

August 10, 2016



Mr. Joseph T. Martella II, Senior Engineer  
Rhode Island Department of Environmental Management  
Office of Waste Management  
Site Remediation Program  
235 Promenade Street  
Providence, Rhode Island 02908

**RE: Parcel C-1 Phase II Area – Mashapaug Pond Surface Water Sampling  
Former Gorham Manufacturing Facility  
333 Adelaide Avenue, Providence, Rhode Island  
AMEC Project No. 3652150040.03**

Dear Mr. Martella:

This letter summarizes the July 6, 2016 collection of surface water samples from Mashapaug Inner and Outer Coves, and Mashapaug Pond as part of the Former Gorham Manufacturing Site in Providence, Rhode Island (Figure 1). This activity was performed following the completion of the remedial action at the Gorham Parcel C, Parcel C-1 Phase II Area Mashapaug Inner Cove and Parcel C-1 Phase III Area in November 2015. Site stabilization was achieved in June 2016 and the turbidity curtain removed from the Outer Cove on June 29, 2016. This surface water sampling was conducted in accordance with the Remedial Action Work Plan (RAWP), dated March 11, 2015, and Response to Rhode Island Department of Environmental Management (RIDEM) comments, dated July 6, 2015, and the corresponding RIDEM July 9, 2015 Order of Approval (Order of Approval).

## **Background**

Extensive surface water investigations were conducted in 2006 within the Mashapaug Inner and Outer Coves (MACTEC, 2006a). Additional surface water investigations were conducted in 2011 to further assess the conditions in the Inner Cove, Outer Cove and Mashapaug Pond (background). The 2006 and 2011 surface water investigations evaluated the presence of volatile organic compounds (VOCs) semi-volatile organic compounds (SVOCs), metals, dioxins/furans and polychlorinated biphenyls (PCBs)/pesticides found in the Mashapaug Inner and Outer Cove and Mashapaug Pond.

The trace concentrations of VOCs found at the interface with the sediment and surface water within the Inner Cove were likely related to the groundwater discharge into the Inner Cove. The detected VOCs confirm their biodegradation as they pass through the sediment and into the surface water. The Screening Level Ecological Risk Assessment (SLERA) concluded that detected VOC concentrations did not pose an unacceptable risk and did not require further evaluation.

Petroleum aromatic hydrocarbons (PAHs) were found in only one sample (Inner Cove) and posed negligible risks to human and ecological receptors and did not require further evaluation. No dissolved metals were found in the 2006 surface water samples and only zinc was found in the

2011 surface water samples above the laboratory quantitation limit. Dioxins were found in the three unfiltered surface water samples within the Inner Cove. Only one of these detections was greater than the 2006 SLERA surface water screening benchmark (Amec, 2014). Dioxins and furans are virtually insoluble in water, so the reported surface water concentrations are likely associated with suspended particulate matter (likely sediment). PCBs and pesticides were essentially non-detect in the 2006 surface water samples (Amec, 2014).

RIDEM's Order of Approval (Condition #11) requires Textron to collect five surface water samples from the Inner and Outer Cove and Mashapaug Pond following the completion of the remedial action and removal of the turbidity curtain. These five locations include SED/SW27 and SED28 (Inner Cove), SED/SW36 and SED/SW39 (Outer Cove), and SED/SW11 (Mashapaug Pond) (highlighted in Figure 2). Surface water samples will be analyzed for PAHs, total and dissolved metals and dioxins.

### **Work Activities Conducted**

Amec Foster Wheeler Environment and Infrastructure, Inc., (Amec Foster Wheeler) utilized the global positioning system (GPS) to mobilize a boat operated by our subcontractor, TG&B Marine, Inc., to the specific historic sampling locations. Once the boat was anchored at a sample location, Amec Foster Wheeler collected the surface water sample using a peristaltic pump equipped with PVC tubing. The PVC tubing was attached to a rod with the intake of the tubing located approximately one foot above the bottom of the rod. TG&B lowered the rod within the water column to the sediment interface so that the tubing intake was approximately one foot above the surface water/sediment interface.

Amec Foster Wheeler also measured and recorded the water and sample depth, and water quality parameters including specific conductivity, DO, oxidation reduction potential (ORP), and temperature prior to sample collection at each surface water sample location. Copies of the surface water sampling records containing these measurements are included in **Appendix A**.

Surface water samples were hand delivered to ESS Laboratory on July 6, 2016 under chain-of-custody control, and analyzed for PAHs, total and dissolved metals and dioxins. A copy of the chain-of-custody for the samples is included with the laboratory reports in **Appendix B** of this report.

### **Surface Water Sampling Results**

Tables 1 (Inner Cove) and 2 (Outer Cove and Mashapaug Pond) summarize the historic concentrations of PAHs, total and dissolved metals and dioxin detected in the four surface water sample locations (note: no surface water samples were historically collected from SED28). Tables 1 and 2 also include the analytical results from the five surface water sample locations collected on July 6, 2016. Contaminant concentrations detected in the surface water were compared to RIDEM Ambient Water Quality Fresh Water Criteria. The analytical laboratory report for the July 2016 surface water sampling event is included in **Appendix B**.

As shown in surface water samples SW 27 and SW 28 within the Inner Cove (Table 1), the PAHs were all non-detect. Total Arsenic, barium, copper, lead and zinc were detected in both SW 27 and SW 28; however, all detected concentrations were below the referenced RIDEM surface water criteria. Of the dissolved metals, only barium, copper and zinc were detected in the two surface water samples. All of these detections were well below the referenced RIDEM surface water

criteria. Surface water sample SW 27 was found to contain a native dioxin isomer, OCDD, with a concentration of 230 picograms per liter (pg/L); there is no published criteria for this compound. OCDD was previously detected at SW 27 (2006) at 350 pg/L. The 2006 SW 27 data also included the detection of total HpCDD and HpCDF. Neither of these or other dioxin parameters were detected in the two surface water samples in July 2016.

Surface water samples SW 36 and SW 39 were both located in the Outer Cove (Table 2). Isolated PAHs were detected in surface water sample SW-39 which is located on the northern end of the Outer Cove, furthest away from the Site. These PAHs included benzo(a)pyrene, benzo(b)fluoranthene, chrysene and indeno(1,2,3-cd)pyrene. There are no referenced RIDEM surface water criteria for these compounds. The highest detection of these compounds was 0.0001ug/L of benzo(b)fluoranthene. Total Arsenic, barium, copper, lead and zinc were detected in SW 36 and SW 39; however, all detected concentrations were below the referenced RIDEM surface water criteria. Of the dissolved metals, only arsenic (SW 39 only), barium and zinc were detected, all well below the referenced RIDEM surface water criteria. Surface water sample SW 39 was found to contain the dioxin isomer OCDD with a concentration of 160 pg/L; there is no published criteria for this compound. No other native dioxin parameters were detected in the two surface water samples.

Surface water sample SW 11 was collected outside of the Outer Cove in Mashapaug Pond (table 2). No PAHs were detected within this surface water sample. Of the dissolved metals, only arsenic, barium and zinc were detected, all well below the referenced RIDEM surface water criteria. All of the native dioxin isomers were non-detect in the 2016 SW 11 surface water sample. The 2006 surface water sample from SW 11 was previously found to contain OCDD (180 pg/L), total HpCDD (430J pg/L) and total HpCDF (120 pg/L).

## Conclusion

Based on the collection and analysis of the five surface water samples in the Inner Cove, Outer Cove and Mashapaug Pond there were no exceedances of the RIDEM surface water criteria. The Condition #11 under the RIDEM July 9, 2015 Order of Approval is now complete.

Please contact the Greg Simpson (401-457-2635) or David Heislein (978-392-5327) if we can provide additional information or answer any questions concerning these surface water sampling results.

Sincerely,

**Amec Foster Wheeler Environment & Infrastructure, Inc.**



Elizabeth Lahti  
Staff Engineer



David E. Heislein  
Senior Project Manager

Textron, Inc.  
Former Gorham Manufacturing Facility, Providence, RI  
Remedial Action Work Plan – Phase II Area- Mashapaug Pond and Cove, Phase III Area – Northeast Upland and Parcel C  
Surface Water Sampling  
August 10, 2016  
Project No.: 3652150040.03

Enclosures: Table 1 – Summary of Inner Cove Surface Water Sampling Results July 2016  
Table 2 – Summary of Outer Cove and Mashapaug Pond Surface Water  
Sampling Results July 2016  
Figure 1 – Site Location Map  
Figure 2 – Surface Water and Sediment Sample Locations 2005-2016  
Appendix A – Field Data Records  
Appendix B – Laboratory Reports – July 2016 Surface Water Sampling Event

cc: Don Gralnek, Executive Director – Providence Redevelopment Agency  
G. Simpson, Textron Inc. (Electronic)  
Knight Memorial Library Repository  
Amec Foster Wheeler Project File

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## TABLES

Table 1 Surface Water Results Mashapaug Inner Cove

Table 2 Surface Water Results Mashapaug Outer Cove and Pond

**Table 1**  
**Summary of Analytical Results for Surface Water - Inner Cove**  
**Phase II Area - Mashapaug Pond and Cove**  
**Former Gorham Manufacturing Facility**  
**333 Adelaide Avenue**  
**Providence, Rhode Island**

Parameter	RIDEM AWQC Fresh Water Chronic [1]	SW27 6/22/2006	SW27 7/6/2016	SW28 7/6/2016
<b>Semi-Volatile Organic Compounds (mg/L)</b>				
2-Methylnaphthalene		0.0002 U	0.0002 U	0.0002 U
Acenaphthene	0.0019	0.0002 U	0.0002 U	0.0002 U
Acenaphthylene		0.0002 U	0.0002 U	0.0002 U
Anthracene		0.0002 U	0.0002 U	0.0002 U
Benzo(a)anthracene		0.0002 U	0.00005 U	0.00005 U
Benzo(a)pyrene		0.0002 U	0.00005 U	0.00005 U
Benzo(b)fluoranthene		0.0002 U	0.00005 U	0.00005 U
Benzo(g,h,i)perylene		0.0002 U	0.0002 U	0.0002 U
Benzo(k)fluoranthene		0.0003 U	0.00005 U	0.00005 U
Chrysene		0.0002 U	0.00005 U	0.00005 U
Dibenzo(a,h)anthracene		0.0002 U	0.00005 U	0.00005 U
Fluoranthene	0.0044	0.0002 U	0.0002 U	0.0002 U
Fluorene		0.0002 U	0.0002 U	0.0002 U
Indeno(1,2,3-cd)pyrene		0.0003 U	0.00005 U	0.00005 U
Naphthalene	0.0026	0.0002 U	0.0002 U	0.0002 U
Phenanthrene		0.0002 U	0.0002 U	0.0002 U
Pyrene		0.0002 U	0.0002 U	0.0002 U
<b>Dioxins/Furans (mg/L)</b>				
1,2,3,4,6,7,8-HpCDD		0.00000043 BJ	0.00000005 U	0.00000005 U
1,2,3,4,6,7,8-HpCDF		0.00000001 U	0.00000005 U	0.00000005 U
1,2,3,4,7,8,9-HpCDF		0.00000001 U	0.00000005 U	0.00000005 U
1,2,3,4,7,8-HxCDD		0.00000001 U	0.00000005 U	0.00000005 U
1,2,3,4,7,8-HxCDF		0.00000001 U	0.00000005 U	0.00000005 U
1,2,3,6,7,8-HxCDD		0.00000013 J	0.00000005 U	0.00000005 U
1,2,3,6,7,8-HxCDF		0.00000001 U	0.00000005 U	0.00000005 U
1,2,3,7,8,9-HxCDD		0.000000051	0.00000005 U	0.00000005 U
1,2,3,7,8,9-HxCDF		0.00000001 U	0.00000005 U	0.00000005 U
1,2,3,7,8-PeCDD		0.00000046 J	0.00000005 U	0.00000005 U
1,2,3,7,8-PeCDF		0.00000001 UE	0.00000005 U	0.00000005 U
2,3,4,6,7,8-HxCDF		0.00000001 U	0.00000005 U	0.00000005 U
2,3,4,7,8-PeCDF		0.00000001 U	0.00000005 U	0.00000005 U
2,3,7,8-TCDD		0.000000031 J	0.00000001 U	0.00000001 U
2,3,7,8-TCDF		0.000000089 J	0.00000001 U	0.00000001 U
OCDD		0.00000035 B	0.00000023	0.0000001 U
OCDF		0.00000002 U	0.0000001 U	0.0000001 U
Dioxin Toxicity Equivalent (USEPA, 2010)		0.000000061	2.3E-10	0 U
Total HpCDD		0.00000061 B	0.00000005 U	0.00000005 U
Total HpCDF		0.00000013 J	0.00000005 U	0.00000005 U
Total HxCDD		0.00000064	0.00000005 U	0.00000005 U
Total HxCDF		0.00000001 U	0.00000005 U	0.00000005 U
Total PeCDD		0.00000046 J	0.00000005 U	0.00000005 U
Total PeCDF		0.00000029 J	0.00000005 U	0.00000005 U
Total TCDD		0.000000031 J	0.00000001 U	0.00000001 U
Total TCDF		0.000000032	0.00000001 U	0.00000001 U
<b>Metals, Total [2] (mg/L)</b>				
Antimony	0.01	0.005 U	0.0005 U	0.0005 U
Arsenic	0.15	0.005 U	0.006	0.005 U
Barium		0.05 U	0.029	0.024
Beryllium	0.00017	0.001 U	0.0001 U	0.0001 U
Cadmium	0.000271	0.005 U	0.00002 U	0.00002 U
Chromium	0.0114	0.02 U	0.002 U	0.002 U
Copper	0.0093	0.02 U	0.003	0.002
Lead	0.00318	0.005 U	0.003	0.001
Mercury		0.0005 U	0.0002 U	0.0002 U
Nickel	0.05216	0.05 U	0.005 U	0.005 U
Selenium	0.005	0.05 U	0.001 U	0.001 U
Silver		0.005 U	0.001 U	0.001 U
Thallium	0.001	0.002 U	0.0002 U	0.0002 U
Zinc	0.118	0.05 U	0.021	0.014
<b>Metals, Dissolved [2] (mg/L)</b>				
Antimony	0.01	0.005 U	0.0005 U	0.0005 U
Arsenic	0.15	0.005 U	0.005 U	0.005 U
Barium		0.05 U	0.025	0.024
Beryllium	0.00017	0.001 U	0.0001 U	0.0001 U
Cadmium	0.000271	0.005 U	0.00002 U	0.00002 U
Chromium	0.0114	0.02 U	0.002 U	0.002 U
Copper	0.0093	0.02 U	0.002	0.002
Lead	0.00318	0.005 U	0.0005 U	0.0007
Mercury		0.0005 U	0.0002 U	0.0002 U
Nickel	0.05216	0.05 U	0.005 U	0.005 U
Selenium	0.005	0.05 U	0.001 U	0.001 U
Silver		0.005 U	0.001 U	0.001 U
Thallium	0.001	0.002 U	0.0002 U	0.0002 U
Zinc	0.118	0.05 U	0.017	0.017

**Table 1**  
**Summary of Analytical Results for Surface Water - Inner Cove**  
**Phase II Area - Mashapaug Pond and Cove**  
**Former Gorham Manufacturing Facility**  
**333 Adelaide Avenue**  
**Providence, Rhode Island**

Parameter	RIDEM AWQC Fresh Water Chronic [1]	SW27 6/22/2006	SW27 7/6/2016	SW28 7/6/2016
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Notes:

[1] Values are the 2009 RIDEM Ambient Water Quality Criteria.

<http://www.dem.ri.gov/pubs/regs/regs/water/h2oq10.pdf>

[2] RIDEM AWQC values for Cadmium, Chromium (Chromium III was used for Chromium), Copper, Lead, Nickel and Zinc were calculated for acute  $\{CF \times e^{(m_a \times [\ln \text{Hardness}] + b_a)}\}$  and chronic  $\{CF \times e^{(m_c \times [\ln \text{Hardness}] + b_c)}\}$  values for dissolved metals using the average hardness concentration. Values were also used for total metals

mg/L - milligram per liter

U - not detected, value is reporting limit

J - value is estimated

B - analyte detected in sample and the associated blank

E - PCDE interference

**Table 2**  
**Summary of Analytical Results for Surface Water - Outer Cove and Pond**  
**Phase II Area - Mashapaug Pond and Cove**  
**Former Gorham Manufacturing Facility**  
**333 Adelaide Avenue, Providence, Rhode Island**

Parameter	RIDEM AWQC Fresh Water Chronic [1]	SW11 6/21/2006	SW11 7/6/2016	SW-36 12/14/2011	SW36 7/6/2016	SW-39 12/14/2011	SW39 7/6/2016
<b>Semi-Volatile Organic Compounds (mg/L)</b>							
2-Methylnaphthalene		0.0002 U	0.0002 U		0.0002 U		0.0002 U
Acenaphthene	0.0019	0.0002 U	0.0002 U		0.0002 U		0.0002 U
Acenaphthylene		0.0002 U	0.0002 U		0.0002 U		0.0002 U
Anthracene		0.0002 U	0.0002 U		0.0002 U		0.0002 U
Benzo(a)anthracene		0.0002 U	0.00005 U		0.00005 U		0.00005 U
Benzo(a)pyrene		0.0002 U	0.00005 U		0.00005 U		0.00007
Benzo(b)fluoranthene		0.0002 U	0.00005 U		0.00005 U		0.0001
Benzo(g,h,i)perylene		0.0002 U	0.0002 U		0.0002 U		0.0002 U
Benzo(k)fluoranthene		0.0003 U	0.00005 U		0.00005 U		0.00005 U
Chrysene		0.0002 U	0.00005 U		0.00005 U		0.00008
Dibenzo(a,h)anthracene	0	0.0002 U	0.00005 U		0.00005 U		0.00005 U
Fluoranthene	0.0044	0.0002 U	0.0002 U		0.0002 U		0.0002 U
Fluorene		0.0002 U	0.0002 U		0.0002 U		0.0002 U
Indeno(1,2,3-cd)pyrene		0.0003 U	0.00005 U		0.00005 U		0.00007
Naphthalene	0.0026	0.0002 U	0.0002 U		0.0002 U		0.0002 U
Phenanthrene		0.0002 U	0.0002 U		0.0002 U		0.0002 U
Pyrene		0.0002 U	0.0002 U		0.0002 U		0.0002 U
<b>Dioxins/Furans (mg/L)</b>							
1,2,3,4,6,7,8-HpCDD		0.00000024 BJ	0.00000005 U		0.00000005 U		0.00000005 U
1,2,3,4,6,7,8-HpCDF		0.00000001 U	0.00000005 U		0.00000005 U		0.00000005 U
1,2,3,4,7,8,9-HpCDF		0.00000001 U	0.00000005 U		0.00000005 U		0.00000005 U
1,2,3,4,7,8-HxCDD		0.00000001 U	0.00000005 U		0.00000005 U		0.00000005 U
1,2,3,4,7,8-HxCDF		0.00000001 U	0.00000005 U		0.00000005 U		0.00000005 U
1,2,3,6,7,8-HxCDD		0.00000001 U	0.00000005 U		0.00000005 U		0.00000005 U
1,2,3,6,7,8-HxCDF		0.00000001 U	0.00000005 U		0.00000005 U		0.00000005 U
1,2,3,7,8,9-HxCDD		0.00000001 U	0.00000005 U		0.00000005 U		0.00000005 U
1,2,3,7,8,9-HxCDF		0.00000001 U	0.00000005 U		0.00000005 U		0.00000005 U
1,2,3,7,8-PeCDD		0.00000001 U	0.00000005 U		0.00000005 U		0.00000005 U
1,2,3,7,8-PeCDF		0.00000001 U	0.00000005 U		0.00000005 U		0.00000005 U
2,3,4,6,7,8-HxCDF		0.00000001 U	0.00000005 U		0.00000005 U		0.00000005 U
2,3,4,7,8-PeCDF		0.00000001 U	0.00000005 U		0.00000005 U		0.00000005 U
2,3,7,8-TCDD		0.000000021 UA	0.00000001 U		0.00000001 U		0.00000001 U
2,3,7,8-TCDF		0.000000021 UA	0.00000001 U		0.00000001 U		0.00000001 U
OCDD		0.00000018 B	0.00000001 U		0.00000001 U		0.00000016
OCDF		0.000000021 U	0.00000001 U		0.00000001 U		0.00000001 U
Dioxin Toxicity Equivalent (USEPA, 2010)		0.000000012	0 U		0 U		1.6E-10
Total HpCDD		0.000000043 BJ	0.00000005 U		0.00000005 U		0.00000005 U
Total HpCDF		0.000000012 J	0.00000005 U		0.00000005 U		0.00000005 U
Total HxCDD		0.00000001 U	0.00000005 U		0.00000005 U		0.00000005 U
Total HxCDF		0.00000001 U	0.00000005 U		0.00000005 U		0.00000005 U
Total PeCDD		0.00000001 U	0.00000005 U		0.00000005 U		0.00000005 U
Total PeCDF		0.00000001 U	0.00000005 U		0.00000005 U		0.00000005 U



**Table 2**  
**Summary of Analytical Results for Surface Water - Outer Cove and Pond**  
**Phase II Area - Mashapaug Pond and Cove**  
**Former Gorham Manufacturing Facility**  
**333 Adelaide Avenue, Providence, Rhode Island**

