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*The Trusted Integrator for Sustainable Solutions*

18 February 2015

U.S. Environmental Protection Agency Region III  
Attn: Ms. Ruth Scharr  
On-Scene Coordinator  
1650 Arch Street  
Philadelphia, Pennsylvania 19103

Subject: Final Trip Report – New Kent Wood Preservatives, Inc. Site Removal Assessment

Project: New Kent Wood Preservatives, Inc. Site  
EPA Contract No.: EP-S3-10-05  
TDD No.: WS01-14-05-003  
Document Control No.: W0233.1A.01158

Dear Ms. Scharr:

Weston Solutions, Inc. (WESTON®) is submitting the Final Trip Report for the New Kent Wood Preservatives Site. This Trip Report summarizes the removal assessment and site assessment activities conducted at the New Kent Wood Preservatives, Inc. Site in June 2014 and September 2014. If you have any questions regarding this report, please call me at (757) 819-5306.

Sincerely,

WESTON SOLUTIONS, INC.

Matt Fisher  
Project Task Lead

# **FINAL TRIP REPORT**

## **NEW KENT WOOD PRESERVATIVES, INC REMOVAL ASSESSMENT PROVIDENCE FORGE, VIRGINIA**

**EPA CONTRACT NO.: EP-S3-10-05  
TECHNICAL DIRECTION DOCUMENT NO.: WS01-14-05-003  
DOCUMENT CONTROL NO.: W0233.1A.01158**

*Prepared For:*



**U.S. ENVIRONMENTAL PROTECTION AGENCY REGION III  
HAZARDOUS SITE CLEANUP DIVISION  
1650 ARCH STREET  
PHILADELPHIA, PENNSYLVANIA 19103**

*Prepared By*



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WEST CHESTER, PA 19380**

**WESTON PROJECT No.: 20403.012.001.0233.00**

**FEBRUARY 2015**

**FINAL  
TRIP REPORT  
REMOVAL ASSESSMENT  
NEW KENT WOOD PRESERVATIVES, Inc. SITE  
PROVIDENCE FORGE, NEW KENT COUNTY,  
VIRGINIA**



WESTON – Project Task Lead  
Matt Fisher

2/6/2015  
Date



WESTON – START Removal SOW Manager  
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Date

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## LIST OF ACRONYMS AND ABBREVIATIONS

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µg/L	micrograms per liter
ATSDR	Agency for Toxic Substances and Disease Registry
bgs	below ground surface
CCA	chromated copper arsenate
CLP	Contract Laboratory Program
EcoSSL	Ecological Soil Screening Level
EPA	United States Environmental Protection Agency
ESI	Expanded Site Investigation
HI	hazard index
ICP-AES	inductively coupled plasma-atomic emission spectroscopy
ICP-MS	inductively coupled plasma-mass spectrometry
MCL	Maximum Contaminant Level
mg/kg	milligrams per kilogram
OASQA	Office of Analytical Services & Quality Assurance
OSC	On-Scene Coordinator
QAPP	Quality Assurance Project Plan
RSL	Regional Screening Level
SOM01.2	Multi-Media, Multi-Concentration, Organic Analytical Service for Superfund
SOP	Standard Operating Procedure
START	Superfund Technical Assessment and Response Team
SVOC	semivolatile organic compound
TAL	Target Analyte List
TDD	Technical Direction Document
TR	target risk
UFP	Uniform Federal Policy
VADEQ	Virginia Department of Environmental Quality
WESTON®	Weston Solutions, Inc.
XRF	X-ray fluorescence

## 1.0 INTRODUCTION

Under the Eastern Area Superfund Technical Assessment and Response Team (START) Contract No. EP-S3-10-05, Technical Direction Document No. WS01-14-05-003, the U.S. Environmental Protection Agency (EPA) Region III tasked Weston Solutions, Inc. (WESTON®) to conduct in-situ X-ray fluorescence (XRF) analysis of surface soils at the New Kent Wood Preservatives Site (Site) for arsenic, copper, and chromium and to collect surface soil samples from locations if elevated concentrations of these metals were indicated. Initial surface soil screening and sampling was conducted in June 2014. Follow up sampling activities were conducted in September 2014. This removal assessment was conducted at the Site to determine whether metal contamination associated with former activities at the Site posed a risk to the workers or residents at or near the Site. During September 2014, the EPA Site Assessment Branch conducted an Expanded Site Inspection (ESI) to determine whether the Site is eligible for placement on the National Priorities List. Both the ESI sampling results and the Removal Assessment results will be used to evaluate releases of hazardous substances from the Site. The ESI is provided in this report as **Appendix A**.

