg/l	<0.20	0.20	
Hexanoic Acid	mg/l	<0.20	0.20	

LABORATORY CONTROL SAMPLE: 56758

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
EDonors						
Lactic Acid	mg/l	2	2.2	108	70-130	
Formic Acid	mg/l	2	2.1	103	70-130	
Pyruvic Acid	mg/l	2	2.1	103	70-130	
i-Pentanoic Acid	mg/l	2	2.0	101	70-130	
Pentanoic Acid	mg/l	2	2.1	104	70-130	
i-Hexanoic Acid	mg/l	2	2.0	100	70-130	
Hexanoic Acid	mg/l	2	2.0	98	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 56759 56760 Original: 276280001

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	Max RPD	RPD	Qualifiers
EDonors											
Lactic Acid	mg/l	0.061	20	20	20	101	102	70-130	1.6	30	d
Formic Acid	mg/l	0.023	20	21	22	106	108	70-130	2.4	30	d
Pyruvic Acid	mg/l	0.025	20	20	21	100	104	70-130	4.2	30	d
i-Pentanoic Acid	mg/l	0.01	20	22	21	109	105	70-130	3.8	30	d
Pentanoic Acid	mg/l	0.41	20	23	22	112	107	70-130	4.2	30	d
i-Hexanoic Acid	mg/l	0	20	23	22	114	108	70-130	5.6	30	d
Hexanoic Acid	mg/l	0	20	24	22	119	111	70-130	6.9	30	d

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Pace Analytical Energy Services LLC

220 William Pitt Way

Pittsburgh, PA 15238

Phone: (412) 826-5245

Fax: (412) 826-3433

QUALITY CONTROL DATA

Workorder: 27607 L1829000

Report ID: 27607 - 1081882

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**QUALITY CONTROL DATA**

Workorder: 27607 L1829000

QC Batch:	EDON/3831	Analysis Method:	AM23G
QC Batch Method:	AM23G		
Associated Lab Samples:	276070001		

METHOD BLANK: 56905

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
EDonors				
Acetic Acid	mg/l	<0.10	0.10	B
Propionic Acid	mg/l	<0.10	0.10	B
Butyric Acid	mg/l	<0.10	0.10	

LABORATORY CONTROL SAMPLE: 56906

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
EDonors						
Acetic Acid	mg/l	2	2.1	104	70-130	B
Propionic Acid	mg/l	2	2.0	103	70-130	B
Butyric Acid	mg/l	2	2.0	102	70-130	

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QUALITY CONTROL DATA QUALIFIERS

Workorder: 27607 L1829000

QUALITY CONTROL PARAMETER QUALIFIERS

- B The analyte was detected in the associated blank.
- d The analyte concentration was determined from a dilution.



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Pace Analytical Energy Services LLC

220 William Pitt Way

Pittsburgh, PA 15238

Phone: (412) 826-5245

Fax: (412) 826-3433

QUALITY CONTROL DATA CROSS REFERENCE TABLE

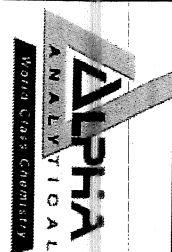
Workorder: 27607 L1829000

Lab ID	Sample ID	Prep Method	Prep Batch	Analysis Method	Analysis Batch
276070001	BMW-3-072618			AM23G	EDON/3826
276070001	BMW-3-072618			AM23G	EDON/3831



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21601

Subcontract Chain of Custody

PACE Analytical Energy Services, LLC
220 William Pitt Way
Pittsburgh, PA 15238

Alpha Job Number
L1829000

Client Information

Client: Alpha Analytical Labs
Address: Eight Walkup Drive
Westborough, MA 01581-1019

Phone: 201.812.9037
Email: nyakes@alphalab.com

Project Information

Project Location: NY
Project Manager: Nadine Yakes

Turnaround & Deliverables Information

Due Date:
Deliverables:

Regulatory Requirements/Report Limits

State/Federal Program:
Regulatory Criteria:

Project Specific Requirements and/or Report Requirements

Reference following Alpha Job Number on final report/deliverables: L1829000

Report to include Method Blank, LCS/LCSD:

Additional Comments: Send all results/reports to subreports@alphalab.com **Standard TAT** VFAs with the lower detection limit (AM/23G)

Lab ID	Client ID	Collection Date/Time	Sample Matrix	Analysis	Batch QC
	BMW-3-072618	07-26-18 13:50	WATER	Volatile Fatty Acids	
Relinquished By: <i>[Signature]</i> Date/Time: 7/30/18 Received By: <i>[Signature]</i> Date/Time: 7/31/18 11:55					
Form No: AL_subcoc					

Cooler Receipt Form

Client Name: Alpha Project: LI8 29000 Lab Work Order: 27607

A. Shipping/Container Information (circle appropriate response)

Courier: FedEx UPS USPS Client Other: _____ Air bill Present: Yes No

Tracking Number: 1ZE306540193532496

Custody Seal on Cooler/Box Present: Yes No Seals Intact: Yes No

Cooler/Box Packing Material: Bubble Wrap Absorbent Foam Other: _____

Type of Ice: Wet Blue None Ice Intact: Yes Melted

Cooler Temperature: 2.7°C Radiation Screened: Yes No Chain of Custody Present: Yes No

Comments: _____

B. Laboratory Assignment/Log-in (check appropriate response)

	YES	NO	N/A	Comment Reference non-Conformance
Chain of Custody properly filled out	☒			
Chain of Custody relinquished	☒			
Sampler Name & Signature on COC			☒	
Containers intact	☒			
Were samples in separate bags	☒			
Sample container labels match COC Sample name/date and time collected	☒			
Sufficient volume provided	☒			
PAES containers used	☒			
Are containers properly preserved for the requested testing? (as labeled)	☒			
If an unknown preservation state, were containers checked? Exception: VOA's coliform			☒	If yes, see pH form.
Was volume for dissolved testing field filtered, as noted on the COC? Was volume received in a preserved container?			☒	
Headspace present?	☒			

Comments: _____

Cooler contents examined/received by: LS Date: 7.31.18

Project Manager Review: JW Date: 8.1.18



ANALYTICAL REPORT

Lab Number:	L1829076
Client:	Wood Env & Infrastructure Solutions, Inc 214-25 42nd Avenue Suite 3R Bayside, NY 11361
ATTN:	Eric Weinstock
Phone:	(347) 836-4445
Project Name:	HYGRADE
Project Number:	3612162331
Report Date:	08/07/18

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Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

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

Client: Eric Weinstock
Wood Environment & Infrastructure Solutions, Inc.
214-25 42nd Ave.
Bayside, NY 11361

Phone:

Fax:

Identifier: 083PG

Date Rec: 07/27/2018

Report Date: 07/31/2018

Client Project #: 3612162331

Client Project Name: Stalingrad/ Hygrade

Purchase Order #:

Analysis Requested: CENSUS

Reviewed By:

A handwritten signature in black ink, appearing to read 'Joan Spence', written over a light blue rectangular background.

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.

MICROBIAL INSIGHTS, INC.

10515 Research Dr., Knoxville, TN 37932
Tel. (865) 573-8188 Fax. (865) 573-8133

CENSUS

Client: Wood Environment & Infrastructure Solutions
Project: Stalingrad/ Hygrade

MI Project Number: 083PG
Date Received: 07/27/2018

Sample Information

Client Sample ID:	BMW-3-072618
Sample Date:	07/26/2018
Units:	cells/mL
Analyst/Reviewer:	JS

Dechlorinating Bacteria

<i>Dehalococcoides</i>	DHC	7.22E+04
tceA Reductase	TCE	3.75E+03
BAV1 Vinyl Chloride Reductase	BVC	2.47E+04
Vinyl Chloride Reductase	VCR	1.36E+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 7/27/2018