Parameter	RIDEM AWQC Fresh Water Chronic [1]	SW11 6/21/2006	SW11 7/6/2016	SW-36 12/14/2011	SW36 7/6/2016	SW-39 12/14/2011	SW39 7/6/2016
Total TCDD		0.000000021 U	0.00000001 U		0.00000001 U		0.00000001 U
Total TCDF		0.000000021 U	0.00000001 U		0.00000001 U		0.00000001 U
<b>Metals, Total [2](mg/L)</b>							
Antimony	0.01	0.005 U	0.0005 U	0.0025 U	0.0005 U	0.0025 U	0.0005 U
Arsenic	0.15	0.005 U	0.006	0.0025 U	0.005	0.0025 U	0.006
Barium		0.05 U	0.127		0.034		0.052
Beryllium	0.00017	0.001 U	0.0001 U	0.0005 U	0.0001 U	0.0005 U	0.0001 U
Cadmium	0.000271	0.005 U	0.00002 U	0.0025 U	0.00002 U	0.0025 U	0.00002 U
Chromium	0.0114	0.02 U	0.002 U	0.01 U	0.002 U	0.01 U	0.002 U
Copper	0.0093	0.02 U	0.002 U	0.01 U	0.002	0.01 U	0.003
Lead	0.00318	0.005 U	0.0006	0.01 U	0.001	0.01 U	0.003
Mercury		0.0005 U	0.0002 U	0.0005 U	0.0002 U	0.0005 U	0.0002 U
Nickel	0.05216	0.05 U	0.005 U	0.025 U	0.005 U	0.025 U	0.005 U
Selenium	0.005	0.05 U	0.001 U	0.025 U	0.001 U	0.025 U	0.001 U
Silver		0.005 U	0.001 U	0.005 U	0.001 U	0.005 U	0.001 U
Thallium	0.001	0.002 U	0.0002 U	0.001 U	0.0002 U	0.001 U	0.0002 U
Zinc	0.118	0.05 U	0.017	0.025 U	0.017	0.026	0.009
<b>Metals, Dissolved [2] (mg/L)</b>							
Antimony	0.01	0.005 U	0.0005 U	0.0025 U	0.0005 U	0.0025 U	0.0005 U
Arsenic	0.15	0.005 U	0.006	0.0025 U	0.005 U	0.0025 U	0.005
Barium		0.05 U	0.017		0.027		0.033
Beryllium	0.00017	0.001 U	0.0001 U	0.0005 U	0.0001 U	0.0005 U	0.0001 U
Cadmium 0.00027	0.000271	0.005 U	0.00002 U	0.0025 U	0.00002 U	0.0025 U	0.00002 U
Chromium (IV 0.00114)	0.0114	0.02 U	0.002 U	0.01 U	0.002 U	0.01 U	0.002 U
Copper (0.0093)	0.0093	0.02 U	0.002 U	0.01 U	0.002 U	0.01 U	0.002 U
Lead (0.00318)	0.00318	0.005 U	0.0005 U	0.01 U	0.0005 U	0.01 U	0.0005 U
Mercury		0.0005 U	0.0002 U	0.0005 U	0.0002 U	0.0005 U	0.0002 U
Nickel (0.05216)	0.05216	0.05 U	0.005 U	0.025 U	0.005 U	0.025 U	0.005 U
Selenium	0.005	0.05 U	0.001 U	0.025 U	0.001 U	0.025 U	0.001 U
Silver		0.005 U	0.001 U	0.005 U	0.001 U	0.005 U	0.001 U
Thallium	0.001	0.002 U	0.0002 U	0.0015 U	0.0002 U	0.0015 U	0.0002 U
Zinc (0.118)	0.118	0.05 U	0.018	0.025 U	0.015	0.025 U	0.015

Notes:

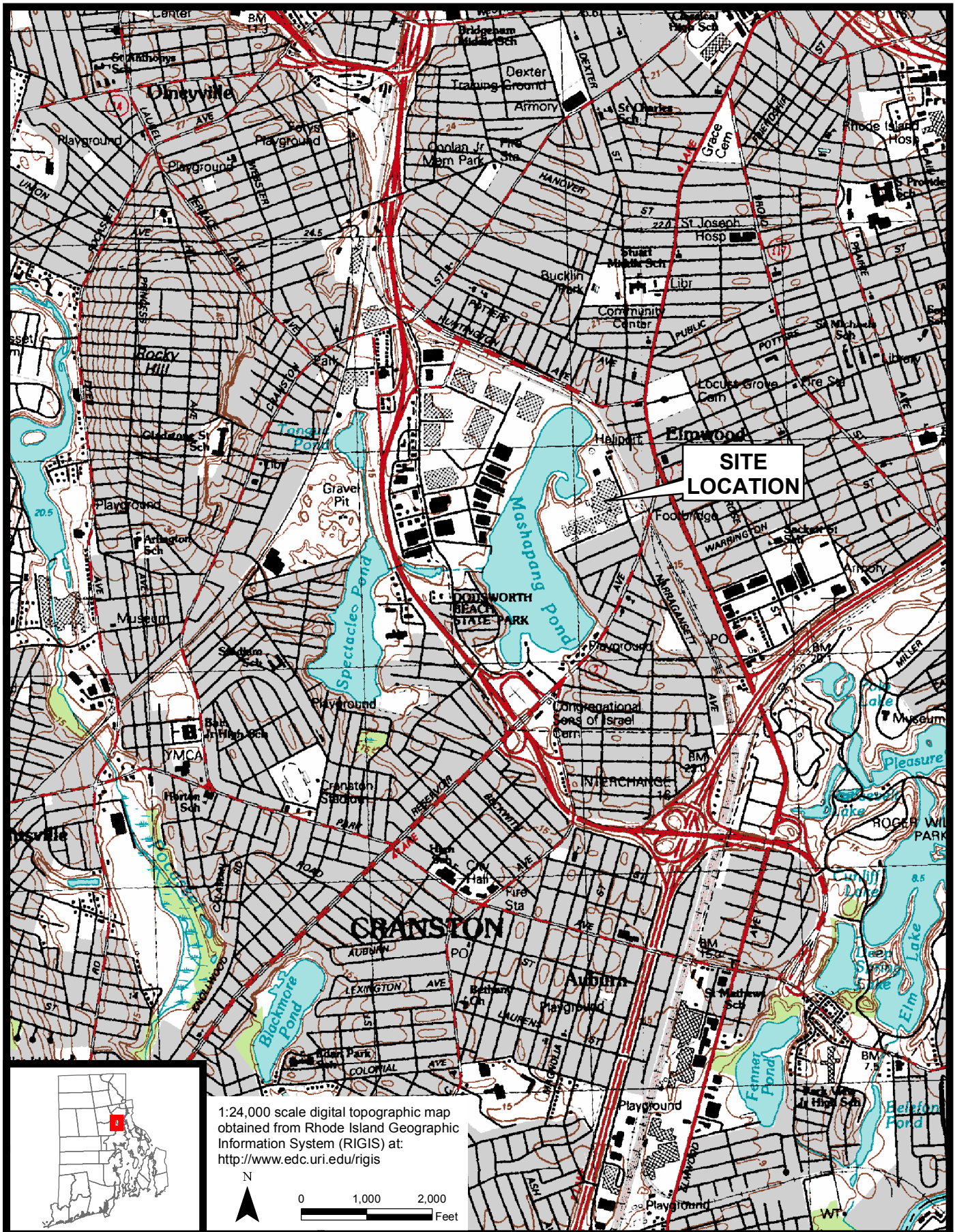
[1] Values are the 2009 RIDEM Ambient Water Quality Criteria.  
<http://www.dem.ri.gov/pubs/regs/regs/water/h2oq10.pdf>

**Table 2**  
**Summary of Analytical Results for Surface Water - Outer Cove and Pond**  
**Phase II Area - Mashapaug Pond and Cove**  
**Former Gorham Manufacturing Facility**  
**333 Adelaide Avenue, Providence, Rhode Island**

Parameter	RIDEM AWQC Fresh Water Chronic [1]	SW11 6/21/2006	SW11 7/6/2016	SW-36 12/14/2011	SW36 7/6/2016	SW-39 12/14/2011	SW39 7/6/2016
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[2] RIDEM AWQC values for Cadmium, Chromium (Chromium III was used for Chromium), Copper, Lead, Nickel and Zinc were calculated for acute  $\{CF \times e^{(m_a \times [\ln \text{Hardness}] + b_a)}\}$  and chronic  $\{CF \times e^{(m_c \times [\ln \text{Hardness}] + b_c)}\}$  values for dissolved metals using the average hardness concentration. Values were also used for total metals  
 mg/L - milligram per liter  
 U - not detected, value is reporting limit  
 J - value is estimated  
 B - analyte detected in sample and the associated blank  
 A - detection limit based on signal-to-noise measurement

## FIGURES



Former Gorham Manufacturing Site  
 333 Adelaide Avenue  
 Providence, RI



Site Location Map

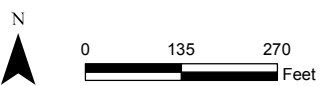
Project 3652-15-0040

Figure 1



**Legend**

- ▲ Sediment Sample Location (2005-2006)
- ▼▲ Surface Water and Sediment Sample Location (2006)
- ▲ Sediment Sample Location (2011)
- ▼▲ Surface Water and Sediment Sample Location (2011)
- - - - - Approximate Site Boundary
- ▭ Study Areas
- ▭ Approximate Pond



333 Adelaide Avenue Site  
Providence, Rhode Island



Surface Water and Sediment Sample Locations  
2005-2016

Project 3650-15-0040

Figure 2

APPENDIX A

Field Data Records

July 6, 2016 Surface Water Sampling Event

**FIELD DATA RECORD - SURFACE WATER**

PROJECT Textron Graham JOB NUMBER 3652150040 DATE 7-6-16  
 FIELD SAMPLE ID .5w11 ACTIVITY TIME START 920 END 953 BOTTLE TIME 926  
 QC SAMPLES COLLECTED Dup-02

**SURFACE WATER DATA**

WATER DEPTH AT LOCATION 11 ft. SPEC. COND 420  $\mu\text{S/cm}$   BEAKER  STREAM/ RIVER DECON FLUIDS USED:  
 DEPTH SAMPLE COLLECTED FROM SURFACE 10 ft. D.O. 0.65 mg/L  DIRECT DIP  LAKE/ POND  DI WATER  
 TEMPERATURE 23.17 DEG C SALINITY / %  PERISTALTIC PUMP  SEEP  POTABLE WATER  
 TURBIDITY 10.1 NTU ORP C7 mV  FILTER (0.45 micron)  MARSH  NONE  
 pH 6.91 UNITS  LDPE Tubing & Silicon  OTHER \_\_\_\_\_

**SEDIMENT DATA**

SEDIMENT SAMPLE START DEPTH  END DEPTH  TYPE OF SEDIMENT  ORGANIC  HAND AUGER  DI WATER  
 TYPE OF SAMPLE GRAB   SAND  S S SPOON  POTABLE WATER  
 SAMPLE OBSERVATIONS  GRAVEL  ALUMINIUM PAN  LIQUINOX  
 ODOR \_\_\_\_\_  CLAY  DREDGE  OTHER \_\_\_\_\_  
 COLOR \_\_\_\_\_  OTHER \_\_\_\_\_  
 FLOC OBSERVED \_\_\_\_\_ CLEAR OF LEAF LITTER \_\_\_\_\_ OBSERVATIONS \_\_\_\_\_

**ANALYTICAL PARAMETERS SURFACE WATER**

	METHOD NUMBER	FILTERED	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED
<input checked="" type="checkbox"/> PAH	8270	N	NA	216 amb	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> trace metals	6010/6020	N	HNO3	1x250ml	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> dissolved metals	" "	Y	HCl3	1x250ml	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Diatoms	8290	N	NA	2x16 amb	<input checked="" type="checkbox"/>
<input type="checkbox"/>					<input type="checkbox"/>
<input type="checkbox"/>					<input type="checkbox"/>
<input type="checkbox"/>					<input type="checkbox"/>
<input type="checkbox"/>					<input type="checkbox"/>
<input type="checkbox"/>					<input type="checkbox"/>
<input type="checkbox"/>					<input type="checkbox"/>

**ANALYTICAL PARAMETERS SEDIMENT**

	METHOD NUMBER	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>

NOTES \_\_\_\_\_

amec foster wheeler 

SIGNATURE: 

Prepared by  
Checked by

**FIELD DATA RECORD - SURFACE WATER**

PROJECT Texton Beach JOB NUMBER 365-2150046 DATE 7-6-16  
 FIELD SAMPLE ID SW 39 ACTIVITY TIME START 1005 END 1021 BOTTLE TIME 1005  
 QC SAMPLES COLLECTED ✓

**SURFACE WATER DATA**

WATER DEPTH AT LOCATION 10.5 ft. SPEC. COND 415  $\mu\text{S/cm}$   BEAKER  STREAM/ RIVER DECON FLUIDS USED:  
 DEPTH SAMPLE COLLECTED FROM SURFACE 9.5 ft. D.O. 6.15 mg/L  DIRECT DIP  LAKE/ POND  DI WATER  
 TEMPERATURE 21.8 DEG C SALINITY / %  PERISTALTIC PUMP  SEEP  POTABLE WATER  
 TURBIDITY 18.8 NTU ORP 65 mV  FILTER (0.45 micron)  MARSH  NONE  
 pH 7.3 UNITS  LDPE Tubing & Silicon  OTHER

**SEDIMENT DATA**

SEDIMENT SAMPLE START DEPTH      END DEPTH      TYPE OF SEDIMENT  ORGANIC  SAND  GRAVEL  CLAY  OTHER       
 TYPE OF SAMPLE GRAB  EQUIPMENT FOR COLLECTION  HAND AUGER  S.S. SPOON  ALUMINIUM PAN  DREDGE  OTHER       
 DECON FLUIDS USED  DI WATER  POTABLE WATER  LIQUINOX  OTHER       
 SAMPLE OBSERVATIONS  
 ODOR      COLOR      FLOC OBSERVED      CLEAR OF LEAF LITTER      OBSERVATIONS     


**ANALYTICAL PARAMETERS SURFACE WATER**

	METHOD NUMBER	FILTERED	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED
<input checked="" type="checkbox"/> PAH	<u>2270</u>	<u>N</u>	<u>NA</u>	<u>2 x 16 amb</u>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> total metals	<u>606/606</u>	<u>N</u>	<u>HAC3</u>	<u>1 x 250 + 1 poly</u>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> dissolved metals	<u>" "</u>	<u>N</u>	<u>HAC3</u>	<u>1 x 250 poly</u>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Dioxins	<u>2296</u>	<u>N</u>	<u>NA</u>	<u>2 x 16 amb</u>	<input checked="" type="checkbox"/>
<input type="checkbox"/>					<input type="checkbox"/>
<input type="checkbox"/>					<input type="checkbox"/>
<input type="checkbox"/>					<input type="checkbox"/>
<input type="checkbox"/>					<input type="checkbox"/>
<input type="checkbox"/>					<input type="checkbox"/>
<input type="checkbox"/>					<input type="checkbox"/>

**ANALYTICAL PARAMETERS SEDIMENT**

	METHOD NUMBER	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>

NOTES

amec foster wheeler 

SIGNATURE: 

Prepared by:  
Checked by:



**FIELD DATA RECORD - SURFACE WATER**

PROJECT Texton Graham JOB NUMBER 365210040 DATE 7-6-18  
 FIELD SAMPLE ID SW20 ACTIVITY TIME START 1035 END 1050 BOTTLE TIME 1035  
 QC SAMPLES COLLECTED /

**SURFACE WATER DATA**

WATER DEPTH AT LOCATION 3 ft. SPEC. COND 425  $\mu\text{S/cm}$   BEAKER  STREAM/ RIVER DECON FLUIDS USED:  
 DEPTH SAMPLE COLLECTED FROM SURFACE 2 ft. D.O. 9.02 mg/L  DIRECT DIP  LAKE/ POND  DI WATER  
 TEMPERATURE 21.93 DEG C SALINITY / %  PERISTALTIC PUMP  SEEP  POTABLE WATER  
 TURBIDITY 20.2 NTU ORP 0.83 mV  FILTER (0.45 micron)  MARSH  NONE  
 pH 6.41 UNITS  LDPE Tubing & Silicon  OTHER \_\_\_\_\_

**SEDIMENT DATA**

SEDIMENT SAMPLE START DEPTH  END DEPTH  TYPE OF SAMPLE GRAB  TYPE OF SEDIMENT  ORGANIC  SAND  GRAVEL  CLAY  OTHER \_\_\_\_\_  
 EQUIPMENT FOR COLLECTION  HAND AUGER  S.S. SPOON  ALUMINIUM PAN  DREDGE  OTHER \_\_\_\_\_  
 DECON FLUIDS USED  DI WATER  POTABLE WATER  LIQUINOX  OTHER \_\_\_\_\_  
 SAMPLE OBSERVATIONS ODOR \_\_\_\_\_ COLOR \_\_\_\_\_ FLOC OBSERVED \_\_\_\_\_ CLEAR OF LEAF LITTER \_\_\_\_\_ OBSERVATIONS \_\_\_\_\_

**ANALYTICAL PARAMETERS SURFACE WATER**

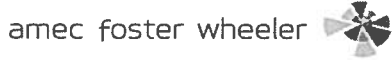
	METHOD NUMBER	FILTERED	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED
<input checked="" type="checkbox"/> PAH	827C	N	NA	2x1L amber	<input checked="" type="checkbox"/>
<input type="checkbox"/> Total metals	6010/6010	N	HAc3	1x200ml poly	<input checked="" type="checkbox"/>
<input type="checkbox"/> Dissolved metals	" "	Y	HAc3	1x200ml poly	<input checked="" type="checkbox"/>
<input type="checkbox"/> Dioxins	P29C	N	NA	2x1L amber	<input checked="" type="checkbox"/>
<input type="checkbox"/>					<input type="checkbox"/>
<input type="checkbox"/>					<input type="checkbox"/>
<input type="checkbox"/>					<input type="checkbox"/>
<input type="checkbox"/>					<input type="checkbox"/>
<input type="checkbox"/>					<input type="checkbox"/>
<input type="checkbox"/>					<input type="checkbox"/>

**ANALYTICAL PARAMETERS SEDIMENT**

	METHOD NUMBER	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>

**NOTES**

SIGNATURE: [Signature]



Prepared by  
Checked by

**FIELD DATA RECORD - SURFACE WATER**

PROJECT Texton Gochan JOB NUMBER 3652150049 DATE 7-6-16  
 FIELD SAMPLE ID SW27 ACTIVITY TIME START 1100 END 1115 BOTTLE TIME 1100  
 QC SAMPLES COLLECTED NA

**SURFACE WATER DATA**

WATER DEPTH AT LOCATION 2.5 ft. SPEC. COND 447  $\mu\text{S/cm}$   BEAKER  STREAM/ RIVER DECON FLUIDS USED:  
 DEPTH SAMPLE COLLECTED FROM SURFACE 1.5 ft. D.O. 2.60 mg/L  DIRECT DIP  LAKE/ POND  DI WATER  
 TEMPERATURE 21.98 DEG C SALINITY / %  PERISTALTIC PUMP  SEEP  POTABLE WATER  
 TURBIDITY 36.9 NTU ORP -29.1 mV  FILTER (0.45 micron)  MARSH  NONE  
 pH 6.91 UNITS  LDPE Tubing & Silicon  OTHER

**SEDIMENT DATA**

SEDIMENT SAMPLE START DEPTH  END DEPTH  TYPE OF SAMPLE GRAB  TYPE OF SEDIMENT  ORGANIC  SAND  GRAVEL  CLAY  OTHER  EQUIPMENT FOR COLLECTION  HAND AUGER  S.S. SPOON  ALUMINIUM PAN  DREDGE  OTHER  DECON FLUIDS USED  DI WATER  POTABLE WATER  LIQUINOX  OTHER  ODOUR \_\_\_\_\_ COLOR \_\_\_\_\_ FLOC OBSERVED \_\_\_\_\_ CLEAR OF LEAF LITTER \_\_\_\_\_ OBSERVATIONS \_\_\_\_\_

**ANALYTICAL PARAMETERS SURFACE WATER**

	METHOD NUMBER	FILTERED	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED
<input checked="" type="checkbox"/> PAH	8270	N	NA	2x1L antb	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> total metals	6061600	N	HAU3	1x200ml pol	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> dissolved metals	" "	Y	HAU3	1x200ml pol	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Dioxins	8296	N	NA	2x1L antb	<input checked="" type="checkbox"/>
<input type="checkbox"/>					<input type="checkbox"/>
<input type="checkbox"/>					<input type="checkbox"/>
<input type="checkbox"/>					<input type="checkbox"/>
<input type="checkbox"/>					<input type="checkbox"/>
<input type="checkbox"/>					<input type="checkbox"/>
<input type="checkbox"/>					<input type="checkbox"/>

**ANALYTICAL PARAMETERS SEDIMENT**

	METHOD NUMBER	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>

NOTES amec foster wheeler   
 SIGNATURE: 

Prepared by  
Checked by

**FIELD DATA RECORD - SURFACE WATER**

PROJECT Texten Aquem JOB NUMBER 3652150040 DATE 7-6-16  
 FIELD SAMPLE ID SW3C ACTIVITY TIME START 1120 END 1150 BOTTLE TIME 1120  
 QC SAMPLES COLLECTED MS/MSD

**SURFACE WATER DATA**

WATER DEPTH AT LOCATION 9.0 ft. SPEC. COND 414  $\mu\text{S/cm}$   BEAKER  STREAM/ RIVER DECON FLUIDS USED:  
 DEPTH SAMPLE COLLECTED FROM SURFACE 8.0 ft. D.O. 5.62 mg/L  DIRECT DIP  LAKE/ POND  DI WATER  
 TEMPERATURE 24.36 DEG C SALINITY      %  PERISTALTIC PUMP  SEEP  POTABLE WATER  
 TURBIDITY 19.3 NTU ORP -23 mV  FILTER (0.45 micron)  MARSH  NONE  
 pH 7.34 UNITS  LDPE Tubing & Silicon  OTHER

**SEDIMENT DATA**

SEDIMENT SAMPLE START DEPTH      END DEPTH      TYPE OF SEDIMENT  ORGANIC  HAND AUGER  DI WATER  
 TYPE OF SAMPLE GRAB  SAND  S.S. SPOON  POTABLE WATER  
 SAMPLE OBSERVATIONS  GRAVEL  ALUMINIUM PAN  LIQUINOX  
 ODOUR       CLAY  DREDGE  OTHER  
 COLOR       OTHER  OTHER  
 FLOC OBSERVED      CLEAR OF LEAF LITTER      OBSERVATIONS     

**ANALYTICAL PARAMETERS SURFACE WATER**

	METHOD NUMBER	FILTERED	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED
<input checked="" type="checkbox"/> PAH	<u>8270</u>	<u>N</u>	<u>NA</u>	<u>2x10 amb</u>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Total metals	<u>6610/6620</u>	<u>N</u>	<u>66A-1/2/3</u>	<u>1x250ml pol</u>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Dissolved metals	<u>" "</u>	<u>Y</u>	<u>H683</u>	<u>1x250ml pol</u>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Dioxins	<u>8290</u>	<u>N</u>	<u>NA</u>	<u>2x10 amb</u>	<input checked="" type="checkbox"/>
<input type="checkbox"/>					<input type="checkbox"/>
<input type="checkbox"/>					<input type="checkbox"/>
<input type="checkbox"/>					<input type="checkbox"/>
<input type="checkbox"/>					<input type="checkbox"/>
<input type="checkbox"/>					<input type="checkbox"/>
<input type="checkbox"/>					<input type="checkbox"/>

**ANALYTICAL PARAMETERS SEDIMENT**

	METHOD NUMBER	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>

**NOTES**

SIGNATURE 

## APPENDIX B

### Laboratory Reports

July 6, 2016 Surface Water Sampling Event



*CERTIFICATE OF ANALYSIS*

David Heislein  
 AMEC Foster Wheeler  
 271 Mill Road  
 Chelmsford, MA 01824

**RE: Textron Gorham - Surface Water (3652150040)**

**ESS Laboratory Work Order Number: 1607062**

This signed Certificate of Analysis is our approved release of your analytical results. These results are only representative of sample aliquots received at the laboratory. ESS Laboratory expects its clients to follow all regulatory sampling guidelines. Beginning with this page, the entire report has been paginated. This report should not be copied except in full without the approval of the laboratory. Samples will be disposed of thirty days after the final report has been delivered. If you have any questions or concerns, please feel free to call our Customer Service Department.