Results were compared to the EPA Regional Screening Level (RSL) for Industrial Soil (EPA, 2014) corresponding to 1E-04 risk level for carcinogens, as well as a non-cancer risk level calculated using a Target Hazard Quotient (THQ) of 1. For known or suspected carcinogens, acceptable exposure levels are generally concentrations that fall within a 1E-04 to 1E-06 (i.e., 1 excess cancer in 10,000 to 1 excess cancer in 1,000,000 people exposed).

Results were also compared to the Ecological Soil Screening Levels (Eco-SSLs) (EPA). Eco-SSLs are concentrations of contaminants in soil that are protective of ecological receptors that commonly come into contact with and/or consume biota that live in or on soil. The Eco-SSLs are soil screening numbers and are not designed to be used as cleanup levels. However, these values are presumed to provide adequate protection of terrestrial ecosystems.

## 2.0 SITE INFORMATION

This section describes the site location, presents a description of the Site, and summarizes previous site investigation activities.

## 2.1 SITE LOCATION AND DESCRIPTION

The Site is located at 4101 South Mountcastle Road, Providence Forge, New Kent County, Virginia, and is depicted on **Figure 1**, Site Location Map. The approximate geographic coordinates of the center of the Site are 37.4539° north latitude and 77.0910° west longitude (Blueskies, 2012). The Site is located approximately 1,500 feet south of the intersection of Route 60 and Route 615 in a primarily undeveloped/rural area.

The Site is currently occupied by two active businesses: McNeil Sales & Service Inc., providing refractory supplies and services, and Museum Resources providing construction, design, and millwork services for historic sites, private owners, and commercial buildings.

As shown on **Figure 1**, Site Location Map, directly surrounding the New Kent Site to the north is undeveloped forested land and wetlands, to the east are wetlands, to the south are active railroad tracks, and to the west is Mountcastle Road. An active tire recycling facility (Virginia Recycling Corporation) is located 0.14 mile north of the Site and an active asphalt manufacturer and recycling plant (Lee Hwy Paving Corporation) is located on the south side of the railroad tracks that border the Site to the south. The nearest residential property is located approximately 0.3 mile to the southwest. The nearest surface water is an unnamed tributary to Schiminoe Creek, located approximately 300 feet to the north and east of the Site from the property fence line. The unnamed tributary flows through the wetlands that border the Site and converges with Schiminoe Creek just upstream of the railroad tracks.

## 2.2 PREVIOUS SITE INVESTIGATIONS

The Site was operated as a lumber company and pressure treated wood with a chromated copper arsenate (CCA) solution under various names and owners between 1977 and approximately 1993. **Figure 2**, Aerial Photograph, depicts the Site and features used during lumber treatment operations. Throughout the operational history, the location of the drip pad, where CCA treated wood was allowed to dry following treatment, remained in the center of the Site. A secondary drip pad was identified during the 1996 assessment by EPA south of the primary drip pad. Site drainage was reported to be a significant issue on-site over its history, with the Site often



becoming inundated with mud. Drainage ditches were used throughout the Site to manage surface storm water flow (Blueskies, 2012).

The Virginia Department of Environmental Quality (VADEQ) and EPA have completed numerous assessments and inspections of the Site, documenting housekeeping issues, improper material handling, and employee complaints, which may be indicative of releases of hazardous materials to the environment. During the most recent sampling assessment, conducted by EPA in 1996, arsenic, chromium, and copper were identified throughout site soils at maximum concentrations of 1,110 milligrams per kilogram (mg/kg), 900 mg/kg, and 602 mg/kg, respectively (Blueskies, 2012).

### **3.0 SITE ACTIVITIES**

Removal assessment activities were conducted at the Site in June and September 2014. ESI activities were conducted at the Site in conjunction with removal assessment activities in September 2014. Removal assessment activities were conducted in accordance with the Field Sampling and Analysis Plan, dated June 2014 (WESTON, 2014a). ESI activities were conducted in accordance with the Supplemental Field Sampling and Analysis Plan, dated September 2014 (WESTON, 2014b). Site activities were documented in accordance with WESTON Standard Operating Procedure (SOP) No. 101, Logbook Documentation (WESTON, 2014c).

#### **3.1 SURFACE SOIL SCREENING**

Surface soils at the Site were analyzed in situ using a hand held XRF Analyzer in June 2014. The Site was divided into 15 grids approximately 150 ft by 300 ft. A minimum of eight XRF analyses were collected at random locations within each grid. Additional analyses were collected at locations biased toward areas of higher use by employees and areas likely to contain elevated concentrations of the metals, based upon historical operations at the Site.

