II. Suggested Format for the Remediation General Permit Notice of Intent (NOI)

A. General site information:

1. Name of site: Olin Corporation	Site address: 51 Street: Eames Street		
	City: Wilmington	State: MA	Zip: 01887-3369
2. Site owner Olin Corporation	Contact Person: James Cashwell		
	Telephone: 423-336-4012	Email: JMCashwell@olin.com	
	Mailing address: Street: 3855 North Ocoee Street, Suite 200		
Owner is (check one): ☐ Federal ☐ State/Tribal ■ Private ☐ Other; if so, specify:	City: Cleveland	State: TN	Zip: 37312
3. Site operator, if different than owner Brian Guichard, Site Manager	Contact Person: Brian Guichard		
	Telephone: 978-658-6121	Email: BEGuichard@olin.com	
	Mailing address: Street: 51 Eames Street		
	City: Wilmington	State: MA	Zip: 01887-3369
4. NPDES permit number assigned by EPA: MAG910000 NHG910000 Tracking # 2/11/2000 MA000534 NPDES permit is (check all that apply: ■ RGP ☐ DGP ☐ CGP ☐ MSGP ☐ Individual NPDES permit ☐ Other; if so, specify:	5. Other regulatory program(s) that apply to the site (check all that apply): ☐ MA Chapter 21e; list RTN(s): RTN-3-0471 ☐ NH Groundwater Management Permit or Groundwater Release Detection Permit: ■ CERCLA ☐ UIC Program ☐ POTW Pretreatment ☐ CWA Section 404		

B. Receiving water information:

1. Name of receiving water(s):	Waterbody identification of receiving water(s):	Classification of receiving water(s):
Unnamed Tributary (South Ditch, East Ditch New Boston Drainway)	Halls Brook	Class B

Receiving water is (check any that apply): ☐ Outstanding Resource Water ☐ Ocean Sanctuary ☐ territorial sea ☐ Wild and Scenic River

2. Has the operator attached a location map in accordance with the instructions in B, above? (check one): ■ Yes ☐ No

Are sensitive receptors present near the site? (check one): ■ Yes ☐ No

If yes, specify: Surface water, wetlands

3. Indicate if the receiving water(s) is listed in the State's Integrated List of Waters (i.e., CWA Section 303(d)). Include which designated uses are impaired, and any pollutants indicated. Also, indicate if a final TMDL is available for any of the indicated pollutants. For more information, contact the appropriate State as noted in Part 4.6 of the RGP. No

4. Indicate the seven day-ten-year low flow (7Q10) of the receiving water determined in accordance with the instructions in Appendix V for sites located in Massachusetts and Appendix VI for sites located in New Hampshire.	0
5. Indicate the requested dilution factor for the calculation of water quality-based effluent limitations (WQBELs) determined in accordance with the instructions in Appendix V for sites in Massachusetts and Appendix VI for sites in New Hampshire.	1

6. Has the operator received confirmation from the appropriate State for the 7Q10and dilution factor indicated? (check one): ■ Yes ☐ No

If yes, indicate date confirmation received: 7/31/2017

7. Has the operator attached a summary of receiving water sampling results as required in Part 4.2 of the RGP in accordance with the instruction in Appendix VIII? (check one): ■ Yes ☐ No

C. Source water information:

1. Source water(s) is (check any that apply):

■ Contaminated groundwater Has the operator attached a summary of influent sampling results as required in Part 4.2 of the RGP in accordance with the instruction in Appendix VIII? (check one): ■ Yes ☐ No	☐ Contaminated surface water Has the operator attached a summary of influent sampling results as required in Part 4.2 of the RGP in accordance with the instruction in Appendix VIII? (check one): ☐ Yes ☐ No	☐ The receiving water ☐ A surface water other than the receiving water; if so, indicate waterbody:	☐ Potable water; if so, indicate municipality or origin: ☐ Other; if so, specify:

2. Source water contaminants: 2,4,4-Trimethyl-1-Pentene (190 µg/L) and 2,4,4-Trimethyl-2-pentene (46 µg/L) See attached Table 1 and Lab Report	
a. For source waters that are contaminated groundwater or contaminated surface water, indicate are any contaminants present that are not included in the RGP? (check one): ■ Yes ☐ No If yes, indicate the contaminant(s) and the maximum concentration present in accordance with the instructions in Appendix VIII.	b. For a source water that is a surface water other than the receiving water, potable water or other, indicate any contaminants present at the maximum concentration in accordance with the instructions in Appendix VIII? (check one): ☐ Yes ☐ No
3. Has the source water been previously chlorinated or otherwise contains residual chlorine? (check one): ☐ Yes ■ No	

D. Discharge information

1.The discharge(s) is a(n) (check any that apply): ■ Existing discharge ☐ New discharge ☐ New source	
Outfall(s): South Ditch (001)	Outfall location(s): (Latitude, Longitude) 42.527244, -71.155097
Discharges enter the receiving water(s) via (check any that apply): ☐ Direct discharge to the receiving water ■ Indirect discharge, if so, specify: Discharge to un-named ditch and culvert to a broadcrested weir box then into South Ditch ☐ A private storm sewer system ☐ A municipal storm sewer system If the discharge enters the receiving water via a private or municipal storm sewer system: Has notification been provided to the owner of this system? (check one): ☐ Yes ☐ No Has the operator has received permission from the owner to use such system for discharges? (check one): ☐ Yes ☐ No, if so, explain, with an estimated timeframe for obtaining permission: Has the operator attached a summary of any additional requirements the owner of this system has specified? (check one): ☐ Yes ☐ No	
Provide the expected start and end dates of discharge(s) (month/year): Indicate if the discharge is expected to occur over a duration of: ☐ less than 12 months ■ 12 months or more ☐ is an emergency discharge	
Has the operator attached a site plan in accordance with the instructions in D, above? (check one): ■ Yes ☐ No	

<table>
<tr><td>2. Activity Category: (check all that apply)</td><td colspan="2">3. Contamination Type Category: (check all that apply)</td></tr>
<tr><td rowspan="5">☐ I – Petroleum-Related Site Remediation
■ II – Non-Petroleum-Related Site Remediation
☐ III – Contaminated Site Dewatering
☐ IV – Dewatering of Pipelines and Tanks
☐ V – Aquifer Pump Testing
☐ VI – Well Development/Rehabilitation
☐ VII – Collection Structure Dewatering/Remediation
☐ VIII – Dredge-Related Dewatering</td><td colspan="2">a. If Activity Category I or II: (check all that apply)

■ A. Inorganics
■ B. Non-Halogenated Volatile Organic Compounds
☐ C. Halogenated Volatile Organic Compounds
■ D. Non-Halogenated Semi-Volatile Organic Compounds
☐ E. Halogenated Semi-Volatile Organic Compounds
☐ F. Fuels Parameters</td></tr>
<tr><td colspan="2">b. If Activity Category III, IV, V, VI, VII or VIII: (check either G or H)</td></tr>
<tr><td>☐ G. Sites with Known Contamination</td><td>☐ H. Sites with Unknown Contamination</td></tr>
<tr><td>c. If Category III-G, IV-G, V-G, VI-G, VII-G or VIII-G: (check all that apply)

☐ A. Inorganics
☐ B. Non-Halogenated Volatile Organic Compounds
☐ C. Halogenated Volatile Organic Compounds
☐ D. Non-Halogenated Semi-Volatile Organic Compounds
☐ E. Halogenated Semi-Volatile Organic Compounds
☐ F. Fuels Parameters</td><td>d. If Category III-H, IV-H, V-H, VI-H, VII-H or VIII-H Contamination Type Categories A through F apply</td></tr>
</table>

4. Influent and Effluent Characteristics

Parameter	Known or believed absent	Known or believed present	# of samples	Test method (#)	Detection limit (µg/l)	Influent		Effluent Limitations	
						Daily maximum (µg/l)*	Daily average (µg/l)*	TBEL	WQBEL
A. Inorganics									
Ammonia		✓	1	E350.1	0.40 mg/L	2.4 mg/L		Report mg/L	---
Chloride		✓	1	E300	2500	310000		Report µg/l	---
Total Residual Chlorine		✓	1	SM4500	0.02 mg/L	0.02 U mg/L		0.2 mg/L	0.011
Total Suspended Solids		✓	1	A2540D	4 mg/L	5.2 mg/L		30 mg/L	---
Antimony	✓		1	E200.8	1	1 U		206 µg/L	---
Arsenic		✓	1	E200.8	1	13		104 µg/L	10
Cadmium	✓		1	E200.8	0.5	0.5 U		10.2 µg/L	---
Chromium III	✓		1	E218.6	5	5 U		323 µg/L	---
Chromium VI	✓		1	E218.6	0.6	0.6 U		323 µg/L	---
Copper		✓	1	E200.8	1	1.6		242 µg/L	---
Iron		✓	1	E200.7	50	9500		5,000 µg/L	1000
Lead	✓		1	E200.8	1	0.21 J		160 µg/L	---
Mercury	✓		1	E245.1	0.2	0.2 U		0.739 µg/L	---
Nickel		✓	1	E200.8	1	3.4		1,450 µg/L	---
Selenium	✓		1	E200.8	1	1 U		235.8 µg/L	---
Silver	✓		1	E200.8	0.5	0.5 U		35.1 µg/L	---
Zinc		✓	1	E200.8	10	3.7 J		420 µg/L	---
Cyanide	✓		1	SM4500	0.01 mg/L	0.01 mg/L		178 mg/L	---
B. Non-Halogenated VOCs									
Total BTEX	✓		1	Calculated	6	6 U		100 µg/L	---
Benzene	✓		1	E624	1	1 U		5.0 µg/L	---
1,4 Dioxane	✓		1	8260SIM	2	2 U		200 µg/L	---
Acetone	✓		1	E524.2	50	50 U		7.97 mg/L	---
Phenol	✓		1	E625	5	5 U		1,080 µg/L	---

Parameter	Known or believed absent	Known or believed present	# of samples	Test method (#)	Detection limit (µg/l)	Influent		Effluent Limitations	
						Daily maximum (µg/l)*	Daily average (µg/l) *	TBEL	WQBEL
C. Halogenated VOCs									
Carbon Tetrachloride	✓		1	E624	1	1 U		4.4 µg/L	---
1,2 Dichlorobenzene	✓		1	E624	1	1 U		600 µg/L	---
1,3 Dichlorobenzene	✓		1	E624	1	1 U		320 µg/L	---
1,4 Dichlorobenzene	✓		1	E624	1	1 U		5.0 µg/L	---
Total dichlorobenzene	✓		1	Calculated	3	3 U		763 µg/L in NH	---
1,1 Dichloroethane	✓		1	E624	1	1 U		70 µg/L	---
1,2 Dichloroethane	✓		1	SW8260C	1	1 U		5.0 µg/L	---
1,1 Dichloroethylene	✓		1	SW8260C	1	1 U		3.2 µg/L	---
Ethylene Dibromide	✓		1	8260SIM	0.02	0.02 U		0.05 µg/L	---
Methylene Chloride	✓		1	E624	5	5 U		4.6 µg/L	---
1,1,1 Trichloroethane	✓		1	E624	1	1 U		200 µg/L	---
1,1,2 Trichloroethane	✓		1	E624	1	1 U		5.0 µg/L	---
Trichloroethylene	✓		1	E624	1	1 U		5.0 µg/L	---
Tetrachloroethylene	✓		1	E624	1	1 U		5.0 µg/L	---
cis-1,2 Dichloroethylene	✓		1	E624	1	1 U		70 µg/L	---
Vinyl Chloride	✓		1	E624	1	1 U		2.0 µg/L	---
D. Non-Halogenated SVOCs									
Total Phthalates		✓	1	Calculated	30	32		190 µg/L	---
Diethylhexyl phthalate		✓	1	E625	10	32		101 µg/L	2.2
Total Group I PAHs	✓		1	Calculated	0.35	0.35 U		1.0 µg/L	---
Benzo(a)anthracene	✓		1	8270SIM	0.05	0.05 U		As Total PAHs	---
Benzo(a)pyrene	✓		1	8270SIM	0.05	0.05 U			---
Benzo(b)fluoranthene	✓		1	8270SIM	0.05	0.05 U			---
Benzo(k)fluoranthene	✓		1	8270SIM	0.05	0.05 U			---
Chrysene	✓		1	8270SIM	0.05	0.05 U			---
Dibenzo(a,h)anthracene	✓		1	8270SIM	0.05	0.05 U			---
Indeno(1,2,3-cd)pyrene	✓		1	8270SIM	0.05	0.05 U			---

Parameter	Known or believed absent	Known or believed present	# of samples	Test method (#)	Detection limit (µg/l)	Influent		Effluent Limitations	
						Daily maximum (µg/l)*	Daily average (µg/l) *	TBEL	WQBEL
Total Group II PAHs	✓		1	Calculated	45	45 U *		100 µg/L	---
Naphthalene	✓		1	E625	5	5 U		20 µg/L	---
E. Halogenated SVOCs									
Total PCBs	✓		1	E608	0.057	0.057 U		0.000064 µg/L	---
Pentachlorophenol	✓		1	8270SIM	0.2	0.2 U		1.0 µg/L	---
F. Fuels Parameters									
Total Petroleum Hydrocarbons		✓	1	E1664	5.9 mg/L	5.9 U mg/L		5.0 mg/L	---
Ethanol	✓		1	E1671A	2 mg/L	2 U mg/L		Report mg/L	---
Methyl-tert-Butyl Ether	✓		1	8260SIM	0.2	0.2 U		70 µg/L	---
tert-Butyl Alcohol	✓		1	E624	20	20 U		120 µg/L in MA 40 µg/L in NH	---
tert-Amyl Methyl Ether	✓		1	E624	1	1 U		90 µg/L in MA 140 µg/L in NH	---
Other (i.e., pH, temperature, hardness, salinity, LC_{50}, additional pollutants present); if so, specify:									
2,4,4-Trimethyl-1-pentene		✓	1	SW8260C	4	190 ug/L			
2,4,4-Trimethyl-2-pentene		✓	1	SW8260C	1	46 ug/L			
Phenolics, Total Recoverable		✓	1	E420.4	0.01 mg/L	0.012 mg/L			

* = U qualified results are non-detect

E. Treatment system information

1. Indicate the type(s) of treatment that will be applied to effluent prior to discharge: (check all that apply)

☐ Adsorption/Absorption ☐ Advanced Oxidation Processes ☐ Air Stripping ■ Granulated Activated Carbon ("GAC")/Liquid Phase Carbon Adsorption
■ Ion Exchange ■ Precipitation/Coagulation/Flocculation ■ Separation/Filtration ☐ Other; if so, specify:

2. Provide a written description of all treatment system(s) or processes that will be applied to the effluent prior to discharge.

See attached sketch and process description: iron precipitation, pre-treatment GAC, calcium hypochlorite addition, final GAC then sodium sulfite, iron exchange, hold for testing then discharge.

Identify each major treatment component (check any that apply):
☐ Fractionation tanks■ Equalization tank ☐ Oil/water separator ☐ Mechanical filter ☐ Media filter
☐ Chemical feed tank ☐ Air stripping unit ■ Bag filter ☐ Other; if so, specify:

Indicate if either of the following will occur (check any that apply):
■ Chlorination ■ De-chlorination

3. Provide the **design flow capacity** in gallons per minute (gpm) of the most limiting component. Indicate the most limiting component: Granulated Activated Carbon Columns Is use of a flow meter feasible? (check one): ■ Yes ☐ No, if so, provide justification:	17
Provide the proposed maximum effluent flow in gpm.	75
Provide the average effluent flow in gpm. Effluent is stored in tanks and batch discharged at 65 gpm	65
If Activity Category IV applies, indicate the estimated total volume of water that will be discharged:	

4. Has the operator attached a schematic of flow in accordance with the instructions in E, above? (check one): ■ Yes ☐ No **see 2 above**

F. Chemical and additive information

1. Indicate the type(s) of chemical or additive that will be applied to effluent prior to discharge or that may otherwise be present in the discharge(s): (check all that apply)

☐ Algaecides/biocides ☐ Antifoams ☐ Coagulants ☐ Corrosion/scale inhibitors ☐ Disinfectants ☐ Flocculants ☐ Neutralizing agents ☐ Oxidants ☐ Oxygen ☐ scavengers ☐ pH conditioners ☐ Bioremedial agents, including microbes ☐ Chlorine or chemicals containing chlorine ☐ Other; if so, specify:
No chemicals are added to effluent after treatment. Chemicals added during treatment are presented in F.2 below.

2. Provide the following information for each chemical/additive, using attachments, if necessary:

Information for caustic soda and calcium hypochlorite is attached.
a. Product name, chemical formula, and manufacturer of the chemical/additive;
b. Purpose or use of the chemical/additive or remedial agent;
c. Material Safety Data Sheet (MSDS) and Chemical Abstracts Service (CAS) Registry number for each chemical/additive;
d. The frequency (hourly, daily, etc.), duration (hours, days), quantity (maximum and average), and method of application for the chemical/additive;
e. Any material compatibility risks for storage and/or use including the control measures used to minimize such risks; and
f. If available, the vendor's reported aquatic toxicity (NOAEL and/or LC50 in percent for aquatic organism(s)).

3. Has the operator attached an explanation which demonstrates that the addition of such chemicals/additives may be authorized under this general permit in accordance with the instructions in F, above? (check one): ■ Yes ☐ No; if no, has the operator attached data that demonstrates each of the 126 priority pollutants in CWA Section 307(a) and 40 CFR Part 423.15(j)(1) are non-detect in discharges with the addition of the proposed chemical/additive?
(check one): ☐ Yes ☐ No

G. Endangered Species Act eligibility determination

1. Indicate under which criterion the discharge(s) is eligible for coverage under this general permit:

☐ **FWS Criterion A**: No endangered or threatened species or critical habitat are in proximity to the discharges or related activities or come in contact with the "action area".

☐ **FWS Criterion B**: Formal or informal consultation with the FWS under section 7 of the ESA resulted in either a no jeopardy opinion (formal consultation) or a written concurrence by FWS on a finding that the discharges and related activities are "not likely to adversely affect" listed species or critical habitat (informal consultation). Has the operator completed consultation with FWS? (check one): ☐ Yes ☐ No; if no, is consultation underway? (check one): ☐ Yes ☐ No

■ **FWS Criterion C**: Using the best scientific and commercial data available, the effect of the discharges and related activities on listed species and critical habitat have been evaluated. Based on those evaluations, a determination is made by EPA, or by the operator and affirmed by EPA, that the discharges and related activities will have "no effect" on any federally threatened or endangered listed species or designated critical habitat under the jurisdiction of the FWS. This determination was made by: (check one) ☐ the operator ☐ EPA ■ Other; if so, specify: Consultant - Amec Foster Wheeler. See attached FWS letter.

☐ **NMFS Criterion**: A determination made by EPA is affirmed by the operator that the discharges and related activities will have "no effect" or are "not likely to adversely affect" any federally threatened or endangered listed species or critical habitat under the jurisdiction of NMFS and will not result in any take of listed species. Has the operator previously completed consultation with NMFS? (check one): ☐ Yes ☐ No

2. Has the operator attached supporting documentation of ESA eligibility in accordance with the instructions in Appendix I, and G, above? (check one): ■ Yes ☐ No

Does the supporting documentation include any written concurrence or finding provided by the Services? (check one): ■ Yes ☐ No; if yes, attach.

H. National Historic Preservation Act eligibility determination

1. Indicate under which criterion the discharge(s) is eligible for coverage under this general permit:

■ **Criterion A**: No historic properties are present. The discharges and discharge-related activities (e.g., BMPs) do not have the potential to cause effects on historic properties.

☐ **Criterion B**: Historic properties are present. Discharges and discharge related activities do not have the potential to cause effects on historic properties.

☐ **Criterion C**: Historic properties are present. The discharges and discharge-related activities have the potential to have an effect or will have an adverse effect on historic properties.

2. Has the operator attached supporting documentation of NHPA eligibility in accordance with the instructions in H, above? (check one): ■ Yes ☐ No

Does the supporting documentation include any written agreement with the State Historic Preservation Officer (SHPO), Tribal Historic Preservation Officer (TPHO), or other tribal representative that outlines measures the operator will carry out to mitigate or prevent any adverse effects on historic properties? (check one): ☐ Yes ☐ No

I. Supplemental information

Describe any supplemental information being provided with the NOI. Include attachments if required or otherwise necessary.

Has the operator attached data, including any laboratory case narrative and chain of custody used to support the application? (check one): ■ Yes ☐ No

Has the operator attached the certification requirement for the Best Management Practices Plan (BMPP)? (check one): ■ Yes ☐ No

J. Certification requirement

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I have no personal knowledge that the information submitted is other than true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

BMPP certification statement: A BMPP has been developed and is current in accordance with the appropiate RGP regulations (Section 2.5 - Special Conditions - Best Management Practices Plan (BMPP)).	
Notification provided to the appropriate State, including a copy of this NOI, if required.	Check one: Yes ■ No ☐
Notification provided to the municipality in which the discharge is located, including a copy of this NOI, if requested.	Check one: Yes ■ No ☐
Notification provided to the owner of a private or municipal storm sewer system, if such system is used for site discharges, including a copy of this NOI, if requested.	Check one: Yes ☐ No ☐ NA ■
Permission obtained from the owner of a private or municipal storm sewer system, if such system is used for site discharges. If yes, attach additional conditions. If no, attach explanation and timeframe for obtaining permission.	Check one: Yes ☐ No ☐ NA ■
Notification provided to the owner/operator of the area associated with activities covered by an additional discharge permit(s). Additional discharge permit is (check one): ☐ RGP ☐ DGP ☐ CGP ☐ MSGP ☐ Individual NPDES permit ☐ Other; if so, specify:	Check one: Yes ☐ No ☐ NA ■
Signature: James M. Cashwell	Date: March 2, 2018
Print Name and Title: James M. Cashwell, Director, Environmental Remediation	

Location Figures and Treatment Process Flow Diagram

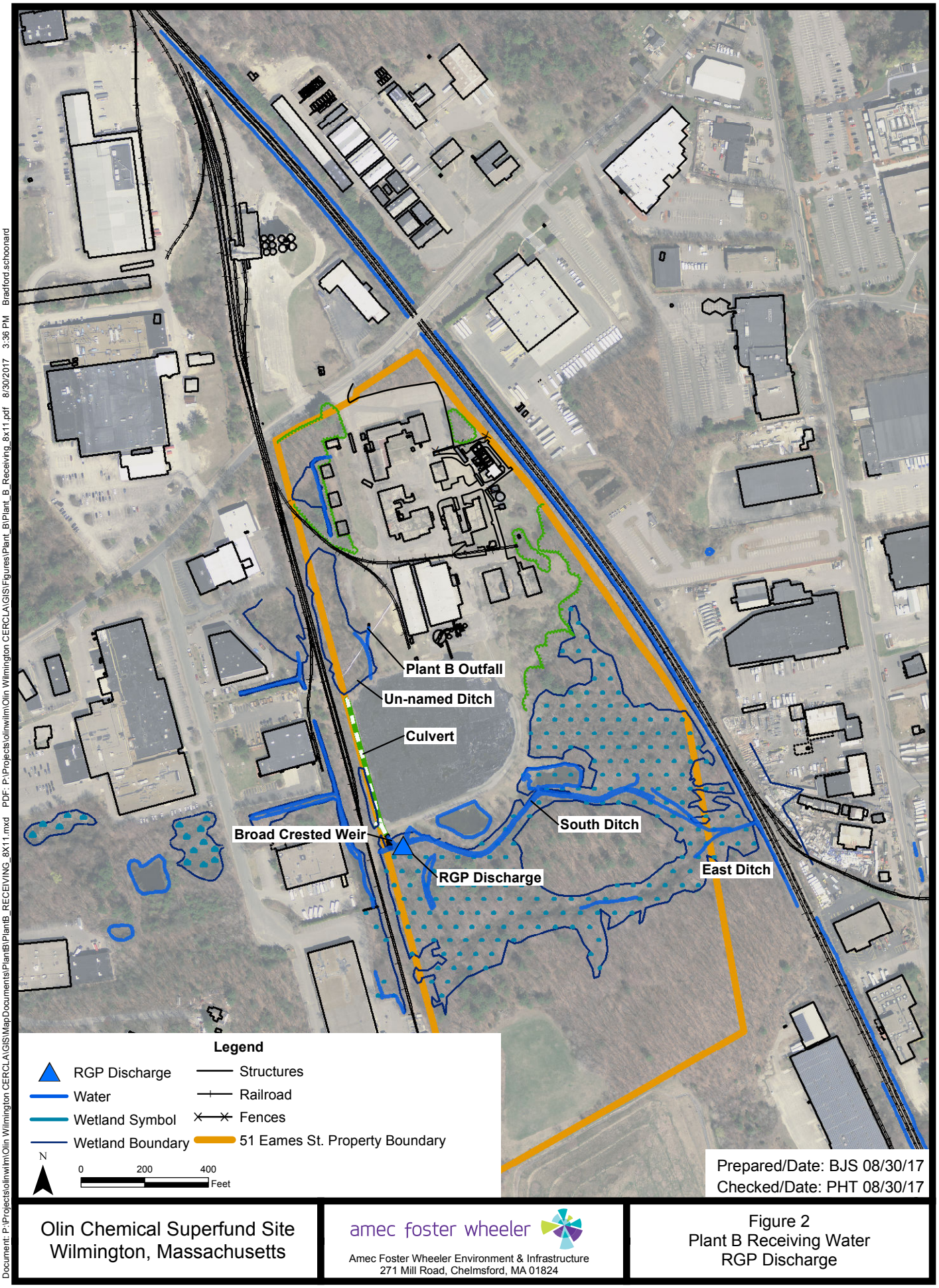
Olin Chemical Superfund Site
Wilmington, Massachusetts

amec foster wheeler

Amec Foster Wheeler Environment & Infrastructure
271 Mill Road, Chelmsford, MA 01824

Figure 1
Site Location

Document: P:\Projects\olinwilm\Olin Wilmington CERCLA\GIS\MapDocuments\PlantB\Olin_8X11_Site_Map.mxd PDF: P:\Projects\olinwilm\Olin Wilmington CERCLA\GIS\Figures\Plant_B\Site_Location.pdf 8/30/2017 12:49 PM Bradford.schoonard



Document: P:\Projects\olinwilm\Olin Wilmington CERCLA\GIS\MapDocuments\PlantB\PlantB_RECEIVING_8X11.mxd PDF: P:\Projects\olinwilm\Olin Wilmington CERCLA\GIS\Figures\Plant_B\Plant_B_Receiving_8x11.pdf 8/30/2017 3:36 PM Bradford.schoonard

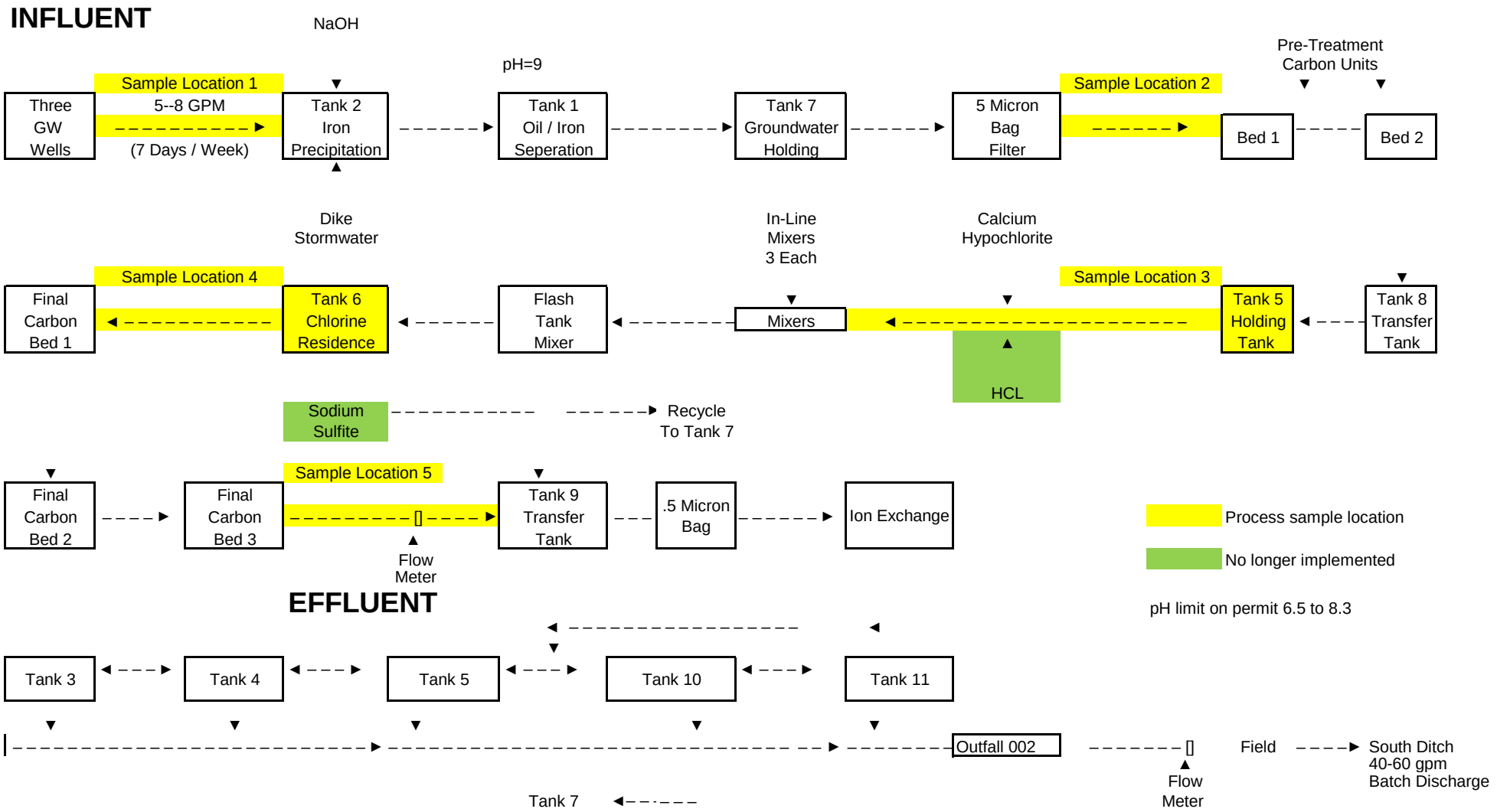
Olin Chemical Superfund Site
Wilmington, Massachusetts

amec foster wheeler

Amec Foster Wheeler Environment & Infrastructure
271 Mill Road, Chelmsford, MA 01824