Laurel Stoddard  
 Laboratory Director

**REVIEWED**

By ESS Laboratory at 11:43 am, Jul 19, 2016

**Analytical Summary**

The project as described above has been analyzed in accordance with the ESS Quality Assurance Plan. This plan utilizes the following methodologies: US EPA SW-846, US EPA Methods for Chemical Analysis of Water and Wastes per 40 CFR Part 136, APHA Standard Methods for the Examination of Water and Wastewater, American Society for Testing and Materials (ASTM), and other recognized methodologies. The analyses with these noted observations are in conformance to the Quality Assurance Plan. In chromatographic analysis, manual integration is frequently used instead of automated integration because it produces more accurate results.

The test results present in this report are in compliance with NELAC Standards, A2LA and/or client Quality Assurance Project Plans (QAPP). The laboratory has reviewed the following: Sample Preservations, Hold Times, Initial Calibrations, Continuing Calibrations, Method Blanks, Blank Spikes, Blank Spike Duplicates, Duplicates, Matrix Spikes, Matrix Spike Duplicates, Surrogates and Internal Standards. Any results which were found to be outside of the recommended ranges stated in our SOPs will be noted in the Project Narrative.

**Subcontracted Analyses**

Pace Analytical - Minneapolis, MN

Dioxin - Full List



*CERTIFICATE OF ANALYSIS*

Client Name: AMEC Foster Wheeler  
Client Project ID: Textron Gorham - Surface Water

ESS Laboratory Work Order: 1607062

**SAMPLE RECEIPT**

The following samples were received on July 06, 2016 for the analyses specified on the enclosed Chain of Custody Record.

<b>Lab Number</b>	<b>Sample Name</b>	<b>Matrix</b>	<b>Analysis</b>
1607062-01	SW11	Surface Water	§, 6010C, 7010, 7470A, 8270D SIM
1607062-02	SW39	Surface Water	§, 6010C, 7010, 7470A, 8270D SIM
1607062-03	SW28	Surface Water	§, 6010C, 7010, 7470A, 8270D SIM
1607062-04	SW27	Surface Water	§, 6010C, 7010, 7470A, 8270D SIM
1607062-05	SW36	Surface Water	§, 6010C, 7010, 7470A, 8270D SIM
1607062-06	Dup-02	Surface Water	§, 6010C, 7010, 7470A, 8270D SIM



*CERTIFICATE OF ANALYSIS*

Client Name: AMEC Foster Wheeler  
Client Project ID: Textron Gorham - Surface Water

ESS Laboratory Work Order: 1607062

**PROJECT NARRATIVE**

**8270D(SIM) Polynuclear Aromatic Hydrocarbons**

CG60724-MSD2 [Matrix Spike recovery is below lower control limit \(M-\).](#)

Naphthalene (35% @ 40-140%)

CG60724-MSD2 [Relative percent difference for duplicate is outside of criteria \(D+\).](#)

Naphthalene (23% @ 20%)

CZG0100-TUN1 [DDT breakdown > 20%](#)

**Dissolved Metals**

CG60701-MS2 [Matrix Spike recovery is above upper control limit \(M+\).](#)

Selenium (124% @ 80-120%)

**Total Metals**

CG60701-DUP1 [Relative percent difference for duplicate is outside of criteria \(D+\).](#)

Lead (48% @ 20%)

CG60701-MS1 [Matrix Spike recovery is above upper control limit \(M+\).](#)

Selenium (132% @ 80-120%)

**No other observations noted.**

**End of Project Narrative.**

**DATA USABILITY LINKS**

- [Definitions of Quality Control Parameters](#)
- [Semivolatile Organics Internal Standard Information](#)
- [Semivolatile Organics Surrogate Information](#)
- [Volatile Organics Internal Standard Information](#)
- [Volatile Organics Surrogate Information](#)
- [EPH and VPH Alkane Lists](#)



*CERTIFICATE OF ANALYSIS*

Client Name: AMEC Foster Wheeler  
Client Project ID: Textron Gorham - Surface Water

ESS Laboratory Work Order: 1607062

**CURRENT SW-846 METHODOLOGY VERSIONS**

**Analytical Methods**

- 1010A - Flashpoint
- 6010C - ICP
- 6020A - ICP MS
- 7010 - Graphite Furnace
- 7196A - Hexavalent Chromium
- 7470A - Aqueous Mercury
- 7471B - Solid Mercury
- 8011 - EDB/DBCP/TCP
- 8015D - GRO/DRO
- 8081B - Pesticides
- 8082A - PCB
- 8100M - TPH
- 8151A - Herbicides
- 8260B - VOA
- 8270D - SVOA
- 8270D SIM - SVOA Low Level
- 9014 - Cyanide
- 9038 - Sulfate
- 9040C - Aqueous pH
- 9045D - Solid pH (Corrosivity)
- 9050A - Specific Conductance
- 9056A - Anions (IC)
- 9060A - TOC
- 9095B - Paint Filter
- MADEP 04-1.1 - EPH / VPH

**Prep Methods**

- 3005A - Aqueous ICP Digestion
- 3020A - Aqueous Graphite Furnace / ICP MS Digestion
- 3050B - Solid ICP / Graphite Furnace / ICP MS Digestion
- 3060A - Solid Hexavalent Chromium Digestion
- 3510C - Separatory Funnel Extraction
- 3520C - Liquid / Liquid Extraction
- 3540C - Manual Soxhlet Extraction
- 3541 - Automated Soxhlet Extraction
- 3546 - Microwave Extraction
- 3580A - Waste Dilution
- 5030B - Aqueous Purge and Trap
- 5030C - Aqueous Purge and Trap
- 5035 - Solid Purge and Trap

SW846 Reactivity Methods 7.3.3.2 (Reactive Cyanide) and 7.3.4.1 (Reactive Sulfide) have been withdrawn by EPA. These methods are reported per client request and are not NELAP accredited.





*CERTIFICATE OF ANALYSIS*

Client Name: AMEC Foster Wheeler  
Client Project ID: Textron Gorham - Surface Water  
Client Sample ID: SW11  
Date Sampled: 07/06/16 09:26

ESS Laboratory Work Order: 1607062  
ESS Laboratory Sample ID: 1607062-01  
Sample Matrix: Surface Water  
Units: %

**Dioxins**

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Frequency</u>	<u>Batch</u>
Dioxin	See Attached (N/A)								



*CERTIFICATE OF ANALYSIS*

Client Name: AMEC Foster Wheeler  
Client Project ID: Textron Gorham - Surface Water  
Client Sample ID: SW11  
Date Sampled: 07/06/16 09:26  
Percent Solids: N/A

ESS Laboratory Work Order: 1607062  
ESS Laboratory Sample ID: 1607062-01  
Sample Matrix: Surface Water  
Units: mg/L

Extraction Method: 3005A

**Dissolved Metals**

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>	<u>Batch</u>
Antimony	ND (0.0005)		7010		1	KJK	07/08/16 7:34	100	10	CG60701
Arsenic	<b>0.006</b> (0.005)		6010C		1	KJK	07/08/16 15:27	100	10	CG60701
Barium	<b>0.017</b> (0.005)		6010C		1	KJK	07/08/16 15:27	100	10	CG60701
Beryllium	ND (0.0001)		6010C		1	KJK	07/08/16 15:27	100	10	CG60701
Cadmium	ND (0.00002)		7010		1	KJK	07/09/16 13:43	100	10	CG60701
Chromium	ND (0.002)		6010C		1	KJK	07/08/16 15:27	100	10	CG60701
Copper	ND (0.002)		6010C		1	KJK	07/08/16 15:27	100	10	CG60701
Lead	ND (0.0005)		7010		1	KJK	07/08/16 20:03	100	10	CG60701
Mercury	ND (0.00020)		7470A		1	BJV	07/07/16 14:40	20	40	CG60703
Nickel	ND (0.005)		6010C		1	KJK	07/08/16 15:27	100	10	CG60701
Selenium	ND (0.001)		7010		1	KJK	07/08/16 12:37	100	10	CG60701
Silver	ND (0.001)		6010C		1	KJK	07/08/16 15:27	100	10	CG60701
Thallium	ND (0.0002)		7010		1	KJK	07/09/16 19:10	100	10	CG60701
Zinc	<b>0.018</b> (0.005)		6010C		1	KJK	07/08/16 15:27	100	10	CG60701



*CERTIFICATE OF ANALYSIS*

Client Name: AMEC Foster Wheeler  
Client Project ID: Textron Gorham - Surface Water  
Client Sample ID: SW11  
Date Sampled: 07/06/16 09:26  
Percent Solids: N/A

ESS Laboratory Work Order: 1607062  
ESS Laboratory Sample ID: 1607062-01  
Sample Matrix: Surface Water  
Units: mg/L

Extraction Method: 3005A

**Total Metals**

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>	<u>Batch</u>
Antimony	ND (0.0005)		7010		1	KJK	07/08/16 9:01	100	10	CG60701
Arsenic	<b>0.006</b> (0.005)		6010C		1	KJK	07/08/16 16:51	100	10	CG60701
Barium	<b>0.127</b> (0.005)		6010C		1	KJK	07/08/16 16:51	100	10	CG60701
Beryllium	ND (0.0001)		6010C		1	KJK	07/08/16 16:51	100	10	CG60701
Cadmium	ND (0.00002)		7010		1	KJK	07/09/16 14:51	100	10	CG60701
Chromium	ND (0.002)		6010C		1	KJK	07/08/16 16:51	100	10	CG60701
Copper	ND (0.002)		6010C		1	KJK	07/08/16 16:51	100	10	CG60701
Lead	<b>0.0006</b> (0.0005)		7010		1	KJK	07/08/16 5:03	100	10	CG60701
Mercury	ND (0.00020)		7470A		1	BJV	07/07/16 14:40	20	40	CG60703
Nickel	ND (0.005)		6010C		1	KJK	07/08/16 16:51	100	10	CG60701
Selenium	ND (0.001)		7010		1	KJK	07/08/16 14:09	100	10	CG60701
Silver	ND (0.001)		6010C		1	KJK	07/08/16 16:51	100	10	CG60701
Thallium	ND (0.0002)		7010		1	KJK	07/09/16 20:18	100	10	CG60701
Zinc	<b>0.017</b> (0.005)		6010C		1	KJK	07/08/16 16:51	100	10	CG60701



*CERTIFICATE OF ANALYSIS*

Client Name: AMEC Foster Wheeler  
Client Project ID: Textron Gorham - Surface Water  
Client Sample ID: SW11  
Date Sampled: 07/06/16 09:26  
Percent Solids: N/A  
Initial Volume: 1070  
Final Volume: 0.25  
Extraction Method: 3510C

ESS Laboratory Work Order: 1607062  
ESS Laboratory Sample ID: 1607062-01  
Sample Matrix: Surface Water  
Units: mg/L  
Analyst: VSC  
Prepared: 7/7/16 16:51

**8270D(SIM) Polynuclear Aromatic Hydrocarbons**

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
2-Methylnaphthalene	ND (0.0002)		8270D SIM		1	07/09/16 8:38	CZG0099	CG60724
Acenaphthene	ND (0.0002)		8270D SIM		1	07/09/16 8:38	CZG0099	CG60724
Acenaphthylene	ND (0.0002)		8270D SIM		1	07/09/16 8:38	CZG0099	CG60724
Anthracene	ND (0.0002)		8270D SIM		1	07/09/16 8:38	CZG0099	CG60724
Benzo(a)anthracene	ND (0.00005)		8270D SIM		1	07/09/16 8:38	CZG0099	CG60724
Benzo(a)pyrene	ND (0.00005)		8270D SIM		1	07/09/16 8:38	CZG0099	CG60724
Benzo(b)fluoranthene	ND (0.00005)		8270D SIM		1	07/09/16 8:38	CZG0099	CG60724
Benzo(g,h,i)perylene	ND (0.0002)		8270D SIM		1	07/09/16 8:38	CZG0099	CG60724
Benzo(k)fluoranthene	ND (0.00005)		8270D SIM		1	07/09/16 8:38	CZG0099	CG60724
Chrysene	ND (0.00005)		8270D SIM		1	07/09/16 8:38	CZG0099	CG60724
Dibenzo(a,h)Anthracene	ND (0.00005)		8270D SIM		1	07/09/16 8:38	CZG0099	CG60724
Fluoranthene	ND (0.0002)		8270D SIM		1	07/09/16 8:38	CZG0099	CG60724
Fluorene	ND (0.0002)		8270D SIM		1	07/09/16 8:38	CZG0099	CG60724
Indeno(1,2,3-cd)Pyrene	ND (0.00005)		8270D SIM		1	07/09/16 8:38	CZG0099	CG60724
Naphthalene	ND (0.0002)		8270D SIM		1	07/09/16 8:38	CZG0099	CG60724
Phenanthrene	ND (0.0002)		8270D SIM		1	07/09/16 8:38	CZG0099	CG60724
Pyrene	ND (0.0002)		8270D SIM		1	07/09/16 8:38	CZG0099	CG60724

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	41 %		30-130
<i>Surrogate: 2-Fluorobiphenyl</i>	46 %		30-130
<i>Surrogate: Nitrobenzene-d5</i>	50 %		30-130
<i>Surrogate: p-Terphenyl-d14</i>	64 %		30-130



*CERTIFICATE OF ANALYSIS*

Client Name: AMEC Foster Wheeler  
Client Project ID: Textron Gorham - Surface Water  
Client Sample ID: SW39  
Date Sampled: 07/06/16 10:05

ESS Laboratory Work Order: 1607062  
ESS Laboratory Sample ID: 1607062-02  
Sample Matrix: Surface Water  
Units: %

**Dioxins**

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Frequency</u>	<u>Batch</u>
Dioxin	See Attached (N/A)								



*CERTIFICATE OF ANALYSIS*

Client Name: AMEC Foster Wheeler  
Client Project ID: Textron Gorham - Surface Water  
Client Sample ID: SW39  
Date Sampled: 07/06/16 10:05  
Percent Solids: N/A

ESS Laboratory Work Order: 1607062  
ESS Laboratory Sample ID: 1607062-02  
Sample Matrix: Surface Water  
Units: mg/L

Extraction Method: 3005A

**Dissolved Metals**

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>	<u>Batch</u>
Antimony	ND (0.0005)		7010		1	KJK	07/08/16 7:40	100	10	CG60701
Arsenic	<b>0.005</b> (0.005)		6010C		1	KJK	07/08/16 15:31	100	10	CG60701
Barium	<b>0.033</b> (0.005)		6010C		1	KJK	07/08/16 15:31	100	10	CG60701
Beryllium	ND (0.0001)		6010C		1	KJK	07/08/16 15:31	100	10	CG60701
Cadmium	ND (0.00002)		7010		1	KJK	07/09/16 13:48	100	10	CG60701
Chromium	ND (0.002)		6010C		1	KJK	07/08/16 15:31	100	10	CG60701
Copper	ND (0.002)		6010C		1	KJK	07/08/16 15:31	100	10	CG60701
Lead	ND (0.0005)		7010		1	KJK	07/08/16 20:09	100	10	CG60701
Mercury	ND (0.00020)		7470A		1	BJV	07/07/16 14:42	20	40	CG60703
Nickel	ND (0.005)		6010C		1	KJK	07/08/16 15:31	100	10	CG60701
Selenium	ND (0.001)		7010		1	KJK	07/08/16 13:07	100	10	CG60701
Silver	ND (0.001)		6010C		1	KJK	07/08/16 15:31	100	10	CG60701
Thallium	ND (0.0002)		7010		1	KJK	07/09/16 19:15	100	10	CG60701
Zinc	<b>0.015</b> (0.005)		6010C		1	KJK	07/08/16 15:31	100	10	CG60701



*CERTIFICATE OF ANALYSIS*

Client Name: AMEC Foster Wheeler  
Client Project ID: Textron Gorham - Surface Water  
Client Sample ID: SW39  
Date Sampled: 07/06/16 10:05  
Percent Solids: N/A

ESS Laboratory Work Order: 1607062  
ESS Laboratory Sample ID: 1607062-02  
Sample Matrix: Surface Water  
Units: mg/L

Extraction Method: 3005A

**Total Metals**

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>	<u>Batch</u>
Antimony	ND (0.0005)		7010		1	KJK	07/08/16 9:06	100	10	CG60701
<b>Arsenic</b>	<b>0.006</b> (0.005)		6010C		1	KJK	07/08/16 16:56	100	10	CG60701
<b>Barium</b>	<b>0.052</b> (0.005)		6010C		1	KJK	07/08/16 16:56	100	10	CG60701
Beryllium	ND (0.0001)		6010C		1	KJK	07/08/16 16:56	100	10	CG60701
Cadmium	ND (0.00002)		7010		1	KJK	07/09/16 14:57	100	10	CG60701
Chromium	ND (0.002)		6010C		1	KJK	07/08/16 16:56	100	10	CG60701
<b>Copper</b>	<b>0.003</b> (0.002)		6010C		1	KJK	07/08/16 16:56	100	10	CG60701
<b>Lead</b>	<b>0.003</b> (0.0005)		7010		1	KJK	07/08/16 5:08	100	10	CG60701
Mercury	ND (0.00020)		7470A		1	BJV	07/07/16 14:42	20	40	CG60703
Nickel	ND (0.005)		6010C		1	KJK	07/08/16 16:56	100	10	CG60701
Selenium	ND (0.001)		7010		1	KJK	07/08/16 14:20	100	10	CG60701
Silver	ND (0.001)		6010C		1	KJK	07/08/16 16:56	100	10	CG60701
Thallium	ND (0.0002)		7010		1	KJK	07/09/16 20:23	100	10	CG60701
<b>Zinc</b>	<b>0.009</b> (0.005)		6010C		1	KJK	07/08/16 16:56	100	10	CG60701



*CERTIFICATE OF ANALYSIS*

Client Name: AMEC Foster Wheeler  
Client Project ID: Textron Gorham - Surface Water  
Client Sample ID: SW39  
Date Sampled: 07/06/16 10:05  
Percent Solids: N/A  
Initial Volume: 1070  
Final Volume: 0.25  
Extraction Method: 3510C

ESS Laboratory Work Order: 1607062  
ESS Laboratory Sample ID: 1607062-02  
Sample Matrix: Surface Water  
Units: mg/L  
Analyst: VSC  
Prepared: 7/7/16 16:51

**8270D(SIM) Polynuclear Aromatic Hydrocarbons**

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
2-Methylnaphthalene	ND (0.0002)		8270D SIM		1	07/09/16 9:28	CZG0099	CG60724
Acenaphthene	ND (0.0002)		8270D SIM		1	07/09/16 9:28	CZG0099	CG60724
Acenaphthylene	ND (0.0002)		8270D SIM		1	07/09/16 9:28	CZG0099	CG60724
Anthracene	ND (0.0002)		8270D SIM		1	07/09/16 9:28	CZG0099	CG60724
Benzo(a)anthracene	ND (0.00005)		8270D SIM		1	07/09/16 9:28	CZG0099	CG60724
<b>Benzo(a)pyrene</b>	<b>0.00007</b> (0.00005)		8270D SIM		1	07/09/16 9:28	CZG0099	CG60724
<b>Benzo(b)fluoranthene</b>	<b>0.0001</b> (0.00005)		8270D SIM		1	07/09/16 9:28	CZG0099	CG60724
Benzo(g,h,i)perylene	ND (0.0002)		8270D SIM		1	07/09/16 9:28	CZG0099	CG60724
Benzo(k)fluoranthene	ND (0.00005)		8270D SIM		1	07/09/16 9:28	CZG0099	CG60724
<b>Chrysene</b>	<b>0.00008</b> (0.00005)		8270D SIM		1	07/09/16 9:28	CZG0099	CG60724
Dibenzo(a,h)Anthracene	ND (0.00005)		8270D SIM		1	07/09/16 9:28	CZG0099	CG60724
Fluoranthene	ND (0.0002)		8270D SIM		1	07/09/16 9:28	CZG0099	CG60724
Fluorene	ND (0.0002)		8270D SIM		1	07/09/16 9:28	CZG0099	CG60724
<b>Indeno(1,2,3-cd)Pyrene</b>	<b>0.00007</b> (0.00005)		8270D SIM		1	07/09/16 9:28	CZG0099	CG60724
Naphthalene	ND (0.0002)		8270D SIM		1	07/09/16 9:28	CZG0099	CG60724
Phenanthrene	ND (0.0002)		8270D SIM		1	07/09/16 9:28	CZG0099	CG60724
Pyrene	ND (0.0002)		8270D SIM		1	07/09/16 9:28	CZG0099	CG60724