Component	Date Prepared	Date Analyzed	Arrival Temperature	Positive Control	Extraction Blank	Negative Control
DHC	07/27/2018	07/31/2018	2 °C	101%	non-detect	non-detect
BVC	07/27/2018	07/31/2018	2 °C	93%	non-detect	non-detect
TCE	07/27/2018	07/31/2018	2 °C	92%	non-detect	non-detect
VCR	07/27/2018	07/31/2018	2 °C	94%	non-detect	non-detect

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829076
Report Date: 08/07/18

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1829076-01	BMW-2-072718	WATER	LONG ISLAND CITY, NY	07/27/18 10:45	07/27/18

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829076
Report Date: 08/07/18

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. All specific QC information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY

For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Client Services at 800-624-9220 with any questions.

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829076
Report Date: 08/07/18

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Nitrogen, Nitrate

L1829076-01: The sample was analyzed for Nitrite within the method required holding time. An aliquot of sample was then preserved and analyzed for Nitrate.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Melissa Cripps

Title: Technical Director/Representative

Date: 08/07/18

METALS

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829076
Report Date: 08/07/18

SAMPLE RESULTS

Lab ID: L1829076-01
 Client ID: BMW-2-072718
 Sample Location: LONG ISLAND CITY, NY

Date Collected: 07/27/18 10:45
 Date Received: 07/27/18
 Field Prep: Not Specified

Sample Depth:
 Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Hardness by SM 2340B - Mansfield Lab											
Hardness	864		mg/l	0.660	NA	1	08/04/18 09:15	08/06/18 13:08	EPA 3005A	1,6010D	LC



Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829076
Report Date: 08/07/18

Method Blank Analysis Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Hardness by SM 2340B - Mansfield Lab for sample(s): 01 Batch: WG1142919-1										
Hardness	ND		mg/l	0.660	NA	1	08/04/18 09:15	08/06/18 11:31	1,6010D	LC

Prep Information

Digestion Method: EPA 3005A

Lab Control Sample Analysis

Batch Quality Control

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829076
Report Date: 08/07/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Hardness by SM 2340B - Mansfield Lab Associated sample(s): 01 Batch: WG1142919-2								
Hardness	106		-		80-120	-		

Matrix Spike Analysis

Batch Quality Control

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829076
Report Date: 08/07/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Hardness by SM 2340B - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1142919-3 QC Sample: L1829572-01 Client ID: MS Sample												
Hardness	729.	66.2	788	89		-	-		75-125	-		20

Project Name: HYGRADE
Project Number: 3612162331

Lab Duplicate Analysis
Batch Quality Control

Lab Number: L1829076
Report Date: 08/07/18

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Hardness by SM 2340B - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1142919-4 QC Sample: L1829572-01 Client ID: DUP Sample						
Hardness	729.	748	mg/l	3		20

INORGANICS & MISCELLANEOUS

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829076
Report Date: 08/07/18

SAMPLE RESULTS

Lab ID: L1829076-01
Client ID: BMW-2-072718
Sample Location: LONG ISLAND CITY, NY

Date Collected: 07/27/18 10:45
Date Received: 07/27/18
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Alkalinity, Total	289.		mg CaCO3/L	2.00	NA	1	-	07/31/18 09:27	121,2320B	BR
Nitrogen, Nitrate	1.55		mg/l	0.100	0.032	1	-	07/30/18 19:44	121,4500NO3-F	MR
Anions by Ion Chromatography - Westborough Lab										
Chloride	442.		mg/l	12.5	2.10	25	-	07/31/18 01:11	44,300.0	JR
Sulfate	597.		mg/l	25.0	4.00	25	-	07/31/18 01:11	44,300.0	JR



Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829076
Report Date: 08/07/18

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1141048-1										
Nitrogen, Nitrate	ND		mg/l	0.100	0.032	1	-	07/30/18 19:24	121,4500NO3-F	MR
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1141223-1										
Alkalinity, Total	ND		mg CaCO3/L	2.00	NA	1	-	07/31/18 09:27	121,2320B	BR
Anions by Ion Chromatography - Westborough Lab for sample(s): 01 Batch: WG1141498-1										
Chloride	ND		mg/l	0.500	0.083	1	-	07/30/18 19:59	44,300.0	JR
Sulfate	0.338	J	mg/l	1.00	0.160	1	-	07/30/18 19:59	44,300.0	JR