Figure 2
Plant B Receiving Water
RGP Discharge

Wilmington Water Treatment System



NOI Format, Part D.4. WQBEL Calculation

Enter Data Tab from MALimitsBook.xls

Enter number values in green boxes below

Enter values in the units specified

↓

0	Q_R = Enter upstream flow in **MGD**
0.2	Q_P = Enter discharge flow in **MGD**
0	Downstream 7Q10

Enter a dilution factor, if other than zero

↓

0

Enter values in the units specified

↓

140	C_d = Enter influent hardness in **mg/L** $CaCO_3$
57	C_s = Enter receiving water hardness in **mg/L** $CaCO_3$

Enter **receiving water** concentrations in the units specified

↓

6.4	pH in **Standard Units**
20.7	Temperature in **^oC**
17	Ammonia in **mg/L**
57	Hardness in **mg/L** $CaCO_3$
0	Salinity in **ppt**
0	Antimony in **µg/L**
1.2	Arsenic in **µg/L**
0	Cadmium in **µg/L**
0	Chromium III in **µg/L**
0	Chromium VI in **µg/L**
0	Copper in **µg/L**
5000	Iron in **µg/L**
0.36	Lead in **µg/L**
0	Mercury in **µg/L**
0	Nickel in **µg/L**
0	Selenium in **µg/L**
0	Silver in **µg/L**
4.7	Zinc in **µg/L**

Enter **influent** concentrations in the units specified

↓

0	TRC in **µg/L**
2.4	Ammonia in **mg/L**
0	Antimony in **µg/L**
13	Arsenic in **µg/L**
0	Cadmium in **µg/L**
0	Chromium III in **µg/L**
0	Chromium VI in **µg/L**
1.6	Copper in **µg/L**
9500	Iron in **µg/L**
0.21	Lead in **µg/L**
0	Mercury in **µg/L**
3.4	Nickel in **µg/L**
0	Selenium in **µg/L**
0	Silver in **µg/L**
3.7	Zinc in **µg/L**
0	Cyanide in **µg/L**
0	Phenol in **µg/L**
0	Carbon Tetrachloride in **µg/L**
0	Tetrachloroethylene in **µg/L**
32	Total Phthalates in **µg/L**
32	Diethylhexylphthalate in **µg/L**
0	Benzo(a)anthracene in **µg/L**
0	Benzo(a)pyrene in **µg/L**
0	Benzo(b)fluoranthene in **µg/L**
0	Benzo(k)fluoranthene in **µg/L**
0	Chrysene in **µg/L**
0	Dibenzo(a,h)anthracene in **µg/L**
0	Indeno(1,2,3-cd)pyrene in **µg/L**
0	Methyl-tert butyl ether in **µg/L**

Notes:

Freshwater: Q_R equal to the 7Q10; enter alternate Q_R if approved by the State; enter 0 if no dilution factor
Saltwater (estuarine and marine): enter Q_R if approved by the State; enter 0 if no entry

Discharge flow is equal to the design flow or 1 MGD, whichever is less
Only if approved by State as the entry for Q_R; leave 0 if no entry

Saltwater (estuarine and marine): only if approved by the State
Leave 0 if no entry

Freshwater only

pH, temperature, and ammonia required for all discharges
Hardness required for freshwater
Salinity required for saltwater (estuarine and marine)
Metals required for all discharges if present and if dilution factor is > 1
Enter 0 if non-detect or testing not required

if >1 sample, enter maximum
if >10 samples, may enter 95th percentile
Enter 0 if non-detect or testing not required

Dilution Factor	1.0			
	TBEL applies if bolded		WQBEL applies if bolded	
A. Inorganics				
Ammonia	**Report**	mg/L	---	
Chloride	**Report**	µg/L	---	
Total Residual Chlorine	0.2	mg/L	**11**	µg/L
Total Suspended Solids	**30**	mg/L	---	
Antimony	**206**	µg/L	640	µg/L
Arsenic	104	µg/L	**10**	µg/L
Cadmium	**10.2**	µg/L	0.3472	µg/L
Chromium III	**323**	µg/L	113.5	µg/L
Chromium VI	**323**	µg/L	11.4	µg/L
Copper	**242**	µg/L	12.4	µg/L
Iron	5000	µg/L	**1000**	µg/L
Lead	**160**	µg/L	4.88	µg/L
Mercury	**0.739**	µg/L	0.91	µg/L
Nickel	**1450**	µg/L	69.3	µg/L
Selenium	**235.8**	µg/L	5.0	µg/L
Silver	**35.1**	µg/L	6.8	µg/L
Zinc	**420**	µg/L	159.3	µg/L
Cyanide	**178**	mg/L	5.2	µg/L
B. Non-Halogenated VOCs				
Total BTEX	**100**	µg/L	---	
Benzene	**5.0**	µg/L	---	
1,4 Dioxane	**200**	µg/L	---	
Acetone	**7970**	µg/L	---	
Phenol	**1,080**	µg/L	300	µg/L
C. Halogenated VOCs				
Carbon Tetrachloride	**4.4**	µg/L	1.6	µg/L
1,2 Dichlorobenzene	**600**	µg/L	---	
1,3 Dichlorobenzene	**320**	µg/L	---	
1,4 Dichlorobenzene	**5.0**	µg/L	---	
Total dichlorobenzene	**---**	µg/L	---	
1,1 Dichloroethane	**70**	µg/L	---	
1,2 Dichloroethane	**5.0**	µg/L	---	
1,1 Dichloroethylene	**3.2**	µg/L	---	
Ethylene Dibromide	**0.05**	µg/L	---	
Methylene Chloride	**4.6**	µg/L	---	
1,1,1 Trichloroethane	**200**	µg/L	---	
1,1,2 Trichloroethane	**5.0**	µg/L	---	
Trichloroethylene	**5.0**	µg/L	---	
Tetrachloroethylene	**5.0**	µg/L	3.3	µg/L
cis-1,2 Dichloroethylene	**70**	µg/L	---	

Vinyl Chloride	**2.0**	µg/L	---	
D. Non-Halogenated SVOCs				
Total Phthalates	**190**	µg/L	---	µg/L
Diethylhexyl phthalate	101	µg/L	**2.2**	µg/L
Total Group I Polycyclic Aromatic Hydrocarbons	**1.0**	µg/L	---	
Benzo(a)anthracene	**1.0**	µg/L	0.0038	µg/L
Benzo(a)pyrene	**1.0**	µg/L	0.0038	µg/L
Benzo(b)fluoranthene	**1.0**	µg/L	0.0038	µg/L
Benzo(k)fluoranthene	**1.0**	µg/L	0.0038	µg/L
Chrysene	**1.0**	µg/L	0.0038	µg/L
Dibenzo(a,h)anthracene	**1.0**	µg/L	0.0038	µg/L
Indeno(1,2,3-cd)pyrene	**1.0**	µg/L	0.0038	µg/L
Total Group II Polycyclic Aromatic Hydrocarbons	**100**	µg/L	---	
Naphthalene	**20**	µg/L	---	
E. Halogenated SVOCs				
Total Polychlorinated Biphenyls	**0.000064**	µg/L	---	
Pentachlorophenol	**1.0**	µg/L	---	
F. Fuels Parameters				
Total Petroleum Hydrocarbons	**5.0**	mg/L	---	
Ethanol	**Report**	mg/L	---	
Methyl-tert-Butyl Ether	**70**	µg/L	20	µg/L
tert-Butyl Alcohol	**120**	µg/L	---	
tert-Amyl Methyl Ether	**90**	µg/L	---	

Part F.2 – Chemical and Additive Information

Part F.2 – Chemical and additive information for Caustic Soda and Calcium Hypochlorite

Caustic Soda

A. **Product name, chemical formula, and manufacturer of the chemical/additive:**

Sodium Hydroxide – Caustic Soda Liquid 25%, NaOH, Manufactured by Hubbard-Hall

B. **Purpose or use of the chemical/additive or remedial agent**:

The caustic soda is metered into the influent groundwater by means of an LMI metering pump to raise the pH to 8.25-9.0 range to precipitate iron and other associated metals in the groundwater.

C. Material Safety Data Sheet (MSDS) and Chemical Abstracts Service (CAS) Registry number for each chemical/additive:

See attached Safety Data Sheet for Caustic Soda Liquid 25%, CAS No. 1310-73-2

D. The frequency (hourly, daily, etc.), duration (hours, days), quantity (maximum and average), and method of application for the chemical/additive;

The caustic soda is metered into the system (influent water from three well pumps) at a rate of approximately 1.3 Gal/24 hrs, 7 days a week. The caustic soda is metered into the influent groundwater by means of an LMI metering diaphragm pump.

E. Any material compatibility risks for storage and/or use including the control measures used to minimize such risks:

The caustic soda is stored in the original high density polyethylene 55 gallon container supplied by the manufacturer, which is covered and stored with spill/overflow protection. Material is stored in a locked, ventilated building away from incompatible materials (i.e. acids).

F. If available, the vendor's reported aquatic toxicity (NOAEL and/or LC50 in percent for aquatic organism(s)).

From the vendor: Fish, Lepomis macrochirus = Caustic-99 mg/L, 48 hrs.

Calcium Hypochlorite

A. **Product name, chemical formula, and manufacturer of the chemical/additive:**

Constant Chlor® Plus Briquettes, Calcium Hypochlorite, $CaCl_2O_2$, Manufactured by Arch Chemical, Inc.

B. **Purpose or use of the chemical/additive or remedial agent**:

The calcium hypochlorite solution is metered into the treatment process by means of a Calcium Hypochlorite Chlorinator manufactured by Arch Chemicals for Ammonia destruction.

C. Material Safety Data Sheet (MSDS) and Chemical Abstracts Service (CAS) Registry number for each chemical/additive:

See attached Safety Data Sheet for Constant Chlor® Plus Briquettes, Calcium Hypochlorite (60% - 80%), CAS No. 7778-54-3.

D. **The frequency (hourly, daily, etc.), duration (hours, days), quantity (maximum and average), and method of application for the chemical/additive;**

Calcium hypochlorite briquettes are slowly dissolved into water to produce a solution that is metered into the process water of the treatment system to achieve a concentration range of approximately 2.5-15 parts per million (PPM) of chlorine in the process water. The hypochlorite is added to the process water only when the treatment plant is operating (i.e. processing water). Approximately 50lbs of calcium hypochlorite briquettes are used to treat 350,000 to 400,000 gallons of water over a two month period.

E. Any material compatibility risks for storage and/or use including the control measures used to minimize such risks:

Calcium hypochlorite briquettes are dry (about the size of small bars of soap) and are stored in their original tightly closed shipping containers (typically at most 6-8 plastic 5 galllon size pails weighing about 50 lbs each). The 5 gallon pails are stored in a cool, dry, locked, ventilated building away from combustible materials and other incompatible materials.

F. If available, the vendor's reported aquatic toxicity (NOAEL and/or LC50 in percent for aquatic organism(s)).

From the vendor: See Section 12 of the attached Safety Data Sheet from the manufacture.

Sodium Sulfite

A. **Product name, chemical formula, and manufacturer of the chemical/additive:**

Sodium Sulfite, Anhydrous, Na_2SO_3, representative safety data sheet is attached.

B. **Purpose or use of the chemical/additive or remedial agent**:

The sodium sulfite is not used on a daily basis and is only added to treat discharge water if chlorine level is over limit. Use of this chemical has not been needed in the last 11 years of Plant B operations.

C. Material Safety Data Sheet (MSDS) and Chemical Abstracts Service (CAS) Registry number for each chemical/additive:

See attached Safety Data Sheet for Sodium Sulfite, Anhydrous powder. CAS# 007757-83-7.

D. **The frequency (hourly, daily, etc.), duration (hours, days), quantity (maximum and average), and method of application for the chemical/additive;**

Use of this chemical has not been needed in the last 11 years of Plant B operations. It is only used when the chlorine level in the effluent exceeds permit level.

E. Any material compatibility risks for storage and/or use including the control measures used to minimize such risks:

Sodium Sulfite is stored in a secondary, tightly closed 5 gallon plastic container. The 5 gallon container is stored in a cool, dry, locked, ventilated building away from combustible materials and other incompatible materials.

F. If available, the vendor's reported aquatic toxicity (NOAEL and/or LC50 in percent for aquatic organism(s)).

See Section 12 of the attached Safety Data Sheet.

Hubbard-Hall

Safety Data Sheet

Better Chemistry. **Better Business**

CAUSTIC SODA LIQUID 25% **Revised:** 12/10/15

1 IDENTIFICATION

Product Name: CAUSTIC SODA LIQUID 25%

Product Code :4762001

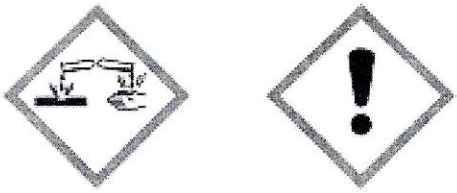
Other Means of identification: Sodium Hydroxide

Recommended use of the chemical and restrictions on use: Industrial applications

Hubbard-Hall Inc.
563 South Leonard Street
Waterbury, CT 06708
Telephone: 203-756-5521
Fax number: 203-756-9017

Emergency Phone Number
CHEMTREC: 1 (800) 424-9300
International: 1 (703) 527-3887

2 HAZARDS IDENTIFICATION



Signal Word: DANGER

Hazard Category: Corrosive to Metals Hazard Category 1
Acute Toxicity-Oral Hazard Category 4
Skin Corrosion/Irritation Hazard Category 1A
Eye Damage/Irritation Hazard Category 1

Hazard Statements: May be corrosive to metals.
Harmful if swallowed.
Causes severe skin burns and eye damage.

Prevention: Keep only in original container.
Wear protective gloves, chemical protective clothing, eye protective goggles and face shield for face protection.
Do not eat, drink or smoke when using this product.
Do not breath dusts or mists.
Wash skin thoroughly after handling.

Response: If inhaled: Remove person to fresh air and keep comfortable for breathing. Call poison center/doctor if you feel unwell.
If swallowed: Rinse mouth. Do NOT induce vomiting.
Wash contaminated clothing before reuse.
Absorb spillage to prevent material damage.

If on skin (or hair): Take off immediately all contaminated clothing Rinse skin with water/shower .
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If inhaled: Remove person to fresh air and keep comfortable for breathing.
If swallowed: Call poison center, if you feel unwell.
Immediately call poison center or doctor and explain the type of exposure to the chemical(s) and provide the name of the chemical(s).
Specific treatment - refer to poison center or doctor for advice.

Storage: Store locked up.
Store in corrosive resistant high density polyethylene container.

Disposal: Dispose of contents/container in accordance with local, regional, national, or international regulations.

3 COMPOSITION INFORMATION

Chemical Name	Common Name And Synonyms	CAS No. and other Unique identifiers	Concentration %
Sodium Hydroxide	Caustic Soda	1310-73-2	25%

4 FIRST AID

After Inhalation:

Move to fresh air. If breathing is difficult, give oxygen. If breathing stops, provide artificial respiration. Do not use mouth-to-mouth method if victim inhaled the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one way valve or other proper respiratory device. Call a physician or poison control center imediately.

After Skin Contact:

Take off immediately all contaminated clothing. Wash off IMMEDIATELY with plenty of water for at least 15-20 minutes. Get medical attention immediately! Wash clothing separately before reuse. Destroy or thoroughly clean all contaminated shoes.

After Eye Contact:

Immediately flush with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do so. Continue rinsing. Call a physician or poison control center immediately.

After Ingestion:

Call a physician or poison control center immediately. Do not induce vomiting. Immediately rinse mouth and drink plenty of water. If vomiting occurs, keep head low so that the stomach content doesn't get into the lungs. Never give anything by mouth to an unconscious person. Do not use mouth-to-mouth method if victim ingested the substance.

Most Important Symptoms/Effects

Delayed:

Burning pain and severe corrosive skin damage. Permanent eye damage including blindness could result. Symptons may include stinging, tearing, redness, swelling, and blurred vision. Shortness of breath.

Indication of immediate medical attention:

Provide general supportive measures and treat symptomatically. Symptons may be delayed. Keep victim under observation.

Special Precautions / Procedures:

Emergency personnel should protect against secondary contamination.

5 FIRE FIGHTING MEASURES

Suitable and Unsuitable extinguishing media: Water fog. Foam. Dry Chemical powder. Carbon Dioxide (CO_2). Use extinguishing agent suitable for type of surrounding fire. Do not use solid water stream as it may scatter and spread fire. Do not use halogenated extinguishing agents.

Specific hazards arising from the chemical: The product itself does not burn. May decompose upon heating to produce corrosive and/or toxic fumes. Contact with metal may release flammable hydrogen gas.

Special protective equipment and precautions for firefighter	Fire fighters should enter area only if they are protected from all contact with the materail. Full protective clothing, including self-contained breathing apparatus, coat, pants, gloves, boots and bands around legs, arms, and waist, should be worn. No skin surfaces should be exposed.

6 ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment, & Emergency Proc	Prevent spilled product from drains, sewers, waterways and soil.
	Wear appropriate chemical protection equipment such as gloves, face-shield, goggles and suitable body protection to prevent contamination of skin, eyes and personal clothing.
Methods and Materials for containment & cleaning up:	If trained in accordance 29 CFR 1910.120, leaks should be stopped. Spills should be contained and cleaned immediately. Persons performing clean up work should wear adequate personal protective equipment and clothing. Spills and releases should be reported, if required, to the appropriate local, state and federal regulatory agencies.

7 HANDLING AND STORAGE

Precautions for safe handling:	Use caution when combining with water. DO NOT add water to Caustic. ALWAYS add caustic to water while stirring to minimize heat generation. Do not get in eyes,skin or on clothing. Do not taste or swallow. Do not breath vapor or mist. Use only with adequate ventilation. Wear appropriate personal protective equipment. Transfer and storage systems should be compatible and corrosion resistant. Observe good industrial hygiene practices.
Conditions for safe storage, inc any incompatibilities:	Keep container tightly closed.
	Store in cool dry place.
	Store away from incompatible materials. (See section 10).
	Do not allow material to freeze.
	Store in corrosive resistant container.

8 EXPOSURE CONTROLS / PERSONAL PROTECTION

Name	Std.	TWA-8hrs	STEL - 15 min.
Sodium Hydroxide	ACGIH	2 mg/m3	-

ACGIH - American Control of Governmental Hygenists
OSHA - Occupational Safety and Health Administration

Ventilation:	Use local exhaust to keep personal exposures below the OSHA Permissible Exposure Limit(s) (PEL) or the ACGIH threshold Limit Values (TLV)Time Weight Average (TWA).
Respiratory Protection:	A respiratory protection program that meets OSHA 29 CFR 1910.134 and ANSI 788.2 or applicable federal requirements must be followed whenever work place conditions warrant respirator use. NIOSH's Respirator Decision Logic" may be useful in determining the suitability of various types of respirators.
	Not required if proper ventilation controls are employed.
Other:	It is recommended that a hazard assesment in accordance with the OSHA PPE standard (29 CFR 1910.132) be conducted before using this product.
Protective Gloves:	Rubber gloves
Eye Protection:	Wear chemical safety goggles with face shield.

Other Protective Equipment:	Wear chemical resistant apron.

9 PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Clear colorless liquid
Odor:	No odor
Odor Threshold:	N/A
PH:	14 (7.5% solution)
Melting Point/Freezing Point:	< 20 F
Initial Boiling Point and Boiling Range:	230-291 °F
Flash Point:	N/A
Evaporation Rate:	N/A
Flammability (solid, gas):	N/A
Upper/Lower flammability or explosive limits:	N/A
Vapor Pressure:	N/A
Vapor Density:	N/A
Relative Density:	1.275
Solubility (ies):	Complete in water
Partition Coefficient; n-octanol/water:	N/A
Auto-ignition Temperature:	N/A
Decomposition Temperature:	N/A
Viscosity:	N/A

10 STABILITY AND REACTIVITY

Reactivity:	Contact with metal may release flammable hydrogen gas.
Chemical Stability:	Stable under normal conditions
Possibility of Hazardous Reactions:	Hazardous polymerization does not occur.
Conditions to Avoid:	Reacts violently with strong acids. This product may react with oxidizing agents. Do not mix with other chemicals. Corrosive to aluminum, tin, zinc, copper and most alloys in which they are present including brass and bronze. Corrosive to steels at elevated temperatures above 40 °C.
Incompatible Materials:	Avoid contact with aluminum, tin, zinc. halogenated solvents, and strong oxidizers and acids.
Hazardous Decomposition Products:	Contact with metal (aluminum, zinc, tin) and sodium tetrahydroborate liberates hydrogen gas.

11 TOXICOLOGICAL INFORMATION

Oral Administration:	Caustic 50% solution: LD50, Rat-300-500 mg/kg
Dermal administration:	Caustic 50% solution-LD50 Rabbit->2 g/kg
Immediate effects:	Severe irritation or burns to skin, eyes and respiratory system
Cancer Hazard:	Not listed by IARC, NTP, OSHA, ACGIH

12 ECOLOGICAL INFORMATION

Fish, Lepomis macrochirus,	Caustic-99 mg/L, 48 hrs
Bioaccumulation potential:	Unlikely
Water result:	Disperses in water.
Soil/Sediment Result:	Pronounced solubility and mobility

13 DISPOSAL CONSIDERATION

Dispose of in accordance with local, state and federal regulations.

14 TRANSPORT INFORMATION

UN Number:	1824
UN Proper Shipping Name:	SODIUM HYDROXIDE SOLUTION,
Transport Hazard Class (es):	8
Packing Group:	II
ERG:	154

15 REGULATORY INFORMATION

HMIS: Health: 3 Flammability: 0 Reactivity: 1

Cercla	Sodium Hydroxide-RQ=1000 lbs
Sara Hazard Classification	SARA 302 - Extremely Hazardous Substances; None present
Sara Hazard Classification	SARA Hazard Categories: Immediate Hazard:Yes Delayed Hazard:Yes Fire Hazard-No Pressure Hazard-No Reactivity Hazard-yes

16 OTHER INFORMATION

Disclaimer:	The information is based on our knowledge to date but does not constitute an assurance of product properties and does not imply a legal contractual relationship.
Date Prepared:	8/8/14

FOR ANY EMERGENCY, 24 HOURS / 7 DAYS, CALL:	1-800-654-6911 (OUTSIDE USA: 1-423-780-2970)
FOR ALL TRANSPORTATION ACCIDENTS, CALL CHEMTREC®:	1-800-424-9300 (OUTSIDE USA: 1-703-527-3887)
FOR ALL SDS QUESTIONS & REQUESTS, CALL:	1-800-511-MSDS (OUTSIDE USA: 1-423-780-2347)

PRODUCT NAME: **CONSTANT CHLOR® PLUS BRIQUETTES**
EPA Registration Number: 1258-1179

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Arch Chemicals, Inc.
1200 Bluegrass Lakes Parkway
Alpharetta, GA 30004

REVISION DATE:	06/02/2015
SUPERCEDES:	05/26/2015
MSDS Number:	000000022378
SYNONYMS:	None
CHEMICAL FAMILY:	Hypochlorite
DESCRIPTION / USE	Sanitizer and OxidizerWater treatment chemical
FORMULA:	Not Applicable/Mixture

SECTION 2. HAZARDS IDENTIFICATION

GHS Classification

Oxidizing solids	:	Category 2
Acute toxicity (Oral)	:	Category 4
Skin corrosion	:	Category 1B
Serious eye damage	:	Category 1
Acute toxicity (Inhalation)	:	Category 3
Specific target organ toxicity - single exposure	:	Category 3

GHS Label element

Hazard pictograms :

Signal word : Danger

Hazard statements	:	H272 May intensify fire; oxidiser. H302 Harmful if swallowed. H314 Causes severe skin burns and eye damage. H331 Toxic if inhaled. H335 May cause respiratory irritation.
Precautionary statements	:	**Prevention:** P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. P220 Keep/Store away from clothing/ combustible materials. P221 Take any precaution to avoid mixing with combustibles. P260 Do not breathe vapours. P264 Wash hands thoroughly after handling. P270 Do not eat, drink or smoke when using this product. P271 Use only outdoors or in a well-ventilated area. P280 Wear protective gloves/ protective clothing/ eye protection/ face protection. **Response:** P301 + P312 IF SWALLOWED: Call a POISON CENTER or doctor/ physician if you feel unwell. P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. P304 + P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P310 Immediately call a POISON CENTER or doctor/ physician. P363 Wash contaminated clothing before reuse. P370 + P378 In case of fire: Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide to extinguish. **Storage:** P403 + P233 Store in a well-ventilated place. Keep container tightly closed. P405 Store locked up. **Disposal:** P501 Dispose of contents/container in accordance with local regulation.

Other hazards

None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

CAS OR CHEMICAL NAME	CAS #	% RANGE
CALCIUM HYPOCHLORITE	7778-54-3	60 - 80

SODIUM CHLORIDE	7647-14-5	10 - 20
CALCIUM CHLORATE	10137-74-3	0 - 5
CALCIUM CHLORIDE	10043-52-4	0 - 5
CALCIUM HYDROXIDE	1305-62-0	0 - 4
CALCIUM CARBONATE	471-34-1	0 - 4
1,2,4-BUTANETRICARBOXYLIC ACID, 2-PHOSPHONO-, SODIUM SALT	40372-66-5	0.2 - 0.8
Water	7732-18-5	4.0 - 8.5

SECTION 4. FIRST AID MEASURES

General Advice: Call a poison control center or doctor for treatment advice. For 24-hour emergency medical assistance, call Arch Chemical Emergency Action Network at 1-800-654-6911. Have the product container or label with you when calling a poison control center or doctor, or going for treatment.

Inhalation: IF INHALED: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a poison control center or doctor for further treatment advice.

Skin Contact: IF ON SKIN OR CLOTHING: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

Eye Contact: IF IN EYES: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

Ingestion: IF SWALLOWED: Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give anything by mouth to an unconscious person.

Notes to Physician: Probable mucosal damage may contraindicate the use of gastric lavage.

SECTION 5. FIREFIGHTING MEASURES

Flammability Summary (OSHA):	This product is chemically reactive with many substances. Any contamination of the product with other substances by spill or otherwise may result in a chemical reaction and fire., This product is a strong oxidizer which is capable of intensifying a fire once started., Product is not known to be flammable, combustible or pyrophoric.

Flammable Properties

Flash Point:	Not applicable
Autoignition Temperature:	Not applicable
Extinguishing Media:	Water only. Do not use dry extinguishers containing ammonium compounds.
Fire Fighting Instructions:	Use water to cool containers exposed to fire. See Section 6 for protective equipment for fire fighting.
Upper Flammable / Explosive Limit, % in air:	Not applicable
Lower Flammable / Explosive Limit, % in air:	Not applicable

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal Protection for Emergency Situations:	Response to a large quantity spill (100 pounds or greater) or when dusting or decomposition gas exposure could occur requires the use of a positive pressure full face supplied air repirator or self contained breathing apparatus (SCBA), chemical resistant gloves, coveralls and boots. In case of fire, this personal protective equipment should be used in addition to normal fire fighter equipment.