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	45 %		30-130
<i>Surrogate: 2-Fluorobiphenyl</i>	50 %		30-130
<i>Surrogate: Nitrobenzene-d5</i>	54 %		30-130
<i>Surrogate: p-Terphenyl-d14</i>	68 %		30-130





*CERTIFICATE OF ANALYSIS*

Client Name: AMEC Foster Wheeler  
Client Project ID: Textron Gorham - Surface Water  
Client Sample ID: SW28  
Date Sampled: 07/06/16 10:35

ESS Laboratory Work Order: 1607062  
ESS Laboratory Sample ID: 1607062-03  
Sample Matrix: Surface Water  
Units: %

**Dioxins**

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Frequency</u>	<u>Batch</u>
Dioxin	See Attached (N/A)								



*CERTIFICATE OF ANALYSIS*

Client Name: AMEC Foster Wheeler  
Client Project ID: Textron Gorham - Surface Water  
Client Sample ID: SW28  
Date Sampled: 07/06/16 10:35  
Percent Solids: N/A

ESS Laboratory Work Order: 1607062  
ESS Laboratory Sample ID: 1607062-03  
Sample Matrix: Surface Water  
Units: mg/L

Extraction Method: 3005A

**Dissolved Metals**

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>	<u>Batch</u>
Antimony	ND (0.0005)		7010		1	KJK	07/08/16 7:45	100	10	CG60701
Arsenic	ND (0.005)		6010C		1	KJK	07/08/16 15:35	100	10	CG60701
<b>Barium</b>	<b>0.024</b> (0.005)		6010C		1	KJK	07/08/16 15:35	100	10	CG60701
Beryllium	ND (0.0001)		6010C		1	KJK	07/08/16 15:35	100	10	CG60701
Cadmium	ND (0.00002)		7010		1	KJK	07/09/16 13:54	100	10	CG60701
Chromium	ND (0.002)		6010C		1	KJK	07/08/16 15:35	100	10	CG60701
<b>Copper</b>	<b>0.002</b> (0.002)		6010C		1	KJK	07/08/16 15:35	100	10	CG60701
<b>Lead</b>	<b>0.0007</b> (0.0005)		7010		1	KJK	07/08/16 20:15	100	10	CG60701
Mercury	ND (0.00020)		7470A		1	BJV	07/07/16 14:44	20	40	CG60703
Nickel	ND (0.005)		6010C		1	KJK	07/08/16 15:35	100	10	CG60701
Selenium	ND (0.001)		7010		1	KJK	07/08/16 13:13	100	10	CG60701
Silver	ND (0.001)		6010C		1	KJK	07/08/16 15:35	100	10	CG60701
Thallium	ND (0.0002)		7010		1	KJK	07/09/16 19:21	100	10	CG60701
<b>Zinc</b>	<b>0.017</b> (0.005)		6010C		1	KJK	07/08/16 15:35	100	10	CG60701



*CERTIFICATE OF ANALYSIS*

Client Name: AMEC Foster Wheeler  
Client Project ID: Textron Gorham - Surface Water  
Client Sample ID: SW28  
Date Sampled: 07/06/16 10:35  
Percent Solids: N/A

ESS Laboratory Work Order: 1607062  
ESS Laboratory Sample ID: 1607062-03  
Sample Matrix: Surface Water  
Units: mg/L

Extraction Method: 3005A

**Total Metals**

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>	<u>Batch</u>
Antimony	ND (0.0005)		7010		1	KJK	07/08/16 9:13	100	10	CG60701
Arsenic	ND (0.005)		6010C		1	KJK	07/08/16 17:00	100	10	CG60701
<b>Barium</b>	<b>0.024</b> (0.005)		6010C		1	KJK	07/08/16 17:00	100	10	CG60701
Beryllium	ND (0.0001)		6010C		1	KJK	07/08/16 17:00	100	10	CG60701
Cadmium	ND (0.00002)		7010		1	KJK	07/09/16 15:02	100	10	CG60701
Chromium	ND (0.002)		6010C		1	KJK	07/08/16 17:00	100	10	CG60701
<b>Copper</b>	<b>0.002</b> (0.002)		6010C		1	KJK	07/08/16 17:00	100	10	CG60701
<b>Lead</b>	<b>0.001</b> (0.0005)		7010		1	KJK	07/08/16 5:14	100	10	CG60701
Mercury	ND (0.00020)		7470A		1	BJV	07/07/16 14:44	20	40	CG60703
Nickel	ND (0.005)		6010C		1	KJK	07/08/16 17:00	100	10	CG60701
Selenium	ND (0.001)		7010		1	KJK	07/08/16 14:25	100	10	CG60701
Silver	ND (0.001)		6010C		1	KJK	07/08/16 17:00	100	10	CG60701
Thallium	ND (0.0002)		7010		1	KJK	07/09/16 20:29	100	10	CG60701
<b>Zinc</b>	<b>0.014</b> (0.005)		6010C		1	KJK	07/08/16 17:00	100	10	CG60701



*CERTIFICATE OF ANALYSIS*

Client Name: AMEC Foster Wheeler  
Client Project ID: Textron Gorham - Surface Water  
Client Sample ID: SW28  
Date Sampled: 07/06/16 10:35  
Percent Solids: N/A  
Initial Volume: 1070  
Final Volume: 0.25  
Extraction Method: 3510C

ESS Laboratory Work Order: 1607062  
ESS Laboratory Sample ID: 1607062-03  
Sample Matrix: Surface Water  
Units: mg/L  
Analyst: VSC  
Prepared: 7/7/16 16:51

**8270D(SIM) Polynuclear Aromatic Hydrocarbons**

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
2-Methylnaphthalene	ND (0.0002)		8270D SIM		1	07/09/16 10:19	CZG0099	CG60724
Acenaphthene	ND (0.0002)		8270D SIM		1	07/09/16 10:19	CZG0099	CG60724
Acenaphthylene	ND (0.0002)		8270D SIM		1	07/09/16 10:19	CZG0099	CG60724
Anthracene	ND (0.0002)		8270D SIM		1	07/09/16 10:19	CZG0099	CG60724
Benzo(a)anthracene	ND (0.00005)		8270D SIM		1	07/09/16 10:19	CZG0099	CG60724
Benzo(a)pyrene	ND (0.00005)		8270D SIM		1	07/09/16 10:19	CZG0099	CG60724
Benzo(b)fluoranthene	ND (0.00005)		8270D SIM		1	07/09/16 10:19	CZG0099	CG60724
Benzo(g,h,i)perylene	ND (0.0002)		8270D SIM		1	07/09/16 10:19	CZG0099	CG60724
Benzo(k)fluoranthene	ND (0.00005)		8270D SIM		1	07/09/16 10:19	CZG0099	CG60724
Chrysene	ND (0.00005)		8270D SIM		1	07/09/16 10:19	CZG0099	CG60724
Dibenzo(a,h)Anthracene	ND (0.00005)		8270D SIM		1	07/09/16 10:19	CZG0099	CG60724
Fluoranthene	ND (0.0002)		8270D SIM		1	07/09/16 10:19	CZG0099	CG60724
Fluorene	ND (0.0002)		8270D SIM		1	07/09/16 10:19	CZG0099	CG60724
Indeno(1,2,3-cd)Pyrene	ND (0.00005)		8270D SIM		1	07/09/16 10:19	CZG0099	CG60724
Naphthalene	ND (0.0002)		8270D SIM		1	07/09/16 10:19	CZG0099	CG60724
Phenanthrene	ND (0.0002)		8270D SIM		1	07/09/16 10:19	CZG0099	CG60724
Pyrene	ND (0.0002)		8270D SIM		1	07/09/16 10:19	CZG0099	CG60724

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	44 %		30-130
<i>Surrogate: 2-Fluorobiphenyl</i>	49 %		30-130
<i>Surrogate: Nitrobenzene-d5</i>	53 %		30-130
<i>Surrogate: p-Terphenyl-d14</i>	64 %		30-130



*CERTIFICATE OF ANALYSIS*

Client Name: AMEC Foster Wheeler  
Client Project ID: Textron Gorham - Surface Water  
Client Sample ID: SW27  
Date Sampled: 07/06/16 11:00

ESS Laboratory Work Order: 1607062  
ESS Laboratory Sample ID: 1607062-04  
Sample Matrix: Surface Water  
Units: %

**Dioxins**

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Frequency</u>	<u>Batch</u>
Dioxin	See Attached (N/A)								



*CERTIFICATE OF ANALYSIS*

Client Name: AMEC Foster Wheeler  
Client Project ID: Textron Gorham - Surface Water  
Client Sample ID: SW27  
Date Sampled: 07/06/16 11:00  
Percent Solids: N/A

ESS Laboratory Work Order: 1607062  
ESS Laboratory Sample ID: 1607062-04  
Sample Matrix: Surface Water  
Units: mg/L

Extraction Method: 3005A

**Dissolved Metals**

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>	<u>Batch</u>
Antimony	ND (0.0005)		7010		1	KJK	07/08/16 7:51	100	10	CG60701
Arsenic	ND (0.005)		6010C		1	KJK	07/08/16 16:09	100	10	CG60701
<b>Barium</b>	<b>0.025</b> (0.005)		6010C		1	KJK	07/08/16 16:09	100	10	CG60701
Beryllium	ND (0.0001)		6010C		1	KJK	07/08/16 16:09	100	10	CG60701
Cadmium	ND (0.00002)		7010		1	KJK	07/09/16 14:00	100	10	CG60701
Chromium	ND (0.002)		6010C		1	KJK	07/08/16 16:09	100	10	CG60701
<b>Copper</b>	<b>0.002</b> (0.002)		6010C		1	KJK	07/08/16 16:09	100	10	CG60701
Lead	ND (0.0005)		7010		1	KJK	07/08/16 20:20	100	10	CG60701
Mercury	ND (0.00020)		7470A		1	BJV	07/07/16 14:46	20	40	CG60703
Nickel	ND (0.005)		6010C		1	KJK	07/08/16 16:09	100	10	CG60701
Selenium	ND (0.001)		7010		1	KJK	07/08/16 13:18	100	10	CG60701
Silver	ND (0.001)		6010C		1	KJK	07/08/16 16:09	100	10	CG60701
Thallium	ND (0.0002)		7010		1	KJK	07/09/16 19:27	100	10	CG60701
<b>Zinc</b>	<b>0.017</b> (0.005)		6010C		1	KJK	07/08/16 16:09	100	10	CG60701



*CERTIFICATE OF ANALYSIS*

Client Name: AMEC Foster Wheeler  
Client Project ID: Textron Gorham - Surface Water  
Client Sample ID: SW27  
Date Sampled: 07/06/16 11:00  
Percent Solids: N/A

ESS Laboratory Work Order: 1607062  
ESS Laboratory Sample ID: 1607062-04  
Sample Matrix: Surface Water  
Units: mg/L

Extraction Method: 3005A

**Total Metals**

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>	<u>Batch</u>
Antimony	ND (0.0005)		7010		1	KJK	07/08/16 9:19	100	10	CG60701
<b>Arsenic</b>	<b>0.006</b> (0.005)		6010C		1	KJK	07/08/16 17:04	100	10	CG60701
<b>Barium</b>	<b>0.029</b> (0.005)		6010C		1	KJK	07/08/16 17:04	100	10	CG60701
Beryllium	ND (0.0001)		6010C		1	KJK	07/08/16 17:04	100	10	CG60701
Cadmium	ND (0.00002)		7010		1	KJK	07/09/16 15:08	100	10	CG60701
Chromium	ND (0.002)		6010C		1	KJK	07/08/16 17:04	100	10	CG60701
<b>Copper</b>	<b>0.003</b> (0.002)		6010C		1	KJK	07/08/16 17:04	100	10	CG60701
<b>Lead</b>	<b>0.003</b> (0.0005)		7010		1	KJK	07/08/16 5:20	100	10	CG60701
Mercury	ND (0.00020)		7470A		1	BJV	07/07/16 14:46	20	40	CG60703
Nickel	ND (0.005)		6010C		1	KJK	07/08/16 17:04	100	10	CG60701
Selenium	ND (0.001)		7010		1	KJK	07/08/16 14:31	100	10	CG60701
Silver	ND (0.001)		6010C		1	KJK	07/08/16 17:04	100	10	CG60701
Thallium	ND (0.0002)		7010		1	KJK	07/09/16 20:34	100	10	CG60701
<b>Zinc</b>	<b>0.021</b> (0.005)		6010C		1	KJK	07/08/16 17:04	100	10	CG60701



*CERTIFICATE OF ANALYSIS*

Client Name: AMEC Foster Wheeler  
Client Project ID: Textron Gorham - Surface Water  
Client Sample ID: SW27  
Date Sampled: 07/06/16 11:00  
Percent Solids: N/A  
Initial Volume: 1070  
Final Volume: 0.25  
Extraction Method: 3510C

ESS Laboratory Work Order: 1607062  
ESS Laboratory Sample ID: 1607062-04  
Sample Matrix: Surface Water  
Units: mg/L  
Analyst: VSC  
Prepared: 7/7/16 16:51

**8270D(SIM) Polynuclear Aromatic Hydrocarbons**

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
2-Methylnaphthalene	ND (0.0002)		8270D SIM		1	07/09/16 11:08	CZG0099	CG60724
Acenaphthene	ND (0.0002)		8270D SIM		1	07/09/16 11:08	CZG0099	CG60724
Acenaphthylene	ND (0.0002)		8270D SIM		1	07/09/16 11:08	CZG0099	CG60724
Anthracene	ND (0.0002)		8270D SIM		1	07/09/16 11:08	CZG0099	CG60724
Benzo(a)anthracene	ND (0.00005)		8270D SIM		1	07/09/16 11:08	CZG0099	CG60724
Benzo(a)pyrene	ND (0.00005)		8270D SIM		1	07/09/16 11:08	CZG0099	CG60724
Benzo(b)fluoranthene	ND (0.00005)		8270D SIM		1	07/09/16 11:08	CZG0099	CG60724
Benzo(g,h,i)perylene	ND (0.0002)		8270D SIM		1	07/09/16 11:08	CZG0099	CG60724
Benzo(k)fluoranthene	ND (0.00005)		8270D SIM		1	07/09/16 11:08	CZG0099	CG60724
Chrysene	ND (0.00005)		8270D SIM		1	07/09/16 11:08	CZG0099	CG60724
Dibenzo(a,h)Anthracene	ND (0.00005)		8270D SIM		1	07/09/16 11:08	CZG0099	CG60724
Fluoranthene	ND (0.0002)		8270D SIM		1	07/09/16 11:08	CZG0099	CG60724
Fluorene	ND (0.0002)		8270D SIM		1	07/09/16 11:08	CZG0099	CG60724
Indeno(1,2,3-cd)Pyrene	ND (0.00005)		8270D SIM		1	07/09/16 11:08	CZG0099	CG60724
Naphthalene	ND (0.0002)		8270D SIM		1	07/09/16 11:08	CZG0099	CG60724
Phenanthrene	ND (0.0002)		8270D SIM		1	07/09/16 11:08	CZG0099	CG60724
Pyrene	ND (0.0002)		8270D SIM		1	07/09/16 11:08	CZG0099	CG60724

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	40 %		30-130
<i>Surrogate: 2-Fluorobiphenyl</i>	46 %		30-130
<i>Surrogate: Nitrobenzene-d5</i>	48 %		30-130
<i>Surrogate: p-Terphenyl-d14</i>	60 %		30-130





*CERTIFICATE OF ANALYSIS*

Client Name: AMEC Foster Wheeler  
Client Project ID: Textron Gorham - Surface Water  
Client Sample ID: SW36  
Date Sampled: 07/06/16 11:20

ESS Laboratory Work Order: 1607062  
ESS Laboratory Sample ID: 1607062-05  
Sample Matrix: Surface Water  
Units: %

**Dioxins**

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Frequency</u>	<u>Batch</u>
Dioxin	See Attached (N/A)								



*CERTIFICATE OF ANALYSIS*

Client Name: AMEC Foster Wheeler  
Client Project ID: Textron Gorham - Surface Water  
Client Sample ID: SW36  
Date Sampled: 07/06/16 11:20  
Percent Solids: N/A

ESS Laboratory Work Order: 1607062  
ESS Laboratory Sample ID: 1607062-05  
Sample Matrix: Surface Water  
Units: mg/L

Extraction Method: 3005A

**Dissolved Metals**

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>	<u>Batch</u>
Antimony	ND (0.0005)		7010		1	KJK	07/08/16 7:57	200	20	CG60701
Arsenic	ND (0.005)		6010C		1	KJK	07/08/16 16:13	200	20	CG60701
<b>Barium</b>	<b>0.027</b> (0.005)		6010C		1	KJK	07/08/16 16:13	200	20	CG60701
Beryllium	ND (0.0001)		6010C		1	KJK	07/08/16 16:13	200	20	CG60701
Cadmium	ND (0.00002)		7010		1	KJK	07/09/16 16:35	200	20	CG60701
Chromium	ND (0.002)		6010C		1	KJK	07/08/16 16:13	200	20	CG60701
Copper	ND (0.002)		6010C		1	KJK	07/08/16 16:13	200	20	CG60701
Lead	ND (0.0005)		7010		1	KJK	07/08/16 20:26	200	20	CG60701
Mercury	ND (0.00020)		7470A		1	BJV	07/07/16 14:48	20	40	CG60703
Nickel	ND (0.005)		6010C		1	KJK	07/08/16 16:13	200	20	CG60701
Selenium	ND (0.001)		7010		1	KJK	07/08/16 13:24	200	20	CG60701
Silver	ND (0.001)		6010C		1	KJK	07/08/16 16:13	200	20	CG60701
Thallium	ND (0.0002)		7010		1	KJK	07/09/16 19:33	200	20	CG60701
<b>Zinc</b>	<b>0.015</b> (0.005)		6010C		1	KJK	07/08/16 16:13	200	20	CG60701



*CERTIFICATE OF ANALYSIS*

Client Name: AMEC Foster Wheeler  
Client Project ID: Textron Gorham - Surface Water  
Client Sample ID: SW36  
Date Sampled: 07/06/16 11:20  
Percent Solids: N/A

ESS Laboratory Work Order: 1607062  
ESS Laboratory Sample ID: 1607062-05  
Sample Matrix: Surface Water  
Units: mg/L

Extraction Method: 3005A

**Total Metals**

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>	<u>Batch</u>
Antimony	ND (0.0005)		7010		1	KJK	07/08/16 9:24	200	20	CG60701
<b>Arsenic</b>	<b>0.005</b> (0.005)		6010C		1	KJK	07/08/16 17:28	200	20	CG60701
<b>Barium</b>	<b>0.034</b> (0.005)		6010C		1	KJK	07/08/16 17:28	200	20	CG60701
Beryllium	ND (0.0001)		6010C		1	KJK	07/08/16 17:28	200	20	CG60701
Cadmium	ND (0.00002)		7010		1	KJK	07/09/16 15:14	200	20	CG60701
Chromium	ND (0.002)		6010C		1	KJK	07/08/16 17:28	200	20	CG60701
<b>Copper</b>	<b>0.002</b> (0.002)		6010C		1	KJK	07/08/16 17:28	200	20	CG60701
<b>Lead</b>	<b>0.001</b> (0.0005)		7010		1	KJK	07/08/16 5:37	200	20	CG60701
Mercury	ND (0.00020)		7470A		1	BJV	07/07/16 14:48	20	40	CG60703
Nickel	ND (0.005)		6010C		1	KJK	07/08/16 17:28	200	20	CG60701
Selenium	ND (0.001)		7010		1	KJK	07/08/16 14:36	200	20	CG60701
Silver	ND (0.001)		6010C		1	KJK	07/08/16 17:28	200	20	CG60701
Thallium	ND (0.0002)		7010		1	KJK	07/09/16 20:40	200	20	CG60701
<b>Zinc</b>	<b>0.017</b> (0.005)		6010C		1	KJK	07/08/16 17:28	200	20	CG60701



*CERTIFICATE OF ANALYSIS*

Client Name: AMEC Foster Wheeler  
Client Project ID: Textron Gorham - Surface Water  
Client Sample ID: SW36  
Date Sampled: 07/06/16 11:20  
Percent Solids: N/A  
Initial Volume: 1070  
Final Volume: 0.25  
Extraction Method: 3510C

ESS Laboratory Work Order: 1607062  
ESS Laboratory Sample ID: 1607062-05  
Sample Matrix: Surface Water  
Units: mg/L  
Analyst: VSC  
Prepared: 7/7/16 16:51