Lab Control Sample Analysis

Batch Quality Control

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829076
Report Date: 08/07/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1141048-2								
Nitrogen, Nitrate	98		-		90-110	-		
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1141223-2								
Alkalinity, Total	101		-		90-110	-		10
Anions by Ion Chromatography - Westborough Lab Associated sample(s): 01 Batch: WG1141498-2								
Chloride	105		-		90-110	-		
Sulfate	106		-		90-110	-		

Matrix Spike Analysis

Batch Quality Control

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829076
Report Date: 08/07/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1141048-4 QC Sample: L1829229-01 Client ID: MS Sample												
Nitrogen, Nitrate	0.926	4	5.12	105		-	-		83-113	-		17
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1141223-4 QC Sample: L1829399-09 Client ID: MS Sample												
Alkalinity, Total	292.	100	391	99		-	-		86-116	-		10
Anions by Ion Chromatography - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1141498-3 QC Sample: L1827961-01 Client ID: MS Sample												
Chloride	40.1	40	82.1	105		-	-		90-110	-		18
Sulfate	170.	80	236	82	Q	-	-		90-110	-		20

Lab Duplicate Analysis *Batch Quality Control*

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829076
Report Date: 08/07/18

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1141048-3 QC Sample: L1829229-01 Client ID: DUP Sample						
Nitrogen, Nitrate	0.926	0.936	mg/l	1		17
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1141223-3 QC Sample: L1829399-02 Client ID: DUP Sample						
Alkalinity, Total	104.	103	mg CaCO3/L	1		10
Anions by Ion Chromatography - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1141498-4 QC Sample: L1827961-01 Client ID: DUP Sample						
Chloride	40.1	44.7	mg/l	11		18
Sulfate	170.	171	mg/l	0		20

Project Name: HYGRADE
Project Number: 3612162331

Serial_No:08071812:05
Lab Number: L1829076
Report Date: 08/07/18

Sample Receipt and Container Information

Were project specific reporting limits specified?

YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1829076-01A	Plastic 250ml HNO3 preserved	A	<2	<2	3.8	Y	Absent		HARDT(180)
L1829076-01B	Plastic 250ml unpreserved/No Headspace	A	N/A	N/A	3.8	Y	Absent		ALK-T-2320(14)
L1829076-01C	Plastic 250ml unpreserved	A	7	7	3.8	Y	Absent		SO4-300(28),CL-300(28),NO3-4500(2)

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829076
Report Date: 08/07/18

GLOSSARY

Acronyms

EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Report Format: DU Report with 'J' Qualifiers



Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829076
Report Date: 08/07/18

Data Qualifiers

- A** - Spectra identified as "Aldol Condensation Product".
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Project Name: HYGRADE
Project Number: 3612162331

Lab Number: L1829076
Report Date: 08/07/18

REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IV, 2007.
- 44 Methods for the Determination of Inorganic Substances in Environmental Samples, EPA/600/R-93/100, August 1993.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility

EPA 624: m/p-xylene, o-xylene

EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270D: NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

EPA 300: DW: Bromide

EPA 6860: SCM: Perchlorate

EPA 9010: NPW and SCM: Amenable Cyanide Distillation

SM4500: NPW: Amenable Cyanide, Dissolved Oxygen; SCM: Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility

SM 2540D: TSS

EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B

EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **EPA 351.1, SM4500P-E, SM4500P-B, E,**

SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D.

EPA 624: Volatile Halocarbons & Aromatics,

EPA 608: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, SM9222D.**

Mansfield Facility:

Drinking Water

EPA 200.7: Al, Ba, Be, Cd, Cr, Cu, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

EPA 522.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn.

EPA 245.1 Hg.

SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

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