Spill Mitigation Procedures

Air Release:	Vapors may be suppressed by the use of water fog. All water utilized to assist in fume suppression, decontamination or fire suppression may be contaminated and must be contained before disposal and/or treatment.
Water Release:	This product is heavier than water. This material is soluble in water. Monitor all exit water for available chlorine and pH. Advise local authorities of any contaminated water release.
Land Release:	Contact 1-800-654-6911 immediately. DANGER: All spills of this product should be treated as contaminated. Contaminated product may initiate a chemical reaction that may spontaneously ignite any combustible material present, resulting in a fire of great intensity. In case of a spill, separate all spilled product from packaging, debris and other material. Using a clean broom or shovel, place all spilled product into plastic bags, and place those bags into a clean, dry disposal container, properly marked and labeled. Disposal containers made of plastic or metal are recommended. Do not seal disposal containers tightly. Immediately remove all product in disposal containers to an isolated area outdoors. Place all damaged packaging material in a disposal container of water to assure decontamination (i.e. removal of all product) before disposal. Place all undamaged packaging in a clean, dry container properly marked and labeled. Call for disposal procedures.

Additional Spill Information :	Hazardous concentrations in air may be found in local spill area and immediately downwind. Remove all sources of ignition. Stop source of spill as soon as possible and notify appropriate personnel. Dispose of spill residues per guidelines under Section 13, Disposal Consideration. This material may be neutralized for disposal; you are requested to contact Arch Chemicals at 1-800-654-6911 before beginning any such procedure. FOR ALL TRANSPORTATION ACCIDENTS, CALL CHEMTREC: 1-800-424-9300 REPORTABLE QUANTITY: 10 lbs. (as calcium hypochlorite) per 40 CFR 302.4.

SECTION 7. HANDLING AND STORAGE

Handling:	Avoid inhalation of dust and fumes. Do not take internally. Avoid contact with skin, eyes and clothing. Upon contact with skin or eyes, wash off with water. Remove contaminated clothing and wash before reuse.
Storage:	Keep product tightly sealed in original containers. Store product in a cool, dry, well-ventilated area. Store away from combustible or flammable products. Keep product packaging clean and free of all contamination, including, e.g. other pool treatment products, acids, organic materials, nitrogen-containing compounds, dry powder fire extinguishers (containing mono-ammonium phosphate), oxidizers, all corrosive liquids, flammable or combustible materials, etc.
Shelf Life Limitations:	Do not store product where the average daily temperature exceeds 95° F. Storage above this temperature may result in rapid decomposition, evolution of chlorine gas and heat sufficient to ignite combustible products. Shelf life (that is, the period of time before the product goes below stated label strength) is determined by storage time and temperatures. Store in a cool, dry and well ventilated area. Prolonged storage at elevated temperatures will significantly shorten the shelf life. Storage in a climate controlled storage area or building is recommended in those areas where extremes of high temperature occur.
Incompatible Materials for Storage:	Do not allow product to come in contact with other materials, including e.g. other pool treatment products, acids, organic materials, nitrogen-containing compounds, dry powder fire extinguishers (containing mono-ammonium phosphate), oxidizers, all corrosive liquids, flammable or combustible materials, etc. A chemical reaction with such substances can cause a fire of great intensity.
Do Not Store At temperatures Above:	Average daily temperature of 35° C / 95° F. Storage above this temperature may result in rapid decomposition, evolution of chlorine gas and heat sufficient to ignite combustible products.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ventilation: Local exhaust ventilation or other engineering controls are normally required when handling or using this product to keep airborne exposures below the TLV, PEL or other recommended exposure limit.

Protective Equipment for Routine Use of Product

Respiratory Protection : Wear a NIOSH approved respirator if levels above the exposure limits are possible.

Respirator Type : A NIOSH approved full-face air purifying respirator equipped with combination chlorine/P100 cartridges. Air purifying respirators should not be used in oxygen deficient or IDLH atmospheres or if exposure concentrations exceed ten (10) times the published limit.

Skin Protection : Wear impervious gloves to avoid skin contact. A full impervious suit is recommended if exposure is possible to a large portion of the body. A safety shower should be provided in the immediate work area.

Eye Protection: Use chemical goggles. Emergency eyewash should be provided in the immediate work area.

Protective Clothing Type: Neoprene, Nitrile, Natural rubber (This includes: gloves, boots, apron, protective suit)

Components with workplace control parameters

Components (CAS-No.)	Value	Control parameters	Basis (Update)
CALCIUM HYPOCHLORITE (7778-54-3)	TWA	1 mg/m3	ARCH OEL*
CALCIUM HYPOCHLORITE (7778-54-3)	Conc	37 - 48 mg/m3	NIOSH/GUIDE IDLH
CALCIUM HYDROXIDE (1305-62-0)	TWA	5 mg/m3	ACGIH (02 2014)

ARCH OEL: Arch Recommended Occupational Exposure Guideline.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	solid
Form	Tablet
Color:	white
Odor:	Chlorine-like
Molecular Weight:	143.00 g/mol
pH :	10.4 - 10.8 (1% solution in neutral, distilled water) (@ 25 Deg. C)
Boiling Point:	Not applicable
Freezing Point:	Not applicable
Density:	1.9g/cc
Vapor Pressure:	(@ 25 Deg. C) Not applicable

Vapor Density:	Not applicable
Viscosity:	Not applicable
Fat Solubility:	No data
Solubility in Water:	18 % (@ 25 Deg. C) Product also contains calcium hydroxide and calcium carbonate which will leave a residue.
Partition coefficient n-octanol/water:	Not applicable
Evaporation Rate:	Not applicable
Oxidizing:	Oxidizer
Volatiles, % by vol.:	Not applicable
VOC Content	Not applicable
HAP Content	Not applicable

SECTION 10. STABILITY AND REACTIVITY

Stability and Reactivity Summary:	Product is not sensitive to mechanical shock or impact. Product is not sensitive to electrical static discharge. Product will not undergo hazardous polymerization. Product is an NFPA Class 3 oxidizer which can cause a severe increase in fire intensity. Not pyrophoric. Not an organic peroxide. If subjected to excessive temperatures, the product may undergo rapid decomposition, evolution of chlorine gas, and heat sufficient to ignite combustible substances. If product is exposed to small amounts of water, it can react violently to produce heat and toxic gases and spatter. Use copious amounts of water for fires involving this product.
Conditions to Avoid:	Do not store next to heat source, in direct sunlight, or elevated storage temperature. Do not store where the daily average temperature exceeds 95 °F. Prevent ingress of humidity and moisture into container or package. Always close the lid.
Chemical Incompatibility:	This product is chemically reactive with many substances, including, e.g., other pool treatment products, acids, organics, nitrogen-containing compounds, dry powder fire extinguishers (containing mono-ammonium phosphate), oxidizers, corrosive ,flammable or combustible materials. Do not allow product to contact any foreign matter, including other water treatment products. Contamination or improper use may cause a fire of great intensity, explosion or the release of toxic gases. If product is exposed to small amounts of water, it can react violently to produce heat and toxic gases and spatter.
Hazardous Decomposition Products:	Chlorine
Decomposition Temperature:	170 - 180 °C - , 338 - 356 °F-

SECTION 11. TOXICOLOGICAL INFORMATION

Component Animal Toxicology
Oral LD50 value:

CALCIUM HYPOCHLORITE	LD50 (65% calcium hypochlorite)	850 mg/kg	Rat

SODIUM CHLORIDE	LD50	= 3,000 mg/kg	Rat
CALCIUM CHLORIDE	LD50	= 1,000 mg/kg	Rat
CALCIUM HYDROXIDE	LD50	= 7,340 mg/kg	Rat

Component Animal Toxicology
Dermal LD50 value:

CALCIUM HYPOCHLORITE	LD50 (65% calcium hypochlorite)	> 2,000 mg/kg	Rabbit
SODIUM CHLORIDE	LD50	> 10,000 mg/kg	Rabbit
CALCIUM CHLORIDE	LD50	= 2,630 mg/kg	Rat
CALCIUM HYDROXIDE	No data		

Component Animal Toxicology
Inhalation LC50 value:

CALCIUM HYPOCHLORITE	Inhalation LC50 1 h (65% calcium hypochlorite), (Nose Only) = Rat	2.04 mg/l
	Inhalation LC50 4 h (65% calcium hypochlorite), (Nose Only) = Rat	0.51 mg/l
SODIUM CHLORIDE	Inhalation LC50 1 h > 42 mg/l Rat	
CALCIUM CHLORIDE	No data	
CALCIUM HYDROXIDE	No data	

Product Animal Toxicity

Oral LD50 value:	LD50 Approximately 800 mg/kg Rat
Dermal LD50 value:	LD50 > 2,000 mg/kg Rabbit
Inhalation LC50 value:	Inhalation LC50 1.00 h (Nose Only) > 2.04 mg/l Rat Inhalation LC50 4 h (Nose Only) > 0.51 mg/l Rat Inhalation LC50 1 h (Nose Only) > 2.04 mg/l Rat Inhalation LC50 4 h (Nose Only) > 0.51 mg/l Rat
Skin Irritation:	DRY MATERIAL CAUSES MODERATE SKIN IRRITATION., WET MATERIAL CAUSES SKIN BURNS.
Eye Irritation:	Corrosive to eyes.
Skin Sensitization:	This material is not known or reported to be a skin or respiratory sensitizer.
Acute Toxicity:	This product is corrosive to all tissues contacted and upon inhalation, may cause irritation to mucous membranes and respiratory tract.The dry material is irritating to the skin. However when wet, it will produce burns to the skin.
Subchronic / Chronic Toxicity:	There are no known or reported effects from repeated exposure except those secondary to burns.
Reproductive and Developmental Toxicity:	Calcium hypochlorite has been tested for teratogenicity in laboratory animals. Results of this study have shown that calcium hypochlorite is not a teratogen.

CALCIUM CHLORIDE	Not known or reported to cause reproductive or developmental toxicity.

Mutagenicity: Calcium hypochlorite has been tested in the Dominant lethal assay in male mice, and it did not induce a dominant lethal response. Calcium hypochlorite has been reported to produce mutagenic activity in two in vitro assays. It has, however, been shown to lack the capability to produce mutations in animals based on results from the micronucleus assay. In vitro assays frequently are inappropriate to judge the mutagenic potential of bactericidal chemicals due to a high degree of cellular toxicity. The concentration which produces mutations in these in vitro assays is significantly greater than the concentrations used for disinfection. Based on high cellular toxicity in in vitro assays and the lack of mutagenicity in animals, the risk of genetic damage to humans is judged not significant.

CALCIUM CHLORIDE	This product was determined to be non-mutagenic in the Ames assay. It was also shown to be non-clastogenic in the chromosomal aberration test.

Carcinogenicity: This product is not known or reported to be carcinogenic by any reference source including IARC, OSHA, NTP or EPA. One hundred mice were exposed dermally 3 times a week for 18 months to a solution of calcium hypochlorite. Histopathological examination failed to show an increased incidence of tumors. IARC (International Agency for Research on Cancer) reviewed studies conducted with several hypochlorite salts. IARC has classified hypochlorite salts as having inadequate evidence for carcinogenicity to humans and animals. IARC therefore considers hypochlorite salts to be not classifiable as to their carcinogenicity to humans (Group 3 Substance).

CALCIUM CHLORIDE	This chemical is not known or reported to be carcinogenic by any reference source including IARC, OSHA, NTP, or EPA.

SECTION 12. ECOLOGICAL INFORMATION

Overview: Highly toxic to fish and other aquatic organisms.

Ecological Toxicity Values for: CALCIUM HYPOCHLORITE

Bluegill	-	(nominal, static). 96 h LC50 0.088 mg/l
Rainbow trout (Salmo gairdneri),	-	(nominal, static). 96 h LC50 0.16 mg/l
Daphnia magna,	-	(nominal, static). 48 h LC50 0.11 mg/l
Bobwhite quail	-	Dietary LC50 > 5,000 ppm
Mallard ducklings	-	Dietary LC50 > 5,000 ppm
Bobwhite quail	-	Oral LD50 3,474 mg/kg

Ecological Toxicity Values for: CALCIUM CHLORIDE

Bluegill	-	(nominal, static). 96 h LC50 = 10,650 mg/l
Mosquito fish	-	(nominal, static). 96 h LC50 = 13,400 mg/l

Pimephales promelas (fathead minnow)	-	(nominal, static). 96 h LC50 = 4,630 mg/l
Daphnia magna,	-	(nominal, static). 48 h LC50= 2,770 mg/l
Ceriodaphnia dubia	-	(nominal, static). 48 h LC50= 1,830 mg/l
Nitzschia linearis (diatom)	-	(nominal, static). 5 day LC50 = 3,130 mg/l

SECTION 13. DISPOSAL CONSIDERATIONS

CARE MUST BE TAKEN TO PREVENT ENVIRONMENTAL CONTAMINATION FROM THE USE OF THE MATERIAL. THE USER OF THE MATERIAL HAS THE RESPONSIBILITY TO DISPOSE OF UNUSED MATERIAL, RESIDUES AND CONTAINERS IN COMPLIANCE WITH ALL RELEVANT LOCAL, STATE AND FEDERAL LAWS AND REGULATIONS REGARDING TREATMENT, STORAGE AND DISPOSAL FOR HAZARDOUS AND NONHAZARDOUS WASTES.

Waste Disposal Summary :	If this product becomes a waste, it meets the criteria of a hazardous waste as defined under 40 CFR 261 and would have the following EPA hazardous waste number: D001.If this product becomes a waste, it will be a hazardous waste which is subject to the Land Disposal restrictions under 40 CFR 268 and must be managed accordingly.As a hazardous solid waste, it must be disposed of in accordance with local, state and federal regulations.
Disposal Methods :	As a hazardous solid waste it should be disposed of in accordance with local, state and federal regulations.
Potential US EPA Waste Codes :	D001

SECTION 14. TRANSPORT INFORMATION

DOT

UN number	:	1748
Description of the goods	:	Calcium hypochlorite mixtures dry
Class	:	5.1
Packing group	:	III
Labels	:	5.1
Emergency Response Guidebook Number	:	140

TDG

UN number	:	1748
Description of the goods	:	CALCIUM HYPOCHLORITE MIXTURE, DRY
Class	:	5.1
Packing group	:	II

Labels	:	5.1

IATA

UN number	:	1748
Description of the goods	:	Calcium hypochlorite mixture, dry
Class	:	5.1
Packing group	:	III
Labels	:	5.1
Packing instruction (cargo aircraft)	:	563
Packing instruction (passenger aircraft)	:	559
Packing instruction (passenger aircraft)	:	Y546

IMDG-CODE

UN number	:	1748
Description of the goods	:	CALCIUM HYPOCHLORITE MIXTURE, DRY
Class	:	5.1
Packing group	:	III
Labels	:	5.1
EmS Number 1	:	F-H
EmS Number 2	:	S-Q
Marine pollutant	:	yes

SECTION 15. REGULATORY INFORMATION

This chemical is a pesticide product registered by the United States Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets (SDS), and for workplace labels of non-pesticide chemicals.

Signal word	:	DANGER!
Hazard statements	:	Causes substantial but temporary eye injury. Corrosive. Causes skin burns. Corrosive. Causes irreversible eye damage. This pesticide is toxic to fish.

EPCRA - Emergency Planning and Community Right-to-Know Act

CERCLA Reportable Quantity

Components	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
Calcium hypochlorite	7778-54-3	10	13

SARA 302

No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313

This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

US State Regulations

Massachusetts Right To Know

Calcium hypochlorite	7778-54-3
Calcium chlorate	10137-74-3
Calcium carbonate	471-34-1
Calcium dihydroxide	1305-62-0

Pennsylvania Right To Know

Calcium hypochlorite	7778-54-3
Sodium chloride	7647-14-5
Calcium chlorate	10137-74-3
Calcium chloride	10043-52-4
Calcium carbonate	471-34-1
Calcium dihydroxide	1305-62-0

New Jersey Right To Know

Calcium hypochlorite	7778-54-3
Sodium chloride	7647-14-5
Calcium chlorate	10137-74-3
Calcium chloride	10043-52-4
Calcium carbonate	471-34-1
Calcium dihydroxide	1305-62-0

California Prop 65

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

The components of this product are reported in the following inventories:

TSCA : This is an EPA registered pesticide.

Inventories

AICS (Australia), DSL (Canada), IECSC (China), REACH (European Union), ENCS (Japan), ISHL (Japan), KECI (Korea), NZIoC (New Zealand), PICCS (Philippines), TSCA (USA)

SECTION 16. OTHER INFORMATION

SECTIONS REVISED: 1, 14
Major References : Available upon request.

THIS MATERIAL SAFETY DATA SHEET (MSDS) HAS BEEN PREPARED IN COMPLIANCE WITH THE FEDERAL OSHA HAZARD COMMUNICATION STANDARD, 29 CFR 1910.1200. THE INFORMATION IN THIS MSDS SHOULD BE PROVIDED TO ALL WHO WILL USE, HANDLE, STORE, TRANSPORT, OR OTHERWISE BE EXPOSED TO THIS PRODUCT. THIS INFORMATION HAS BEEN PREPARED FOR THE GUIDANCE OF PLANT ENGINEERING, OPERATIONS AND MANAGEMENT AND FOR PERSONS WORKING WITH OR HANDLING THIS PRODUCT. ARCH CHEMICALS BELIEVES THIS INFORMATION TO BE RELIABLE AND UP TO DATE AS OF THE DATE OF PUBLICATION BUT, MAKES NO WARRANTY THAT IT IS. ADDITIONALLY, IF THIS MSDS IS MORE THAN THREE YEARS OLD, YOU SHOULD CONTACT ARCH CHEMICALS MSDS CONTROL AT THE PHONE NUMBER ON THE FRONT PAGE TO MAKE CERTAIN THAT THIS DOCUMENT IS CURRENT. .

Safety Data Sheet

SODIUM SULFITE, ANHYDROUS

Section 1 - Product and Company Identification

Product Name: Sodium Sulfite, Anhydrous
Chemical Formula: Na_2SO_3
CAS Number: 007757-83-7
Other Designations: Sul-Flow, Sulf-Lite, Disodium Sulfite, Sulfurous Sodium Salt, Disodium Salt.
General Use: Food and pharmaceutical, waste water dechlorination agent, lab reagent, reducing agent, dietary supplement, color preservative and photographic applications.
Supplier: Calabrian Corporation
5500 Hwy. 366
Port Neches, Texas77651
Telephone: 409-727-1471
Fax: 409-727-5803
Emergency Contact: CHEMTREC 800-424-9300

Section 2 - Hazards Identification

Emergency Overview
Target Organs: Respiratory system, eyes, skin
GHS Classification: Acute Toxicity, Oral (Category 4)
Acute Toxicity, Inhalation (Category 4)
Acute Toxicity, Dermal (Category 4)
Eye Damage/Irritation (2A)

GHS Label Elements: Signal Word – Warning

Pictogram

Irritant

Hazard Statements: H302 – Harmful if swallowed
H312 – Harmful in contact with skin
H319 – Causes serious eye irritation
H332 - Harmful if inhaled

Precautionary Statements: P261 – Avoid breathing dust/fume/gas/mist/vapor/spray
P280 – Wear protective equipment for hands, eyes, face and respiratory tract
P305, P351 and P338 – IF IN EYES: Rinse with water for several minutes. Remove contact lenses if present and continue rinsing.
Other Hazards: Contact with acids may release toxic sulfur oxides.

HMIS Classification: Health Hazard 1
Flammability 0
Reactivity 1

Potential Health Effects:	Inhalation:	Irritant
	Eye:	Irritant
	Skin:	Irritant
	Ingestion:	Harmful if swallowed

Medical Condition aggravated by long term exposure - Capable of provoking bronchospasm in sulfite sensitive individuals with asthma.

Section 3 - Composition / Information on Ingredients

Composition	CAS Number	% wt *or* vol
Sodium Sulfite	007757-83-7	94.5 (wt)
Sodium Sulfate	007757-82-6	5.0 (wt)

Section 4 - First Aid Measures

Exposure Route	Symptom	Treatment
Inhalation:	Sore throat, shortness of breath coughing, and congestion.	Remove from exposure to fresh air. Seek medical attention in severe cases or if recovery is not rapid.
Eye Contact:	Irritation to eyes and mucous membranes.	Irrigate with water until no evidence of chemical remains. Obtain medical attention.
Skin Contact:	Irritation, itching, dermatitis	Wash with soap and drench with water. Remove contaminated clothing and wash before reuse.
Ingestion:	Irritation to mucous membranes.	Give large quantities of water or milk immediately. Obtain medical attention.

After first aid, get appropriate medical attention.
Note to Physician: Exposure may aggravate acute or chronic asthma, emphysema and bronchitis.

Section 5 - Fire-Fighting Measures

Flash Point:	Not combustible.
Flash Point Method:	Not Applicable.
Burning Rate:	Not Applicable.
Auto ignition Temperature:	Not Applicable.
LEL:	Not Applicable.
UEL:	Not Applicable.
Flammability Classification:	Not Flammable.
Extinguishing Media:	Use extinguishing agent appropriate for surrounding fire conditions.

Unusual Fire or Explosion

Hazards: None indicated.

Hazardous Combustion Products: May release hazardous gas.
Fire-Fighting Instructions: Do not release runoff from fire control methods to sewers or waterways.
Fire-Fighting Equipment: Because fire may produce toxic thermal decomposition products, wear a self-contained breathing apparatus (SCBA) with a full face piece operated in pressure-demand or positive-pressure mode.

Section 6 - Accidental Release Measures

Spill / Leak Procedures: Wear appropriate PPE - See Section 8.
Small Spills / Leaks: Leaks may be located by spraying the area with ammonium hydroxide solution which forms a white fume in the presence of sulfur dioxide.
Large Spills / Leaks: Large spills should be handled according to a predetermined plan.
Containment: For large spills, dike far ahead of contaminated runoff for later disposal.

Section 7 - Handling and Storage

Handling Precautions: Avoid contact with product. Do not breathe vapor.
Storage Requirements: Avoid heat or moisture. Store in areas, away from heat and moisture and protected from physical damage. Segregate from acids and oxidizers.

Section 8 - Exposure Controls / Personal Protection

Composition	CAS Number	TWA	STEL	IDLH
Sodium Sulfite	007757-83-7	*	*	*
Sodium Sulfate	007757-82-6	*	*	*

* None established. Control as nuisance dust.

Ventilation: Provide general or local exhaust ventilation systems to maintain airborne concentrations below OSHA limits (Sec. 2). Local exhaust ventilation is preferred because it prevents contaminant dispersion into the work area by controlling it at the source.

Respiratory Protection: Follow OSHA respirator regulations (29 CFR 1910.134) and, if necessary, wear a MSHA/NIOSH-approved respirator. Select respirator based on its suitability to provide adequate worker protection for given working conditions, level of airborne contamination, and presence of sufficient oxygen. For emergency or non-routine operations (cleaning spills, reactor vessels, or storage tanks), wear a SCBA. *Warning! Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.*

Protective Clothing / Equipment: Wear protective gloves, boots, and clothing when necessary to prevent excessive skin contact. Wear protective eyeglasses or goggles, per OSHA eye- and face-protection regulations (29 CFR 1910.133).

Safety Stations: Make emergency eyewash stations, showers, and washing facilities available in the work area.

Contaminated Equipment: Remove this material from personal protective equipment as needed.

Comments: Do not eat, drink, or smoke in work areas. Practice good personal hygiene after using this material, especially before food or beverage consumption.

Section 9 - Physical and Chemical Properties

Physical State:	Crystal or Powder	**Water Solubility:**	21% @ 68 ^{o}F
Appearance:	White	**Other Solubility:**	Soluble in Glycerin
Odor Threshold:	Odorless	**Boiling Point:**	NA
Vapor Pressure:	NA	**Freezing Point:**	
Vapor Density (Air=1):	NA	**Melting Point:**	Decomposes
Formula Weight:	126.04	**Evaporation Rate:**	NA
Density:	85 - 95 lb/ft^3	**pH:**	9 - 10 (1% solution)
Specific Gravity (H_2O=1):		**% Volatile:**	NA

Section 10 - Stability & Reactivity

Stability: Stable under normal conditions.

Polymerization: Hazardous polymerization will not occur.

Chemical Incompatibilities: Sodium sulfite may, in acidic solutions, release toxic and hazardous fumes of sulfur oxides, including sulfur dioxide. Acute poisoning from sulfur dioxide is rare because the gas is easily detected. It is so irritating that contact cannot be tolerated. Symptoms include coughing, hoarseness, sneezing, tearing, and breathing difficulty. However, workers who cannot escape high accidental exposure may suffer severe pulmonary damage which can be fatal. Contact with powdered potassium, sodium metals, alkali, and oxidizing agents produce violent reactions. Reacts with water and steam to form corrosive sulfurous acid. Reacts with chlorates to form unstable chlorine dioxide.

Conditions to Avoid: Avoid excessive heat, or open flame.

Hazardous Decomposition Products: May release hazardous sulfur dioxide gas.

Section 11 - Toxicological Information

Eye Effects (rabbit): Not available.

Skin Effects (rabbit): Not available.

Acute Inhalation Effects (rat): LC50 > 5.5 mg/L/4h

Acute Oral Effects (rat): LD_{50} = 2610 mg/kg.

Carcinogenicity: IARC, NTP, and OSHA do not list Sodium Sulfite as a carcinogen.

Chronic Effects: Prolonged or repeated exposure may cause dermatitis, and sensitization reactions. Exposure to asthmatic, atopic and sulfite sensitive individuals may result in severe bronchoconstriction and reduced levels in forced expiratory volume. Acidic decomposition of sodium sulfite may release toxic and

hazardous fumes of sulfur oxides, including sulfur dioxide, which may cause permanent pulmonary impairments from acute and chronic exposure.

Section 12 - Ecological Information

Ecotoxicity:	Sodium Sulfite is non hazardous in solution and is commonly used as a waste water dechlorination agent. High concentrations will contribute to elevated chemical oxygen demand in aquatic environments.
Environmental Transport:	Soluble in water.
Environmental Degradation:	Rapid biological decomposition.
Soil Absorption/Mobility:	Slight.
96 hour LC50 (fish):	460 mg/L

Section 13 - Disposal Considerations

Disposal:	Waste determinations typically consider Sodium Sulfite contaminated materials to be non-hazardous.
Disposal Regulatory Requirements:	Follow applicable Federal, state and local regulations.
Container Cleaning and Disposal:	Follow applicable Federal, state and local regulations.

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Section 14 - Transport Information

DOT Transportation Data (49 CFR 172.101):

Shipping Name:	Non-Regulated Material
Shipping Symbols:	**NA**
Hazard Class:	NA
Subsidiary Hazard:	NA
ID No.:	NA
Packing Group:	NA
Label:	GHS label requirements
Special Provisions:	None indicated

Section 15 - Regulatory Information

EPA Regulations:

RCRA Hazardous Waste Classification (40 CFR 261):	Not listed.
RCRA Hazardous Waste Number (40 CFR 261):	Not listed.
CERCLA Hazardous Substance (40 CFR 302.4):	Not listed.
CERCLA Reportable Quantity (RQ):	NA
SARA Title III:	Not listed.
FIFRA:	Not regulated.
TSCA:	All components listed

OSHA Regulations:

Air Contaminant (29 CFR 1910.1000):	Not listed.
OSHA Specifically Regulated Substance:	Not listed.

Other Regulations:

FDA (GRAS):	Regulated when used as a food preservative.
WHMIS Classification (Canada):	D2B

Other Foreign Chemical Control Inventory Listing: Canadian DSL, Australian AICS, Chinese IECSC, Japanese MITI, Korean KECL, Philippines PICCS and European EINEC.

Section 16 - Other Information

Previous SDS issue date: May, 2014
Current SDS issue date: February, 2015
Reason for current revision: Refinement

The information herein is believed to be reliable. However, no warranty, expressed or implied, is made as to its accuracy or completeness and none is made as to the fitness of this material for any purpose. The manufacturer shall not be liable for damages to person or property resulting from its use. Nothing herein shall be construed as a recommendation for use in violation of any patent.

Part F.3 – Explanation that addition of chemical additives may be authorized under this general permit.

Effluent samples are analyzed monthly for residual chlorine.