**8270D(SIM) Polynuclear Aromatic Hydrocarbons**

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
2-Methylnaphthalene	ND (0.0002)		8270D SIM		1	07/09/16 11:58	CZG0099	CG60724
Acenaphthene	ND (0.0002)		8270D SIM		1	07/09/16 11:58	CZG0099	CG60724
Acenaphthylene	ND (0.0002)		8270D SIM		1	07/09/16 11:58	CZG0099	CG60724
Anthracene	ND (0.0002)		8270D SIM		1	07/09/16 11:58	CZG0099	CG60724
Benzo(a)anthracene	ND (0.00005)		8270D SIM		1	07/09/16 11:58	CZG0099	CG60724
Benzo(a)pyrene	ND (0.00005)		8270D SIM		1	07/09/16 11:58	CZG0099	CG60724
Benzo(b)fluoranthene	ND (0.00005)		8270D SIM		1	07/09/16 11:58	CZG0099	CG60724
Benzo(g,h,i)perylene	ND (0.0002)		8270D SIM		1	07/09/16 11:58	CZG0099	CG60724
Benzo(k)fluoranthene	ND (0.00005)		8270D SIM		1	07/09/16 11:58	CZG0099	CG60724
Chrysene	ND (0.00005)		8270D SIM		1	07/09/16 11:58	CZG0099	CG60724
Dibenzo(a,h)Anthracene	ND (0.00005)		8270D SIM		1	07/09/16 11:58	CZG0099	CG60724
Fluoranthene	ND (0.0002)		8270D SIM		1	07/09/16 11:58	CZG0099	CG60724
Fluorene	ND (0.0002)		8270D SIM		1	07/09/16 11:58	CZG0099	CG60724
Indeno(1,2,3-cd)Pyrene	ND (0.00005)		8270D SIM		1	07/09/16 11:58	CZG0099	CG60724
Naphthalene	ND (0.0002)		8270D SIM		1	07/09/16 11:58	CZG0099	CG60724
Phenanthrene	ND (0.0002)		8270D SIM		1	07/09/16 11:58	CZG0099	CG60724
Pyrene	ND (0.0002)		8270D SIM		1	07/09/16 11:58	CZG0099	CG60724

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	39 %		30-130
<i>Surrogate: 2-Fluorobiphenyl</i>	43 %		30-130
<i>Surrogate: Nitrobenzene-d5</i>	49 %		30-130
<i>Surrogate: p-Terphenyl-d14</i>	57 %		30-130



*CERTIFICATE OF ANALYSIS*

Client Name: AMEC Foster Wheeler  
Client Project ID: Textron Gorham - Surface Water  
Client Sample ID: Dup-02  
Date Sampled: 07/06/16 00:00

ESS Laboratory Work Order: 1607062  
ESS Laboratory Sample ID: 1607062-06  
Sample Matrix: Surface Water  
Units: %

**Dioxins**

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Frequency</u>	<u>Batch</u>
Dioxin	See Attached (N/A)								



*CERTIFICATE OF ANALYSIS*

Client Name: AMEC Foster Wheeler  
Client Project ID: Textron Gorham - Surface Water  
Client Sample ID: Dup-02  
Date Sampled: 07/06/16 00:00  
Percent Solids: N/A

ESS Laboratory Work Order: 1607062  
ESS Laboratory Sample ID: 1607062-06  
Sample Matrix: Surface Water  
Units: mg/L

Extraction Method: 3005A

**Dissolved Metals**

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>	<u>Batch</u>
Antimony	ND (0.0005)		7010		1	KJK	07/08/16 8:55	100	10	CG60701
Arsenic	ND (0.005)		6010C		1	KJK	07/08/16 16:35	100	10	CG60701
<b>Barium</b>	<b>0.020</b> (0.005)		6010C		1	KJK	07/08/16 16:35	100	10	CG60701
Beryllium	ND (0.0001)		6010C		1	KJK	07/08/16 16:35	100	10	CG60701
<b>Cadmium</b>	<b>0.00005</b> (0.00002)		7010		1	KJK	07/09/16 16:46	100	10	CG60701
Chromium	ND (0.002)		6010C		1	KJK	07/08/16 16:35	100	10	CG60701
Copper	ND (0.002)		6010C		1	KJK	07/08/16 16:35	100	10	CG60701
<b>Lead</b>	<b>0.0006</b> (0.0005)		7010		1	KJK	07/08/16 4:57	100	10	CG60701
Mercury	ND (0.00020)		7470A		1	BJV	07/07/16 15:02	20	40	CG60703
Nickel	ND (0.005)		6010C		1	KJK	07/08/16 16:35	100	10	CG60701
Selenium	ND (0.001)		7010		1	KJK	07/08/16 14:03	100	10	CG60701
Silver	ND (0.001)		6010C		1	KJK	07/08/16 16:35	100	10	CG60701
Thallium	ND (0.0002)		7010		1	KJK	07/09/16 20:12	100	10	CG60701
<b>Zinc</b>	<b>0.027</b> (0.005)		6010C		1	KJK	07/08/16 16:35	100	10	CG60701



*CERTIFICATE OF ANALYSIS*

Client Name: AMEC Foster Wheeler  
Client Project ID: Textron Gorham - Surface Water  
Client Sample ID: Dup-02  
Date Sampled: 07/06/16 00:00  
Percent Solids: N/A

ESS Laboratory Work Order: 1607062  
ESS Laboratory Sample ID: 1607062-06  
Sample Matrix: Surface Water  
Units: mg/L

Extraction Method: 3005A

**Total Metals**

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>	<u>Batch</u>
Antimony	ND (0.0005)		7010		1	KJK	07/08/16 10:20	100	10	CG60701
<b>Arsenic</b>	<b>0.006</b> (0.005)		6010C		1	KJK	07/08/16 17:50	100	10	CG60701
<b>Barium</b>	<b>0.131</b> (0.005)		6010C		1	KJK	07/08/16 17:50	100	10	CG60701
Beryllium	ND (0.0001)		6010C		1	KJK	07/08/16 17:50	100	10	CG60701
Cadmium	ND (0.00002)		7010		1	KJK	07/09/16 16:30	100	10	CG60701
Chromium	ND (0.002)		6010C		1	KJK	07/08/16 17:50	100	10	CG60701
<b>Copper</b>	<b>0.002</b> (0.002)		6010C		1	KJK	07/08/16 17:50	100	10	CG60701
<b>Lead</b>	<b>0.0009</b> (0.0005)		7010		1	KJK	07/08/16 6:06	100	10	CG60701
Mercury	ND (0.00020)		7470A		1	BJV	07/07/16 15:02	20	40	CG60703
Nickel	ND (0.005)		6010C		1	KJK	07/08/16 17:50	100	10	CG60701
Selenium	ND (0.001)		7010		1	KJK	07/08/16 15:16	100	10	CG60701
Silver	ND (0.001)		6010C		1	KJK	07/08/16 17:50	100	10	CG60701
Thallium	ND (0.0002)		7010		1	KJK	07/09/16 21:20	100	10	CG60701
<b>Zinc</b>	<b>0.017</b> (0.005)		6010C		1	KJK	07/08/16 17:50	100	10	CG60701



*CERTIFICATE OF ANALYSIS*

Client Name: AMEC Foster Wheeler  
 Client Project ID: Textron Gorham - Surface Water  
 Client Sample ID: Dup-02  
 Date Sampled: 07/06/16 00:00  
 Percent Solids: N/A  
 Initial Volume: 1070  
 Final Volume: 0.25  
 Extraction Method: 3510C

ESS Laboratory Work Order: 1607062  
 ESS Laboratory Sample ID: 1607062-06  
 Sample Matrix: Surface Water  
 Units: mg/L  
 Analyst: VSC  
 Prepared: 7/7/16 16:51

**8270D(SIM) Polynuclear Aromatic Hydrocarbons**

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
2-Methylnaphthalene	ND (0.0002)		8270D SIM		1	07/09/16 16:01	CZG0100	CG60724
Acenaphthene	ND (0.0002)		8270D SIM		1	07/09/16 16:01	CZG0100	CG60724
Acenaphthylene	ND (0.0002)		8270D SIM		1	07/09/16 16:01	CZG0100	CG60724
Anthracene	ND (0.0002)		8270D SIM		1	07/09/16 16:01	CZG0100	CG60724
Benzo(a)anthracene	ND (0.00005)		8270D SIM		1	07/09/16 16:01	CZG0100	CG60724
Benzo(a)pyrene	ND (0.00005)		8270D SIM		1	07/09/16 16:01	CZG0100	CG60724
Benzo(b)fluoranthene	ND (0.00005)		8270D SIM		1	07/09/16 16:01	CZG0100	CG60724
Benzo(g,h,i)perylene	ND (0.0002)		8270D SIM		1	07/09/16 16:01	CZG0100	CG60724
Benzo(k)fluoranthene	ND (0.00005)		8270D SIM		1	07/09/16 16:01	CZG0100	CG60724
Chrysene	ND (0.00005)		8270D SIM		1	07/09/16 16:01	CZG0100	CG60724
Dibenzo(a,h)Anthracene	ND (0.00005)		8270D SIM		1	07/09/16 16:01	CZG0100	CG60724
Fluoranthene	ND (0.0002)		8270D SIM		1	07/09/16 16:01	CZG0100	CG60724
Fluorene	ND (0.0002)		8270D SIM		1	07/09/16 16:01	CZG0100	CG60724
Indeno(1,2,3-cd)Pyrene	ND (0.00005)		8270D SIM		1	07/09/16 16:01	CZG0100	CG60724
Naphthalene	ND (0.0002)		8270D SIM		1	07/09/16 16:01	CZG0100	CG60724
Phenanthrene	ND (0.0002)		8270D SIM		1	07/09/16 16:01	CZG0100	CG60724
Pyrene	ND (0.0002)		8270D SIM		1	07/09/16 16:01	CZG0100	CG60724

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	37 %		30-130
<i>Surrogate: 2-Fluorobiphenyl</i>	45 %		30-130
<i>Surrogate: Nitrobenzene-d5</i>	50 %		30-130
<i>Surrogate: p-Terphenyl-d14</i>	60 %		30-130





*CERTIFICATE OF ANALYSIS*

Client Name: AMEC Foster Wheeler  
Client Project ID: Textron Gorham - Surface Water

ESS Laboratory Work Order: 1607062

**Quality Control Data**

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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Dissolved Metals

**Batch CG60701 - 3005A**

**Blank**

Antimony	ND	0.0005	mg/L							
Arsenic	ND	0.005	mg/L							
Barium	ND	0.005	mg/L							
Beryllium	ND	0.0001	mg/L							
Cadmium	ND	0.00002	mg/L							
Chromium	ND	0.002	mg/L							
Copper	ND	0.002	mg/L							
Lead	ND	0.0005	mg/L							
Nickel	ND	0.005	mg/L							
Selenium	ND	0.001	mg/L							
Silver	ND	0.001	mg/L							
Thallium	ND	0.0002	mg/L							
Zinc	ND	0.005	mg/L							

**LCS**

Antimony	0.050	0.012	mg/L	0.05000	99	80-120				
Arsenic	0.049	0.005	mg/L	0.05000	99	80-120				
Barium	0.050	0.005	mg/L	0.05000	100	80-120				
Beryllium	0.0050	0.0001	mg/L	0.005000	100	80-120				
Cadmium	0.0240	0.0125	mg/L	0.02500	96	80-120				
Chromium	0.050	0.002	mg/L	0.05000	100	80-120				
Copper	0.049	0.002	mg/L	0.05000	98	80-120				
Lead	0.048	0.012	mg/L	0.05000	96	80-120				
Nickel	0.050	0.005	mg/L	0.05000	99	80-120				
Selenium	0.110	0.025	mg/L	0.1000	110	80-120				
Silver	0.025	0.001	mg/L	0.02500	101	80-120				
Thallium	0.047	0.005	mg/L	0.05000	95	80-120				
Zinc	0.051	0.005	mg/L	0.05000	102	80-120				

**LCS Dup**

Antimony	0.051	0.012	mg/L	0.05000	102	80-120	3	20		
Arsenic	0.051	0.005	mg/L	0.05000	102	80-120	3	20		
Barium	0.050	0.005	mg/L	0.05000	100	80-120	0.3	20		
Beryllium	0.0050	0.0001	mg/L	0.005000	100	80-120	0.8	20		
Cadmium	0.0244	0.0125	mg/L	0.02500	98	80-120	2	20		
Chromium	0.050	0.002	mg/L	0.05000	101	80-120	0.7	20		
Copper	0.050	0.002	mg/L	0.05000	99	80-120	1	20		
Lead	0.049	0.012	mg/L	0.05000	98	80-120	2	20		
Nickel	0.050	0.005	mg/L	0.05000	100	80-120	0.5	20		
Selenium	0.110	0.025	mg/L	0.1000	110	80-120	0.2	20		
Silver	0.025	0.001	mg/L	0.02500	101	80-120	0.5	20		
Thallium	0.048	0.005	mg/L	0.05000	95	80-120	0.8	20		
Zinc	0.052	0.005	mg/L	0.05000	104	80-120	2	20		

**Duplicate Source: 1607062-05**

Antimony	0.0003	0.0005	mg/L	0.0003			5	20		
Arsenic	0.005	0.005	mg/L	0.003			29	20		



*CERTIFICATE OF ANALYSIS*

Client Name: AMEC Foster Wheeler  
Client Project ID: Textron Gorham - Surface Water

ESS Laboratory Work Order: 1607062

**Quality Control Data**

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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Dissolved Metals

**Batch CG60701 - 3005A**

Barium	0.026	0.005	mg/L		0.027			5	20	
Beryllium	ND	0.0001	mg/L		ND				20	
Cadmium	ND	0.00002	mg/L		0.000006			200	20	
Chromium	ND	0.002	mg/L		ND				20	
Copper	0.002	0.002	mg/L		0.001			30	20	
Lead	ND	0.0005	mg/L		0.0001			200	20	
Nickel	0.002	0.005	mg/L		0.0008			74	20	
Selenium	ND	0.001	mg/L		ND				20	
Silver	ND	0.001	mg/L		ND				20	
Thallium	ND	0.0002	mg/L		ND				20	
Zinc	0.016	0.005	mg/L		0.015			9	20	

**Matrix Spike Source: 1607062-05**

Antimony	0.047	0.010	mg/L	0.05000	ND	95	75-125			
Arsenic	0.054	0.005	mg/L	0.05000	0.003	101	75-125			
Barium	0.072	0.005	mg/L	0.05000	0.027	91	75-125			
Beryllium	0.0047	0.0001	mg/L	0.005000	ND	93	75-125			
Cadmium	0.0240	0.0125	mg/L	0.02500	ND	96	75-125			
Chromium	0.047	0.002	mg/L	0.05000	ND	94	75-125			
Copper	0.050	0.002	mg/L	0.05000	0.001	97	75-125			
Lead	0.046	0.010	mg/L	0.05000	ND	92	75-125			
Nickel	0.046	0.005	mg/L	0.05000	0.0008	91	75-125			
Selenium	0.124	0.020	mg/L	0.1000	ND	124	80-120			M+
Silver	0.024	0.001	mg/L	0.02500	ND	98	75-125			
Thallium	0.045	0.004	mg/L	0.05000	ND	91	75-125			
Zinc	0.065	0.005	mg/L	0.05000	0.015	100	75-125			

**Batch CG60703 - 245.1/7470A**

<b>Blank</b>										
Mercury	ND	0.00020	mg/L							
<b>LCS</b>										
Mercury	0.00597	0.00020	mg/L	0.006000		99	80-120			
<b>LCS Dup</b>										
Mercury	0.00596	0.00020	mg/L	0.006000		99	80-120	0.07	20	
<b>Duplicate Source: 1607062-05</b>										
Mercury	ND	0.00020	mg/L		ND				20	
<b>Duplicate Source: 1607062-05</b>										
Mercury	ND	0.00020	mg/L		ND				20	
<b>Matrix Spike Source: 1607062-05</b>										
Mercury	0.00603	0.00020	mg/L	0.006000	ND	100	75-125			
<b>Matrix Spike Source: 1607062-05</b>										
Mercury	0.00600	0.00020	mg/L	0.006000	ND	100	75-125			

Total Metals

**Batch CG60701 - 3005A**



*CERTIFICATE OF ANALYSIS*

Client Name: AMEC Foster Wheeler  
Client Project ID: Textron Gorham - Surface Water

ESS Laboratory Work Order: 1607062

**Quality Control Data**

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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**Total Metals**

**Batch CG60701 - 3005A**

**Blank**

Antimony	ND	0.0005	mg/L							
Arsenic	ND	0.005	mg/L							
Barium	ND	0.005	mg/L							
Beryllium	ND	0.0001	mg/L							
Cadmium	ND	0.00002	mg/L							
Chromium	ND	0.002	mg/L							
Copper	ND	0.002	mg/L							
Lead	ND	0.0005	mg/L							
Nickel	ND	0.005	mg/L							
Selenium	ND	0.001	mg/L							
Silver	ND	0.001	mg/L							
Thallium	ND	0.0002	mg/L							
Zinc	ND	0.005	mg/L							

**LCS**

Antimony	0.050	0.012	mg/L	0.05000		99	80-120			
Arsenic	0.049	0.005	mg/L	0.05000		99	80-120			
Barium	0.050	0.005	mg/L	0.05000		100	80-120			
Beryllium	0.0050	0.0001	mg/L	0.005000		100	80-120			
Cadmium	0.0240	0.0125	mg/L	0.02500		96	80-120			
Chromium	0.050	0.002	mg/L	0.05000		100	80-120			
Copper	0.049	0.002	mg/L	0.05000		98	80-120			
Lead	0.048	0.012	mg/L	0.05000		96	80-120			
Nickel	0.050	0.005	mg/L	0.05000		99	80-120			
Selenium	0.110	0.025	mg/L	0.1000		110	80-120			
Silver	0.025	0.001	mg/L	0.02500		101	80-120			
Thallium	0.047	0.005	mg/L	0.05000		95	80-120			
Zinc	0.051	0.005	mg/L	0.05000		102	80-120			

**LCS Dup**

Antimony	0.051	0.012	mg/L	0.05000		102	80-120	3	20	
Arsenic	0.051	0.005	mg/L	0.05000		102	80-120	3	20	
Barium	0.050	0.005	mg/L	0.05000		100	80-120	0.3	20	
Beryllium	0.0050	0.0001	mg/L	0.005000		100	80-120	0.8	20	
Cadmium	0.0244	0.0125	mg/L	0.02500		98	80-120	2	20	
Chromium	0.050	0.002	mg/L	0.05000		101	80-120	0.7	20	
Copper	0.050	0.002	mg/L	0.05000		99	80-120	1	20	
Lead	0.049	0.012	mg/L	0.05000		98	80-120	2	20	
Nickel	0.050	0.005	mg/L	0.05000		100	80-120	0.5	20	
Selenium	0.110	0.025	mg/L	0.1000		110	80-120	0.2	20	
Silver	0.025	0.001	mg/L	0.02500		101	80-120	0.5	20	
Thallium	0.048	0.005	mg/L	0.05000		95	80-120	0.8	20	
Zinc	0.052	0.005	mg/L	0.05000		104	80-120	2	20	

**Duplicate Source: 1607062-05**

Antimony	0.0003	0.0005	mg/L		0.0003			10	20	
Arsenic	0.005	0.005	mg/L		0.005			4	20	



*CERTIFICATE OF ANALYSIS*

Client Name: AMEC Foster Wheeler  
Client Project ID: Textron Gorham - Surface Water

ESS Laboratory Work Order: 1607062

**Quality Control Data**

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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**Total Metals**

**Batch CG60701 - 3005A**

Barium	0.033	0.005	mg/L		0.034			4	20	
Beryllium	ND	0.0001	mg/L		ND				20	
Cadmium	0.00002	0.00002	mg/L		0.00001			25	20	
Chromium	0.0005	0.002	mg/L		0.0004			9	20	
Copper	0.002	0.002	mg/L		0.002			7	20	
Lead	0.0007	0.0005	mg/L		0.001			48	20	D+
Nickel	0.001	0.005	mg/L		0.001			6	20	
Selenium	ND	0.001	mg/L		ND				20	
Silver	ND	0.001	mg/L		ND				20	
Thallium	ND	0.0002	mg/L		ND				20	
Zinc	0.017	0.005	mg/L		0.017			1	20	

**Matrix Spike Source: 1607062-05**

Antimony	0.049	0.010	mg/L	0.05000	ND	98	75-125			
Arsenic	0.057	0.005	mg/L	0.05000	0.005	104	75-125			
Barium	0.081	0.005	mg/L	0.05000	0.034	94	75-125			
Beryllium	0.0049	0.0001	mg/L	0.005000	ND	99	75-125			
Cadmium	0.0245	0.0125	mg/L	0.02500	ND	98	75-125			
Chromium	0.050	0.002	mg/L	0.05000	0.0004	99	75-125			
Copper	0.053	0.002	mg/L	0.05000	0.002	102	75-125			
Lead	0.048	0.010	mg/L	0.05000	ND	95	75-125			
Nickel	0.048	0.005	mg/L	0.05000	0.001	95	75-125			
Selenium	0.132	0.020	mg/L	0.1000	ND	132	80-120			M+
Silver	0.026	0.001	mg/L	0.02500	ND	105	75-125			
Thallium	0.050	0.004	mg/L	0.05000	ND	99	75-125			
Zinc	0.067	0.005	mg/L	0.05000	0.017	101	75-125			

**Batch CG60703 - 245.1/7470A**

<b>Blank</b>										
Mercury	ND	0.00020	mg/L							
<b>LCS</b>										
Mercury	0.00597	0.00020	mg/L	0.006000		99	80-120			
<b>LCS Dup</b>										
Mercury	0.00596	0.00020	mg/L	0.006000		99	80-120	0.07	20	
<b>Duplicate Source: 1607062-05</b>										
Mercury	ND	0.00020	mg/L		ND				20	
<b>Duplicate Source: 1607062-05</b>										
Mercury	ND	0.00020	mg/L		ND				20	
<b>Matrix Spike Source: 1607062-05</b>										
Mercury	0.00603	0.00020	mg/L	0.006000	ND	100	75-125			
<b>Matrix Spike Source: 1607062-05</b>										
Mercury	0.00600	0.00020	mg/L	0.006000	ND	100	75-125			