#### **3.2 SURFACE SOIL SAMPLING**

A total of 17 surface soil samples were collected from locations, chosen on the basis of in situ XRF results that indicated the highest concentrations of chromium, arsenic, and/or copper. Three background surface soil samples were also collected from an undeveloped portion of a

residential property located approximately 1,000 feet northwest of the Site. All surface soil samples were collected as grab samples from 0 to 3 inches below ground surface (bgs) using a plastic scoop and placed directly into an 8-ounce glass jar. All sampling locations, times, and descriptions were recorded in the field logbook. Soil samples were collected in accordance with WESTON SOP No. 302, Surface Soil Sampling (WESTON, 2011a). Samples were shipped to the assigned Contract Laboratory Program (CLP) Laboratory for Target Analyte List (TAL) Metals analysis. Sample locations for the surface soil samples discussed in this section are presented on **Figure 3**.

### 3.3 SUBSURFACE SOIL INVESTIGATION

In September 2014, four subsurface soil samples were collected from the northeast portion of the Site. A tenant of the property reported seeing a large area in the northeast corner of the Site just within the fenceline approximately 15 to 20 years ago that contained a reported “green gooey” material thought to have been waste material from one of the previous owners of the Site. This area has since been overgrown; however, the current owner indicated that this material was reportedly located approximately 30 feet from the fence within the northeast corner of the Site.

Four subsurface samples were collected from the northeast corner of the Site inside the fence line. Because this pile was last seen 15 to 20 years ago, it was determined that if hazardous material was here, it would be between 3 to 4 feet bgs. This assumption was based on the time that has elapsed from when the potentially hazardous material was last noted and the general soil erosion/settlement conditions in the area. Samples depths were selected at the direction of the On-Scene Coordinator (OSC).

At each subsurface sample location, a hand auger was advanced 3 feet bgs and soil was collected between 3 to 4 feet bgs. The soil was collected directly from the bucket of the auger, homogenized in an aluminum pan, and placed directly into the appropriate sample containers for analyses of TAL metals and semivolatile organic compounds (SVOCs). Analyses were conducted using inductively coupled plasma-atomic emission spectroscopy (ICP-AES) and Multi-Media, Multi-Concentration, Organic Analytical Service for Superfund (SOM01.2) methods, respectively. No green material was observed while collecting these samples.

All sampling locations, times, and descriptions were recorded in the field logbook. Soil samples were collected in accordance with WESTON SOP No. 304, Subsurface Soil Sampling (WESTON, 2011a).

### **3.4 POTABLE AND MONITORING WELL SAMPLING**

In September 2014, potable well samples were collected by WESTON from two adjacent business locations, two nearby residential properties, and from the bathroom at the Site. The potable well samples were collected to determine whether contamination associated with the Site was affecting potable water at the Site or nearby properties. All potable well samples were collected directly from an outdoor spigot, with the exception of the on-site potable water sample, which was collected from the cold water tap in the bathroom of the office building located at the Site. The residential well depths were said to be between 300 – 500 feet deep according to the various property owners. Official water depth levels were not taken at any of the residential well sample locations. Sample locations are shown on **Figure 4**.

Prior to sampling, the potable wells were purged from the sampling location for a minimum of 15 minutes into 5-gallon buckets to control dispersion of purge water. The purge was then discharged directly to the ground surface at each property in a manner that would not cause ponding. Potable water samples were collected from the purge locations directly into the appropriate sample containers for metals and SVOC analyses using the ICP-AES and SOM01.2 methods, respectively.

Groundwater from two existing monitoring wells located at the Site was also sampled in September 2014. The onsite monitoring well depths were between 20 – 25 feet bgs but the water level was observed between 6 – 7 feet bgs. The two site monitoring wells were purged with 2-inch dedicated disposable polyethylene bailers. Approximately two well volumes were purged from each well prior to sampling. All purge water was stored in 5-gallon buckets and dispersed on-site in accordance with the OSC's direction. Once the appropriate purge volume was removed, groundwater samples were collected directly from the bailers into the appropriate sample containers for TAL metals and SVOC analysis using the ICP-AES and SOM01.2 methods, respectively.

### 3.5 SAMPLE MANAGEMENT

All samples collected during the removal assessment were handled and packaged in accordance with the Contract Laboratory Program Guidance for Field Samplers (EPA, 2011), the EPA Region III START 4 Program-Wide Uniform Federal Policy (UFP) Quality Assurance Project Plan (QAPP) (WESTON, 2010a) and the WESTON Environmental Sample Shipment Checklist (WESTON, 2010b). All shipping containers were properly labeled with EPA chain-of-custody seals and delivered with signed chain-of-custody forms and appropriate hazard warnings for laboratory personnel. Copies of the chain-of-custody records are provided with the Validated Laboratory Results Packages in **Appendix B**. As appropriate, samples were preserved and all samples were kept on ice during delivery to the assigned laboratories. The analytical data generated by the laboratories were validated by the EPA Office of Analytical Services & Quality Assurance (OASQA).