Section G. Endangered Species Act Eligibility Determination

Olin Wilmington – NOI

G.1. Endangered Species Act Eligibility Determination –

On January 22, 2018, Charles H. Lyman (Senior Project Scientist) submitted an on-line IPaC (Information for Planning and Consultation) Consultation with USFWS to determine if there are any Endangered or Threatened Species or Critical Habitats know to occur in the vicinity of the Olin Wilmington Site/discharge point. An official list was returned from the USFWS that listed the Northern Long-eared Bat (*Myotis septentrionalis*) as the only species that may occur in the vicinity of the Site/Discharge point (see attached USFWS letter). There are no Critical Habitats identified in the vicinity of the Site. There is no tree cutting proposed in support of this NOI, therefore the discharge will have no affect on the Northern Long-eared Bat. In addition, on January 31, 2017 Mr. Lyman had a phone conversation with Maria Turr (USFWS-New England Ecological Services Field Office, Concord, NH) who corroborated our assumption that the discharge would have no affect on the Northern Long-eared Bat.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
Phone: (603) 223-2541 Fax: (603) 223-0104
http://www.fws.gov/newengland

In Reply Refer To:
Consultation Code: 05E1NE00-2018-SLI-0718
Event Code: 05E1NE00-2018-E-01652
Project Name: Olin Wilmington

January 22, 2018

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
(603) 223-2541

Project Summary

Consultation Code: 05E1NE00-2018-SLI-0718

Event Code: 05E1NE00-2018-E-01652

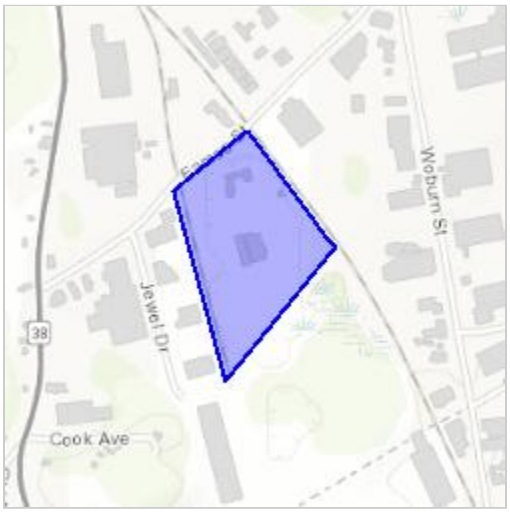
Project Name: Olin Wilmington

Project Type: Superfund Site Remediation

Project Description: The site is a former manufacturing facility located in an industrial area in Wilmington, MA. There is an existing groundwater extraction and treatment system that has operated since the late 1990's that is part of a CERCLA site. The system currently discharges to an on-site ditch system. The purpose of this request is to support renewal of the Remediation General Permit (RGP) under the Massachusetts General Permit, Permit No. MAG910000. This updates our previous request from June 2013.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/42.52746003599684N71.15367018950244W



Counties: Middlesex, MA

Endangered Species Act Species

There is a total of 1 threatened, endangered, or candidate species on this species list. Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

Mammals

NAME	STATUS
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

Influent Sample and Receiving Water Sample Analytical Data Table and Laboratory Reports

Influent Sample Lab Report: TestAmerica Job ID: 480-129628-1

Receiving Water Sample: TestAmerica Job ID: 480-122511-1

Table 1 - Plant B Influent Sample
Laboratory Results

Olin RGP
Wilmington, MA

			Location	Plant B Influent			
			Sample Date	1/3/2018			
		Effluent	Sample ID	OC-INF-010318			
Analysis Method	Fraction	Limitation	Parameter	Result	Qualifier	MDL	RL
VOCs (ug/L)							
E624	N	200	1,1,1-Trichloroethane	1	U	0.08	1
E624	N	5	1,1,2-Trichloroethane	1	U	0.09	1
E624	N	70	1,1-Dichloroethane	1	U	0.09	1
E624	N	3.2	1,1-Dichloroethene	1	U	0.16	1
E624	N	600	1,2-Dichlorobenzene	1	U	0.07	1
E624	N	5	1,2-Dichloroethane	1	U	0.09	1
E624	N	320	1,3-Dichlorobenzene	1	U	0.05	1
E624	N	5	1,4-Dichlorobenzene	1	U	0.07	1
SW8260B_SIM	N	200	1,4-Dioxane	2	U	0.5	2
SW8260C	N		2,4,4-Trimethyl-1-pentene	190	H	1.6	4
SW8260C	N		2,4,4-Trimethyl-2-pentene	46	H	0.43	1
E524.2	N	7.97	Acetone	50	U	2.3	50
E624	N	5	Benzene	1	U	0.15	1
E624	N		Butane, 2-methoxy-2-methyl-	1	U	0.06	1
E624	N	1.6	Carbon tetrachloride	1	U	0.14	1
E624	N	70	Cis-1,2-Dichloroethene	1	U	0.12	1
E624	N		Ethylbenzene	1	U	0.05	1
SW8260B_SIM	N	20	Methyl Tertbutyl Ether	0.2	U	0.1	0.2
E624	N	4.6	Methylene chloride	5	U	0.11	5
E624	N	120	t-Butyl alcohol	20	U	1.1	20
E624	N	3.3	Tetrachloroethene	1	U	0.09	1
E624	N		Toluene	1	U	0.07	1
E624	N	5	Trichloroethene	1	U	0.1	1
E624	N	2	Vinyl chloride	1	U	0.11	1
E624	N		Xylene, o	1	U	0.05	1
E624	N		Xylenes (m&p)	2	U	0.06	2
SVOCs (ug/L)							
E625	N	2.2	Bis(2-Ethylhexyl)phthalate	**32**		1.2	10
E625	N		Butylbenzylphthalate	5	U	1.1	5
E625	N		Di-n-butylphthalate	5	U	1.6	5
E625	N		Di-n-octylphthalate	5	U	1.2	5
E625	N		Diethylphthalate	5	U	1	5
E625	N		Dimethylphthalate	5	U	0.91	5
E625	N		2,4,5-Trichlorophenol	5	U	1.4	5
E625	N		2,4,6-Trichlorophenol	5	U	1	5
E625	N		2,4-Dichlorophenol	5	U	0.77	5
E625	N		2,4-Dimethylphenol	5	U	1.4	5
E625	N		2,4-Dinitrophenol	10	U	5	10
E625	N		2-Chlorophenol	5	U	0.66	5
E625	N		2-Methylphenol	5	U	0.81	5
E625	N		2-Nitrophenol	5	U	0.7	5
E625	N		3 & 4 Methylphenol	10	U	0.83	10
E625	N		3-Methylphenol	10	U	0.83	10
E625	N		4,6-Dinitro-2-methylphenol	10	U	0.66	10
E625	N		4-Chloro-3-methylphenol	5	U	1.1	5
E625	N		4-Methylphenol	5	U	0.79	5
E625	N		4-Nitrophenol	15	U	10	15
E625	N		Acenaphthene	5	U	0.81	5
E625	N		Acenaphthylene	5	U	0.87	5
E625	N		Anthracene	5	U	1.4	5
SW8270D_SIM	N	0.0038	Benzo(a)anthracene*	0.05	U	0.018	0.05
SW8270D_SIM	N	0.0038	Benzo(a)pyrene*	0.05	U	0.025	0.05
SW8270D_SIM	N	0.0038	Benzo(b)fluoranthene*	0.05	U	0.019	0.05
E625	N		Benzo(ghi)perylene	5	U	1.5	5
SW8270D_SIM	N	0.0038	Benzo(k)fluoranthene*	0.05	U	0.028	0.05
SW8270D_SIM	N		Bis(2-Chloroethyl)ether	0.02	U	0.016	0.02
SW8270D_SIM	N	0.0038	Chrysene*	0.05	U	0.019	0.05
SW8270D_SIM	N	0.0038	Dibenz(a,h)anthracene*	0.05	U	0.037	0.05
E625	N		Fluoranthene	5	U	1.6	5

Created by: BCG 1/24/18
Checked by: TLC 1/25/18

Table 1 - Plant B Influent Sample
Laboratory Results

Olin RGP
Wilmington, MA

Analysis Method	Fraction	Effluent Limitation	Location / Sample Date / Sample ID / Parameter	Plant B Influent 1/3/2018 OC-INF-010318 Result Qualifier	MDL	RL
SVOCs Continued (ug/L)						
E625	N		Fluorene	5 U	1.6	5
SW8270D_SIM	N		Hexachlorobenzene	0.02 U	0.009	0.02
SW8270D_SIM	N	0.0038	Indeno(1,2,3-cd)pyrene*	0.05 U	0.021	0.05
SW8270D_SIM	N		N-Nitrosodimethylamine	0.2 U	0.016	0.2
E625	N	20	Naphthalene	5 U	0.86	5
SW8270D_SIM	N	1	Pentachlorophenol	0.2 U	0.031	0.2
E625	N		Phenanthrene	5 U	1.2	5
E625	N	300	Phenol	5 U	0.35	5
E625	N		Pyrene	5 U	1.4	5
Non-Standard Analysis (ug/L)						
SW8260C_SIM	N	0.05	1,2-Dibromoethane	0.02 U	0.001	0.02
Oil and Grease (mg/L)						
E1664	T	5	Total Petroleum Hydrocarbons	5.9 U	2.3	5.9
PCBs (ug/L)						
E608	N		Aroclor-1016	0.057 U	0.036	0.057
E608	N		Aroclor-1221	0.057 U	0.036	0.057
E608	N		Aroclor-1232	0.057 U	0.036	0.057
E608	N		Aroclor-1242	0.057 U	0.036	0.057
E608	N		Aroclor-1248	0.057 U	0.036	0.057
E608	N		Aroclor-1254	0.057 U	0.03	0.057
E608	N		Aroclor-1260	0.057 U	0.03	0.057
Phenolics (mg/L)						
E420.4	T		Phenolics, Total Recoverable	0.012	0.005	0.01
Total Metals (ug/L)						
E218.6	T	74	Chromium, Trivalent	5 U	2	5
E218.6	T	11	Chromium, Hexavalent	0.6 U F1 F2	0.25	0.6
E200.8	T	640	Antimony	1 U	0.35	1
E200.8	T	10	Arsenic	**13**	0.27	1
E200.8	T	0.25	Cadmium	0.5 U	0.071	0.5
E200.8	T	9	Copper	1.6	0.22	1
E200.7	T	1000	Iron	**9500**	19	50
E200.8	T	2.5	Lead	0.21 J	0.17	1
E200.8	T	52	Nickel	3.4	0.11	1
E200.8	T	5	Selenium	1 U	0.44	1
E200.8	T	3.2	Silver	0.5 U	0.036	0.5
E200.8	T	120	Zinc	3.7 J	2.6	10
E245.1	T	0.77	Mercury	0.2 U	0.12	0.2
Inorganics/Wet Chemistry (mg/L)						
E350.1	N		Ammonia	2.4	0.2	0.4
A2540D	N		TOTAL SUSPENDED SOLIDS	5.2	4	4
A2340B	N		Hardness (CaCO3)	140	0.1	0.5
E300	N		Chloride	310	1.4	2.5
SM4500_CN_E	N		Cyanide, Total	0.01 U	0.003	0.01
SM4500_CL_G	N		Chlorine	0.02 U HF	0.01	0.02
Ethanol (ug/L)						
E1671A	N		Ethanol	2 U	0.5	2

Notes:

Bold value exceeds Effluent Limitation

HF = Field parameter with a holding time of 15 minutes.Test performed by lab outside of holding time.
H = Compound analyzed 1 day past the 14 day analytical hold time.
F1 = MS and/or MSD Recovery is outside acceptable limits
F2 = MS/MSD RPD exceeds control limits
U = Not detected, value is the reporting limit
J = Value is estimated
ug/L = Micrograms per liter
mg/L = Milligrams per liter
N = Normal
T = Total
* = Parameter part of Group I PAHs. Compliance level for each individual PAH is 0.1 ug/L.

Created by: BCG 1/24/18
Checked by: TLC 1/25/18

Table 1 - Receiving Water Sampling Results

Olin Plant B RGP
Wilmington, MA

Method	Units	Parameter	Sample ID: OC-RECEIVING 080917 Result	Qualifier
A2340B	mg/l	Hardness as CaCO3	57	
A2340B	mg/l	Hardness, Magnesium	13	
A2340B	mg/l	Total Hardness	70	
A3500_CR_D	mg/l	Chromium, Hexavalent	0.01	U
E200.7	ug/l	Copper	10	U
E200.7	ug/l	Iron	5000	
E200.7	ug/l	Zinc	4.7	J B
E200.8	ug/l	Arsenic	1.2	
E200.8	ug/l	Cadmium	0.5	U
E200.8	ug/l	Lead	0.36	J B
E200.8	ug/l	Selenium	1	U
E350.1	mg/l	Ammonia	17	
SW9040C	pH units	pH	6.4	HF
SW9040C	deg C	Temperature	20.7	HF

Notes

U = Not Detected at the reporting limit
J = Result is less than the reporting limit, but greater than the method detection limit and the reported concentration is an approximate value.
HF = Field parameter with a holding time of 15 minutes. Test performed by labratory at the clients request.
ug/L = Micrograms per liter
mg/L = Milligrams per liter
deg C= Degrees Celsius

Created by: BJS 8/24/17
Checked by: TLC 8/24/17

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Tel: (716)691-2600

TestAmerica Job ID: 480-129628-1
Client Project/Site: Wilmington Plant B RPG
Revision: 2

For:
Olin Corporation
PO BOX 248
Charleston, Tennessee 37310-0248

Attn: Mr. James Cashwell

Authorized for release by:
1/25/2018 9:40:56 AM

Becky Mason, Project Manager II
(413)572-4000
becky.mason@testamericainc.com

Table of Contents

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
*	LCS or LCSD is outside acceptance limits.
H	Sample was prepped or analyzed beyond the specified holding time
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

GC/MS VOA TICs

Qualifier	Qualifier Description
J	Indicates an Estimated Value for TICs
N	Presumptive evidence of material.
T	Result is a tentatively identified compound (TIC) and an estimated value.

Metals

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

General Chemistry

Qualifier	Qualifier Description
HF	Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.
F1	MS and/or MSD Recovery is outside acceptance limits.
F2	MS/MSD RPD exceeds control limits
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 480-129628-1

Laboratory: TestAmerica Buffalo

Narrative

Job Narrative
480-129628-1

Revised report II: Per client request added Hardness.
Revised report: Per client request added analytes to 624 method and added 8260 to report 2,4,4-trimethyl-1-pentene and 2,4,4-trimethyl-2-pentene.

Receipt
The sample was received on 1/4/2018 10:05 AM; the sample arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.7º C.

Receipt Exceptions
The following sample was received at the laboratory outside the required temperature criteria: OC-INF-010318 (480-129628-1), received at 8.7°C.

GC/MS VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

GC/MS Semi VOA
Method 8270D SIM: The continuing calibration verification (CCV) analyzed in batch 460-489232 was outside the method criteria for the following analyte(s): N-Nitrosodimethylamine and Pentachlorophenol. A CCV standard at or below the reporting limit (RL) was analyzed with the affected samples and found to be acceptable. As indicated in the reference method, sample analysis may proceed; however, any detection for the affected analyte(s) is considered estimated.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

HPLC/IC
Method 300.0: The following sample was diluted to bring the concentration of target analytes within the calibration range: OC-INF-010318 (480-129628-1). Elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC Semi VOA
Method 608: The continuing calibration verification (CCV) associated with batch 480-394838 recovered above the upper control limit for analytes PCB-1232, PCB-1242 and PCB-1248 as well as surrogate Decachlorobiphenyl. The samples associated with this CCV were non-detects for the affected and associated analytes; therefore, the data have been reported. The following sample is impacted: OC-INF-010318 (480-129628-1).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Metals
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry
Method SM 4500 Cl G: This analysis is normally performed in the field and has a method-defined holding time of 15 minutes. The following sample has been qualified with the "HF" flag to indicate analysis was performed in the laboratory outside the 15 minute timeframe: OC-INF-010318 (480-129628-1).

Method 218.6: Please note that the following IC7 hexavalent chromium sample in batch 500-416536 has been reported as a non-detect with an elevated reporting limit: OC-INF-010318 (480-129628-1). During the preservation process, the sample precipitated and therefore a dilution was performed to preserve the instrument.

Method 218.6: Manual integration was performed due to the software incorrectly identifying the baseline on the following IC7 hexavalent chromium samples in batch 500-416536: (480-129628-AE-1 MS) and (480-129628-AE-1 MSD).

Job ID: 480-129628-1 (Continued)

Laboratory: TestAmerica Buffalo (Continued)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Organic Prep
Method 3510C: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 480-394718.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Detection Summary

Client: Olin Corporation
Project/Site: Wilmington Plant B RPG

TestAmerica Job ID: 480-129628-1

Client Sample ID: OC-INF-010318

Lab Sample ID: 480-129628-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
2,4,4-Trimethyl-2-pentene	46	* H	1.0	0.43	ug/L	1		8260C	Total/NA
2,4,4-Trimethyl-1-pentene - DL	190	H	4.0	1.6	ug/L	4		8260C	Total/NA
Diethylhexyl phthalate	32		10	1.2	ug/L	1		625	Total/NA
Iron	9500		50	19	ug/L	1		200.7 Rev 4.4	Total/NA
Arsenic	13		1.0	0.27	ug/L	1		200.8	Total/NA
Copper	1.6		1.0	0.22	ug/L	1		200.8	Total/NA
Lead	0.21	J	1.0	0.17	ug/L	1		200.8	Total/NA
Nickel	3.4		1.0	0.11	ug/L	1		200.8	Total/NA
Zinc	3.7	J	10	2.6	ug/L	1		200.8	Total/NA
Hardness as calcium carbonate	140		0.50	0.10	mg/L	1		SM 2340B	Total/NA
Calcium hardness as calcium carbonate	110		0.50	0.10	mg/L	1		SM 2340B	Total/NA
Magnesium hardness as calcium carbonate	33		0.50	0.10	mg/L	1		SM 2340B	Total/NA
Chloride	310		2.5	1.4	mg/L	5		300.0	Total/NA
Ammonia	2.4		0.40	0.20	mg/L	2		350.1	Total/NA
Phenolics, Total Recoverable	0.012		0.010	0.0050	mg/L	1		420.4	Total/NA

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
Total Suspended Solids	5.2		4.0	4.0	mg/L	1		SM 2540D	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: OC-INF-010318
Date Collected: 01/03/18 13:30
Date Received: 01/04/18 10:00

Lab Sample ID: 480-129628-1
Matrix: Water

Method: 524.2 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		50	2.3	ug/L			01/11/18 17:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*70 - 130*		*01/11/18 17:26*	*1*
Dibromofluoromethane (Surr)	*103*		*70 - 130*		*01/11/18 17:26*	*1*
Toluene-d8 (Surr)	*98*		*70 - 130*		*01/11/18 17:26*	*1*
4-Bromofluorobenzene (Surr)	*112*		*70 - 130*		*01/11/18 17:26*	*1*

Method: 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		1.0	0.080	ug/L			01/05/18 16:54	1
1,1,2-Trichloroethane	ND		1.0	0.090	ug/L			01/05/18 16:54	1
1,1-Dichloroethane	ND		1.0	0.090	ug/L			01/05/18 16:54	1
1,1-Dichloroethene	ND		1.0	0.16	ug/L			01/05/18 16:54	1
1,2-Dichlorobenzene	ND		1.0	0.070	ug/L			01/05/18 16:54	1
1,2-Dichloroethane	ND		1.0	0.090	ug/L			01/05/18 16:54	1
1,3-Dichlorobenzene	ND		1.0	0.050	ug/L			01/05/18 16:54	1
1,4-Dichlorobenzene	ND		1.0	0.070	ug/L			01/05/18 16:54	1
Benzene	ND		1.0	0.15	ug/L			01/05/18 16:54	1
Carbon tetrachloride	ND		1.0	0.14	ug/L			01/05/18 16:54	1
cis-1,2-Dichloroethene	ND		1.0	0.12	ug/L			01/05/18 16:54	1
Ethylbenzene	ND		1.0	0.050	ug/L			01/05/18 16:54	1
m-Xylene & p-Xylene	ND		2.0	0.060	ug/L			01/05/18 16:54	1
Methylene Chloride	ND		5.0	0.11	ug/L			01/05/18 16:54	1
o-Xylene	ND		1.0	0.050	ug/L			01/05/18 16:54	1
Tert-amyl methyl ether	ND		1.0	0.060	ug/L			01/05/18 16:54	1
Tetrachloroethene	ND		1.0	0.090	ug/L			01/05/18 16:54	1
Toluene	ND		1.0	0.070	ug/L			01/05/18 16:54	1
Trichloroethene	ND		1.0	0.10	ug/L			01/05/18 16:54	1
Vinyl chloride	ND		1.0	0.11	ug/L			01/05/18 16:54	1
tert-Butyl alcohol	ND		20	1.1	ug/L			01/05/18 16:54	1

Tentatively Identified Compound	*Est. Result*	*Qualifier*	*Unit*	*D*	*RT*	*CAS No.*	*Prepared*	*Analyzed*	*Dil Fac*
1-Pentene, 2,4,4-trimethyl-	*250*	*T J N*	*ug/L*		*3.73*	*107-39-1*		*01/05/18 16:54*	*1*
2-Pentene, 2,4,4-trimethyl-	*17*	*T J N*	*ug/L*		*4.59*	*107-40-4*		*01/05/18 16:54*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 143*		*01/05/18 16:54*	*1*
4-Bromofluorobenzene (Surr)	*91*		*76 - 124*		*01/05/18 16:54*	*1*
Toluene-d8 (Surr)	*123*		*60 - 144*		*01/05/18 16:54*	*1*

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	ND		2.0	0.50	ug/L			01/09/18 18:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*101*		*80 - 120*		*01/09/18 18:20*	*1*

Method: 8260B SIM - Volatile Organic Compounds (GC/MS) - RA

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methyl tert-butyl ether	ND		0.20	0.10	ug/L			01/11/18 16:56	1

Client Sample ID: OC-INF-010318
Date Collected: 01/03/18 13:30
Date Received: 01/04/18 10:00

Lab Sample ID: 480-129628-1
Matrix: Water

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*105*		*80 - 120*		*01/11/18 16:56*	*1*

Method: 8260C SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethylene Dibromide	ND		0.020	0.0010	ug/L			01/11/18 13:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*71 - 144*		*01/11/18 13:12*	*1*
4-Bromofluorobenzene	*106*		*72 - 133*		*01/11/18 13:12*	*1*

Method: 8260C - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,4-Trimethyl-2-pentene	**46**	*** H**	1.0	0.43	ug/L			01/18/18 13:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*70 - 130*		*01/18/18 13:23*	*1*
4-Bromofluorobenzene (Surr)	*103*		*70 - 130*		*01/18/18 13:23*	*1*
Toluene-d8 (Surr)	*100*		*70 - 130*		*01/18/18 13:23*	*1*
Dibromofluoromethane (Surr)	*96*		*70 - 130*		*01/18/18 13:23*	*1*

Method: 8260C - Volatile Organic Compounds (GC/MS) - DL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,4-Trimethyl-1-pentene	**190**	**H**	4.0	1.6	ug/L			01/18/18 19:18	4

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*70 - 130*		*01/18/18 19:18*	*4*
4-Bromofluorobenzene (Surr)	*103*		*70 - 130*		*01/18/18 19:18*	*4*
Toluene-d8 (Surr)	*100*		*70 - 130*		*01/18/18 19:18*	*4*
Dibromofluoromethane (Surr)	*99*		*70 - 130*		*01/18/18 19:18*	*4*

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4-Dichlorophenol	ND		5.0	0.77	ug/L		01/04/18 14:32	01/05/18 19:43	1
2,4-Dimethylphenol	ND		5.0	1.4	ug/L		01/04/18 14:32	01/05/18 19:43	1
2-Methylphenol	ND		5.0	0.81	ug/L		01/04/18 14:32	01/05/18 19:43	1
3 & 4 Methylphenol	ND		10	0.83	ug/L		01/04/18 14:32	01/05/18 19:43	1
3-Methylphenol	ND		10	0.83	ug/L		01/04/18 14:32	01/05/18 19:43	1
4-Methylphenol	ND		5.0	0.79	ug/L		01/04/18 14:32	01/05/18 19:43	1
Acenaphthene	ND		5.0	0.81	ug/L		01/04/18 14:32	01/05/18 19:43	1
Acenaphthylene	ND		5.0	0.87	ug/L		01/04/18 14:32	01/05/18 19:43	1
Anthracene	ND		5.0	1.4	ug/L		01/04/18 14:32	01/05/18 19:43	1
Benzo(a)anthracene	ND		5.0	1.1	ug/L		01/04/18 14:32	01/05/18 19:43	1
Benzo(a)pyrene	ND		5.0	1.3	ug/L		01/04/18 14:32	01/05/18 19:43	1
Benzo(b)fluoranthene	ND		5.0	1.2	ug/L		01/04/18 14:32	01/05/18 19:43	1
Benzo(g,h,i) perylene	ND		5.0	1.5	ug/L		01/04/18 14:32	01/05/18 19:43	1
Benzo(k)fluoranthene	ND		5.0	1.3	ug/L		01/04/18 14:32	01/05/18 19:43	1
Diethylhexyl phthalate	**32**		10	1.2	ug/L		01/04/18 14:32	01/05/18 19:43	1
Butyl benzyl phthalate	ND		5.0	1.1	ug/L		01/04/18 14:32	01/05/18 19:43	1
Chrysene	ND		5.0	1.0	ug/L		01/04/18 14:32	01/05/18 19:43	1
Dibenz(a,h)anthracene	ND		5.0	1.5	ug/L		01/04/18 14:32	01/05/18 19:43	1
Diethyl phthalate	ND		5.0	1.0	ug/L		01/04/18 14:32	01/05/18 19:43	1
Dimethyl phthalate	ND		5.0	0.91	ug/L		01/04/18 14:32	01/05/18 19:43	1

Client: Olin Corporation
Project/Site: Wilmington Plant B RPG

TestAmerica Job ID: 480-129628-1

Client Sample ID: OC-INF-010318
Date Collected: 01/03/18 13:30
Date Received: 01/04/18 10:00

Lab Sample ID: 480-129628-1
Matrix: Water

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Di-n-butyl phthalate	ND		5.0	1.6	ug/L		01/04/18 14:32	01/05/18 19:43	1
Di-n-octyl phthalate	ND		5.0	1.2	ug/L		01/04/18 14:32	01/05/18 19:43	1
Fluoranthene	ND		5.0	1.6	ug/L		01/04/18 14:32	01/05/18 19:43	1
Fluorene	ND		5.0	1.0	ug/L		01/04/18 14:32	01/05/18 19:43	1
Indeno(1,2,3-cd)pyrene	ND		5.0	1.5	ug/L		01/04/18 14:32	01/05/18 19:43	1
Naphthalene	ND		5.0	0.86	ug/L		01/04/18 14:32	01/05/18 19:43	1
Pentachlorophenol	ND		10	1.6	ug/L		01/04/18 14:32	01/05/18 19:43	1
Phenanthrene	ND		5.0	1.2	ug/L		01/04/18 14:32	01/05/18 19:43	1
Phenol	ND		5.0	0.35	ug/L		01/04/18 14:32	01/05/18 19:43	1
Pyrene	ND		5.0	1.4	ug/L		01/04/18 14:32	01/05/18 19:43	1
2,4,5-Trichlorophenol	ND		5.0	1.4	ug/L		01/04/18 14:32	01/05/18 19:43	1
2,4,6-Trichlorophenol	ND		5.0	1.0	ug/L		01/04/18 14:32	01/05/18 19:43	1
2,4-Dinitrophenol	ND		10	5.0	ug/L		01/04/18 14:32	01/05/18 19:43	1
2-Chlorophenol	ND		5.0	0.66	ug/L		01/04/18 14:32	01/05/18 19:43	1
2-Nitrophenol	ND		5.0	0.70	ug/L		01/04/18 14:32	01/05/18 19:43	1
4-Nitrophenol	ND		15	10	ug/L		01/04/18 14:32	01/05/18 19:43	1
4,6-Dinitro-2-methylphenol	ND		10	0.66	ug/L		01/04/18 14:32	01/05/18 19:43	1
4-Chloro-3-methylphenol	ND		5.0	1.1	ug/L		01/04/18 14:32	01/05/18 19:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol (Surr)	*98*		*52 - 151*	*01/04/18 14:32*	*01/05/18 19:43*	*1*
2-Fluorobiphenyl	*85*		*44 - 120*	*01/04/18 14:32*	*01/05/18 19:43*	*1*
2-Fluorophenol (Surr)	*47*		*17 - 120*	*01/04/18 14:32*	*01/05/18 19:43*	*1*
Nitrobenzene-d5 (Surr)	*77*		*42 - 120*	*01/04/18 14:32*	*01/05/18 19:43*	*1*
Phenol-d5 (Surr)	*34*		*10 - 120*	*01/04/18 14:32*	*01/05/18 19:43*	*1*
p-Terphenyl-d14	*83*		*22 - 125*	*01/04/18 14:32*	*01/05/18 19:43*	*1*