**8270D(SIM) Polynuclear Aromatic Hydrocarbons**

**Batch CG60724 - 3510C**



CERTIFICATE OF ANALYSIS

Client Name: AMEC Foster Wheeler  
Client Project ID: Textron Gorham - Surface Water

ESS Laboratory Work Order: 1607062

**Quality Control Data**

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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8270D(SIM) Polynuclear Aromatic Hydrocarbons

**Batch CG60724 - 3510C**

**Blank**

2-Methylnaphthalene	ND	0.0002	mg/L							
Acenaphthene	ND	0.0002	mg/L							
Acenaphthylene	ND	0.0002	mg/L							
Anthracene	ND	0.0002	mg/L							
Benzo(a)anthracene	ND	0.00005	mg/L							
Benzo(a)pyrene	ND	0.00005	mg/L							
Benzo(b)fluoranthene	ND	0.00005	mg/L							
Benzo(g,h,i)perylene	ND	0.0002	mg/L							
Benzo(k)fluoranthene	ND	0.00005	mg/L							
Chrysene	ND	0.00005	mg/L							
Dibenzo(a,h)Anthracene	ND	0.00005	mg/L							
Fluoranthene	ND	0.0002	mg/L							
Fluorene	ND	0.0002	mg/L							
Indeno(1,2,3-cd)Pyrene	ND	0.00005	mg/L							
Naphthalene	ND	0.0002	mg/L							
Phenanthrene	ND	0.0002	mg/L							
Pyrene	ND	0.0002	mg/L							
Surrogate: 1,2-Dichlorobenzene-d4	0.00111		mg/L	0.002500		44	30-130			
Surrogate: 2-Fluorobiphenyl	0.00121		mg/L	0.002500		49	30-130			
Surrogate: Nitrobenzene-d5	0.00133		mg/L	0.002500		53	30-130			
Surrogate: p-Terphenyl-d14	0.00162		mg/L	0.002500		65	30-130			

**LCS**

2-Methylnaphthalene	0.0026	0.0002	mg/L	0.004000		66	40-140			
Acenaphthene	0.0027	0.0002	mg/L	0.004000		67	40-140			
Acenaphthylene	0.0027	0.0002	mg/L	0.004000		68	40-140			
Anthracene	0.0029	0.0002	mg/L	0.004000		71	40-140			
Benzo(a)anthracene	0.0028	0.00005	mg/L	0.004000		70	40-140			
Benzo(a)pyrene	0.0031	0.00005	mg/L	0.004000		77	40-140			
Benzo(b)fluoranthene	0.0030	0.00005	mg/L	0.004000		75	40-140			
Benzo(g,h,i)perylene	0.0032	0.0002	mg/L	0.004000		79	40-140			
Benzo(k)fluoranthene	0.0030	0.00005	mg/L	0.004000		76	40-140			
Chrysene	0.0028	0.00005	mg/L	0.004000		70	40-140			
Dibenzo(a,h)Anthracene	0.0033	0.00005	mg/L	0.004000		81	40-140			
Fluoranthene	0.0030	0.0002	mg/L	0.004000		74	40-140			
Fluorene	0.0030	0.0002	mg/L	0.004000		74	40-140			
Indeno(1,2,3-cd)Pyrene	0.0033	0.00005	mg/L	0.004000		83	40-140			
Naphthalene	0.0024	0.0002	mg/L	0.004000		60	40-140			
Phenanthrene	0.0027	0.0002	mg/L	0.004000		69	40-140			
Pyrene	0.0030	0.0002	mg/L	0.004000		74	40-140			
Surrogate: 1,2-Dichlorobenzene-d4	0.00142		mg/L	0.002500		57	30-130			
Surrogate: 2-Fluorobiphenyl	0.00168		mg/L	0.002500		67	30-130			
Surrogate: Nitrobenzene-d5	0.00174		mg/L	0.002500		70	30-130			
Surrogate: p-Terphenyl-d14	0.00202		mg/L	0.002500		81	30-130			

**LCS Dup**



*CERTIFICATE OF ANALYSIS*

Client Name: AMEC Foster Wheeler  
Client Project ID: Textron Gorham - Surface Water

ESS Laboratory Work Order: 1607062

**Quality Control Data**

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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8270D(SIM) Polynuclear Aromatic Hydrocarbons

**Batch CG60724 - 3510C**

2-Methylnaphthalene	0.0026	0.0002	mg/L	0.004000		65	40-140	2	20	
Acenaphthene	0.0028	0.0002	mg/L	0.004000		69	40-140	3	20	
Acenaphthylene	0.0028	0.0002	mg/L	0.004000		70	40-140	3	20	
Anthracene	0.0030	0.0002	mg/L	0.004000		74	40-140	4	20	
Benzo(a)anthracene	0.0029	0.00005	mg/L	0.004000		72	40-140	3	20	
Benzo(a)pyrene	0.0032	0.00005	mg/L	0.004000		79	40-140	3	20	
Benzo(b)fluoranthene	0.0030	0.00005	mg/L	0.004000		76	40-140	2	20	
Benzo(g,h,i)perylene	0.0032	0.0002	mg/L	0.004000		81	40-140	2	20	
Benzo(k)fluoranthene	0.0031	0.00005	mg/L	0.004000		77	40-140	0.8	20	
Chrysene	0.0029	0.00005	mg/L	0.004000		73	40-140	4	20	
Dibenzo(a,h)Anthracene	0.0033	0.00005	mg/L	0.004000		83	40-140	3	20	
Fluoranthene	0.0031	0.0002	mg/L	0.004000		78	40-140	5	20	
Fluorene	0.0030	0.0002	mg/L	0.004000		76	40-140	3	20	
Indeno(1,2,3-cd)Pyrene	0.0034	0.00005	mg/L	0.004000		85	40-140	2	20	
Naphthalene	0.0024	0.0002	mg/L	0.004000		59	40-140	2	20	
Phenanthrene	0.0029	0.0002	mg/L	0.004000		72	40-140	5	20	
Pyrene	0.0031	0.0002	mg/L	0.004000		78	40-140	5	20	
Surrogate: 1,2-Dichlorobenzene-d4	0.00139		mg/L	0.002500		56	30-130			
Surrogate: 2-Fluorobiphenyl	0.00166		mg/L	0.002500		66	30-130			
Surrogate: Nitrobenzene-d5	0.00172		mg/L	0.002500		69	30-130			
Surrogate: p-Terphenyl-d14	0.00191		mg/L	0.002500		77	30-130			

**Matrix Spike Source: 1607062-05**

2-Methylnaphthalene	0.0018	0.0002	mg/L	0.003738	ND	49	40-140			
Acenaphthene	0.0018	0.0002	mg/L	0.003738	ND	48	40-140			
Acenaphthylene	0.0019	0.0002	mg/L	0.003738	ND	51	40-140			
Anthracene	0.0021	0.0002	mg/L	0.003738	ND	56	40-140			
Benzo(a)anthracene	0.0021	0.00005	mg/L	0.003738	ND	57	40-140			
Benzo(a)pyrene	0.0024	0.00005	mg/L	0.003738	ND	65	40-140			
Benzo(b)fluoranthene	0.0024	0.00005	mg/L	0.003738	ND	65	40-140			
Benzo(g,h,i)perylene	0.0024	0.0002	mg/L	0.003738	ND	65	40-140			
Benzo(k)fluoranthene	0.0024	0.00005	mg/L	0.003738	ND	64	40-140			
Chrysene	0.0023	0.00005	mg/L	0.003738	ND	61	40-140			
Dibenzo(a,h)Anthracene	0.0025	0.00005	mg/L	0.003738	ND	67	40-140			
Fluoranthene	0.0023	0.0002	mg/L	0.003738	ND	63	40-140			
Fluorene	0.0021	0.0002	mg/L	0.003738	ND	55	40-140			
Indeno(1,2,3-cd)Pyrene	0.0025	0.00005	mg/L	0.003738	ND	67	40-140			
Naphthalene	0.0017	0.0002	mg/L	0.003738	ND	44	40-140			
Phenanthrene	0.0021	0.0002	mg/L	0.003738	ND	56	40-140			
Pyrene	0.0023	0.0002	mg/L	0.003738	ND	62	40-140			
Surrogate: 1,2-Dichlorobenzene-d4	0.00101		mg/L	0.002336		43	30-130			
Surrogate: 2-Fluorobiphenyl	0.00112		mg/L	0.002336		48	30-130			
Surrogate: Nitrobenzene-d5	0.00118		mg/L	0.002336		51	30-130			
Surrogate: p-Terphenyl-d14	0.00155		mg/L	0.002336		66	30-130			

**Matrix Spike Dup Source: 1607062-05**

2-Methylnaphthalene	0.0015	0.0002	mg/L	0.003738	ND	41	40-140	19	20	
---------------------	--------	--------	------	----------	----	----	--------	----	----	--



*CERTIFICATE OF ANALYSIS*

Client Name: AMEC Foster Wheeler  
Client Project ID: Textron Gorham - Surface Water

ESS Laboratory Work Order: 1607062

**Quality Control Data**

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
---------	--------	-----	-------	-------------	---------------	------	-------------	-----	-----------	-----------

8270D(SIM) Polynuclear Aromatic Hydrocarbons

**Batch CG60724 - 3510C**

Acenaphthene	0.0016	0.0002	mg/L	0.003738	ND	44	40-140	10	20	
Acenaphthylene	0.0017	0.0002	mg/L	0.003738	ND	45	40-140	13	20	
Anthracene	0.0020	0.0002	mg/L	0.003738	ND	55	40-140	2	20	
Benzo(a)anthracene	0.0022	0.00005	mg/L	0.003738	ND	58	40-140	1	20	
Benzo(a)pyrene	0.0024	0.00005	mg/L	0.003738	ND	65	40-140	0.2	20	
Benzo(b)fluoranthene	0.0023	0.00005	mg/L	0.003738	ND	62	40-140	4	20	
Benzo(g,h,i)perylene	0.0024	0.0002	mg/L	0.003738	ND	65	40-140	0.1	20	
Benzo(k)fluoranthene	0.0024	0.00005	mg/L	0.003738	ND	64	40-140	0.2	20	
Chrysene	0.0022	0.00005	mg/L	0.003738	ND	59	40-140	3	20	
Dibenzo(a,h)Anthracene	0.0026	0.00005	mg/L	0.003738	ND	68	40-140	1	20	
Fluoranthene	0.0023	0.0002	mg/L	0.003738	ND	62	40-140	0.3	20	
Fluorene	0.0019	0.0002	mg/L	0.003738	ND	52	40-140	6	20	
Indeno(1,2,3-cd)Pyrene	0.0025	0.00005	mg/L	0.003738	ND	68	40-140	1	20	
Naphthalene	0.0013	0.0002	mg/L	0.003738	ND	35	40-140	23	20	D+, M-
Phenanthrene	0.0021	0.0002	mg/L	0.003738	ND	56	40-140	0.4	20	
Pyrene	0.0023	0.0002	mg/L	0.003738	ND	62	40-140	0.1	20	
Surrogate: 1,2-Dichlorobenzene-d4	0.000756		mg/L	0.002336		32	30-130			
Surrogate: 2-Fluorobiphenyl	0.000935		mg/L	0.002336		40	30-130			
Surrogate: Nitrobenzene-d5	0.000916		mg/L	0.002336		39	30-130			
Surrogate: p-Terphenyl-d14	0.00150		mg/L	0.002336		64	30-130			



*CERTIFICATE OF ANALYSIS*

Client Name: AMEC Foster Wheeler

Client Project ID: Textron Gorham - Surface Water

ESS Laboratory Work Order: 1607062

**Notes and Definitions**

- Z-08 See Attached
- U Analyte included in the analysis, but not detected
- M+ Matrix Spike recovery is above upper control limit (M+).
- M- Matrix Spike recovery is below lower control limit (M-).
- DDT DDT breakdown > 20%
- D+ Relative percent difference for duplicate is outside of criteria (D+).
- D Diluted.
- ND Analyte NOT DETECTED at or above the MRL (LOQ), LOD for DoD Reports, MDL for J-Flagged Analytes
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference
- MDL Method Detection Limit
- MRL Method Reporting Limit
- LOD Limit of Detection
- LOQ Limit of Quantitation
- DL Detection Limit
- I/V Initial Volume
- F/V Final Volume
- § Subcontracted analysis; see attached report
- 1 Range result excludes concentrations of surrogates and/or internal standards eluting in that range.
- 2 Range result excludes concentrations of target analytes eluting in that range.
- 3 Range result excludes the concentration of the C9-C10 aromatic range.
- Avg Results reported as a mathematical average.
- NR No Recovery
- [CALC] Calculated Analyte
- SUB Subcontracted analysis; see attached report





*CERTIFICATE OF ANALYSIS*

Client Name: AMEC Foster Wheeler  
Client Project ID: Textron Gorham - Surface Water

ESS Laboratory Work Order: 1607062

**ESS LABORATORY CERTIFICATIONS AND ACCREDITATIONS**

**ENVIRONMENTAL**

Rhode Island Potable and Non Potable Water: LAI00179

<http://www.health.ri.gov/find/labs/analytical/ESS.pdf>

Connecticut Potable and Non Potable Water, Solid and Hazardous Waste: PH-0750

[http://www.ct.gov/dph/lib/dph/environmental\\_health/environmental\\_laboratories/pdf/OutOfStateCommercialLaboratories.pdf](http://www.ct.gov/dph/lib/dph/environmental_health/environmental_laboratories/pdf/OutOfStateCommercialLaboratories.pdf)

Maine Potable and Non Potable Water, and Solid and Hazardous Waste: RI00002

<http://www.maine.gov/dhhs/mecdc/environmental-health/water/dwp-services/labcert/documents/AllLabs.xls>

Massachusetts Potable and Non Potable Water: M-RI002

<http://public.dep.state.ma.us/Labcert/Labcert.aspx>

New Hampshire (NELAP accredited) Potable and Non Potable Water, Solid and Hazardous Waste: 2424

<http://des.nh.gov/organization/divisions/water/dwgb/nhelap/index.htm>

New York (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: 11313

<http://www.wadsworth.org/labcert/elap/comm.html>

New Jersey (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: RI006

[http://datamine2.state.nj.us/DEP\\_OPRA/OpraMain/pi\\_main?mode=pi\\_by\\_site&sort\\_order=PI\\_NAMEA&Select+a+Site:=58715](http://datamine2.state.nj.us/DEP_OPRA/OpraMain/pi_main?mode=pi_by_site&sort_order=PI_NAMEA&Select+a+Site:=58715)

United States Department of Agriculture Soil Permit: P330-12-00139

Pennsylvania: 68-01752

[http://www.depweb.state.pa.us/portal/server.pt/community/labs/13780/laboratory\\_accreditation\\_program/590095](http://www.depweb.state.pa.us/portal/server.pt/community/labs/13780/laboratory_accreditation_program/590095)

**Report Prepared for:**

Shawn Morrell  
ESS Laboratory  
185 Frances Avenue  
Cranston RI 02910-2211

**REPORT OF  
LABORATORY  
ANALYSIS FOR  
PCDD/PCDF**

**Report Information:**


**Pace Project #: 10354881**  
**Sample Receipt Date: 07/08/2016**  
**Client Project #: 1607062**  
**Client Sub PO #: B02407**  
**State Cert #: N/A**

**Invoicing & Reporting Options:**

The report provided has been invoiced as a Level 2 PCDD/PCDF Report. If an upgrade of this report package is requested, an additional charge may be applied.

Please review the attached invoice for accuracy and forward any questions to Joanne Richardson, your Pace Project Manager.

**This report has been reviewed by:**



July 18, 2016

Joanne Richardson,  
(612) 607-6453  
(612) 607-6444 (fax)

**Report Prepared Date:**

July 15, 2016



**Report of Laboratory Analysis**

This report should not be reproduced, except in full, without the written consent of Pace Analytical Services, Inc.

The results relate only to the samples included in this report.



## **DISCUSSION**

This report presents the results from the analyses performed on six samples submitted by a representative of ESS Laboratory. The samples were analyzed for the presence or absence of polychlorodibenzo-p-dioxins (PCDDs) and polychlorodibenzofurans (PCDFs) using a modified version of USEPA Method 8290. The reporting limits were set to correspond to the lowest calibration points and a nominal 1-Liter sample amount. Estimated Maximum Possible Concentration (EMPC) values were treated as positives in the toxic equivalence calculations.

The recoveries of the isotopically-labeled PCDD/PCDF internal standards in the sample extracts ranged from 64-110%. All of the labeled standard recoveries obtained for this project were within the 40-135% target range specified in Method 8290. Also, since the quantification of the native 2,3,7,8-substituted congeners was based on isotope dilution, the data were automatically corrected for variation in recovery and accurate values were obtained.

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show the blank to be free of PCDDs and PCDFs at the reporting limits. These results indicate that the sample processing steps did not significantly impact the results reported for the field samples.

Laboratory and matrix spike samples were also prepared using clean water or sample matrix that had been fortified with native standard materials. The recoveries of the native compounds ranged from 78-125% with relative percent differences of 0.1-11.0%. These results were within the target ranges for the method.

## **REPORT OF LABORATORY ANALYSIS**

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## Minnesota Laboratory Certifications

Authority	Certificate #	Authority	Certificate #
A2LA	2926.01	Mississippi	MN00064
Alabama	40770	Montana	92
Alaska	MN00064	Nebraska	NE-OS-18-06
Arizona	AZ0014	Nevada	MN_00064_200
Arkansas	88-0680	New Jersey (NE)	MN002
California	01155CA	New York (NEL)	11647
Colorado	MN00064	North Carolina	27700
Connecticut	PH-0256	North Dakota	R-036
EPA Region 8	8TMS-Q	Ohio	4150
Florida (NELAP)	E87605	Oklahoma	D9922
Georgia (DNR)	959	Oregon (ELAP)	MN200001-005
Guam	959	Oregon (OREL)	MN300001-001
Hawaii	SLD	Pennsylvania	68-00563
Idaho	MN00064	Puerto Rico	MN00064
Illinois	200012	Saipan	MP0003
Indiana	C-MN-01	South Carolina	74003001
Indiana	C-MN-01	Tennessee	TN02818
Iowa	368	Texas	T104704192-08
Kansas	E-10167	Utah (NELAP)	MN00064
Kentucky	90062	Virginia	00251
Louisiana	03086	Washington	C755
Maine	2007029	West Virginia #	9952C
Maryland	322	West Virginia D	382
Michigan	9909	Wisconsin	999407970
Minnesota	027-053-137	Wyoming	8TMS-Q

## REPORT OF LABORATORY ANALYSIS

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Report No.....In-House

# Appendix A

## Sample Management

# ESS Laboratory

Division of Thielsch Engineering, Inc.

185 Frances Avenue, Cranston RI 02910-2211  
 Tel. (401)461-7181 Fax (401)461-4486  
 www.esslaboratory.com

# CHAIN OF CUSTODY

Turn Time **Standard** Other

Regulatory State: MA RI CT NH NJ NY ME Other

is this project for any of the following: (please circle)

MA-MCP Navy USACE CT DEP Other

Project # **1607062**

Proj Location

City, State

Zip

PO # **B02407**

email: [smorrell@thielsch.com](mailto:smorrell@thielsch.com)

ESS Lab ID	Date	Collection Time	Grab-G Composite-C	Matrix	Sample ID	Pres Code	# of Containers	Type of Container	Vol of Container	Analysis	Dioxin EPA 8290	M/MSD
	7/6/16	0926	G	SW	1607062-01	1	2	AG	1L	X	X	001
	7/6/16	1005	G	SW	1607062-02	1	2	AG	1L	X	X	002
	7/6/16	1035	G	SW	1607062-03	1	2	AG	1L	X	X	003
	7/6/16	1100	G	SW	1607062-04	1	2	AG	1L	X	X	004
	7/6/16	1120	G	SW	1607062-05	1	6	AG	1L	X	X	005
	7/6/16		G	SW	1607062-06	1	2	AG	1L	X	X	006

Container Type: P-Poly G-Glass AG-Amber Glass S-Sterile V-VOA

Matrix: S-Soil SD-Solid D-Sludge WW-Wastewater GW-Groundwater SW-Surface Water DW-Drinking Water O-Oil W-Wipes F-Filter

Cooler Present Yes No Internal Use Only

Seals Intact Yes No NA: [ ] Pickup

Cooler Temperature: [ ] Technician

Received by: (Signature, Date & Time)

Relinquished by: (Signature, Date & Time)

Received by: (Signature, Date & Time)

Received by: (Signature, Date & Time)

Relinquished by: (Signature, Date & Time)

Received by: (Signature, Date & Time)

*[Signature]* 7/7/16 1420  
 UPS  
*[Signature]* 7-8-16  
 9:15  
 T-5-559

Comments: \*Please provide electronic deliverables

\* By circling MA-MCP, client acknowledges samples were collected in accordance with MADEP CAM VIIA

Please fax to the laboratory all changes to Chain of Custody

## Report Method Blank & Laboratory Control Sample Results

**Sample Condition Upon Receipt**

Client Name: ESS Labs

Project #: **WO# : 10354881**

Courier:  Fed Ex  UPS  USPS  Client  
 Commercial  Pace  Speedee  Other: \_\_\_\_\_



10354881

Tracking Number: 1203749701 4715 6518  
4599 7109

Custody Seal on Cooler/Box Present?  Yes  No      Seals Intact?  Yes  No      **Optional:** Proj. Due Date: \_\_\_\_\_ Proj. Name: \_\_\_\_\_

Packing Material:  Bubble Wrap  Bubble Bags  None  Other: \_\_\_\_\_      Temp Blank?  Yes  No

Thermometer  151401163  B88A912167504  B88A0143310098      Type of Ice:  Wet  Blue  None  Samples on ice, cooling process has begun  
 Used:  151401164

Cooler Temp Read (°C): 5.5, 5.9      Cooler Temp Corrected (°C): 5.5, 5.9      Biological Tissue Frozen?  Yes  No  N/A

Temp should be above freezing to 6°C      Correction Factor: Time      Date and Initials of Person Examining Contents: 7-8-16/MS

USDA Regulated Soil ( N/A, water sample)

Did samples originate in a quarantine zone within the United States: AL, AR, AZ, CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)?  Yes  No      Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)?  Yes  No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

	COMMENTS:
Chain of Custody Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name and/or Signature on COC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time Analysis (<72 hr)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time Requested? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient Volume? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Pace Containers Used? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered Volume Received for Dissolved Tests? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11. Note if sediment is visible in the dissolved container
Sample Labels Match COC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes Date/Time/ID/Analysis Matrix: <u>WT</u>	
All containers needing acid/base preservation have been checked? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13. <input type="checkbox"/> HNO <sub>3</sub> <input type="checkbox"/> H <sub>2</sub> SO <sub>4</sub> <input type="checkbox"/> NaOH <input type="checkbox"/> HCl
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO <sub>3</sub> , H <sub>2</sub> SO <sub>4</sub> , HCl<2; NaOH >9 Sulfide, NaOH>12 Cyanide) <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Sample #
Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Initial when completed: _____ Lot # of added preservative: _____
Headspace in VOA Vials (>6mm)? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Trip Blank Present? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.
Trip Blank Custody Seals Present? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased): _____	

**CLIENT NOTIFICATION/RESOLUTION**

Person Contacted: Kevin Braga  
 Comments/Resolution: 8290 full scan

Field Data Required?  Yes  No

Date/Time: 7-8-16 15:00

Project Manager Review: Joanne Richardson

Date: 7-8-16

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers).