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzo[a]anthracene	ND		0.050	0.018	ug/L		01/08/18 12:49	01/09/18 01:19	1
Benzo[a]pyrene	ND		0.050	0.025	ug/L		01/08/18 12:49	01/09/18 01:19	1
Benzo[b]fluoranthene	ND		0.050	0.019	ug/L		01/08/18 12:49	01/09/18 01:19	1
Bis(2-chloroethyl)ether	ND		0.020	0.016	ug/L		01/08/18 12:49	01/09/18 01:19	1
Hexachlorobenzene	ND		0.020	0.0090	ug/L		01/08/18 12:49	01/09/18 01:19	1
N-Nitrosodimethylamine	ND		0.20	0.016	ug/L		01/08/18 12:49	01/09/18 01:19	1
Pentachlorophenol	ND		0.20	0.031	ug/L		01/08/18 12:49	01/09/18 01:19	1
Benzo[k]fluoranthene	ND		0.050	0.028	ug/L		01/08/18 12:49	01/09/18 01:19	1
Chrysene	ND		0.050	0.019	ug/L		01/08/18 12:49	01/09/18 01:19	1
Dibenz(a,h)anthracene	ND		0.050	0.037	ug/L		01/08/18 12:49	01/09/18 01:19	1
Indeno[1,2,3-cd]pyrene	ND		0.050	0.021	ug/L		01/08/18 12:49	01/09/18 01:19	1

Method: 1671A - Ethanol (GC/FID)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethanol	ND		2.0	0.50	mg/L			01/08/18 16:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Isopropyl acetate (Surr)	*97*		*70 - 130*		*01/08/18 16:00*	*1*

Method: 608 - Polychlorinated Biphenyls (PCBs) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	ND		0.057	0.036	ug/L		01/06/18 07:17	01/08/18 15:38	1

Client Sample ID: OC-INF-010318
Date Collected: 01/03/18 13:30
Date Received: 01/04/18 10:00

Lab Sample ID: 480-129628-1
Matrix: Water

Method: 608 - Polychlorinated Biphenyls (PCBs) (GC) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1221	ND		0.057	0.036	ug/L		01/06/18 07:17	01/08/18 15:38	1
PCB-1232	ND		0.057	0.036	ug/L		01/06/18 07:17	01/08/18 15:38	1
PCB-1242	ND		0.057	0.036	ug/L		01/06/18 07:17	01/08/18 15:38	1
PCB-1248	ND		0.057	0.036	ug/L		01/06/18 07:17	01/08/18 15:38	1
PCB-1254	ND		0.057	0.030	ug/L		01/06/18 07:17	01/08/18 15:38	1
PCB-1260	ND		0.057	0.030	ug/L		01/06/18 07:17	01/08/18 15:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*75*		*36 - 121*	*01/06/18 07:17*	*01/08/18 15:38*	*1*
Tetrachloro-m-xylene	*99*		*42 - 135*	*01/06/18 07:17*	*01/08/18 15:38*	*1*

Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	**9500**		50	19	ug/L		01/05/18 08:42	01/08/18 18:33	1

Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0	0.35	ug/L		01/05/18 07:50	01/05/18 19:57	1
Arsenic	**13**		1.0	0.27	ug/L		01/05/18 07:50	01/05/18 19:57	1
Cadmium	ND		0.50	0.071	ug/L		01/05/18 07:50	01/05/18 19:57	1
Copper	**1.6**		1.0	0.22	ug/L		01/05/18 07:50	01/05/18 19:57	1
Lead	**0.21**	**J**	1.0	0.17	ug/L		01/05/18 07:50	01/05/18 19:57	1
Nickel	**3.4**		1.0	0.11	ug/L		01/05/18 07:50	01/05/18 19:57	1
Selenium	ND		1.0	0.44	ug/L		01/05/18 07:50	01/05/18 19:57	1
Silver	ND		0.50	0.036	ug/L		01/05/18 07:50	01/05/18 19:57	1
Zinc	**3.7**	**J**	10	2.6	ug/L		01/05/18 07:50	01/09/18 16:36	1

Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00012	mg/L		01/05/18 12:20	01/05/18 16:18	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hardness as calcium carbonate	**140**		0.50	0.10	mg/L			01/24/18 14:23	1
Calcium hardness as calcium carbonate	**110**		0.50	0.10	mg/L			01/24/18 14:23	1
Magnesium hardness as calcium carbonate	**33**		0.50	0.10	mg/L			01/24/18 14:23	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Petroleum Hydrocarbons (1664A)	ND		5.9	2.3	mg/L		01/10/18 11:15	01/10/18 11:15	1
Chromium, hexavalent	ND	F1 F2	0.60	0.25	ug/L			01/05/18 17:05	2
Cr (III)	ND		5.0	2.0	ug/L			01/12/18 16:36	1
Chloride	**310**		2.5	1.4	mg/L			01/08/18 18:14	5
Ammonia	**2.4**		0.40	0.20	mg/L		01/05/18 13:30	01/05/18 14:29	2
Phenolics, Total Recoverable	**0.012**		0.010	0.0050	mg/L		01/08/18 02:08	01/08/18 13:03	1
Chlorine, Total Residual	ND	HF	0.020	0.010	mg/L			01/04/18 16:10	1
Cyanide, Total	ND		0.010	0.0030	mg/L		01/08/18 12:30	01/08/18 16:53	1

Client Sample Results

Client: Olin Corporation
Project/Site: Wilmington Plant B RPG

TestAmerica Job ID: 480-129628-1

Client Sample ID: OC-INF-010318
Date Collected: 01/03/18 13:30
Date Received: 01/04/18 10:00

Lab Sample ID: 480-129628-1
Matrix: Water

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	5.2		4.0	4.0	mg/L			01/04/18 13:41	1

Method: 524.2 - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	DBFM	TOL	BFB
Lab Sample ID	Client Sample ID	(70-130)	(70-130)	(70-130)	(70-130)
480-129628-1	OC-INF-010318	99	103	98	112
LCS 490-488816/3	Lab Control Sample	101	102	99	102
LCSD 490-488816/4	Lab Control Sample Dup	107	100	98	102
MB 490-488816/7	Method Blank	105	103	97	111

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
DBFM = Dibromofluoromethane (Surr)
TOL = Toluene-d8 (Surr)
BFB = 4-Bromofluorobenzene (Surr)

Method: 624 - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)		
		DCA	BFB	TOL
Lab Sample ID	Client Sample ID	(62-143)	(76-124)	(60-144)
480-129628-1	OC-INF-010318	98	91	123
480-129628-1 MS	OC-INF-010318	105	91	119
LCS 490-487776/4	Lab Control Sample	108	87	114
MB 490-487776/7	Method Blank	103	93	120

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DBFM
Lab Sample ID	Client Sample ID	(80-120)
480-129628-1	OC-INF-010318	101
480-129628-1 - RA	OC-INF-010318	105
480-129628-1 MS	OC-INF-010318	96
480-129628-1 MS	OC-INF-010318	105
480-129628-1 MSD	OC-INF-010318	98
480-129628-1 MSD	OC-INF-010318	102
LCS 440-450751/4	Lab Control Sample	87
LCS 440-451089/4	Lab Control Sample	104
MB 440-450751/3	Method Blank	93
MB 440-451089/3	Method Blank	103

Surrogate Legend

DBFM = Dibromofluoromethane (Surr)

Surrogate Summary

Client: Olin Corporation
Project/Site: Wilmington Plant B RPG

TestAmerica Job ID: 480-129628-1

Method: 8260C - Volatile Organic Compounds (GC/MS)

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(70-130)	(70-130)	(70-130)	(70-130)
480-129628-1	OC-INF-010318	99	103	100	96
480-129628-1 - DL	OC-INF-010318	97	103	100	99
LCS 480-396313/5	Lab Control Sample	101	103	100	93
LCSD 480-396313/6	Lab Control Sample Dup	100	103	100	92
MB 480-396313/34	Method Blank	98	102	99	99

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260C SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)	
		DCA	BFB
Lab Sample ID	Client Sample ID	(71-144)	(72-133)
480-129628-1	OC-INF-010318	98	106
LCS 460-489831/3	Lab Control Sample	92	98
LCSD 460-489831/4	Lab Control Sample Dup	93	95
MB 460-489831/7	Method Blank	93	92

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)					
		TBP	FBP	2FP	NBZ	PHL	TPHd14
Lab Sample ID	Client Sample ID	(52-151)	(44-120)	(17-120)	(42-120)	(10-120)	(22-125)
480-129628-1	OC-INF-010318	98	85	47	77	34	83
LCS 480-394545/2-A	Lab Control Sample	101	94	55	87	40	98
LCSD 480-394545/3-A	Lab Control Sample Dup	97	89	52	82	40	96
MB 480-394545/1-A	Method Blank	89	89	54	84	39	96

Surrogate Legend

TBP = 2,4,6-Tribromophenol (Surr)
FBP = 2-Fluorobiphenyl
2FP = 2-Fluorophenol (Surr)
NBZ = Nitrobenzene-d5 (Surr)
PHL = Phenol-d5 (Surr)
TPHd14 = p-Terphenyl-d14

Surrogate Summary

Client: Olin Corporation
Project/Site: Wilmington Plant B RPG

TestAmerica Job ID: 480-129628-1

Method: 1671A - Ethanol (GC/FID)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)								
Lab Sample ID	Client Sample ID	IPAC (70-130)								
480-129628-1	OC-INF-010318	97								
LCS 490-488175/6	Lab Control Sample	85								
MB 490-488175/5	Method Blank	85								

Surrogate Legend

IPAC = Isopropyl acetate (Surr)

Method: 608 - Polychlorinated Biphenyls (PCBs) (GC)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)								
Lab Sample ID	Client Sample ID	DCBP1 (36-121)	TCX1 (42-135)							
480-129628-1	OC-INF-010318	75	99							
LCS 480-394718/2-A	Lab Control Sample	51	95							
LCSD 480-394718/3-A	Lab Control Sample Dup	48	86							
MB 480-394718/1-A	Method Blank	62	107							

Surrogate Legend

DCBP = DCB Decachlorobiphenyl

TCX = Tetrachloro-m-xylene

Method: 524.2 - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 490-488816/7
Matrix: Water
Analysis Batch: 488816

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		50	2.3	ug/L			01/11/18 15:36	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*70 - 130*		*01/11/18 15:36*	*1*
Dibromofluoromethane (Surr)	*103*		*70 - 130*		*01/11/18 15:36*	*1*
Toluene-d8 (Surr)	*97*		*70 - 130*		*01/11/18 15:36*	*1*
4-Bromofluorobenzene (Surr)	*111*		*70 - 130*		*01/11/18 15:36*	*1*

Lab Sample ID: LCS 490-488816/3
Matrix: Water
Analysis Batch: 488816

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Acetone			25.0	25.6	J	ug/L		103	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*101*		*70 - 130*
Dibromofluoromethane (Surr)	*102*		*70 - 130*
Toluene-d8 (Surr)	*99*		*70 - 130*
4-Bromofluorobenzene (Surr)	*102*		*70 - 130*

Lab Sample ID: LCSD 490-488816/4
Matrix: Water
Analysis Batch: 488816

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Acetone			25.0	28.8	J	ug/L		115	70 - 130	12	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*107*		*70 - 130*
Dibromofluoromethane (Surr)	*100*		*70 - 130*
Toluene-d8 (Surr)	*98*		*70 - 130*
4-Bromofluorobenzene (Surr)	*102*		*70 - 130*

Method: 624 - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 490-487776/7
Matrix: Water
Analysis Batch: 487776

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		1.0	0.080	ug/L			01/05/18 13:39	1
1,1,2-Trichloroethane	ND		1.0	0.090	ug/L			01/05/18 13:39	1
1,1-Dichloroethane	ND		1.0	0.090	ug/L			01/05/18 13:39	1
1,1-Dichloroethene	ND		1.0	0.16	ug/L			01/05/18 13:39	1
1,2-Dichlorobenzene	ND		1.0	0.070	ug/L			01/05/18 13:39	1
1,2-Dichloroethane	ND		1.0	0.090	ug/L			01/05/18 13:39	1

Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 490-487776/7
Matrix: Water
Analysis Batch: 487776

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,3-Dichlorobenzene	ND		1.0	0.050	ug/L			01/05/18 13:39	1
1,4-Dichlorobenzene	ND		1.0	0.070	ug/L			01/05/18 13:39	1
Benzene	ND		1.0	0.15	ug/L			01/05/18 13:39	1
Carbon tetrachloride	ND		1.0	0.14	ug/L			01/05/18 13:39	1
cis-1,2-Dichloroethene	ND		1.0	0.12	ug/L			01/05/18 13:39	1
Ethylbenzene	ND		1.0	0.050	ug/L			01/05/18 13:39	1
m-Xylene & p-Xylene	ND		2.0	0.060	ug/L			01/05/18 13:39	1
Methylene Chloride	ND		5.0	0.11	ug/L			01/05/18 13:39	1
o-Xylene	ND		1.0	0.050	ug/L			01/05/18 13:39	1
Tert-amyl methyl ether	ND		1.0	0.060	ug/L			01/05/18 13:39	1
Tetrachloroethene	ND		1.0	0.090	ug/L			01/05/18 13:39	1
Toluene	ND		1.0	0.070	ug/L			01/05/18 13:39	1
Trichloroethene	ND		1.0	0.10	ug/L			01/05/18 13:39	1
Vinyl chloride	ND		1.0	0.11	ug/L			01/05/18 13:39	1
tert-Butyl alcohol	ND		20	1.1	ug/L			01/05/18 13:39	1

Tentatively Identified Compound	*MB Est. Result*	*MB Qualifier*	*Unit*	*D*	*RT*	*CAS No.*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,4-Trimethyl-1-Pentene	*None*		*ug/L*			*107-39-1*		*01/05/18 13:39*	*1*
2,4,4-Trimethyl-2-Pentene	*None*		*ug/L*			*107-40-4*		*01/05/18 13:39*	*1*

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 143*		*01/05/18 13:39*	*1*
4-Bromofluorobenzene (Surr)	*93*		*76 - 124*		*01/05/18 13:39*	*1*
Toluene-d8 (Surr)	*120*		*60 - 144*		*01/05/18 13:39*	*1*

Lab Sample ID: LCS 490-487776/4
Matrix: Water
Analysis Batch: 487776

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	20.0	20.7		ug/L		104	52 - 162
1,1,2-Trichloroethane	20.0	20.2		ug/L		101	52 - 150
1,1-Dichloroethane	20.0	22.0		ug/L		110	59 - 155
1,1-Dichloroethene	20.0	22.2		ug/L		111	10 - 234
1,2-Dichlorobenzene	20.0	19.1		ug/L		95	18 - 190
1,2-Dichloroethane	20.0	21.1		ug/L		106	49 - 155
1,3-Dichlorobenzene	20.0	18.8		ug/L		94	59 - 156
1,4-Dichlorobenzene	20.0	19.1		ug/L		96	18 - 190
Benzene	20.0	20.9		ug/L		104	37 - 151
Carbon tetrachloride	20.0	22.3		ug/L		112	70 - 140
cis-1,2-Dichloroethene	20.0	20.8		ug/L		104	70 - 130
Ethylbenzene	20.0	19.5		ug/L		98	37 - 162
m-Xylene & p-Xylene	20.0	20.0		ug/L		100	70 - 130
Methylene Chloride	20.0	21.8		ug/L		109	10 - 221
o-Xylene	20.0	19.3		ug/L		96	70 - 130
Tert-amyl methyl ether	20.0	19.4		ug/L		97	63 - 135
Tetrachloroethene	20.0	19.8		ug/L		99	64 - 148

Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 490-487776/4
Matrix: Water
Analysis Batch: 487776

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Toluene	20.0	22.6		ug/L		113	47 - 150
Trichloroethene	20.0	20.4		ug/L		102	71 - 157
Vinyl chloride	20.0	22.1		ug/L		110	10 - 251
tert-Butyl alcohol	200	186		ug/L		93	12 - 150

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*108*		*62 - 143*
4-Bromofluorobenzene (Surr)	*87*		*76 - 124*
Toluene-d8 (Surr)	*114*		*60 - 144*

Lab Sample ID: 480-129628-1 MS
Matrix: Water
Analysis Batch: 487776

Client Sample ID: OC-INF-010318
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	ND		20.0	21.3		ug/L		107	52 - 162
1,1,2-Trichloroethane	ND		20.0	18.8		ug/L		94	52 - 150
1,1-Dichloroethane	ND		20.0	22.4		ug/L		112	59 - 155
1,1-Dichloroethene	ND		20.0	24.4		ug/L		122	10 - 234
1,2-Dichlorobenzene	ND		20.0	18.8		ug/L		94	18 - 190
1,2-Dichloroethane	ND		20.0	19.8		ug/L		99	49 - 155
1,3-Dichlorobenzene	ND		20.0	19.2		ug/L		96	59 - 156
1,4-Dichlorobenzene	ND		20.0	19.3		ug/L		97	18 - 190
Benzene	ND		20.0	20.9		ug/L		105	37 - 151
Carbon tetrachloride	ND		20.0	22.7		ug/L		113	70 - 140
cis-1,2-Dichloroethene	ND		20.0	21.7		ug/L		109	70 - 130
Ethylbenzene	ND		20.0	20.3		ug/L		102	37 - 162
m-Xylene & p-Xylene	ND		20.0	20.5		ug/L		102	70 - 130
Methylene Chloride	ND		20.0	21.1		ug/L		106	10 - 221
o-Xylene	ND		20.0	19.4		ug/L		97	70 - 130
Tert-amyl methyl ether	ND		20.0	18.8		ug/L		94	63 - 135
Tetrachloroethene	ND		20.0	21.0		ug/L		105	64 - 148
Toluene	ND		20.0	23.5		ug/L		117	47 - 150
Trichloroethene	ND		20.0	22.3		ug/L		111	71 - 157
Vinyl chloride	ND		20.0	23.2		ug/L		116	10 - 251
tert-Butyl alcohol	ND		200	166		ug/L		83	12 - 150

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 143*
4-Bromofluorobenzene (Surr)	*91*		*76 - 124*
Toluene-d8 (Surr)	*119*		*60 - 144*

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 440-450751/3
Matrix: Water
Analysis Batch: 450751

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	ND		2.0	0.50	ug/L			01/09/18 17:22	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*93*		*80 - 120*		*01/09/18 17:22*	*1*

Lab Sample ID: LCS 440-450751/4
Matrix: Water
Analysis Batch: 450751

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
1,4-Dioxane			10.0	9.65		ug/L		96	70 - 125		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*87*		*80 - 120*

Lab Sample ID: 480-129628-1 MS
Matrix: Water
Analysis Batch: 450751

Client Sample ID: OC-INF-010318
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
1,4-Dioxane	ND		10.0	9.14		ug/L		91	70 - 130		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*96*		*80 - 120*

Lab Sample ID: 480-129628-1 MSD
Matrix: Water
Analysis Batch: 450751

Client Sample ID: OC-INF-010318
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,4-Dioxane	ND		10.0	9.08		ug/L		91	70 - 130	1	30

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*98*		*80 - 120*

Lab Sample ID: MB 440-451089/3
Matrix: Water
Analysis Batch: 451089

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methyl tert-butyl ether	ND		0.20	0.10	ug/L			01/11/18 15:35	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*103*		*80 - 120*		*01/11/18 15:35*	*1*

Method: 8260B SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 440-451089/4
Matrix: Water
Analysis Batch: 451089

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Dibromofluoromethane (Surr)	*104*		*80 - 120*

Lab Sample ID: 480-129628-1 MS
Matrix: Water
Analysis Batch: 451089

Client Sample ID: OC-INF-010318
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*105*		*80 - 120*

Lab Sample ID: 480-129628-1 MSD
Matrix: Water
Analysis Batch: 451089

Client Sample ID: OC-INF-010318
Prep Type: Total/NA

Surrogate	MSD %Recovery	MSD Qualifier	Limits
Dibromofluoromethane (Surr)	*102*		*80 - 120*

Method: 8260C - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 480-396313/34
Matrix: Water
Analysis Batch: 396313

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,4-Trimethyl-1-pentene	ND		1.0	0.40	ug/L			01/18/18 12:41	1
2,4,4-Trimethyl-2-pentene	ND		1.0	0.43	ug/L			01/18/18 12:41	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*98*		*70 - 130*		*01/18/18 12:41*	*1*
4-Bromofluorobenzene (Surr)	*102*		*70 - 130*		*01/18/18 12:41*	*1*
Toluene-d8 (Surr)	*99*		*70 - 130*		*01/18/18 12:41*	*1*
Dibromofluoromethane (Surr)	*99*		*70 - 130*		*01/18/18 12:41*	*1*

Lab Sample ID: LCS 480-396313/5
Matrix: Water
Analysis Batch: 396313

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
2,4,4-Trimethyl-1-pentene			25.0	28.7		ug/L		115	70 - 130		
2,4,4-Trimethyl-2-pentene			25.0	38.2	*	ug/L		153	70 - 130		

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*101*		*70 - 130*
4-Bromofluorobenzene (Surr)	*103*		*70 - 130*
Toluene-d8 (Surr)	*100*		*70 - 130*
Dibromofluoromethane (Surr)	*93*		*70 - 130*

Method: 8260C - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 480-396313/6
Matrix: Water
Analysis Batch: 396313

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2,4,4-Trimethyl-1-pentene			25.0	31.6		ug/L		126	70 - 130	9	20
2,4,4-Trimethyl-2-pentene			25.0	41.6	*	ug/L		166	70 - 130	8	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*70 - 130*
4-Bromofluorobenzene (Surr)	*103*		*70 - 130*
Toluene-d8 (Surr)	*100*		*70 - 130*
Dibromofluoromethane (Surr)	*92*		*70 - 130*

Method: 8260C SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 460-489831/7
Matrix: Water
Analysis Batch: 489831

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethylene Dibromide	ND		0.020	0.0010	ug/L			01/11/18 12:48	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*71 - 144*		*01/11/18 12:48*	*1*
4-Bromofluorobenzene	*92*		*72 - 133*		*01/11/18 12:48*	*1*

Lab Sample ID: LCS 460-489831/3
Matrix: Water
Analysis Batch: 489831

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Ethylene Dibromide			0.0500	0.0474		ug/L		95	59 - 132		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*71 - 144*
4-Bromofluorobenzene	*98*		*72 - 133*

Lab Sample ID: LCSD 460-489831/4
Matrix: Water
Analysis Batch: 489831

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Ethylene Dibromide			0.0500	0.0480		ug/L		96	59 - 132	1	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*93*		*71 - 144*
4-Bromofluorobenzene	*95*		*72 - 133*

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 480-394545/1-A
Matrix: Water
Analysis Batch: 394664

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 394545

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4-Dichlorophenol	ND		5.0	0.77	ug/L		01/04/18 14:32	01/05/18 17:32	1
2,4-Dimethylphenol	ND		5.0	1.4	ug/L		01/04/18 14:32	01/05/18 17:32	1
2-Methylphenol	ND		5.0	0.81	ug/L		01/04/18 14:32	01/05/18 17:32	1
3 & 4 Methylphenol	ND		10	0.83	ug/L		01/04/18 14:32	01/05/18 17:32	1
3-Methylphenol	ND		10	0.83	ug/L		01/04/18 14:32	01/05/18 17:32	1
4-Methylphenol	ND		5.0	0.79	ug/L		01/04/18 14:32	01/05/18 17:32	1
Acenaphthene	ND		5.0	0.81	ug/L		01/04/18 14:32	01/05/18 17:32	1
Acenaphthylene	ND		5.0	0.87	ug/L		01/04/18 14:32	01/05/18 17:32	1
Anthracene	ND		5.0	1.4	ug/L		01/04/18 14:32	01/05/18 17:32	1
Benzo(a)anthracene	ND		5.0	1.1	ug/L		01/04/18 14:32	01/05/18 17:32	1
Benzo(a)pyrene	ND		5.0	1.3	ug/L		01/04/18 14:32	01/05/18 17:32	1
Benzo(b)fluoranthene	ND		5.0	1.2	ug/L		01/04/18 14:32	01/05/18 17:32	1
Benzo(g,h,i) perylene	ND		5.0	1.5	ug/L		01/04/18 14:32	01/05/18 17:32	1
Benzo(k)fluoranthene	ND		5.0	1.3	ug/L		01/04/18 14:32	01/05/18 17:32	1
Diethylhexyl phthalate	ND		10	1.2	ug/L		01/04/18 14:32	01/05/18 17:32	1
Butyl benzyl phthalate	ND		5.0	1.1	ug/L		01/04/18 14:32	01/05/18 17:32	1
Chrysene	ND		5.0	1.0	ug/L		01/04/18 14:32	01/05/18 17:32	1
Dibenz(a,h)anthracene	ND		5.0	1.5	ug/L		01/04/18 14:32	01/05/18 17:32	1
Diethyl phthalate	ND		5.0	1.0	ug/L		01/04/18 14:32	01/05/18 17:32	1
Dimethyl phthalate	ND		5.0	0.91	ug/L		01/04/18 14:32	01/05/18 17:32	1
Di-n-butyl phthalate	ND		5.0	1.6	ug/L		01/04/18 14:32	01/05/18 17:32	1
Di-n-octyl phthalate	ND		5.0	1.2	ug/L		01/04/18 14:32	01/05/18 17:32	1
Fluoranthene	ND		5.0	1.6	ug/L		01/04/18 14:32	01/05/18 17:32	1
Fluorene	ND		5.0	1.0	ug/L		01/04/18 14:32	01/05/18 17:32	1
Indeno(1,2,3-cd)pyrene	ND		5.0	1.5	ug/L		01/04/18 14:32	01/05/18 17:32	1
Naphthalene	ND		5.0	0.86	ug/L		01/04/18 14:32	01/05/18 17:32	1
Pentachlorophenol	ND		10	1.6	ug/L		01/04/18 14:32	01/05/18 17:32	1
Phenanthrene	ND		5.0	1.2	ug/L		01/04/18 14:32	01/05/18 17:32	1
Phenol	ND		5.0	0.35	ug/L		01/04/18 14:32	01/05/18 17:32	1
Pyrene	ND		5.0	1.4	ug/L		01/04/18 14:32	01/05/18 17:32	1
2,4,5-Trichlorophenol	ND		5.0	1.4	ug/L		01/04/18 14:32	01/05/18 17:32	1
2,4,6-Trichlorophenol	ND		5.0	1.0	ug/L		01/04/18 14:32	01/05/18 17:32	1
2,4-Dinitrophenol	ND		10	5.0	ug/L		01/04/18 14:32	01/05/18 17:32	1
2-Chlorophenol	ND		5.0	0.66	ug/L		01/04/18 14:32	01/05/18 17:32	1
2-Nitrophenol	ND		5.0	0.70	ug/L		01/04/18 14:32	01/05/18 17:32	1
4-Nitrophenol	ND		15	10	ug/L		01/04/18 14:32	01/05/18 17:32	1
4,6-Dinitro-2-methylphenol	ND		10	0.66	ug/L		01/04/18 14:32	01/05/18 17:32	1
4-Chloro-3-methylphenol	ND		5.0	1.1	ug/L		01/04/18 14:32	01/05/18 17:32	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol (Surr)	*89*		*52 - 151*	*01/04/18 14:32*	*01/05/18 17:32*	*1*
2-Fluorobiphenyl	*89*		*44 - 120*	*01/04/18 14:32*	*01/05/18 17:32*	*1*
2-Fluorophenol (Surr)	*54*		*17 - 120*	*01/04/18 14:32*	*01/05/18 17:32*	*1*
Nitrobenzene-d5 (Surr)	*84*		*42 - 120*	*01/04/18 14:32*	*01/05/18 17:32*	*1*
Phenol-d5 (Surr)	*39*		*10 - 120*	*01/04/18 14:32*	*01/05/18 17:32*	*1*
p-Terphenyl-d14	*96*		*22 - 125*	*01/04/18 14:32*	*01/05/18 17:32*	*1*

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 480-394545/2-A
Matrix: Water
Analysis Batch: 394664