## Reporting Flags

- A = Reporting Limit based on signal to noise
- B = Less than 10x higher than method blank level
- C = Result obtained from confirmation analysis
- D = Result obtained from analysis of diluted sample
- E = Exceeds calibration range
- I = Interference present
- J = Estimated value
- Nn = Value obtained from additional analysis
- P = PCDE Interference
- R = Recovery outside target range
- S = Peak saturated
- U = Analyte not detected
- V = Result verified by confirmation analysis
- X = %D Exceeds limits
- Y = Calculated using average of daily RFs
- \* = See Discussion

### REPORT OF LABORATORY ANALYSIS

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Report No.....In-House

Report No.....10354881\_8290

Page 7 of 19  
Page 44 of 60



# **Appendix B**

## Sample Analysis Summary



**Method 8290 Sample Analysis Results**

Client - ESS Laboratory

Client's Sample ID	1607062-01		
Lab Sample ID	10354881001		
Filename	U160713A_08		
Injected By	CVS		
Total Amount Extracted	1060 mL	Matrix	Water
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	07/06/2016 09:26
ICAL ID	U160204	Received	07/08/2016 09:15
CCal Filename(s)	U160713A_01 & U160713A_17	Extracted	07/12/2016 09:45
Method Blank ID	BLANK-51000	Analyzed	07/13/2016 23:37

Native Isomers	Conc pg/L	EMPC pg/L	RL pg/L	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	----	10	2,3,7,8-TCDF-13C	2.00	66
Total TCDF	ND	----	10	2,3,7,8-TCDD-13C	2.00	86
				1,2,3,7,8-PeCDF-13C	2.00	68
2,3,7,8-TCDD	ND	----	10	2,3,4,7,8-PeCDF-13C	2.00	65
Total TCDD	ND	----	10	1,2,3,7,8-PeCDD-13C	2.00	80
				1,2,3,4,7,8-HxCDF-13C	2.00	67
1,2,3,7,8-PeCDF	ND	----	50	1,2,3,6,7,8-HxCDF-13C	2.00	65
2,3,4,7,8-PeCDF	ND	----	50	2,3,4,6,7,8-HxCDF-13C	2.00	70
Total PeCDF	ND	----	50	1,2,3,7,8,9-HxCDF-13C	2.00	73
				1,2,3,4,7,8-HxCDD-13C	2.00	81
1,2,3,7,8-PeCDD	ND	----	50	1,2,3,6,7,8-HxCDD-13C	2.00	66
Total PeCDD	ND	----	50	1,2,3,4,6,7,8-HpCDF-13C	2.00	80
				1,2,3,4,7,8,9-HpCDF-13C	2.00	90
1,2,3,4,7,8-HxCDF	ND	----	50	1,2,3,4,6,7,8-HpCDD-13C	2.00	90
1,2,3,6,7,8-HxCDF	ND	----	50	OCDD-13C	4.00	97
2,3,4,6,7,8-HxCDF	ND	----	50			
1,2,3,7,8,9-HxCDF	ND	----	50	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	----	50	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	----	50	2,3,7,8-TCDD-37Cl4	0.20	85
1,2,3,6,7,8-HxCDD	ND	----	50			
1,2,3,7,8,9-HxCDD	ND	----	50			
Total HxCDD	ND	----	50			
1,2,3,4,6,7,8-HpCDF	ND	----	50	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	----	50	Equivalence: 0.00 pg/L		
Total HpCDF	ND	----	50	(Using MADEP Factors)		
1,2,3,4,6,7,8-HpCDD	ND	----	50			
Total HpCDD	ND	----	50			
OCDF	ND	----	100			
OCDD	ND	----	100			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).  
EMPC = Estimated Maximum Possible Concentration  
RL = Reporting Limit

ND = Not Detected  
NA = Not Applicable  
NC = Not Calculated

**REPORT OF LABORATORY ANALYSIS**

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**Method 8290 Sample Analysis Results**

Client - ESS Laboratory

Client's Sample ID	1607062-02		
Lab Sample ID	10354881002		
Filename	U160713A_09		
Injected By	CVS		
Total Amount Extracted	1050 mL	Matrix	Water
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	07/06/2016 10:05
ICAL ID	U160204	Received	07/08/2016 09:15
CCal Filename(s)	U160713A_01 & U160713A_17	Extracted	07/12/2016 09:45
Method Blank ID	BLANK-51000	Analyzed	07/14/2016 00:20

Native Isomers	Conc pg/L	EMPC pg/L	RL pg/L	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	----	10	2,3,7,8-TCDF-13C	2.00	70
Total TCDF	ND	----	10	2,3,7,8-TCDD-13C	2.00	90
				1,2,3,7,8-PeCDF-13C	2.00	72
2,3,7,8-TCDD	ND	----	10	2,3,4,7,8-PeCDF-13C	2.00	69
Total TCDD	ND	----	10	1,2,3,7,8-PeCDD-13C	2.00	86
				1,2,3,4,7,8-HxCDF-13C	2.00	68
1,2,3,7,8-PeCDF	ND	----	50	1,2,3,6,7,8-HxCDF-13C	2.00	65
2,3,4,7,8-PeCDF	ND	----	50	2,3,4,6,7,8-HxCDF-13C	2.00	73
Total PeCDF	ND	----	50	1,2,3,7,8,9-HxCDF-13C	2.00	80
				1,2,3,4,7,8-HxCDD-13C	2.00	83
1,2,3,7,8-PeCDD	ND	----	50	1,2,3,6,7,8-HxCDD-13C	2.00	69
Total PeCDD	ND	----	50	1,2,3,4,6,7,8-HpCDF-13C	2.00	80
				1,2,3,4,7,8,9-HpCDF-13C	2.00	90
1,2,3,4,7,8-HxCDF	ND	----	50	1,2,3,4,6,7,8-HpCDD-13C	2.00	96
1,2,3,6,7,8-HxCDF	ND	----	50	OCDD-13C	4.00	97
2,3,4,6,7,8-HxCDF	ND	----	50			
1,2,3,7,8,9-HxCDF	ND	----	50	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	----	50	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	----	50	2,3,7,8-TCDD-37Cl4	0.20	90
1,2,3,6,7,8-HxCDD	ND	----	50			
1,2,3,7,8,9-HxCDD	ND	----	50			
Total HxCDD	ND	----	50			
1,2,3,4,6,7,8-HpCDF	ND	----	50	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	----	50	Equivalence: 0.16 pg/L		
Total HpCDF	ND	----	50	(Using MADEP Factors)		
1,2,3,4,6,7,8-HpCDD	ND	----	50			
Total HpCDD	ND	----	50			
OCDF	ND	----	100			
OCDD	160	----	100			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).  
EMPC = Estimated Maximum Possible Concentration  
RL = Reporting Limit

ND = Not Detected  
NA = Not Applicable  
NC = Not Calculated

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**Method 8290 Sample Analysis Results**

Client - ESS Laboratory

Client's Sample ID	1607062-03		
Lab Sample ID	10354881003		
Filename	U160713A_10		
Injected By	CVS		
Total Amount Extracted	1050 mL	Matrix	Water
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	07/06/2016 10:35
ICAL ID	U160204	Received	07/08/2016 09:15
CCal Filename(s)	U160713A_01 & U160713A_17	Extracted	07/12/2016 09:45
Method Blank ID	BLANK-51000	Analyzed	07/14/2016 01:04

Native Isomers	Conc pg/L	EMPC pg/L	RL pg/L	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	----	10	2,3,7,8-TCDF-13C	2.00	65
Total TCDF	ND	----	10	2,3,7,8-TCDD-13C	2.00	81
				1,2,3,7,8-PeCDF-13C	2.00	68
2,3,7,8-TCDD	ND	----	10	2,3,4,7,8-PeCDF-13C	2.00	64
Total TCDD	ND	----	10	1,2,3,7,8-PeCDD-13C	2.00	81
				1,2,3,4,7,8-HxCDF-13C	2.00	66
1,2,3,7,8-PeCDF	ND	----	50	1,2,3,6,7,8-HxCDF-13C	2.00	65
2,3,4,7,8-PeCDF	ND	----	50	2,3,4,6,7,8-HxCDF-13C	2.00	70
Total PeCDF	ND	----	50	1,2,3,7,8,9-HxCDF-13C	2.00	76
				1,2,3,4,7,8-HxCDD-13C	2.00	81
1,2,3,7,8-PeCDD	ND	----	50	1,2,3,6,7,8-HxCDD-13C	2.00	68
Total PeCDD	ND	----	50	1,2,3,4,6,7,8-HpCDF-13C	2.00	78
				1,2,3,4,7,8,9-HpCDF-13C	2.00	90
1,2,3,4,7,8-HxCDF	ND	----	50	1,2,3,4,6,7,8-HpCDD-13C	2.00	92
1,2,3,6,7,8-HxCDF	ND	----	50	OCDD-13C	4.00	98
2,3,4,6,7,8-HxCDF	ND	----	50			
1,2,3,7,8,9-HxCDF	ND	----	50	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	----	50	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	----	50	2,3,7,8-TCDD-37Cl4	0.20	86
1,2,3,6,7,8-HxCDD	ND	----	50			
1,2,3,7,8,9-HxCDD	ND	----	50			
Total HxCDD	ND	----	50			
1,2,3,4,6,7,8-HpCDF	ND	----	50	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	----	50	Equivalence: 0.00 pg/L		
Total HpCDF	ND	----	50	(Using MADEP Factors)		
1,2,3,4,6,7,8-HpCDD	ND	----	50			
Total HpCDD	ND	----	50			
OCDF	ND	----	100			
OCDD	ND	----	100			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).  
EMPC = Estimated Maximum Possible Concentration  
RL = Reporting Limit

ND = Not Detected  
NA = Not Applicable  
NC = Not Calculated

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**Method 8290 Sample Analysis Results**

Client - ESS Laboratory

Client's Sample ID	1607062-04		
Lab Sample ID	10354881004		
Filename	U160713A_11		
Injected By	CVS		
Total Amount Extracted	1060 mL	Matrix	Water
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	07/06/2016 11:00
ICAL ID	U160204	Received	07/08/2016 09:15
CCal Filename(s)	U160713A_01 & U160713A_17	Extracted	07/12/2016 09:45
Method Blank ID	BLANK-51000	Analyzed	07/14/2016 01:48

Native Isomers	Conc pg/L	EMPC pg/L	RL pg/L	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	----	10	2,3,7,8-TCDF-13C	2.00	75
Total TCDF	ND	----	10	2,3,7,8-TCDD-13C	2.00	95
				1,2,3,7,8-PeCDF-13C	2.00	76
2,3,7,8-TCDD	ND	----	10	2,3,4,7,8-PeCDF-13C	2.00	74
Total TCDD	ND	----	10	1,2,3,7,8-PeCDD-13C	2.00	94
				1,2,3,4,7,8-HxCDF-13C	2.00	73
1,2,3,7,8-PeCDF	ND	----	50	1,2,3,6,7,8-HxCDF-13C	2.00	72
2,3,4,7,8-PeCDF	ND	----	50	2,3,4,6,7,8-HxCDF-13C	2.00	77
Total PeCDF	ND	----	50	1,2,3,7,8,9-HxCDF-13C	2.00	84
				1,2,3,4,7,8-HxCDD-13C	2.00	92
1,2,3,7,8-PeCDD	ND	----	50	1,2,3,6,7,8-HxCDD-13C	2.00	73
Total PeCDD	ND	----	50	1,2,3,4,6,7,8-HpCDF-13C	2.00	86
				1,2,3,4,7,8,9-HpCDF-13C	2.00	96
1,2,3,4,7,8-HxCDF	ND	----	50	1,2,3,4,6,7,8-HpCDD-13C	2.00	99
1,2,3,6,7,8-HxCDF	ND	----	50	OCDD-13C	4.00	107
2,3,4,6,7,8-HxCDF	ND	----	50			
1,2,3,7,8,9-HxCDF	ND	----	50	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	----	50	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	----	50	2,3,7,8-TCDD-37Cl4	0.20	95
1,2,3,6,7,8-HxCDD	ND	----	50			
1,2,3,7,8,9-HxCDD	ND	----	50			
Total HxCDD	ND	----	50			
1,2,3,4,6,7,8-HpCDF	ND	----	50	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	----	50	Equivalence: 0.23 pg/L		
Total HpCDF	ND	----	50	(Using MADEP Factors)		
1,2,3,4,6,7,8-HpCDD	ND	----	50			
Total HpCDD	ND	----	50			
OCDF	ND	----	100			
OCDD	230	----	100			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).  
EMPC = Estimated Maximum Possible Concentration  
RL = Reporting Limit

ND = Not Detected  
NA = Not Applicable  
NC = Not Calculated

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### Method 8290 Sample Analysis Results

Client - ESS Laboratory

Client's Sample ID	1607062-05		
Lab Sample ID	10354881005		
Filename	U160713A_12		
Injected By	CVS		
Total Amount Extracted	1050 mL	Matrix	Water
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	07/06/2016 11:20
ICAL ID	U160204	Received	07/08/2016 09:15
CCal Filename(s)	U160713A_01 & U160713A_17	Extracted	07/12/2016 09:45
Method Blank ID	BLANK-51000	Analyzed	07/14/2016 02:32

Native Isomers	Conc pg/L	EMPC pg/L	RL pg/L	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	----	10	2,3,7,8-TCDF-13C	2.00	78
Total TCDF	ND	----	10	2,3,7,8-TCDD-13C	2.00	98
				1,2,3,7,8-PeCDF-13C	2.00	76
2,3,7,8-TCDD	ND	----	10	2,3,4,7,8-PeCDF-13C	2.00	75
Total TCDD	ND	----	10	1,2,3,7,8-PeCDD-13C	2.00	94
				1,2,3,4,7,8-HxCDF-13C	2.00	74
1,2,3,7,8-PeCDF	ND	----	50	1,2,3,6,7,8-HxCDF-13C	2.00	77
2,3,4,7,8-PeCDF	ND	----	50	2,3,4,6,7,8-HxCDF-13C	2.00	79
Total PeCDF	ND	----	50	1,2,3,7,8,9-HxCDF-13C	2.00	90
				1,2,3,4,7,8-HxCDD-13C	2.00	89
1,2,3,7,8-PeCDD	ND	----	50	1,2,3,6,7,8-HxCDD-13C	2.00	77
Total PeCDD	ND	----	50	1,2,3,4,6,7,8-HpCDF-13C	2.00	89
				1,2,3,4,7,8,9-HpCDF-13C	2.00	106
1,2,3,4,7,8-HxCDF	ND	----	50	1,2,3,4,6,7,8-HpCDD-13C	2.00	100
1,2,3,6,7,8-HxCDF	ND	----	50	OCDD-13C	4.00	110
2,3,4,6,7,8-HxCDF	ND	----	50			
1,2,3,7,8,9-HxCDF	ND	----	50	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	----	50	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	----	50	2,3,7,8-TCDD-37Cl4	0.20	100
1,2,3,6,7,8-HxCDD	ND	----	50			
1,2,3,7,8,9-HxCDD	ND	----	50			
Total HxCDD	ND	----	50			
1,2,3,4,6,7,8-HpCDF	ND	----	50	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	----	50	Equivalence: 0.00 pg/L		
Total HpCDF	ND	----	50	(Using MADEP Factors)		
1,2,3,4,6,7,8-HpCDD	ND	----	50			
Total HpCDD	ND	----	50			
OCDF	ND	----	100			
OCDD	ND	----	100			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).  
EMPC = Estimated Maximum Possible Concentration  
RL = Reporting Limit

ND = Not Detected  
NA = Not Applicable  
NC = Not Calculated

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### Method 8290 Sample Analysis Results

Client - ESS Laboratory

Client's Sample ID	1607062-06		
Lab Sample ID	10354881006		
Filename	U160713A_13		
Injected By	CVS		
Total Amount Extracted	1060 mL	Matrix	Water
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	07/06/2016 00:01
ICAL ID	U160204	Received	07/08/2016 09:15
CCal Filename(s)	U160713A_01 & U160713A_17	Extracted	07/12/2016 09:45
Method Blank ID	BLANK-51000	Analyzed	07/14/2016 03:16

Native Isomers	Conc pg/L	EMPC pg/L	RL pg/L	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	----	10	2,3,7,8-TCDF-13C	2.00	77
Total TCDF	ND	----	10	2,3,7,8-TCDD-13C	2.00	97
				1,2,3,7,8-PeCDF-13C	2.00	77
2,3,7,8-TCDD	ND	----	10	2,3,4,7,8-PeCDF-13C	2.00	74
Total TCDD	ND	----	10	1,2,3,7,8-PeCDD-13C	2.00	92
				1,2,3,4,7,8-HxCDF-13C	2.00	74
1,2,3,7,8-PeCDF	ND	----	50	1,2,3,6,7,8-HxCDF-13C	2.00	69
2,3,4,7,8-PeCDF	ND	----	50	2,3,4,6,7,8-HxCDF-13C	2.00	77
Total PeCDF	ND	----	50	1,2,3,7,8,9-HxCDF-13C	2.00	84
				1,2,3,4,7,8-HxCDD-13C	2.00	86
1,2,3,7,8-PeCDD	ND	----	50	1,2,3,6,7,8-HxCDD-13C	2.00	76
Total PeCDD	ND	----	50	1,2,3,4,6,7,8-HpCDF-13C	2.00	84
				1,2,3,4,7,8,9-HpCDF-13C	2.00	96
1,2,3,4,7,8-HxCDF	ND	----	50	1,2,3,4,6,7,8-HpCDD-13C	2.00	94
1,2,3,6,7,8-HxCDF	ND	----	50	OCDD-13C	4.00	104
2,3,4,6,7,8-HxCDF	ND	----	50			
1,2,3,7,8,9-HxCDF	ND	----	50	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	----	50	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	----	50	2,3,7,8-TCDD-37Cl4	0.20	90
1,2,3,6,7,8-HxCDD	ND	----	50			
1,2,3,7,8,9-HxCDD	ND	----	50			
Total HxCDD	ND	----	50			
1,2,3,4,6,7,8-HpCDF	ND	----	50	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	----	50	Equivalence: 0.00 pg/L		
Total HpCDF	ND	----	50	(Using MADEP Factors)		
1,2,3,4,6,7,8-HpCDD	ND	----	50			
Total HpCDD	ND	----	50			
OCDF	ND	----	100			
OCDD	ND	----	100			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).  
EMPC = Estimated Maximum Possible Concentration  
RL = Reporting Limit

ND = Not Detected  
NA = Not Applicable  
NC = Not Calculated

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**Method 8290 Blank Analysis Results**

Lab Sample ID	BLANK-51000	Matrix	Water
Filename	U160713A_07	Dilution	NA
Total Amount Extracted	1050 mL	Extracted	07/12/2016 09:45
ICAL ID	U160204	Analyzed	07/13/2016 22:53
CCal Filename(s)	U160713A_01 & U160713A_17	Injected By	CVS