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 394545

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2,4-Dichlorophenol	50.0	44.1		ug/L		88	39 - 135
2,4-Dimethylphenol	50.0	42.6		ug/L		85	32 - 119
2-Methylphenol	50.0	37.8		ug/L		76	45 - 120
3 & 4 Methylphenol	50.0	35.8		ug/L		72	48 - 120
3-Methylphenol	50.0	35.8		ug/L		72	48 - 120
4-Methylphenol	50.0	35.8		ug/L		72	48 - 120
Acenaphthene	50.0	45.1		ug/L		90	47 - 145
Acenaphthylene	50.0	45.0		ug/L		90	33 - 145
Anthracene	50.0	46.8		ug/L		94	27 - 133
Benzo(a)anthracene	50.0	47.9		ug/L		96	33 - 143
Benzo(a)pyrene	50.0	47.4		ug/L		95	17 - 163
Benzo(b)fluoranthene	50.0	51.3		ug/L		103	24 - 159
Benzo(g,h,i) perylene	50.0	47.1		ug/L		94	1 - 219
Benzo(k)fluoranthene	50.0	43.0		ug/L		86	11 - 162
Diethylhexyl phthalate	50.0	47.8		ug/L		96	8 - 158
Butyl benzyl phthalate	50.0	48.7		ug/L		97	1 - 152
Chrysene	50.0	47.7		ug/L		95	17 - 168
Dibenz(a,h)anthracene	50.0	47.7		ug/L		95	1 - 227
Diethyl phthalate	50.0	47.8		ug/L		96	1 - 114
Dimethyl phthalate	50.0	48.0		ug/L		96	1 - 112
Di-n-butyl phthalate	50.0	49.3		ug/L		99	1 - 118
Di-n-octyl phthalate	50.0	52.2		ug/L		104	4 - 146
Fluoranthene	50.0	48.9		ug/L		98	26 - 137
Fluorene	50.0	46.8		ug/L		94	59 - 121
Indeno(1,2,3-cd)pyrene	50.0	46.9		ug/L		94	1 - 171
Naphthalene	50.0	41.2		ug/L		82	21 - 133
Pentachlorophenol	100	89.7		ug/L		90	14 - 176
Phenanthrene	50.0	46.9		ug/L		94	54 - 120
Phenol	50.0	20.6		ug/L		41	5 - 112
Pyrene	50.0	46.7		ug/L		93	52 - 115

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2,4,6-Tribromophenol (Surr)	*101*		*52 - 151*
2-Fluorobiphenyl	*94*		*44 - 120*
2-Fluorophenol (Surr)	*55*		*17 - 120*
Nitrobenzene-d5 (Surr)	*87*		*42 - 120*
Phenol-d5 (Surr)	*40*		*10 - 120*
p-Terphenyl-d14	*98*		*22 - 125*

Lab Sample ID: LCSD 480-394545/3-A
Matrix: Water
Analysis Batch: 394664

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 394545

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2,4-Dichlorophenol	50.0	42.8		ug/L		86	39 - 135	3	23
2,4-Dimethylphenol	50.0	42.1		ug/L		84	32 - 119	1	18
2-Methylphenol	50.0	35.6		ug/L		71	45 - 120	6	30
3 & 4 Methylphenol	50.0	34.4		ug/L		69	48 - 120	4	30

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 480-394545/3-A
Matrix: Water
Analysis Batch: 394664

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 394545

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
3-Methylphenol			50.0	34.4		ug/L		69	48 - 120	4	30
4-Methylphenol			50.0	34.4		ug/L		69	48 - 120	4	30
Acenaphthene			50.0	42.5		ug/L		85	47 - 145	6	25
Acenaphthylene			50.0	42.1		ug/L		84	33 - 145	6	22
Anthracene			50.0	45.2		ug/L		90	27 - 133	3	15
Benzo(a)anthracene			50.0	47.1		ug/L		94	33 - 143	2	15
Benzo(a)pyrene			50.0	45.2		ug/L		90	17 - 163	5	15
Benzo(b)fluoranthene			50.0	46.9		ug/L		94	24 - 159	9	17
Benzo(g,h,i) perylene			50.0	45.3		ug/L		91	1 - 219	4	19
Benzo(k)fluoranthene			50.0	42.5		ug/L		85	11 - 162	1	19
Diethylhexyl phthalate			50.0	47.4		ug/L		95	8 - 158	1	15
Butyl benzyl phthalate			50.0	46.9		ug/L		94	1 - 152	4	15
Chrysene			50.0	46.2		ug/L		92	17 - 168	3	15
Dibenz(a,h)anthracene			50.0	45.7		ug/L		91	1 - 227	4	18
Diethyl phthalate			50.0	45.6		ug/L		91	1 - 114	5	15
Dimethyl phthalate			50.0	46.4		ug/L		93	1 - 112	3	15
Di-n-butyl phthalate			50.0	47.4		ug/L		95	1 - 118	4	15
Di-n-octyl phthalate			50.0	51.4		ug/L		103	4 - 146	2	15
Fluoranthene			50.0	47.7		ug/L		95	26 - 137	2	15
Fluorene			50.0	44.8		ug/L		90	59 - 121	4	18
Indeno(1,2,3-cd)pyrene			50.0	45.0		ug/L		90	1 - 171	4	17
Naphthalene			50.0	39.4		ug/L		79	21 - 133	4	31
Pentachlorophenol			100	89.5		ug/L		90	14 - 176	0	21
Phenanthrene			50.0	44.9		ug/L		90	54 - 120	4	16
Phenol			50.0	19.8		ug/L		40	5 - 112	4	36
Pyrene			50.0	45.2		ug/L		90	52 - 115	3	15

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
2,4,6-Tribromophenol (Surr)	*97*		*52 - 151*
2-Fluorobiphenyl	*89*		*44 - 120*
2-Fluorophenol (Surr)	*52*		*17 - 120*
Nitrobenzene-d5 (Surr)	*82*		*42 - 120*
Phenol-d5 (Surr)	*40*		*10 - 120*
p-Terphenyl-d14	*96*		*22 - 125*

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Lab Sample ID: MB 460-489176/1-A
Matrix: Water
Analysis Batch: 489232

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 489176

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzo[a]anthracene	ND		0.050	0.018	ug/L		01/08/18 12:49	01/09/18 01:42	1
Benzo[a]pyrene	ND		0.050	0.025	ug/L		01/08/18 12:49	01/09/18 01:42	1
Benzo[b]fluoranthene	ND		0.050	0.019	ug/L		01/08/18 12:49	01/09/18 01:42	1
Bis(2-chloroethyl)ether	ND		0.020	0.016	ug/L		01/08/18 12:49	01/09/18 01:42	1
Hexachlorobenzene	ND		0.020	0.0090	ug/L		01/08/18 12:49	01/09/18 01:42	1
N-Nitrosodimethylamine	ND		0.20	0.016	ug/L		01/08/18 12:49	01/09/18 01:42	1

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Lab Sample ID: MB 460-489176/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 489232 — **Prep Batch: 489176**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	ND		0.20	0.031	ug/L		01/08/18 12:49	01/09/18 01:42	1
Benzo[k]fluoranthene	ND		0.050	0.028	ug/L		01/08/18 12:49	01/09/18 01:42	1
Chrysene	ND		0.050	0.019	ug/L		01/08/18 12:49	01/09/18 01:42	1
Dibenz(a,h)anthracene	ND		0.050	0.037	ug/L		01/08/18 12:49	01/09/18 01:42	1
Indeno[1,2,3-cd]pyrene	ND		0.050	0.021	ug/L		01/08/18 12:49	01/09/18 01:42	1

Lab Sample ID: LCS 460-489176/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 489232 — **Prep Batch: 489176**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzo[a]anthracene	0.800	0.871		ug/L		109	49 - 135
Benzo[a]pyrene	0.800	0.927		ug/L		116	40 - 141
Benzo[b]fluoranthene	0.800	0.919		ug/L		115	46 - 143
Bis(2-chloroethyl)ether	0.800	0.782		ug/L		98	33 - 150
Hexachlorobenzene	0.800	0.862		ug/L		108	29 - 132
N-Nitrosodimethylamine	0.800	0.442		ug/L		55	10 - 97
Pentachlorophenol	1.60	0.539		ug/L		34	10 - 132

Lab Sample ID: LCSD 460-489176/3-A — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 489232 — **Prep Batch: 489176**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzo[a]anthracene	0.800	0.898		ug/L		112	49 - 135	3	30
Benzo[a]pyrene	0.800	0.935		ug/L		117	40 - 141	1	30
Benzo[b]fluoranthene	0.800	0.963		ug/L		120	46 - 143	5	30
Bis(2-chloroethyl)ether	0.800	0.776		ug/L		97	33 - 150	1	30
Hexachlorobenzene	0.800	0.900		ug/L		112	29 - 132	4	30
N-Nitrosodimethylamine	0.800	0.441		ug/L		55	10 - 97	0	30
Pentachlorophenol	1.60	0.583		ug/L		36	10 - 132	8	30

Method: 1671A - Ethanol (GC/FID)

Lab Sample ID: MB 490-488175/5 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 488175

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethanol	ND		2.0	0.50	mg/L			01/08/18 15:48	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Isopropyl acetate (Surr)	*85*		*70 - 130*		*01/08/18 15:48*	*1*

Method: 1671A - Ethanol (GC/FID) (Continued)

Lab Sample ID: LCS 490-488175/6
Matrix: Water
Analysis Batch: 488175

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Ethanol			50.2	48.5		mg/L		96	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Isopropyl acetate (Surr)	*85*		*70 - 130*

Method: 608 - Polychlorinated Biphenyls (PCBs) (GC)

Lab Sample ID: MB 480-394718/1-A
Matrix: Water
Analysis Batch: 394838

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 394718

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	ND		0.060	0.038	ug/L		01/06/18 07:17	01/08/18 14:50	1
PCB-1221	ND		0.060	0.038	ug/L		01/06/18 07:17	01/08/18 14:50	1
PCB-1232	ND		0.060	0.038	ug/L		01/06/18 07:17	01/08/18 14:50	1
PCB-1242	ND		0.060	0.038	ug/L		01/06/18 07:17	01/08/18 14:50	1
PCB-1248	ND		0.060	0.038	ug/L		01/06/18 07:17	01/08/18 14:50	1
PCB-1254	ND		0.060	0.031	ug/L		01/06/18 07:17	01/08/18 14:50	1
PCB-1260	ND		0.060	0.031	ug/L		01/06/18 07:17	01/08/18 14:50	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*62*		*36 - 121*	*01/06/18 07:17*	*01/08/18 14:50*	*1*
Tetrachloro-m-xylene	*107*		*42 - 135*	*01/06/18 07:17*	*01/08/18 14:50*	*1*

Lab Sample ID: LCS 480-394718/2-A
Matrix: Water
Analysis Batch: 394838

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 394718

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
PCB-1016			1.00	1.02		ug/L		102	69 - 123		
PCB-1260			1.00	0.857		ug/L		86	69 - 120		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
DCB Decachlorobiphenyl	*51*		*36 - 121*
Tetrachloro-m-xylene	*95*		*42 - 135*

Lab Sample ID: LCSD 480-394718/3-A
Matrix: Water
Analysis Batch: 394838

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 394718

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
PCB-1016			1.00	0.936		ug/L		94	69 - 123	8	30
PCB-1260			1.00	0.785		ug/L		78	69 - 120	9	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
DCB Decachlorobiphenyl	*48*		*36 - 121*

Method: 608 - Polychlorinated Biphenyls (PCBs) (GC) (Continued)

Lab Sample ID: LCSD 480-394718/3-A
Matrix: Water
Analysis Batch: 394838

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 394718

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
Tetrachloro-m-xylene	*86*		*42 - 135*

Method: 200.7 Rev 4.4 - Metals (ICP)

Lab Sample ID: MB 480-394590/1-A
Matrix: Water
Analysis Batch: 394822

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 394590

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	ND		50	19	ug/L		01/05/18 08:42	01/05/18 17:15	1

Lab Sample ID: LCS 480-394590/2-A
Matrix: Water
Analysis Batch: 394822

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 394590

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Iron	10000	9510		ug/L		95	85 - 115

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 480-394523/1-A
Matrix: Water
Analysis Batch: 394870

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 394523

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0	0.35	ug/L		01/05/18 07:50	01/05/18 17:34	1
Arsenic	ND		1.0	0.27	ug/L		01/05/18 07:50	01/05/18 17:34	1
Cadmium	ND		0.50	0.071	ug/L		01/05/18 07:50	01/05/18 17:34	1
Copper	ND		1.0	0.22	ug/L		01/05/18 07:50	01/05/18 17:34	1
Lead	ND		1.0	0.17	ug/L		01/05/18 07:50	01/05/18 17:34	1
Nickel	ND		1.0	0.11	ug/L		01/05/18 07:50	01/05/18 17:34	1
Selenium	ND		1.0	0.44	ug/L		01/05/18 07:50	01/05/18 17:34	1
Silver	ND		0.50	0.036	ug/L		01/05/18 07:50	01/05/18 17:34	1

Lab Sample ID: MB 480-394523/1-A
Matrix: Water
Analysis Batch: 395244

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 394523

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Zinc	ND		10	2.6	ug/L		01/05/18 07:50	01/09/18 16:26	1

Lab Sample ID: LCS 480-394523/2-A
Matrix: Water
Analysis Batch: 394870

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 394523

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	20.0	19.2		ug/L		96	85 - 115
Arsenic	20.0	18.8		ug/L		94	85 - 115

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: LCS 480-394523/2-A
Matrix: Water
Analysis Batch: 394870

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 394523

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cadmium	20.0	19.7		ug/L		99	85 - 115
Copper	20.0	19.0		ug/L		95	85 - 115
Lead	20.0	19.1		ug/L		96	85 - 115
Nickel	20.0	18.7		ug/L		94	85 - 115
Selenium	20.0	19.7		ug/L		98	85 - 115
Silver	20.0	17.9		ug/L		89	85 - 115

Lab Sample ID: LCS 480-394523/2-A
Matrix: Water
Analysis Batch: 395244

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 394523

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Zinc	50.0	47.5		ug/L		95	85 - 115

Lab Sample ID: MB 480-394599/1-A
Matrix: Water
Analysis Batch: 394872

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 394599

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0	0.35	ug/L		01/05/18 08:15	01/05/18 23:56	1
Arsenic	ND		1.0	0.27	ug/L		01/05/18 08:15	01/05/18 23:56	1
Copper	ND		1.0	0.22	ug/L		01/05/18 08:15	01/05/18 23:56	1
Lead	ND		1.0	0.17	ug/L		01/05/18 08:15	01/05/18 23:56	1
Nickel	ND		1.0	0.11	ug/L		01/05/18 08:15	01/05/18 23:56	1
Silver	ND		0.50	0.036	ug/L		01/05/18 08:15	01/05/18 23:56	1

Lab Sample ID: LCS 480-394599/2-A
Matrix: Water
Analysis Batch: 394872

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 394599

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	20.0	18.6		ug/L		93	85 - 115
Arsenic	20.0	21.1		ug/L		106	85 - 115
Copper	20.0	21.2		ug/L		106	85 - 115
Lead	20.0	21.4		ug/L		107	85 - 115
Nickel	20.0	20.7		ug/L		104	85 - 115
Silver	20.0	19.9		ug/L		100	85 - 115

Lab Sample ID: LCS 480-394599/3-A
Matrix: Water
Analysis Batch: 394872

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 394599

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	20.0	19.0		ug/L		95	85 - 115
Arsenic	20.0	21.8		ug/L		109	85 - 115
Copper	20.0	21.5		ug/L		107	85 - 115
Lead	20.0	21.1		ug/L		105	85 - 115
Nickel	20.0	21.4		ug/L		107	85 - 115
Silver	20.0	20.3		ug/L		102	85 - 115

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: LCS 480-394599/4-A
Matrix: Water
Analysis Batch: 394872

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 394599

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	20.0	18.9		ug/L		95	85 - 115
Arsenic	20.0	21.3		ug/L		107	85 - 115
Copper	20.0	20.9		ug/L		104	85 - 115
Lead	20.0	20.9		ug/L		104	85 - 115
Nickel	20.0	20.7		ug/L		104	85 - 115
Silver	20.0	20.0		ug/L		100	85 - 115

Method: 245.1 - Mercury (CVAA)

Lab Sample ID: MB 480-394649/1-A
Matrix: Water
Analysis Batch: 394711

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 394649

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.000148	J	0.00020	0.00012	mg/L		01/05/18 12:20	01/05/18 15:54	1

Lab Sample ID: LCS 480-394649/2-A
Matrix: Water
Analysis Batch: 394711

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 394649

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.00667	0.00618		mg/L		93	85 - 115

Lab Sample ID: 480-129628-1 MS
Matrix: Water
Analysis Batch: 394711

Client Sample ID: OC-INF-010318
Prep Type: Total/NA
Prep Batch: 394649

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	ND		0.00667	0.00638		mg/L		96	70 - 130

Lab Sample ID: 480-129628-1 MSD
Matrix: Water
Analysis Batch: 394711

Client Sample ID: OC-INF-010318
Prep Type: Total/NA
Prep Batch: 394649

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	ND		0.00667	0.00602		mg/L		90	70 - 130	6	20

Method: 1664A - HEM and SGT-HEM

Lab Sample ID: MB 480-395230/1-A
Matrix: Water
Analysis Batch: 395265

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 395230

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Petroleum Hydrocarbons (1664A)	ND		5.0	1.9	mg/L		01/10/18 11:15	01/10/18 11:15	1

Method: 1664A - HEM and SGT-HEM (Continued)

Lab Sample ID: LCS 480-395230/2-A
Matrix: Water
Analysis Batch: 395265

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 395230

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Petroleum Hydrocarbons (1664A)	20.0	16.78		mg/L		84	64 - 132

Method: 218.6 - Chromium, Hexavalent (Ion Chromatography)

Lab Sample ID: MB 500-416536/3
Matrix: Water
Analysis Batch: 416536

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	ND		0.30	0.13	ug/L			01/05/18 16:39	1

Lab Sample ID: LCS 500-416536/4
Matrix: Water
Analysis Batch: 416536

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chromium, hexavalent	25.0	24.3		ug/L		97	90 - 110

Lab Sample ID: 480-129628-1 MS
Matrix: Water
Analysis Batch: 416536

Client Sample ID: OC-INF-010318
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chromium, hexavalent	ND	F1 F2	25.0	0.804	F1	ug/L		3	90 - 110

Lab Sample ID: 480-129628-1 MSD
Matrix: Water
Analysis Batch: 416536

Client Sample ID: OC-INF-010318
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chromium, hexavalent	ND	F1 F2	25.0	0.353	J F1 F2	ug/L		1	90 - 110	78	20

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 480-394893/4
Matrix: Water
Analysis Batch: 394893

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50	0.28	mg/L			01/08/18 16:45	1

Lab Sample ID: LCS 480-394893/3
Matrix: Water
Analysis Batch: 394893

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	50.0	49.3		mg/L		99	90 - 110

Method: 350.1 - Nitrogen, Ammonia

Lab Sample ID: MB 480-394676/2-A
Matrix: Water
Analysis Batch: 394688

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 394676

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia	ND		0.20	0.10	mg/L		01/05/18 13:30	01/05/18 13:51	1

Lab Sample ID: LCS 480-394676/1-A
Matrix: Water
Analysis Batch: 394688

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 394676

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia	1.00	1.03		mg/L		103	90 - 110

Method: 420.4 - Phenolics, Total Recoverable

Lab Sample ID: MB 480-394767/1-A
Matrix: Water
Analysis Batch: 394879

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 394767

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phenolics, Total Recoverable	ND		0.010	0.0050	mg/L		01/08/18 02:08	01/08/18 13:03	1

Lab Sample ID: LCS 480-394767/2-A
Matrix: Water
Analysis Batch: 394879

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 394767

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Phenolics, Total Recoverable	0.100	0.102		mg/L		102	90 - 110

Method: SM 2540D - Solids, Total Suspended (TSS)

Lab Sample ID: MB 480-394537/1
Matrix: Water
Analysis Batch: 394537

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		1.0	1.0	mg/L			01/04/18 13:41	1

Lab Sample ID: LCS 480-394537/2
Matrix: Water
Analysis Batch: 394537

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Suspended Solids	257	257		mg/L		100	88 - 110

Method: SM 4500 Cl G - Chlorine, Residual

Lab Sample ID: MB 480-394567/3
Matrix: Water
Analysis Batch: 394567

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chlorine, Total Residual	ND		0.020	0.010	mg/L			01/04/18 16:10	1

Lab Sample ID: LCS 480-394567/4
Matrix: Water
Analysis Batch: 394567

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chlorine, Total Residual	0.900	0.920		mg/L		102	90 - 110

Lab Sample ID: 480-129628-1 DU
Matrix: Water
Analysis Batch: 394567

Client Sample ID: OC-INF-010318
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Chlorine, Total Residual	ND	HF	ND		mg/L		NC	20

Method: SM 4500 CN E - Cyanide, Total

Lab Sample ID: MB 500-416170/1-A
Matrix: Water
Analysis Batch: 416260

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 416170

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	ND		0.010	0.0030	mg/L		01/08/18 12:30	01/08/18 16:45	1

Lab Sample ID: LCS 500-416170/2-A
Matrix: Water
Analysis Batch: 416260

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 416170

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Total	0.100	0.0949		mg/L		95	80 - 120

GC/MS VOA

Analysis Batch: 396313

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-129628-1	OC-INF-010318	Total/NA	Water	8260C	
480-129628-1 - DL	OC-INF-010318	Total/NA	Water	8260C	
MB 480-396313/34	Method Blank	Total/NA	Water	8260C	
LCS 480-396313/5	Lab Control Sample	Total/NA	Water	8260C	
LCSD 480-396313/6	Lab Control Sample Dup	Total/NA	Water	8260C	

Analysis Batch: 450751

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-129628-1	OC-INF-010318	Total/NA	Water	8260B SIM	
MB 440-450751/3	Method Blank	Total/NA	Water	8260B SIM	
LCS 440-450751/4	Lab Control Sample	Total/NA	Water	8260B SIM	
480-129628-1 MS	OC-INF-010318	Total/NA	Water	8260B SIM	
480-129628-1 MSD	OC-INF-010318	Total/NA	Water	8260B SIM	

Analysis Batch: 451089

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-129628-1 - RA	OC-INF-010318	Total/NA	Water	8260B SIM	
MB 440-451089/3	Method Blank	Total/NA	Water	8260B SIM	
LCS 440-451089/4	Lab Control Sample	Total/NA	Water	8260B SIM	
480-129628-1 MS	OC-INF-010318	Total/NA	Water	8260B SIM	
480-129628-1 MSD	OC-INF-010318	Total/NA	Water	8260B SIM	

Analysis Batch: 487776

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-129628-1	OC-INF-010318	Total/NA	Water	624	
MB 490-487776/7	Method Blank	Total/NA	Water	624	
LCS 490-487776/4	Lab Control Sample	Total/NA	Water	624	
480-129628-1 MS	OC-INF-010318	Total/NA	Water	624	

Analysis Batch: 488816

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-129628-1	OC-INF-010318	Total/NA	Water	524.2	
MB 490-488816/7	Method Blank	Total/NA	Water	524.2	
LCS 490-488816/3	Lab Control Sample	Total/NA	Water	524.2	
LCSD 490-488816/4	Lab Control Sample Dup	Total/NA	Water	524.2	

Analysis Batch: 489831

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-129628-1	OC-INF-010318	Total/NA	Water	8260C SIM	
MB 460-489831/7	Method Blank	Total/NA	Water	8260C SIM	
LCS 460-489831/3	Lab Control Sample	Total/NA	Water	8260C SIM	
LCSD 460-489831/4	Lab Control Sample Dup	Total/NA	Water	8260C SIM	

GC/MS Semi VOA

Prep Batch: 394545

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-129628-1	OC-INF-010318	Total/NA	Water	625	
MB 480-394545/1-A	Method Blank	Total/NA	Water	625	
LCS 480-394545/2-A	Lab Control Sample	Total/NA	Water	625	

GC/MS Semi VOA (Continued)

Prep Batch: 394545 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCSD 480-394545/3-A	Lab Control Sample Dup	Total/NA	Water	625	

Analysis Batch: 394664

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-129628-1	OC-INF-010318	Total/NA	Water	625	394545
MB 480-394545/1-A	Method Blank	Total/NA	Water	625	394545
LCS 480-394545/2-A	Lab Control Sample	Total/NA	Water	625	394545
LCSD 480-394545/3-A	Lab Control Sample Dup	Total/NA	Water	625	394545

Prep Batch: 489176

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-129628-1	OC-INF-010318	Total/NA	Water	3510C	
MB 460-489176/1-A	Method Blank	Total/NA	Water	3510C	
LCS 460-489176/2-A	Lab Control Sample	Total/NA	Water	3510C	
LCSD 460-489176/3-A	Lab Control Sample Dup	Total/NA	Water	3510C	

Analysis Batch: 489232

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-129628-1	OC-INF-010318	Total/NA	Water	8270D SIM	489176
MB 460-489176/1-A	Method Blank	Total/NA	Water	8270D SIM	489176
LCS 460-489176/2-A	Lab Control Sample	Total/NA	Water	8270D SIM	489176
LCSD 460-489176/3-A	Lab Control Sample Dup	Total/NA	Water	8270D SIM	489176

GC VOA

Analysis Batch: 488175

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-129628-1	OC-INF-010318	Total/NA	Water	1671A	
MB 490-488175/5	Method Blank	Total/NA	Water	1671A	
LCS 490-488175/6	Lab Control Sample	Total/NA	Water	1671A	

GC Semi VOA

Prep Batch: 394718

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-129628-1	OC-INF-010318	Total/NA	Water	3510C	
MB 480-394718/1-A	Method Blank	Total/NA	Water	3510C	
LCS 480-394718/2-A	Lab Control Sample	Total/NA	Water	3510C	
LCSD 480-394718/3-A	Lab Control Sample Dup	Total/NA	Water	3510C	

Analysis Batch: 394838

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-129628-1	OC-INF-010318	Total/NA	Water	608	394718
MB 480-394718/1-A	Method Blank	Total/NA	Water	608	394718
LCS 480-394718/2-A	Lab Control Sample	Total/NA	Water	608	394718
LCSD 480-394718/3-A	Lab Control Sample Dup	Total/NA	Water	608	394718

Metals

Prep Batch: 394523

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-129628-1	OC-INF-010318	Total/NA	Water	200.8	
MB 480-394523/1-A	Method Blank	Total/NA	Water	200.8	
LCS 480-394523/2-A	Lab Control Sample	Total/NA	Water	200.8	

Prep Batch: 394590

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-129628-1	OC-INF-010318	Total/NA	Water	200.7	
MB 480-394590/1-A	Method Blank	Total/NA	Water	200.7	
LCS 480-394590/2-A	Lab Control Sample	Total/NA	Water	200.7	

Prep Batch: 394599

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 480-394599/1-A	Method Blank	Total/NA	Water	200.8	
LCS 480-394599/2-A	Lab Control Sample	Total/NA	Water	200.8	
LCS 480-394599/3-A	Lab Control Sample	Total/NA	Water	200.8	
LCS 480-394599/4-A	Lab Control Sample	Total/NA	Water	200.8	

Prep Batch: 394649

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-129628-1	OC-INF-010318	Total/NA	Water	245.1	
MB 480-394649/1-A	Method Blank	Total/NA	Water	245.1	
LCS 480-394649/2-A	Lab Control Sample	Total/NA	Water	245.1	
480-129628-1 MS	OC-INF-010318	Total/NA	Water	245.1	
480-129628-1 MSD	OC-INF-010318	Total/NA	Water	245.1	

Analysis Batch: 394711

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-129628-1	OC-INF-010318	Total/NA	Water	245.1	394649
MB 480-394649/1-A	Method Blank	Total/NA	Water	245.1	394649
LCS 480-394649/2-A	Lab Control Sample	Total/NA	Water	245.1	394649
480-129628-1 MS	OC-INF-010318	Total/NA	Water	245.1	394649
480-129628-1 MSD	OC-INF-010318	Total/NA	Water	245.1	394649

Analysis Batch: 394822

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 480-394590/1-A	Method Blank	Total/NA	Water	200.7 Rev 4.4	394590
LCS 480-394590/2-A	Lab Control Sample	Total/NA	Water	200.7 Rev 4.4	394590

Analysis Batch: 394870

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-129628-1	OC-INF-010318	Total/NA	Water	200.8	394523
MB 480-394523/1-A	Method Blank	Total/NA	Water	200.8	394523
LCS 480-394523/2-A	Lab Control Sample	Total/NA	Water	200.8	394523

Analysis Batch: 394872

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 480-394599/1-A	Method Blank	Total/NA	Water	200.8	394599
LCS 480-394599/2-A	Lab Control Sample	Total/NA	Water	200.8	394599
LCS 480-394599/3-A	Lab Control Sample	Total/NA	Water	200.8	394599
LCS 480-394599/4-A	Lab Control Sample	Total/NA	Water	200.8	394599

Metals (Continued)

Analysis Batch: 394986

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-129628-1	OC-INF-010318	Total/NA	Water	200.7 Rev 4.4	394590

Analysis Batch: 395244

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-129628-1	OC-INF-010318	Total/NA	Water	200.8	394523
MB 480-394523/1-A	Method Blank	Total/NA	Water	200.8	394523
LCS 480-394523/2-A	Lab Control Sample	Total/NA	Water	200.8	394523

Analysis Batch: 397170

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-129628-1	OC-INF-010318	Total/NA	Water	SM 2340B	

General Chemistry

Analysis Batch: 394537

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-129628-1	OC-INF-010318	Total/NA	Water	SM 2540D	
MB 480-394537/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 480-394537/2	Lab Control Sample	Total/NA	Water	SM 2540D	