Native Isomers	Conc pg/L	EMPC pg/L	RL pg/L	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	----	10	2,3,7,8-TCDF-13C	2.00	57
Total TCDF	ND	----	10	2,3,7,8-TCDD-13C	2.00	75
				1,2,3,7,8-PeCDF-13C	2.00	58
2,3,7,8-TCDD	ND	----	10	2,3,4,7,8-PeCDF-13C	2.00	57
Total TCDD	ND	----	10	1,2,3,7,8-PeCDD-13C	2.00	72
				1,2,3,4,7,8-HxCDF-13C	2.00	57
1,2,3,7,8-PeCDF	ND	----	50	1,2,3,6,7,8-HxCDF-13C	2.00	54
2,3,4,7,8-PeCDF	ND	----	50	2,3,4,6,7,8-HxCDF-13C	2.00	61
Total PeCDF	ND	----	50	1,2,3,7,8,9-HxCDF-13C	2.00	64
				1,2,3,4,7,8-HxCDD-13C	2.00	66
1,2,3,7,8-PeCDD	ND	----	50	1,2,3,6,7,8-HxCDD-13C	2.00	61
Total PeCDD	ND	----	50	1,2,3,4,6,7,8-HpCDF-13C	2.00	69
				1,2,3,4,7,8,9-HpCDF-13C	2.00	77
1,2,3,4,7,8-HxCDF	ND	----	50	1,2,3,4,6,7,8-HpCDD-13C	2.00	84
1,2,3,6,7,8-HxCDF	ND	----	50	OCDD-13C	4.00	83
2,3,4,6,7,8-HxCDF	ND	----	50			
1,2,3,7,8,9-HxCDF	ND	----	50	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	----	50	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	----	50	2,3,7,8-TCDD-37Cl4	0.20	75
1,2,3,6,7,8-HxCDD	ND	----	50			
1,2,3,7,8,9-HxCDD	ND	----	50			
Total HxCDD	ND	----	50			
1,2,3,4,6,7,8-HpCDF	ND	----	50	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	----	50	Equivalence: 0.00 pg/L		
Total HpCDF	ND	----	50	(Using MADEP Factors)		
1,2,3,4,6,7,8-HpCDD	ND	----	50			
Total HpCDD	ND	----	50			
OCDF	ND	----	100			
OCDD	ND	----	100			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).  
EMPC = Estimated Maximum Possible Concentration  
RL = Reporting Limit

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**Method 8290 Laboratory Control Spike Results**

Lab Sample ID	LCS-51001	Matrix	Water
Filename	U160713A_02	Dilution	NA
Total Amount Extracted	1030 mL	Extracted	07/12/2016 09:45
ICAL ID	U160204	Analyzed	07/13/2016 19:13
CCal Filename(s)	U160713A_01 & U160713A_17	Injected By	CVS
Method Blank ID	BLANK-51000		

Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.20	0.20	100	2,3,7,8-TCDF-13C	2.0	65
Total TCDF				2,3,7,8-TCDD-13C	2.0	83
				1,2,3,7,8-PeCDF-13C	2.0	66
2,3,7,8-TCDD	0.20	0.17	87	2,3,4,7,8-PeCDF-13C	2.0	61
Total TCDD				1,2,3,7,8-PeCDD-13C	2.0	79
				1,2,3,4,7,8-HxCDF-13C	2.0	66
1,2,3,7,8-PeCDF	1.0	0.95	95	1,2,3,6,7,8-HxCDF-13C	2.0	63
2,3,4,7,8-PeCDF	1.0	1.1	110	2,3,4,6,7,8-HxCDF-13C	2.0	70
Total PeCDF				1,2,3,7,8,9-HxCDF-13C	2.0	71
				1,2,3,4,7,8-HxCDD-13C	2.0	79
1,2,3,7,8-PeCDD	1.0	0.88	88	1,2,3,6,7,8-HxCDD-13C	2.0	69
Total PeCDD				1,2,3,4,6,7,8-HpCDF-13C	2.0	78
				1,2,3,4,7,8,9-HpCDF-13C	2.0	88
1,2,3,4,7,8-HxCDF	1.0	1.1	114	1,2,3,4,6,7,8-HpCDD-13C	2.0	96
1,2,3,6,7,8-HxCDF	1.0	1.1	109	OCDD-13C	4.0	92
2,3,4,6,7,8-HxCDF	1.0	0.98	98			
1,2,3,7,8,9-HxCDF	1.0	1.0	105	1,2,3,4-TCDD-13C	2.0	NA
Total HxCDF				1,2,3,7,8,9-HxCDD-13C	2.0	NA
1,2,3,4,7,8-HxCDD	1.0	1.1	107	2,3,7,8-TCDD-37Cl4	0.20	82
1,2,3,6,7,8-HxCDD	1.0	1.1	106			
1,2,3,7,8,9-HxCDD	1.0	1.1	107			
Total HxCDD						
1,2,3,4,6,7,8-HpCDF	1.0	1.0	104			
1,2,3,4,7,8,9-HpCDF	1.0	0.97	97			
Total HpCDF						
1,2,3,4,6,7,8-HpCDD	1.0	1.0	104			
Total HpCDD						
OCDF	2.0	1.9	94			
OCDD	2.0	2.3	113			

Qs = Quantity Spiked  
Qm = Quantity Measured  
Rec. = Recovery (Expressed as Percent)  
R = Recovery outside of target range

Y = RF averaging used in calculations  
Nn = Value obtained from additional analysis  
NA = Not Applicable  
\* = See Discussion

**REPORT OF LABORATORY ANALYSIS**

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### Method 8290 Spiked Sample Report

Client - ESS Laboratory

Client's Sample ID	1607062-05-MS	Matrix	Water
Lab Sample ID	10354881005-MS	Dilution	NA
Filename	U160713A_04	Extracted	07/12/2016 09:45
Total Amount Extracted	1060 mL	Analyzed	07/13/2016 20:41
ICAL ID	U160204	Injected By	CVS
CCal Filename(s)	U160713A_01 & U160713A_17		
Method Blank ID	BLANK-51000		

Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.20	0.21	106	2,3,7,8-TCDF-13C	2.00	64
				2,3,7,8-TCDD-13C	2.00	83
				1,2,3,7,8-PeCDF-13C	2.00	68
2,3,7,8-TCDD	0.20	0.17	87	2,3,4,7,8-PeCDF-13C	2.00	64
				1,2,3,7,8-PeCDD-13C	2.00	80
				1,2,3,4,7,8-HxCDF-13C	2.00	67
1,2,3,7,8-PeCDF	1.00	0.98	98	1,2,3,6,7,8-HxCDF-13C	2.00	65
2,3,4,7,8-PeCDF	1.00	1.10	110	2,3,4,6,7,8-HxCDF-13C	2.00	70
				1,2,3,7,8,9-HxCDF-13C	2.00	75
				1,2,3,4,7,8-HxCDD-13C	2.00	81
1,2,3,7,8-PeCDD	1.00	0.92	92	1,2,3,6,7,8-HxCDD-13C	2.00	70
				1,2,3,4,6,7,8-HpCDF-13C	2.00	80
				1,2,3,4,7,8,9-HpCDF-13C	2.00	92
1,2,3,4,7,8-HxCDF	1.00	1.15	115	1,2,3,4,6,7,8-HpCDD-13C	2.00	96
1,2,3,6,7,8-HxCDF	1.00	1.10	110	OCDD-13C	4.00	93
2,3,4,6,7,8-HxCDF	1.00	1.08	108			
1,2,3,7,8,9-HxCDF	1.00	1.04	104	1,2,3,4-TCDD-13C	2.00	NA
				1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	1.00	1.06	106	2,3,7,8-TCDD-37Cl4	0.20	88
1,2,3,6,7,8-HxCDD	1.00	1.15	115			
1,2,3,7,8,9-HxCDD	1.00	1.25	125			
1,2,3,4,6,7,8-HpCDF	1.00	1.13	113			
1,2,3,4,7,8,9-HpCDF	1.00	1.07	107			
1,2,3,4,6,7,8-HpCDD	1.00	1.10	110			
OCDF	2.00	2.07	103			
OCDD	2.00	2.38	119			

Qs = Quantity Spiked

Qm = Quantity Measured

Rec. = Recovery (Expressed as Percent)

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### Method 8290 Spiked Sample Report

Client - ESS Laboratory

Client's Sample ID	1607062-05-MSD	Matrix	Water
Lab Sample ID	10354881005-MSD	Dilution	NA
Filename	U160713A_05	Extracted	07/12/2016 09:45
Total Amount Extracted	1050 mL	Analyzed	07/13/2016 21:25
ICAL ID	U160204	Injected By	CVS
CCal Filename(s)	U160713A_01 & U160713A_17		
Method Blank ID	BLANK-51000		

Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.20	0.19	97	2,3,7,8-TCDF-13C	2.00	69
				2,3,7,8-TCDD-13C	2.00	90
				1,2,3,7,8-PeCDF-13C	2.00	73
2,3,7,8-TCDD	0.20	0.16	78	2,3,4,7,8-PeCDF-13C	2.00	70
				1,2,3,7,8-PeCDD-13C	2.00	87
				1,2,3,4,7,8-HxCDF-13C	2.00	71
1,2,3,7,8-PeCDF	1.00	0.96	96	1,2,3,6,7,8-HxCDF-13C	2.00	69
2,3,4,7,8-PeCDF	1.00	1.06	106	2,3,4,6,7,8-HxCDF-13C	2.00	75
				1,2,3,7,8,9-HxCDF-13C	2.00	75
				1,2,3,4,7,8-HxCDD-13C	2.00	88
1,2,3,7,8-PeCDD	1.00	0.93	93	1,2,3,6,7,8-HxCDD-13C	2.00	73
				1,2,3,4,6,7,8-HpCDF-13C	2.00	85
				1,2,3,4,7,8,9-HpCDF-13C	2.00	75
1,2,3,4,7,8-HxCDF	1.00	1.14	114	1,2,3,4,6,7,8-HpCDD-13C	2.00	90
1,2,3,6,7,8-HxCDF	1.00	1.10	110	OCDD-13C	4.00	83
2,3,4,6,7,8-HxCDF	1.00	1.04	104			
1,2,3,7,8,9-HxCDF	1.00	1.09	109	1,2,3,4-TCDD-13C	2.00	NA
				1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	1.00	0.99	99	2,3,7,8-TCDD-37Cl4	0.20	89
1,2,3,6,7,8-HxCDD	1.00	1.13	113			
1,2,3,7,8,9-HxCDD	1.00	1.15	115			
1,2,3,4,6,7,8-HpCDF	1.00	1.08	108			
1,2,3,4,7,8,9-HpCDF	1.00	1.04	104			
1,2,3,4,6,7,8-HpCDD	1.00	1.08	108			
OCDF	2.00	2.05	102			
OCDD	2.00	2.36	118			

Qs = Quantity Spiked

Qm = Quantity Measured

Rec. = Recovery (Expressed as Percent)

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### Method 8290 Spike Sample Results

Client - ESS Laboratory

Client Sample ID	1607062-05								
Lab Sample ID	10354881005	Sample Filename	U160713A_12					Dry Weights	
MS ID	10354881005-MS	MS Filename	U160713A_04					Sample Amount	NA
MSD ID	10354881005-MSD	MSD Filename	U160713A_05					MS Amount	NA
								MSD Amount	NA

Analyte	Sample Conc. pg/L	MS/MSD Qs (ng)	MS Qm (ng)	MSD Qm (ng)	RPD	Background Subtracted		
						MS % Rec.	MSD % Rec.	RPD
2,3,7,8-TCDF	0.000	0.20	0.21	0.19	8.2	106	97	8.2
2,3,7,8-TCDD	0.000	0.20	0.17	0.16	11.0	87	78	11.0
1,2,3,7,8-PeCDF	0.000	1.00	0.98	0.96	2.0	98	96	2.0
2,3,4,7,8-PeCDF	0.000	1.00	1.10	1.06	3.6	110	106	3.6
1,2,3,7,8-PeCDD	0.000	1.00	0.92	0.93	0.4	92	93	0.4
1,2,3,4,7,8-HxCDF	0.000	1.00	1.15	1.14	0.9	115	114	0.9
1,2,3,6,7,8-HxCDF	0.000	1.00	1.10	1.10	0.1	110	110	0.1
2,3,4,6,7,8-HxCDF	0.000	1.00	1.08	1.04	3.9	108	104	3.9
1,2,3,7,8,9-HxCDF	0.000	1.00	1.04	1.09	5.0	104	109	5.0
1,2,3,4,7,8-HxCDD	0.000	1.00	1.06	0.99	7.5	106	99	7.5
1,2,3,6,7,8-HxCDD	0.000	1.00	1.15	1.13	1.3	115	113	1.3
1,2,3,7,8,9-HxCDD	0.000	1.00	1.25	1.15	8.8	125	115	8.8
1,2,3,4,6,7,8-HpCDF	0.000	1.00	1.13	1.08	4.7	113	108	4.7
1,2,3,4,7,8,9-HpCDF	0.000	1.00	1.07	1.04	3.2	107	104	3.2
1,2,3,4,6,7,8-HpCDD	0.000	1.00	1.10	1.08	1.7	110	108	1.7
OCDF	0.000	2.00	2.07	2.05	0.8	103	102	0.8
OCDD	0.000	2.00	2.38	2.36	0.8	117	116	0.8

#### Definitions

MS = Matrix Spike	CDD = Chlorinated dibenzo-p-dioxin
MSD = Matrix Spike Duplicate	CDF = Chlorinated dibenzo-p-furan
Qm = Quantity Measured	T = Tetra
Qs = Quantity Spiked	Pe = Penta
% Rec. = Percent Recovery	Hx = Hexa
RPD = Relative Percent Difference	Hp = Hepta
NA = Not Applicable	O = Octa
NC = Not Calculated	

## ESS Laboratory Sample and Cooler Receipt Checklist

Client: AMEC Foster Wheeler - KP/B/HDM

ESS Project ID: 1607062  
 Date Received: 7/6/2016  
 Project Due Date: 7/13/2016  
 Days for Project: 5 Day

Shipped/Delivered Via: \_\_\_\_\_ Client \_\_\_\_\_

- |  |  |
|--|--|
| 1. Air bill manifest present? <input type="checkbox"/> No<br>Air No.: <u>NA</u><br>2. Were custody seals present? <input type="checkbox"/> NA<br>3. Is radiation count <100 CPM? <input type="checkbox"/> Yes<br>4. Is a Cooler Present? <input type="checkbox"/> Yes<br>Temp: <u>3.3</u> Iced with: <u>Ice</u><br>5. Was COC signed and dated by client? <input type="checkbox"/> Yes | 6. Does COC match bottles? <input type="checkbox"/> Yes<br>7. Is COC complete and correct? <input type="checkbox"/> Yes<br>8. Were samples received intact? <input type="checkbox"/> Yes<br>9. Were labs informed about <u>short holds &amp; rushes</u> ? Yes / No / <input checked="" type="checkbox"/> NA<br>10. Were any analyses received outside of hold time? Yes / <input checked="" type="checkbox"/> No |
|--|--|

11. Any Subcontracting needed?  Yes / No  
 ESS Sample IDs: 01-06  
 Analysis: Digxin  
 TAT: STD

12. Were VOAs received? Yes /  No  
 a. Air bubbles in aqueous VOAs? Yes / No  
 b. Does methanol cover soil completely? Yes / No /  NA

13. Are the samples properly preserved?  Yes / No  
 a. If metals preserved upon receipt: Date: \_\_\_\_\_ Time: \_\_\_\_\_ By: \_\_\_\_\_  
 b. Low Level VOAs brought to freezer: Date: \_\_\_\_\_ Time: \_\_\_\_\_ By: \_\_\_\_\_

Sample Receiving Notes:  
 \_\_\_\_\_  
 \_\_\_\_\_

14. Was there a need to contact Project Manager? Yes /  No  
 a. Was there a need to contact the client? Yes / No  
 Who was contacted? \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_ By: \_\_\_\_\_

Sample Number	Container ID	Proper Container	Air Bubbles Present	Sufficient Volume	Container Type	Preservative	Record pH (Cyanide and 608 Pesticides)
01	48809	Yes	NA	Yes	1L Amber - Unpres	NP	
01	48810	Yes	NA	Yes	1L Amber - Unpres	NP	
01	48811	Yes	NA	Yes	1L Amber - Unpres	NP	
01	48812	Yes	NA	Yes	1L Amber - Unpres	NP	
01	48836	Yes	NA	Yes	250 mL Poly - HNO3	HNO3	
01	48837	Yes	NA	Yes	250 mL Poly - HNO3	HNO3	
02	48805	Yes	NA	Yes	1L Amber - Unpres	NP	
02	48806	Yes	NA	Yes	1L Amber - Unpres	NP	
02	48807	Yes	NA	Yes	1L Amber - Unpres	NP	
02	48808	Yes	NA	Yes	1L Amber - Unpres	NP	
02	48834	Yes	NA	Yes	250 mL Poly - HNO3	HNO3	
02	48835	Yes	NA	Yes	250 mL Poly - HNO3	HNO3	
03	48801	Yes	NA	Yes	1L Amber - Unpres	NP	
03	48802	Yes	NA	Yes	1L Amber - Unpres	NP	
03	48803	Yes	NA	Yes	1L Amber - Unpres	NP	
03	48804	Yes	NA	Yes	1L Amber - Unpres	NP	
03	48832	Yes	NA	Yes	250 mL Poly - HNO3	HNO3	
03	48833	Yes	NA	Yes	250 mL Poly - HNO3	HNO3	
04	48797	Yes	NA	Yes	1L Amber - Unpres	NP	
04	48798	Yes	NA	Yes	1L Amber - Unpres	NP	
04	48799	Yes	NA	Yes	1L Amber - Unpres	NP	
04	48800	Yes	NA	Yes	1L Amber - Unpres	NP	
04	48830	Yes	NA	Yes	250 mL Poly - HNO3	HNO3	

## ESS Laboratory Sample and Cooler Receipt Checklist

Client: AMEC Foster Wheeler - KPB/HDM

ESS Project ID: 1607062  
Date Received: 7/6/2016

04	48831	Yes	NA	Yes	250 mL Poly - HNO3	HNO3
05	48815	Yes	NA	Yes	1L Amber - Unpres	NP
05	48816	Yes	NA	Yes	1L Amber - Unpres	NP
05	48817	Yes	NA	Yes	1L Amber - Unpres	NP
05	48818	Yes	NA	Yes	1L Amber - Unpres	NP
05	48819	Yes	NA	Yes	1L Amber - Unpres	NP
05	48820	Yes	NA	Yes	1L Amber - Unpres	NP
05	48821	Yes	NA	Yes	1L Amber - Unpres	NP
05	48822	Yes	NA	Yes	1L Amber - Unpres	NP
05	48823	Yes	NA	Yes	1L Amber - Unpres	NP
05	48824	Yes	NA	Yes	1L Amber - Unpres	NP
05	48825	Yes	NA	Yes	1L Amber - Unpres	NP
05	48826	Yes	NA	Yes	1L Amber - Unpres	NP
05	48839	Yes	NA	Yes	250 mL Poly - HNO3	HNO3
05	48840	Yes	NA	Yes	250 mL Poly - HNO3	HNO3
05	48841	Yes	NA	Yes	250 mL Poly - HNO3	HNO3
05	48842	Yes	NA	Yes	250 mL Poly - HNO3	HNO3
05	48843	Yes	NA	Yes	250 mL Poly - HNO3	HNO3
05	48844	Yes	NA	Yes	250 mL Poly - HNO3	HNO3
06	48793	Yes	NA	Yes	1L Amber - Unpres	NP
06	48794	Yes	NA	Yes	1L Amber - Unpres	NP
06	48795	Yes	NA	Yes	1L Amber - Unpres	NP
06	48796	Yes	NA	Yes	1L Amber - Unpres	NP
06	48828	Yes	NA	Yes	250 mL Poly - HNO3	HNO3
06	48829	Yes	NA	Yes	250 mL Poly - HNO3	HNO3

**2nd Review**

Are barcode labels on correct containers?

Yes / No

Completed By: [Signature] Date & Time: 7/6/16 14:42  
 Reviewed By: [Signature] Date & Time: 7/6/16 1535  
 Delivered By: [Signature] Date & Time: 7/6/16 1535



# ESS Laboratory

Division of Thielsch Engineering, Inc.

185 Frances Avenue, Cranston, RI 02910-2211  
 Tel. (401) 461-7181 Fax (401) 461-4486  
 www.esslaboratory.com

# CHAIN OF CUSTODY

Turn Time  Standard  Other \_\_\_\_\_

Regulatory State: MA RI CT NH NJ NY ME Other \_\_\_\_\_

Is this project for any of the following: (please circle)  
 MA-MCP Navy USACE CT DEP Other \_\_\_\_\_

Project # 3652150040  
 Project Name Texton Gusher  
 Address 271 Mill Rd  
 PO #  
 State MA  
 Zip 0154  
 email: Penic.King@amec.com

ESS Lab # 1607062

Reporting Limits - \_\_\_\_\_

Electronic Deliverables Excel Access PDF

ESS Lab ID	Date	Collection Time	Grab -G Composite-C	Matrix	Sample ID	Pres Code	# of Containers	Type of Container	Vol of Container	Analysis
1	7-6-16	926	G	SW	SW11	4/1	6	P/AG		X PAH 8270 X Hk metals 6010 X Diss metals (FBI) X Pickin 8270
2	7-6-16	1005	G	SW	SW39	4/1	6	P/AG		X
3	7-6-16	1035	G	SW	SW27	4/1	6	P/AG		X
4	7-6-16	1100	G	SW	SW27	4/1	6	P/AG		X
5	7-6-16	1120	G	SW	SW36	4/1	18	P/AG		X (run ms/msd)
6	7-6-16	---	G	SW	Dup-02	4/1	6	P/AG		X

Container Type: P-Poly G-Glass AG-Amber Glass S-Sterile V-VOA Matrix: S-Soil SB-Solid D-Sludge WW-Wastewater GW-Groundwater SW-Surface Water DW-Drinking Water O-Oil W-Wipes F-Filter

Cooler Present  Yes  No Internal Use Only  Pickup  Technician

Seals Intact Yes  No NA:  X

Cooler Temperature: 3.3 ABICE

Sampled by: Mark Maggion 337-927-3747

Comments: \_\_\_\_\_

Relinquished by: (Signature, Date & Time) \_\_\_\_\_ Received by: (Signature, Date & Time) \_\_\_\_\_  
 Relinquished by: (Signature, Date & Time) \_\_\_\_\_ Received by: (Signature, Date & Time) \_\_\_\_\_

1 (White) Lab Copy  
 2 (Yellow) Client Receipt

Please fax to the laboratory all changes to Chain of Custody

\* By circling MA-MCP, client acknowledges samples were collected in accordance with MADEP CAM VIIA