Analysis Batch: 394567

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-129628-1	OC-INF-010318	Total/NA	Water	SM 4500 Cl G	
MB 480-394567/3	Method Blank	Total/NA	Water	SM 4500 Cl G	
LCS 480-394567/4	Lab Control Sample	Total/NA	Water	SM 4500 Cl G	
480-129628-1 DU	OC-INF-010318	Total/NA	Water	SM 4500 Cl G	

Prep Batch: 394676

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-129628-1	OC-INF-010318	Total/NA	Water	Distill/Ammonia	
MB 480-394676/2-A	Method Blank	Total/NA	Water	Distill/Ammonia	
LCS 480-394676/1-A	Lab Control Sample	Total/NA	Water	Distill/Ammonia	

Analysis Batch: 394688

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-129628-1	OC-INF-010318	Total/NA	Water	350.1	394676
MB 480-394676/2-A	Method Blank	Total/NA	Water	350.1	394676
LCS 480-394676/1-A	Lab Control Sample	Total/NA	Water	350.1	394676

Prep Batch: 394767

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-129628-1	OC-INF-010318	Total/NA	Water	Distill/Phenol	
MB 480-394767/1-A	Method Blank	Total/NA	Water	Distill/Phenol	
LCS 480-394767/2-A	Lab Control Sample	Total/NA	Water	Distill/Phenol	

Analysis Batch: 394879

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-129628-1	OC-INF-010318	Total/NA	Water	420.4	394767
MB 480-394767/1-A	Method Blank	Total/NA	Water	420.4	394767
LCS 480-394767/2-A	Lab Control Sample	Total/NA	Water	420.4	394767

General Chemistry (Continued)

Analysis Batch: 394893

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-129628-1	OC-INF-010318	Total/NA	Water	300.0	
MB 480-394893/4	Method Blank	Total/NA	Water	300.0	
LCS 480-394893/3	Lab Control Sample	Total/NA	Water	300.0	

Prep Batch: 395230

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-129628-1	OC-INF-010318	Total/NA	Water	1664A	
MB 480-395230/1-A	Method Blank	Total/NA	Water	1664A	
LCS 480-395230/2-A	Lab Control Sample	Total/NA	Water	1664A	

Analysis Batch: 395265

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-129628-1	OC-INF-010318	Total/NA	Water	1664A	395230
MB 480-395230/1-A	Method Blank	Total/NA	Water	1664A	395230
LCS 480-395230/2-A	Lab Control Sample	Total/NA	Water	1664A	395230

Prep Batch: 416170

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-129628-1	OC-INF-010318	Total/NA	Water	Distill/CN	
MB 500-416170/1-A	Method Blank	Total/NA	Water	Distill/CN	
LCS 500-416170/2-A	Lab Control Sample	Total/NA	Water	Distill/CN	

Analysis Batch: 416260

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-129628-1	OC-INF-010318	Total/NA	Water	SM 4500 CN E	416170
MB 500-416170/1-A	Method Blank	Total/NA	Water	SM 4500 CN E	416170
LCS 500-416170/2-A	Lab Control Sample	Total/NA	Water	SM 4500 CN E	416170

Analysis Batch: 416536

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-129628-1	OC-INF-010318	Total/NA	Water	218.6	
MB 500-416536/3	Method Blank	Total/NA	Water	218.6	
LCS 500-416536/4	Lab Control Sample	Total/NA	Water	218.6	
480-129628-1 MS	OC-INF-010318	Total/NA	Water	218.6	
480-129628-1 MSD	OC-INF-010318	Total/NA	Water	218.6	

Analysis Batch: 416718

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-129628-1	OC-INF-010318	Total/NA	Water	218.6 CR3	

Client Sample ID: OC-INF-010318
Date Collected: 01/03/18 13:30
Date Received: 01/04/18 10:00

Lab Sample ID: 480-129628-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	524.2		1	488816	01/11/18 17:26	SW1	TAL NSH
Total/NA	Analysis	624		1	487776	01/05/18 16:54	JJR	TAL NSH
Total/NA	Analysis	8260B SIM		1	450751	01/09/18 18:20	GK	TAL IRV
Total/NA	Analysis	8260B SIM	RA	1	451089	01/11/18 16:56	GK	TAL IRV
Total/NA	Analysis	8260C		1	396313	01/18/18 13:23	KMN	TAL BUF
Total/NA	Analysis	8260C	DL	4	396313	01/18/18 19:18	KMN	TAL BUF
Total/NA	Analysis	8260C SIM		1	489831	01/11/18 13:12	SZD	TAL EDI
Total/NA	Prep	625			394545	01/04/18 14:32	ATG	TAL BUF
Total/NA	Analysis	625		1	394664	01/05/18 19:43	DMR	TAL BUF
Total/NA	Prep	3510C			489176	01/08/18 12:49	ANM	TAL EDI
Total/NA	Analysis	8270D SIM		1	489232	01/09/18 01:19	SK	TAL EDI
Total/NA	Analysis	1671A		1	488175	01/08/18 16:00	AAB	TAL NSH
Total/NA	Prep	3510C			394718	01/06/18 07:17	SMP	TAL BUF
Total/NA	Analysis	608		1	394838	01/08/18 15:38	JMO	TAL BUF
Total/NA	Prep	200.7			394590	01/05/18 08:42	EMB	TAL BUF
Total/NA	Analysis	200.7 Rev 4.4		1	394986	01/08/18 18:33	LMH	TAL BUF
Total/NA	Prep	200.8			394523	01/05/18 07:50	EMB	TAL BUF
Total/NA	Analysis	200.8		1	394870	01/05/18 19:57	JRK	TAL BUF
Total/NA	Prep	200.8			394523	01/05/18 07:50	EMB	TAL BUF
Total/NA	Analysis	200.8		1	395244	01/09/18 16:36	JRK	TAL BUF
Total/NA	Prep	245.1			394649	01/05/18 12:20	BMB	TAL BUF
Total/NA	Analysis	245.1		1	394711	01/05/18 16:18	BMB	TAL BUF
Total/NA	Analysis	SM 2340B		1	397170	01/24/18 14:23	AMH	TAL BUF
Total/NA	Prep	1664A			395230	01/10/18 11:15	DSC	TAL BUF
Total/NA	Analysis	1664A		1	395265	01/10/18 11:15	DSC	TAL BUF
Total/NA	Analysis	218.6		2	416536	01/05/18 17:05	CCK	TAL CHI
Total/NA	Analysis	218.6 CR3		1	416718	01/12/18 16:36	CCK	TAL CHI
Total/NA	Analysis	300.0		5	394893	01/08/18 18:14	CLA	TAL BUF
Total/NA	Prep	Distill/Ammonia			394676	01/05/18 13:30	SSS	TAL BUF
Total/NA	Analysis	350.1		2	394688	01/05/18 14:29	SSS	TAL BUF
Total/NA	Prep	Distill/Phenol			394767	01/08/18 02:08	BEV	TAL BUF
Total/NA	Analysis	420.4		1	394879	01/08/18 13:03	EKB	TAL BUF
Total/NA	Analysis	SM 2540D		1	394537	01/04/18 13:41	EKB	TAL BUF
Total/NA	Analysis	SM 4500 Cl G		1	394567	01/04/18 16:10	LED	TAL BUF
Total/NA	Prep	Distill/CN			416170	01/08/18 12:30	MAN	TAL CHI
Total/NA	Analysis	SM 4500 CN E		1	416260		MAN	TAL CHI
					(Start)	01/08/18 16:53		
					(End)	01/08/18 16:53		

Lab Chronicle

Client: Olin Corporation
Project/Site: Wilmington Plant B RPG

TestAmerica Job ID: 480-129628-1

Laboratory References:

TAL BUF = TestAmerica Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

TAL EDI = TestAmerica Edison, 777 New Durham Road, Edison, NJ 08817, TEL (732)549-3900

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

TAL NSH = TestAmerica Nashville, 2960 Foster Creighton Drive, Nashville, TN 37204, TEL (615)726-0177

Accreditation/Certification Summary

Client: Olin Corporation
Project/Site: Wilmington Plant B RPG

TestAmerica Job ID: 480-129628-1

Laboratory: TestAmerica Buffalo

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	EPA Region	Identification Number	Expiration Date
Massachusetts	State Program	1	M-NY044	06-30-18

The following analytes are included in this report, but are not accredited/certified under this accreditation/certification:

Analysis Method	Prep Method	Matrix	Analyte
1664A	1664A	Water	Total Petroleum Hydrocarbons (1664A)

The following analytes are included in this report, but accreditation/certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
420.4	Distill/Phenol	Water	Phenolics, Total Recoverable
625	625	Water	2-Methylphenol
8260C		Water	2,4,4-Trimethyl-1-pentene
8260C		Water	2,4,4-Trimethyl-2-pentene
SM 2340B		Water	Calcium hardness as calcium carbonate
SM 2340B		Water	Hardness as calcium carbonate
SM 2340B		Water	Magnesium hardness as calcium carbonate
SM 4500 Cl G		Water	Chlorine, Total Residual

Laboratory: TestAmerica Chicago

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State Program	9	2903	04-30-18 *
Georgia	State Program	4	N/A	04-30-18
Georgia	State Program	4	939	04-30-18
Hawaii	State Program	9	N/A	04-30-18
Illinois	NELAP	5	100201	04-30-18
Indiana	State Program	5	C-IL-02	04-30-18 *
Iowa	State Program	7	82	05-01-18
Kansas	NELAP	7	E-10161	12-31-17 *
Kentucky (UST)	State Program	4	66	04-30-18
Kentucky (WW)	State Program	4	KY90023	12-31-18
Louisiana	NELAP	6	30720	06-30-18
Mississippi	State Program	4	N/A	04-30-18
New York	NELAP	2	12019	04-01-18 *
North Carolina (WW/SW)	State Program	4	291	12-31-18
North Dakota	State Program	8	R-194	04-30-18
Oklahoma	State Program	6	8908	08-31-18
South Carolina	State Program	4	77001	04-30-18
USDA	Federal		P330-15-00038	02-11-18
Wisconsin	State Program	5	999580010	08-31-18
Wyoming	State Program	8	8TMS-Q	04-30-18

Laboratory: TestAmerica Edison

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Connecticut	State Program	1	PH-0200	09-30-18
DE Haz. Subst. Cleanup Act (HSCA)	State Program	3	N/A	12-31-18
New Jersey	NELAP	2	12028	06-30-18
New York	NELAP	2	11452	04-01-18
Pennsylvania	NELAP	3	68-00522	02-28-18

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Accreditation/Certification Summary

Client: Olin Corporation
Project/Site: Wilmington Plant B RPG

TestAmerica Job ID: 480-129628-1

Laboratory: TestAmerica Edison (Continued)

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Rhode Island	State Program	1	LAO00132	12-30-17 *
USDA	Federal		NJCA-003-08	06-13-20

Laboratory: TestAmerica Irvine

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska	State Program	10	CA01531	06-30-18
Arizona	State Program	9	AZ0671	10-14-18
California	LA Cty Sanitation Districts	9	10256	06-30-18
California	State Program	9	CA ELAP 2706	06-30-18
Guam	State Program	9	Cert. No. 17-003R	01-23-18 *
Hawaii	State Program	9	N/A	01-29-18 *
Kansas	NELAP	7	E-10420	07-31-18
Nevada	State Program	9	CA015312018-1	07-31-18
New Mexico	State Program	6	N/A	01-29-18 *
Northern Mariana Islands	State Program	9	MP0002	01-29-17 *
Oregon	NELAP	10	4028	01-29-18 *
USDA	Federal		P330-15-00184	07-08-18
Washington	State Program	10	C900	09-03-18

Laboratory: TestAmerica Nashville

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
A2LA	A2LA		NA: NELAP & A2LA	12-31-19
A2LA	ISO/IEC 17025		0453.07	12-31-19
Alaska (UST)	State Program	10	UST-087	01-01-18 *
Arizona	State Program	9	AZ0473	05-05-18
Arkansas DEQ	State Program	6	88-0737	04-25-18
California	State Program	9	2938	10-31-18
Connecticut	State Program	1	PH-0220	12-31-19
Florida	NELAP	4	E87358	06-30-18
Georgia	State Program	4	E87358(FL)/453.07(A2LA)	06-30-18
Illinois	NELAP	5	200010	12-09-18
Iowa	State Program	7	131	04-01-18
Kansas	NELAP	7	E-10229	12-31-17 *
Kentucky (UST)	State Program	4	19	06-30-18
Kentucky (WW)	State Program	4	90038	12-31-18
Louisiana	NELAP	6	30613	06-30-18
Maine	State Program	1	TN00032	11-03-19
Maryland	State Program	3	316	03-31-18
Massachusetts	State Program	1	M-TN032	06-30-18
Minnesota	NELAP	5	047-999-345	12-31-18
Mississippi	State Program	4	N/A	06-30-18
Montana (UST)	State Program	8	NA	02-24-20
Nevada	State Program	9	TN00032	07-31-18
New Hampshire	NELAP	1	2963	10-09-18
New Jersey	NELAP	2	TN965	06-30-18
New York	NELAP	2	11342	03-31-18

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Accreditation/Certification Summary

Client: Olin Corporation
Project/Site: Wilmington Plant B RPG

TestAmerica Job ID: 480-129628-1

Laboratory: TestAmerica Nashville (Continued)

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
North Carolina (WW/SW)	State Program	4	387	12-31-18
North Dakota	State Program	8	R-146	06-30-18
Ohio VAP	State Program	5	CL0033	07-06-19
Oklahoma	State Program	6	9412	08-31-18
Oregon	NELAP	10	TN200001	04-27-18
Pennsylvania	NELAP	3	68-00585	06-30-18
Rhode Island	State Program	1	LAO00268	12-30-17 *
South Carolina	State Program	4	84009 (001)	02-28-18
Tennessee	State Program	4	2008	02-23-20
Texas	NELAP	6	T104704077	08-31-18
USDA	Federal		P330-13-00306	12-01-19
Utah	NELAP	8	TN00032	07-31-18
Virginia	NELAP	3	460152	06-14-18
Washington	State Program	10	C789	07-19-18
West Virginia DEP	State Program	3	219	02-28-18
Wisconsin	State Program	5	998020430	08-31-18
Wyoming (UST)	A2LA	8	453.07	12-31-19

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

Client: Olin Corporation
Project/Site: Wilmington Plant B RPG

TestAmerica Job ID: 480-129628-1

Method	Method Description	Protocol	Laboratory
524.2	Volatile Organic Compounds (GC/MS)	EPA-DW	TAL NSH
624	Volatile Organic Compounds (GC/MS)	40CFR136A	TAL NSH
8260B SIM	Volatile Organic Compounds (GC/MS)	SW846	TAL IRV
8260C	Volatile Organic Compounds (GC/MS)	MA DEP	TAL BUF
8260C SIM	Volatile Organic Compounds (GC/MS)	SW846	TAL EDI
625	Semivolatile Organic Compounds (GC/MS)	40CFR136A	TAL BUF
8270D SIM	Semivolatile Organic Compounds (GC/MS SIM)	SW846	TAL EDI
1671A	Ethanol (GC/FID)	EPA	TAL NSH
608	Polychlorinated Biphenyls (PCBs) (GC)	40CFR136A	TAL BUF
200.7 Rev 4.4	Metals (ICP)	EPA	TAL BUF
200.8	Metals (ICP/MS)	EPA	TAL BUF
245.1	Mercury (CVAA)	EPA	TAL BUF
SM 2340B	Total Hardness (as CaCO3) by calculation	SM	TAL BUF
1664A	HEM and SGT-HEM	1664A	TAL BUF
218.6	Chromium, Hexavalent (Ion Chromatography)	EPA	TAL CHI
218.6 CR3	Chromium, Trivalent (Calculation)	EPA	TAL CHI
300.0	Anions, Ion Chromatography	MCAWW	TAL BUF
350.1	Nitrogen, Ammonia	MCAWW	TAL BUF
420.4	Phenolics, Total Recoverable	MCAWW	TAL BUF
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL BUF
SM 4500 Cl G	Chlorine, Residual	SM	TAL BUF
SM 4500 CN E	Cyanide, Total	SM	TAL CHI

Protocol References:

1664A = EPA-821-98-002

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

EPA = US Environmental Protection Agency

EPA-DW = "Methods For The Determination Of Organic Compounds In Drinking Water", EPA/600/4-88/039, December 1988 And Its Supplements.

MA DEP = Massachusetts Department Of Environmental Protection

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

SM = "Standard Methods For The Examination Of Water And Wastewater",

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL BUF = TestAmerica Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

TAL EDI = TestAmerica Edison, 777 New Durham Road, Edison, NJ 08817, TEL (732)549-3900

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

TAL NSH = TestAmerica Nashville, 2960 Foster Creighton Drive, Nashville, TN 37204, TEL (615)726-0177

Sample Summary

Client: Olin Corporation
Project/Site: Wilmington Plant B RPG

TestAmerica Job ID: 480-129628-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
480-129628-1	OC-INF-010318	Water	01/03/18 13:30	01/04/18 10:00

360325-Boston

TestAmerica Buffalo

10 Hazelwood Drive
Amherst, NY 14228-2298
Phone (716) 691-2600 Fax (716) 691-7991

360325-Boston

Chain of Custody Record

TestAm
THE LEADER IN ENVIRO

480-129628 COC

Client Information	Sampler:	Lab PM: Mason, Becky C	Carrier Tracking No(s):	COC No: 480-106785-25145.1
Client Contact: Mr. Brian Guichard	Phone:	E-Mail: becky.mason@testamericainc.com		Page: Page 1 of 2
Company: Olin Corporation				Job #:

Address: 51 Eames street	Due Date Requested:
City: Wilmington	TAT Requested (days):
State, Zip: MA, 01887	
Phone: 423-336-4012(Tel)	PO #: REWI0025
Email: beguichard@olin.com	WO #:
Project Name: Wilmington Plant B RPG	Project #: 48006853
Site:	SSOW#:

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8260B_SIM - MTBE/1,4 Dioxane	8270D_SIM - 8270 SIM	8260C_SIM - EDB SIM	300.0_28D - Chloride	350.1 - Nitrogen, Ammonia	4500_CL_G - Chlorine, Residual	200.7, 200.8, 245.1	1664A_Calc - TPH	420.4 - Phenols	524.2_Preserved - Acetone	625 - SVOC	608_PCB - PCB	2540D - TSS	Total Number of containers	Special Instructions/Note:
			Preservation Code:				A	N	A	N	S	N	D	S	S	A	N	N	N		
INF 010318	1-3-18	1330	G	Water			3	4	2	1	1	1	1	2	1	3	2	2	1	24	

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by	Date/Time	Company	Received by	Date/Time	Company
1		1-3-18			1-3-18 1326	D
2		1-3-18 1800			01/04/18 1805	TA
3						

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 2.7 #1 ICE

Ver: 08/04/2016

TestAmerica Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone (716) 691-2600 Fax (716) 691-7991

360325 Boston

Chain of Custody Record

360325 Boston

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler:	Lab PM: Mason, Becky C	Carrier Tracking No(s):	COC No: 480-106785-25145.2
Client Contact: Mr. Brian Guichard	Phone:	E-Mail: becky.mason@testamericainc.com		Page: Page 2 of 2
Company: Olin Corporation				Job #:

Address: 51 Eames street	Due Date Requested:
City: Wilmington	TAT Requested (days):
State, Zip: MA, 01887	
Phone: 423-336-4012(Tel)	PO #: REWI0025
Email: beguichard@olin.com	WO #:
Project Name: Wilmington Plant B RPG	Project #: 48006853
Site:	SSOW#:

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	1671A, 624_5ml	218.6 - Chromium, Hexavalent	4500_CN_E - Cyanide, Total	Total Number of containers	Special Instructions/Note:
			Preservation Code:				A	N	B		
INF010318	1.3.18	1330	G	Water			6	1	1	8	

Hexavalent + 500. Sodium Hydrate to charge

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify)	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1		1.3.18			1.3.18 1320	TJ
2		1-3-18 1800	TJ		01/04/18 1005	TA
3		Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 2.7 #1 ICE

Ver: 08/04/2016

TestAmerica Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone (716) 691-2600 Fax (716) 691-7991

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Mason, Becky C	Carrier Tracking No(s):	COC No: 480-39933.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: becky.mason@testamericainc.com	State of Origin: Massachusetts	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc		Accreditations Required (See note): State Program - Massachusetts		Job #: 480-129628-1
Address: 17461 Derian Ave, Suite 100,	Due Date Requested: 1/16/2018			
City: Irvine	TAT Requested (days):			
State, Zip: CA, 92614-5817				
Phone: 949-261-1022(Tel) 949-260-3297(Fax)	PO #:			
Email:	WO #:			
Project Name: Wilmington Plant B RPG	Project #: 48006853			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8260B_SIM/5030B MTBE/1,4 Dioxane	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
OC-INF-010318 (480-129628-1)	1/3/18	13:30 Eastern		Water			X	3	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
[signature]	1-4-18 1600	TAB	[signature]		
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
			[signature]	1/5/18 0945	TAL
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: ∆ Yes ∆ No | Custody Seal No.: Fed Ex 5057 0123 6735 | Cooler Temperature(s) °C and Other Remarks: 1.8, 2.4-IR6

Ver: 09/20/2016

TestAmerica Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone (716) 691-2600 Fax (716) 691-7991

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Mason, Becky C	Carrier Tracking No(s):	COC No: 480-39932.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: becky.mason@testamericainc.com	State of Origin: Massachusetts	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): State Program - Massachusetts		Job #: 480-129628-1
Address: 777 New Durham Road, ,	Due Date Requested: 1/16/2018			
City: Edison	TAT Requested (days):			
State, Zip: NJ, 08817				
Phone: 732-549-3900(Tel) 732-549-3679(Fax)	PO #:			
Email:	WO #:			
Project Name: Wilmington Plant B RPG	Project #: 48006853			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8270D_SIM/3510C_LVI 8270 SIM	8260C_SIM/5030C EDB SIM	Total Number of containers	Special Instructions/Note:
			Preservation Code:							
OC-INF-010318 (480-129628-1)	1/3/18	13:30 Eastern		Water			X	X	6	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
[signature]	1-4-18 1600	TAS	[signature] via FedEx	1/8/18 1010	TAEBU
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: ☒ Yes ☐ No	Custody Seal No.: 009472	Cooler Temperature(s) °C and Other Remarks: 8.7°C IR9

Ver: 09/20/2016

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
Nashville, TN

COOLER RECEIPT FORM

480-129628 Chain of Custody

Cooler Received/Opened On 1/5/2018 @1005

Time Samples Removed From Cooler 1500 Time Samples Placed In Storage 1552 (2 Hour Window)

1. Tracking # 6724 (last 4 digits, FedEx) Courier: FedEx

IR Gun ID 14740456 pH Strip Lot NA Chlorine Strip Lot NA

2. Temperature of rep. sample or temp blank when opened: 3.6 *Degrees Celsius*

3. If Item #2 temperature is 0°C or less, was the representative sample or temp blank frozen? YES NO...NA

4. Were custody seals on outside of cooler? YES...NO...NA

If yes, how many and where: 1 Front

5. Were the seals intact, signed, and dated correctly? YES...NO...NA

6. Were custody papers inside cooler? YES...NO...NA

I certify that I opened the cooler and answered questions 1-6 (intial) JL

7. Were custody seals on containers: YES NO and Intact YES...NO...NA

Were these signed and dated correctly? YES...NO...NA

8. Packing mat'l used? Bubblewrap Plastic bag Peanuts Vermiculite Foam Insert Paper Other None

9. Cooling process: Ice Ice-pack Ice (direct contact) Dry ice Other None

10. Did all containers arrive in good condition (unbroken)? YES...NO...NA

11. Were all container labels complete (#, date, signed, pres., etc)? YES...NO...NA

12. Did all container labels and tags agree with custody papers? YES...NO...NA

13a. Were VOA vials received? YES...NO...NA

b. Was there any observable headspace present in any VOA vial? YES...NO...NA


Larger than this.

14. Was there a Trip Blank in this cooler? YES...NO...NA If multiple coolers, sequence #_____

I certify that I unloaded the cooler and answered questions 7-14 (intial) KRG

15a. On pres'd bottles, did pH test strips suggest preservation reached the correct pH level? YES...NO...NA

b. Did the bottle labels indicate that the correct preservatives were used YES...NO...NA

16. Was residual chlorine present? YES...NO...NA

I certify that I checked for chlorine and pH as per SOP and answered questions 15-16 (intial) KRG

17. Were custody papers properly filled out (ink, signed, etc)? YES...NO...NA

18. Did you sign the custody papers in the appropriate place? YES...NO...NA

19. Were correct containers used for the analysis requested? YES...NO...NA

20. Was sufficient amount of sample sent in each container? YES...NO...NA

I certify that I entered this project into LIMS and answered questions 17-20 (intial) KRG

I certify that I attached a label with the unique LIMS number to each container (intial) KRG

21. Were there Non-Conformance issues at login? YES...NO Was a NCM generated? YES...NO...#_____

BIS = Broken in shipment
Cooler Receipt Form.doc

LF-1
End of Form

Revised 8/23/17

1/25/2018 (Rev. 2)

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
Nashville, TN

Loc: 480
129628

COOLER RECEIPT FORM

Cooler Received/Opened On 1/5/2018 @1005

Time Samples Removed From Cooler 1500 Time Samples Placed In Storage 1552 (2 Hour Window)

1. Tracking # 6713 (last 4 digits, FedEx) Courier: FedEx

IR Gun ID 17960357 pH Strip Lot NA Chlorine Strip Lot NA

2. Temperature of rep. sample or temp blank when opened: 3.5 *Degrees Celsius*

3. If Item #2 temperature is 0°C or less, was the representative sample or temp blank frozen? YES NO...NA

4. Were custody seals on outside of cooler? YES...NO...NA

If yes, how many and where: 1 front

5. Were the seals intact, signed, and dated correctly? YES...NO...NA

6. Were custody papers inside cooler? YES...NO...NA CS-1/5/18

I certify that I opened the cooler and answered questions 1-6 (intial) RS

7. Were custody seals on containers: YES NO and Intact YES...NO...NA

Were these signed and dated correctly? YES...NO...NA

8. Packing mat'l used? Bubblewrap Plastic bag Peanuts Vermiculite Foam Insert Paper Other None

9. Cooling process: Ice Ice-pack Ice (direct contact) Dry ice Other None

10. Did all containers arrive in good condition (unbroken)? YES...NO...NA

11. Were all container labels complete (#, date, signed, pres., etc)? YES...NO...NA

12. Did all container labels and tags agree with custody papers? YES...NO...NA

13a. Were VOA vials received? YES...NO...NA

b. Was there any observable headspace present in any VOA vial? YES...NO...NA

Larger than this.

14. Was there a Trip Blank in this cooler? YES...NO...NA If multiple coolers, sequence #_____

I certify that I unloaded the cooler and answered questions 7-14 (intial) KMG

15a. On pres'd bottles, did pH test strips suggest preservation reached the correct pH level? YES...NO...NA

b. Did the bottle labels indicate that the correct preservatives were used YES...NO...NA

16. Was residual chlorine present? YES...NO...NA

I certify that I checked for chlorine and pH as per SOP and answered questions 15-16 (intial) KMG

17. Were custody papers properly filled out (ink, signed, etc)? YES...NO...NA

18. Did you sign the custody papers in the appropriate place? YES...NO...NA

19. Were correct containers used for the analysis requested? YES...NO...NA

20. Was sufficient amount of sample sent in each container? YES...NO...NA

I certify that I entered this project into LIMS and answered questions 17-20 (intial) KMG

I certify that I attached a label with the unique LIMS number to each container (intial) KMG

21. Were there Non-Conformance issues at login? YES...NO Was a NCM generated? YES...NO...#_____

BIS = Broken in shipment
Cooler Receipt Form.doc

LF-1
End of Form

Revised 8/23/17

1/25/2018 (Rev. 2)

TestAmerica Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone (716) 691-2600 Fax (716) 691-7991

Chain of Custody Record

Loc: 480
129628

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Mason, Becky C	Job(s):	COC No: 480-39935.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: becky.mason@testamericainc.com		Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc		Accreditations Required (See note): State Program - Massachusetts		Job #: 480-129628-1
Address: 2960 Foster Creighton Drive, ,	Due Date Requested: 1/16/2018			
City: Nashville	TAT Requested (days):			
State, Zip: TN, 37204	PO #:			
Phone: 615-726-0177(Tel) 615-726-3404(Fax)	WO #:			
Email:	Project #: 48006853			
Project Name: Wilmington Plant B RPG	SSOW#:			
Site:				

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	1671A/ Ethanol	624_5ml/ VOC	624.2_Preserved/ Acetone	Total Number of containers	Special Instructions/Note:
			Preservation Code:		X	X					
OC-INF-010318 (480-129628-1)	1/3/18	13:30 Eastern		Water			X	X	X	6	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify)	Primary Deliverable Rank: 2
Empty Kit Relinquished by:	Special Instructions/QC Requirements:

	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
[signature]	1-4-18 1600		[signature] 3.6/3.5	1/5/18 1005	TA-NAS
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 09/20/2016

1/25/2018 (Rev. 2)

TestAmerica Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone (716) 691-2600 Fax (716) 691-7991

Chain of Custody Record

360325-Boston

Client Information	Sampler:	Lab PM: Mason, Becky C	Carrier Tracking No(s):	COC No: 480-106785-25145.2
Client Contact: Mr. Brian Guichard	Phone:	E-Mail: becky.mason@testamericainc.com		Page: Page 2 of 2
Company: Olin Corporation				Job #: 480-129628
Address: 51 Eames street	Due Date Requested:			
City: Wilmington	TAT Requested (days):			
State, Zip: MA, 01887				
Phone: 423-336-4012(Tel)	PO #: REWI0025			
Email: beguichard@olin.com	WO #:			
Project Name: Wilmington Plant B RPG	Project #: 48006853			
Site:	SSOW#:			

Analysis Requested

480-129628 COC

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=wasteoil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	1671A, 624_5ml	218.6 - Chromium, Hexavalent	4500_CN_E - Cyanide, Total	Total Number of containers	Special Instructions/Note:
			Preservation Code:				A	N	B		
INF 010318	1-3-18	1330	G	Water			6	1	1	8	

Hexavalent + 500. Sodium Hydroxide to pH > 12

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:		Date:		Time:		Method of Shipment:	
Relinquished by:	Date/Time: 1-3-18	Company	Received by:	Date/Time: 1-3-18 1320	Company TJ		
Relinquished by:	Date/Time: 1-3-18 1800	Company TJ	Received by:	Date/Time: 01/04/18 @ 0830	Company TA		
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company		

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.: | Cooler Temperature(s) °C and Other Remarks: 2.0

Ver: 08/04/2016

Login Sample Receipt Checklist

Client: Olin Corporation

Job Number: 480-129628-1

Login Number: 129628

List Source: TestAmerica Buffalo

List Number: 1

Creator: Williams, Christopher S

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time (Excluding tests with immediate HTs)..	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Sampling Company provided.	True	olin
Samples received within 48 hours of sampling.	True	
Samples requiring field filtration have been filtered in the field.	N/A	
Chlorine Residual checked.	N/A	

Login Sample Receipt Checklist

Client: Olin Corporation

Job Number: 480-129628-1

Login Number: 129628
List Number: 5
Creator: Armbruster, Chris

List Source: TestAmerica Edison
List Creation: 01/08/18 11:23 AM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	009472
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	False	Water present in cooler; indicates evidence of melted ice.
Cooler Temperature is acceptable.	False	Cooler temperature outside required temperature criteria.
Cooler Temperature is recorded.	True	8.7°C IR9
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Olin Corporation

Job Number: 480-129628-1

Login Number: 129628
List Number: 4
Creator: Ornelas, Olga

List Source: TestAmerica Irvine
List Creation: 01/05/18 03:21 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	Not Present
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Olin Corporation

Job Number: 480-129628-1

Login Number: 129628
List Number: 3
Creator: Gundi, Hozar K

List Source: TestAmerica Nashville
List Creation: 01/05/18 03:49 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Tel: (716)691-2600

TestAmerica Job ID: 480-122511-1
Client Project/Site: Wilmington Plant B RPG

For:
Olin Corporation
PO BOX 248
Charleston, Tennessee 37310-0248

Attn: Mr. James Cashwell

Denise L Giglia

Authorized for release by:
8/21/2017 9:08:22 AM
Denise Giglia, Project Management Assistant II
denise.giglia@testamericainc.com

Designee for

Becky Mason, Project Manager II
(413)572-4000
becky.mason@testamericainc.com

Table of Contents

Definitions/Glossary

Client: Olin Corporation
Project/Site: Wilmington Plant B RPG

TestAmerica Job ID: 480-122511-1

Qualifiers

Metals

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

General Chemistry

Qualifier	Qualifier Description
HF	Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 480-122511-1

Laboratory: TestAmerica Buffalo

Narrative

Job Narrative
480-122511-1

Receipt
The samples were received on 8/10/2017 1:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.4° C.

Metals
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry
Method 9040C, SM 4500 H+ B: This analysis is normally performed in the field and has a method-defined holding time of 15 minutes. The following sample has been qualified with the "HF" flag to indicate analysis was performed in the laboratory outside the 15 minute timeframe: OC-RECEIVING 080917 (480-122511-1).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Detection Summary

Client: Olin Corporation
Project/Site: Wilmington Plant B RPG

TestAmerica Job ID: 480-122511-1

Client Sample ID: OC-RECEIVING 080917 — Lab Sample ID: 480-122511-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Iron	5000		50	19	ug/L	1		200.7 Rev 4.4	Total/NA
Zinc	4.7	J B	10	1.5	ug/L	1		200.7 Rev 4.4	Total/NA
Arsenic	1.2		1.0	0.27	ug/L	1		200.8	Total/NA
Lead	0.36	J B	1.0	0.17	ug/L	1		200.8	Total/NA
Hardness as calcium carbonate	70		0.50	0.10	mg/L	1		SM 2340B	Total/NA
Calcium hardness as calcium carbonate	57		0.50	0.10	mg/L	1		SM 2340B	Total/NA
Magnesium hardness as calcium carbonate	13		0.50	0.10	mg/L	1		SM 2340B	Total/NA
Ammonia	17		2.0	1.0	mg/L	10		350.1	Total/NA

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	6.4	HF	0.1	0.1	SU	1		9040C	Total/NA
Temperature	20.7	HF	0.001	0.001	Degrees C	1		9040C	Total/NA

Client Sample ID: OC-INFLUENT 080917 — Lab Sample ID: 480-122511-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Ammonia	3.0		0.40	0.20	mg/L	2		350.1	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: OC-RECEIVING 080917

Lab Sample ID: 480-122511-1
Matrix: Water
Date Collected: 08/09/17 11:30
Date Received: 08/10/17 01:30

Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	ND		10	1.6	ug/L		08/10/17 10:27	08/11/17 16:42	1
Iron	**5000**		50	19	ug/L		08/10/17 10:27	08/11/17 16:42	1
Zinc	**4.7**	**J B**	10	1.5	ug/L		08/10/17 10:27	08/11/17 16:42	1

Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**1.2**		1.0	0.27	ug/L		08/10/17 10:45	08/19/17 03:23	1
Cadmium	ND		0.50	0.071	ug/L		08/10/17 10:45	08/19/17 03:23	1
Lead	**0.36**	**J B**	1.0	0.17	ug/L		08/10/17 10:45	08/19/17 03:23	1
Selenium	ND		1.0	0.44	ug/L		08/10/17 10:45	08/19/17 03:23	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hardness as calcium carbonate	**70**		0.50	0.10	mg/L			08/14/17 14:01	1
Calcium hardness as calcium carbonate	**57**		0.50	0.10	mg/L			08/14/17 14:01	1
Magnesium hardness as calcium carbonate	**13**		0.50	0.10	mg/L			08/14/17 14:01	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia	**17**		2.0	1.0	mg/L		08/11/17 11:02	08/11/17 14:33	10
Chromium, hexavalent	ND		0.010	0.0050	mg/L			08/10/17 04:17	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**6.4**	**HF**	0.1	0.1	SU			08/10/17 18:12	1
Temperature	**20.7**	**HF**	0.001	0.001	Degrees C			08/10/17 18:12	1

Client Sample ID: OC-INFLUENT 080917

Lab Sample ID: 480-122511-2
Matrix: Water
Date Collected: 08/09/17 11:15
Date Received: 08/10/17 01:30

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia	**3.0**		0.40	0.20	mg/L		08/11/17 11:02	08/11/17 14:34	2

Method: 200.7 Rev 4.4 - Metals (ICP)

Lab Sample ID: MB 480-371458/1-A
Matrix: Water
Analysis Batch: 371998

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 371458

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	ND		10	1.6	ug/L		08/10/17 10:27	08/11/17 14:08	1
Iron	ND		50	19	ug/L		08/10/17 10:27	08/11/17 14:08	1
Zinc	1.95	J	10	1.5	ug/L		08/10/17 10:27	08/11/17 14:08	1

Lab Sample ID: LCS 480-371458/2-A
Matrix: Water
Analysis Batch: 371998

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 371458

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Copper	200	191		ug/L		96	85 - 115
Iron	10000	10400		ug/L		104	85 - 115
Zinc	200	204		ug/L		102	85 - 115

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 480-371477/1-A
Matrix: Water
Analysis Batch: 372963

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 371477

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		1.0	0.27	ug/L		08/10/17 10:45	08/19/17 03:12	1
Cadmium	ND		0.50	0.071	ug/L		08/10/17 10:45	08/19/17 03:12	1
Lead	0.172	J	1.0	0.17	ug/L		08/10/17 10:45	08/19/17 03:12	1
Selenium	ND		1.0	0.44	ug/L		08/10/17 10:45	08/19/17 03:12	1

Lab Sample ID: LCS 480-371477/2-A
Matrix: Water
Analysis Batch: 372963

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 371477

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	20.0	21.9		ug/L		110	85 - 115
Cadmium	20.0	21.9		ug/L		109	85 - 115
Lead	20.0	21.2		ug/L		106	85 - 115
Selenium	20.0	21.9		ug/L		110	85 - 115

Method: 350.1 - Nitrogen, Ammonia

Lab Sample ID: MB 480-371727/2-A
Matrix: Water
Analysis Batch: 371797

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 371727

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia	ND		0.20	0.10	mg/L		08/11/17 11:02	08/11/17 14:11	1

Method: 350.1 - Nitrogen, Ammonia (Continued)

Lab Sample ID: LCS 480-371727/1-A
Matrix: Water
Analysis Batch: 371797

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 371727

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia	1.00	1.01		mg/L		101	90 - 110

Method: 9040C - pH

Lab Sample ID: LCS 480-371628/1
Matrix: Water
Analysis Batch: 371628

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
pH	7.00	7.0		SU		100	99 - 101

Method: SM 3500 CR D - Chromium, Hexavalent

Lab Sample ID: MB 480-371402/3
Matrix: Water
Analysis Batch: 371402

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	ND		0.010	0.0050	mg/L			08/10/17 04:17	1

Lab Sample ID: LCS 480-371402/4
Matrix: Water
Analysis Batch: 371402

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chromium, hexavalent	0.0500	0.0489		mg/L		98	85 - 115

Lab Sample ID: 480-122511-1 DU
Matrix: Water
Analysis Batch: 371402

Client Sample ID: OC-RECEIVING 080917
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Chromium, hexavalent	ND		ND		mg/L		NC	15

QC Association Summary

Client: Olin Corporation
Project/Site: Wilmington Plant B RPG

TestAmerica Job ID: 480-122511-1

Metals

Prep Batch: 371458

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-122511-1	OC-RECEIVING 080917	Total/NA	Water	200.7	
MB 480-371458/1-A	Method Blank	Total/NA	Water	200.7	
LCS 480-371458/2-A	Lab Control Sample	Total/NA	Water	200.7	

Prep Batch: 371477

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-122511-1	OC-RECEIVING 080917	Total/NA	Water	200.8	
MB 480-371477/1-A	Method Blank	Total/NA	Water	200.8	
LCS 480-371477/2-A	Lab Control Sample	Total/NA	Water	200.8	

Analysis Batch: 371998

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-122511-1	OC-RECEIVING 080917	Total/NA	Water	200.7 Rev 4.4	371458
MB 480-371458/1-A	Method Blank	Total/NA	Water	200.7 Rev 4.4	371458
LCS 480-371458/2-A	Lab Control Sample	Total/NA	Water	200.7 Rev 4.4	371458

Analysis Batch: 372037

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-122511-1	OC-RECEIVING 080917	Total/NA	Water	SM 2340B	

Analysis Batch: 372963

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-122511-1	OC-RECEIVING 080917	Total/NA	Water	200.8	371477
MB 480-371477/1-A	Method Blank	Total/NA	Water	200.8	371477
LCS 480-371477/2-A	Lab Control Sample	Total/NA	Water	200.8	371477

General Chemistry

Analysis Batch: 371402

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-122511-1	OC-RECEIVING 080917	Total/NA	Water	SM 3500 CR D	
MB 480-371402/3	Method Blank	Total/NA	Water	SM 3500 CR D	
LCS 480-371402/4	Lab Control Sample	Total/NA	Water	SM 3500 CR D	
480-122511-1 DU	OC-RECEIVING 080917	Total/NA	Water	SM 3500 CR D	

Analysis Batch: 371628

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-122511-1	OC-RECEIVING 080917	Total/NA	Water	9040C	
LCS 480-371628/1	Lab Control Sample	Total/NA	Water	9040C	

Prep Batch: 371727

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-122511-1	OC-RECEIVING 080917	Total/NA	Water	Distill/Ammonia	
480-122511-2	OC-INFLUENT 080917	Total/NA	Water	Distill/Ammonia	
MB 480-371727/2-A	Method Blank	Total/NA	Water	Distill/Ammonia	
LCS 480-371727/1-A	Lab Control Sample	Total/NA	Water	Distill/Ammonia	

Analysis Batch: 371797

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-122511-1	OC-RECEIVING 080917	Total/NA	Water	350.1	371727

General Chemistry (Continued)

Analysis Batch: 371797 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-122511-2	OC-INFLUENT 080917	Total/NA	Water	350.1	371727
MB 480-371727/2-A	Method Blank	Total/NA	Water	350.1	371727
LCS 480-371727/1-A	Lab Control Sample	Total/NA	Water	350.1	371727

Lab Chronicle

Client: Olin Corporation
Project/Site: Wilmington Plant B RPG

TestAmerica Job ID: 480-122511-1

Client Sample ID: OC-RECEIVING 080917

Lab Sample ID: 480-122511-1

Date Collected: 08/09/17 11:30

Matrix: Water

Date Received: 08/10/17 01:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			371458	08/10/17 10:27	MJW	TAL BUF
Total/NA	Analysis	200.7 Rev 4.4		1	371998	08/11/17 16:42	LMH	TAL BUF
Total/NA	Prep	200.8			371477	08/10/17 10:45	MJW	TAL BUF
Total/NA	Analysis	200.8		1	372963	08/19/17 03:23	JRK	TAL BUF
Total/NA	Analysis	SM 2340B		1	372037	08/14/17 14:01	LMH	TAL BUF
Total/NA	Prep	Distill/Ammonia			371727	08/11/17 11:02	KRT	TAL BUF
Total/NA	Analysis	350.1		10	371797	08/11/17 14:33	SSS	TAL BUF
Total/NA	Analysis	9040C		1	371628	08/10/17 18:12	ALZ	TAL BUF
Total/NA	Analysis	SM 3500 CR D		1	371402	08/10/17 04:17	KMB	TAL BUF

Client Sample ID: OC-INFLUENT 080917

Lab Sample ID: 480-122511-2

Date Collected: 08/09/17 11:15

Matrix: Water

Date Received: 08/10/17 01:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Distill/Ammonia			371727	08/11/17 11:02	KRT	TAL BUF
Total/NA	Analysis	350.1		2	371797	08/11/17 14:34	SSS	TAL BUF

Laboratory References:

TAL BUF = TestAmerica Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

Accreditation/Certification Summary

Client: Olin Corporation
Project/Site: Wilmington Plant B RPG

TestAmerica Job ID: 480-122511-1

Laboratory: TestAmerica Buffalo

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	EPA Region	Identification Number	Expiration Date
Massachusetts	State Program	1	M-NY044	06-30-18

The following analytes are included in this report, but are not accredited/certified under this accreditation/certification:

Analysis Method	Prep Method	Matrix	Analyte
200.7 Rev 4.4	200.7	Water	Iron
200.7 Rev 4.4	200.7	Water	Zinc
200.8	200.8	Water	Lead

The following analytes are included in this report, but accreditation/certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
9040C		Water	pH
9040C		Water	Temperature
SM 2340B		Water	Calcium hardness as calcium carbonate
SM 2340B		Water	Hardness as calcium carbonate
SM 2340B		Water	Magnesium hardness as calcium carbonate
SM 3500 CR D		Water	Chromium, hexavalent

Method Summary

Client: Olin Corporation
Project/Site: Wilmington Plant B RPG

TestAmerica Job ID: 480-122511-1

Method	Method Description	Protocol	Laboratory
200.7 Rev 4.4	Metals (ICP)	EPA	TAL BUF
200.8	Metals (ICP/MS)	EPA	TAL BUF
SM 2340B	Total Hardness (as CaCO3) by calculation	SM	TAL BUF
350.1	Nitrogen, Ammonia	MCAWW	TAL BUF
9040C	pH	SW846	TAL BUF
SM 3500 CR D	Chromium, Hexavalent	SM	TAL BUF

Protocol References:

EPA = US Environmental Protection Agency
MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.
SM = "Standard Methods For The Examination Of Water And Wastewater",
SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL BUF = TestAmerica Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

Sample Summary

Client: Olin Corporation
Project/Site: Wilmington Plant B RPG

TestAmerica Job ID: 480-122511-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
480-122511-1	OC-RECEIVING 080917	Water	08/09/17 11:30	08/10/17 01:30
480-122511-2	OC-INFLUENT 080917	Water	08/09/17 11:15	08/10/17 01:30

TestAmerica Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone (716) 691-2600 Fax (716) 691-7991

360325-Boston

Chain of Custody Record

360325-Boston

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

480-122511 COC

Client Information	Sampler: L Johnson	Lab PM: Mason, Becky C		COC No: 480-100872-24004.1
Client Contact: Mr. Brian Guichard	Phone: 508 265 5143	E-Mail: becky.mason@testamericainc.com		Page: Page 1 of 1
Company: Olin Corporation		Analysis Requ		Job #:
Address: 51 Eames street	Due Date Requested:			Preservation Codes: A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)
City: Wilmington	TAT Requested (days): A.S.A.P.			
State, Zip: MA, 01887				
Phone: 423-336-4012(Tel)	PO #: REWI0025			
Email: beguichard@olin.com	WO #:			
Project Name: Wilmington Plant B RPG	Project #: 48006853			Other:
Site:	SSOW#:			

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	350.1 - Nitrogen, Ammonia	200.7, 200.8, SM2340B	3500_CR_D - Hex Cr	9040C - pH	Total Number of containers	Special Instructions/Note:
			Preservation Code:				S	D	N	N		
				Water			2	1	1	1	5	
Receiving 080917	8.9.17	1130	G	water			1	1	1	1	4	PLEASE
Influent 080917	8.9.17	1115	G	water			1				1	RUSH
RUSH												
PLEASE												

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by	Date/Time	Company	Received by	Date/Time	Company
1	L Johnson	8.9.17			8-9-17 1200	TA
2		8-9-17 1800			8-10-17 0130	TA
3		Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: △ Yes △ No | Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks: 2.4 #1

Login Sample Receipt Checklist

Client: Olin Corporation

Job Number: 480-122511-1

Login Number: 122511

List Source: TestAmerica Buffalo

List Number: 1

Creator: Williams, Christopher S

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time (Excluding tests with immediate HTs)..	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	N/A	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Sampling Company provided.	True	OLIN
Samples received within 48 hours of sampling.	True	
Samples requiring field filtration have been filtered in the field.	N/A	
Chlorine Residual checked.	N/A	

Part H.2 – National Historic Preservation Act Eligibility Determination

Olin Wilmington – NOI

Part H.2 – National Historic Preservation Act eligibility determination

The Olin Corporation (Olin) is seeking renewal of the previous permit authorization for the discharge of effluent water from the treatment plant located at 51 Eames Street in Wilmington MA. The treatment plant is contained in an established building and operates with a best management practice (BMP) plan. The discharge of effluent water has occurred under the RGP since 2006. Currently there is no new construction that is required for discharge of the effluent water.

In accordance with Section II of Appendix III of the Massachusetts General Permit No. MAG910000, Olin reviewed applicable historical RGP documents associated with the renewal process and has determined that the discharge of effluent water to South and East Ditch continues to have no adverse effects on historic properties as defined in the National Historic Preservation Act regulations.

Presented below is documentation from the previous 2011 RGP NOI that contains the Project Notification Form (Appendix A) submitted to the Massachusetts Historical Commission (MHC) on October 18, 2010 and to the local Wilmington Historical Commission. The MHC and Wilmington Historical Commission reviewed the files and materials submitted and concluded that this project is unlikely to affect significant historic or archaeological resources. To determine if updates and/or additions have been made since the 2011 RGP NOI, Olin corresponded with the Wilmington Historical Commission (letter presented below) and reviewed the following databases:

- http://www.nps.gov/nr/research/: National Registry of Historic Places database and National Historic Landmarks database. The National Registry of Historical Places database listed ten historic structures located in Wilmington MA. None of these are on the Olin property. There are no historic landmarks present on the Olin property that are listed on the National Historic Landmarks database.
- http://www.sec.state.ma.us/mhc/mhcidx.htm: Massachusetts Cultural Resource Information System (MACRIS). The MACRIS database lists 207 buildings, structures, objects, burial grounds and/or areas located in the town of Wilmington MA. None of these are located on the Olin property.

Based on the information presented below, national and state databases reviewed, and material obtained from the Town of Wilmington Historical Commission, the effluent discharge point at the Olin Site located at 51 Eames Street in Wilmington, MA meets **Criterion A:** ***No historic properties are present. The discharge related activities do not have the potential to affect historic properties.***

Morrow, Steve G CERG

From: Harnden Tavern [htavern@townofwilmingtonma.com]
Sent: Tuesday, November 23, 2010 10:18 AM
To: Morrow, Steve G CERG
Subject: Re: Wilmington-Olin Corporation RGP Permit

The Wilmington Historical Commission discussed your project at the meeting on Monday, November 8. I told them at that meeting that your documents had also been sent to the State Historic Preservation Officer, which I assume to be part of the Massachusetts Historical Commission. The Wilmington Historical Commission saw nothing of immediate concern in your plans and they expect to be advised by MHC if they suspect a problem. Therefore, they planned on taking no action on the matter at this time.

I hope this will satisfy your notification requirements. Let me know if you need anything else from the Wilmington Historical Commission.

Terry McDermott
Curator
Wilmington Town Museum at the
Col. Joshua Harnden Tavern, c.1770
430 Salem Street
Wilmington, MA 01887
978.658.5475
htavern@town.wilmington.ma.us
http://www.town.wilmington.ma.us/Pages/WilmingtonMA_BComm/Historical/index

The Wilmington Historical Commission can also be reached at the above addresses and phone number.

> ----- Original Message -----
> **From:** Morrow, Steve G CERG
> **To:** htavern htavern
> **Sent:** Monday, November 22, 2010 11:47 AM
> **Subject:** RE: Wilmington-Olin Corporation RGP Permit
>
> Mr. McDermott,
>
> I have not heard back from the Wilmington Historical Commission, so I assume that there are no areas of interest located on the Olin property or adjacent areas.
>
> Thanks,
> Steve
>
> ---
>
> **From:** Harnden Tavern [mailto:htavern@townofwilmingtonma.com]
> **Sent:** Wednesday, October 27, 2010 3:18 PM
> **To:** Morrow, Steve G CERG
> **Subject:** Re: Wilmington-Olin Corporation RGP Permit
>
> I have received your e-mail directed to the Wilmington Historical Commission. I will share the document with

them at their next scheduled meeting on Monday, November 8, 2010.

Terry McDermott
Curator
Wilmington Town Museum at the
Col. Joshua Harnden Tavern, c.1770
430 Salem Street
Wilmington, MA 01887
978.658.5475
htavern@town.wilmington.ma.us
http://www.town.wilmington.ma.us/Pages/WilmingtonMA_BComm/Historical/index

The Wilmington Historical Commission can also be reached at the above addresses and phone number.

----- Original Message -----
From: Morrow, Steve G CERG
To: htavern@town.wilmington.ma.us
Sent: Wednesday, October 27, 2010 2:12 PM
Subject: Wilmington-Olin Corporation RGP Permit

I am writing to provide notification of Olin's filing of a permit for renewal the existing Remediation General Permit (RGP). As part of the filing process, I am required to contact the State Historic Preservation Officer, which I have done, and provide a copy of the application to the 'town or city government historical commission'.

Should you have any question that I could answer please contact me by email or you can call me directly at 423-336-4511.

Steve Morrow

The information contained in this e-mail message is intended only for the personal and confidential use of the recipient(s) named above. If the reader of this message is not the intended recipient or an agent responsible for delivering it to the intended recipient, you are hereby notified that you have received this message and any attachments in error and that any review, dissemination, distribution, copying or alteration of this message and/or its attachments is strictly prohibited. If you have received this message in error, please notify the sender immediately by electronic mail, and delete the original message.

950 CMR: OFFICE OF THE SECRETARY OF THE COMMONWEALTH

APPENDIX A
MASSACHUSETTS HISTORICAL COMMISSION
220 MORRISSEY BOULEVARD
BOSTON, MASS. 02125
617-727-8470, FAX: 617-727-5128

PROJECT NOTIFICATION FORM

Project Name: Remediation General Permit - Renewal

Location / Address: 51 Eames Street

City / Town: Wilmington, MA 01887

Project Proponent

Name: Olin Corporation

Address: 3855 North Ocoee Street, Suite 200

City/Town/Zip/Telephone: Cleveland, TN 37312

After review of MHC files and the materials you submitted, it has been determined that this project is unlikely to affect significant historic or archaeological resources.

RC 25174

11/1/10

Jonathan K. Patton Date
Archaeologist / Preservation Planner
Massachusetts Historical Commission

xc: Lois k. Adams, EPA

Agency license or funding for the project (list all licenses, permits, approvals, grants or other entitlements being sought from state and federal agencies).

Agency Name	Type of License or funding (specify)
USEPA	NPDES Permit Number MAG910074

Project Description (narrative):
Renewal of existing NPDES permit to discharge treated ground water into a draining ditch located at 51 Eames Street in Wilimington, MA.

Does the project include demolition? If so, specify nature of demolition and describe the building(s) which are proposed for demolition.
No

Does the project include rehabilitation of any existing buildings? If so, specify nature of rehabilitation and describe the building(s) which are proposed for rehabilitation.
No

Does the project include new construction? If so, describe (attach plans and elevations if necessary).
No

APPENDIX A (continued)

To the best of your knowledge, are any historic or archaeological properties known to exist within the project's area of potential impact? If so, specify.

No

What is the total acreage of the project area?

Woodland	acres	Productive Resources:	
Wetland	acres	Agriculture	acres
Floodplain	acres	Forestry	acres
Open space	acres	Mining/Extraction	acres
Developed	acres	Total Project Acreage	acres

What is the acreage of the proposed new construction? _____ acres

What is the present land use of the project area?

Industrial / Commercial

Please attach a copy of the section of the USGS quadrangle map which clearly marks the project location.

This Project Notification Form has been submitted to the MHC in compliance with 950 CMR 71.00.

Signature of Person submitting this form: Steve Morrow Date: 10/15/2010

Name: Steve Morrow / Olin Corporation

Address: 3855 North Ocoee Street, Suite 200

City/Town/Zip: Cleveland, TN 37312

Telephone: 423-336-4511

REGULATORY AUTHORITY

950 CMR 71.00: M.G.L. c. 9, §§ 26-27C as amended by St. 1988, c. 254.

Cunningham, Tige L.

From: Harnden Tavern <htavern@wilmingtonma.gov>
Sent: Monday, February 12, 2018 10:05 PM
To: Cunningham, Tige L.
Subject: Re: Update requested from the Wilmington Historical Commission

Dear Tige:

The Historical Commission met tonight and they agreed there is no new information regarding historical resources at the Olin site, so they have no comments or objections to make at this time to the project.

Let me know if you need anything more formal from me than this email.

Terry McDermott
Curator
Wilmington Town Museum
430 Salem Street
Wilmington, MA 01887
978-658-5475
htavern@wilmingtonma.gov
https://www.wilmingtonma.gov/town-museum

The Wilmington Historical Commission can also be reached at the above addresses and phone number.

From: Cunningham, Tige L. <tige.cunningham@woodplc.com>
Sent: Monday, February 12, 2018 3:15 PM
To: Harnden Tavern
Subject: RE: Update requested from the Wilmington Historical Commission

Hi Terry
Just wanted to touch base. I went on the website and noticed that the meeting is tonight. Just wanted to clarify that the information that I sent you last week (attached again) was the same form that Olin submitted for review in 2010. Since nothing has changed at the Site with regards to the discharge point of the water from the treatment plant, I did not fill out a new form.

Good luck at the meeting.

Regards,

Tige

Tige Cunningham, NRCC EAC
Senior Scientist
Amec Foster Wheeler is now Wood.
511 Congress Street Portland, Maine 04101
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www.woodplc.com