## 4.0 ANALYTICAL RESULTS

This section summarizes the analytical results for the samples collected at the Site by WESTON during this assessment. The CLP analytical data packages are provided in **Appendix C**.

### 4.1 XRF AND SOIL SAMPLE RESULTS – JUNE 2014

Results of the in situ XRF analysis indicated that arsenic levels in the surface soil on-site were above residential and industrial RSLs. Analytical results of the surface soil samples collected indicated that concentrations of all 17 samples exceeded both the residential and industrial RSLs for arsenic (EPA, 2014). Residential Arsenic concentrations ranged from 21.9 mg/kg at location 062 to 449 mg/kg at location 098. The chromium and copper concentrations did not exceed either the residential or industrial RSL. Chromium concentrations ranged from 26.3 mg/kg at location 104 to 401 mg/kg at location 096. Copper concentrations ranged from 18.8 mg/kg at location 104 to 1040 mg/kg at location 098. Of the 17 samples collected, none exceeded the Industrial Noncancer RSL with a THQ of 1.0 for arsenic, chromium, or copper (480 mg/kg, 3500 mg/kg, and 47000 mg/kg, respectively). One arsenic sample (location 98) exceeded the Industrial Ingestion Cancer Risk with a target risk (TR) of  $1 \times 10^{-4}$  of 360 mg/kg. None of the chromium samples collected exceeded this cancer risk parameter of 650 mg/kg and copper is not applicable.

Fourteen of the 17 samples collected exceeded both avian and non-avian Wildlife Eco-SSLs (EPA) of 43 mg/kg and 46 mg/kg, respectively, for arsenic; whereas, all samples exceeded the plant Eco-SSL of 18 mg/kg. All samples collected exceeded the avian Eco-SSL for Chromium III of 26 mg/kg and 16 of the 17 samples exceeded the non-avian Eco-SSL of 34 mg/kg. Eight samples exceeded or equaled the Chromium VI non-avian Eco-SSL of 130 mg/kg. Chromium III and Chromium VI do not have plant Eco-SSLs and Chromium VI does not have an avian Eco-SSL. Fourteen of the copper samples exceeded the avian Eco-SSL of 28 mg/kg, 11 exceeded the non-avian Eco-SSL of 49 mg/kg, and 9 exceeded the plant Eco-SSL of 70 mg/kg. Table 1 below outlines the Eco-SSLs that are referenced in this report.

**Table 1          Eco-SSL Levels**

Analysis	Wildlife		Plant
	Avian	Non-Avian	
Arsenic	43 mg/kg	34 mg/kg	18 mg/kg
Chromium III	26 mg/kg	34 mg/kg	N/A
Chromium VI	N/A	130 mg/kg	N/A
Copper	28 mg/kg	49 mg/kg	70 mg/kg

Three background samples were taking from the residential property to the northwest of the site. The samples were taken from the undeveloped and undisturbed area west of the property within the tree line. All organic material was removed from the top and the soil was collected underneath. Concentrations were detected in background samples at levels significantly lower than those detected in the samples collected on-site. Arsenic concentrations in the background samples ranged from 1.8 mg/kg to 2.3 mg/kg and do exceed residential RSL levels. No background samples exceeded residential or industrial screening levels for chromium or copper. Total chromium concentrations ranged from 4.3 mg/kg to 4.6 mg/kg and copper concentrations ranged from 2.9 mg/kg to 6.5 mg/kg. **Table 2** outlines the sample results of the June surface soil sampling event. None of the background samples collected exceeded the Industrial Screening Level, THQ of 1.0 with a TR of  $1 \times 10^{-4}$  for Ingestion Cancer Risk. None of the background samples exceeded any of the Eco-SSLs for arsenic, chromium, or copper.

**Table 2 Surface Soil Sample Results, June 2014**

Sample Location	Sample Matrix	Sample Date	Chemical Name	Result	Unit
BKG01	Soil	06/20/2014	Arsenic	1.8	mg/kg
BKG01	Soil	06/20/2014	Chromium	4.3	mg/kg
BKG01	Soil	06/20/2014	Copper	2.9	mg/kg
BKG02	Soil	06/20/2014	Arsenic	1.8	mg/kg
BKG02	Soil	06/20/2014	Chromium	4.3	mg/kg
BKG02	Soil	06/20/2014	Copper	3.3	mg/kg
BKG03	Soil	06/20/2014	Arsenic	2.3	mg/kg
BKG03	Soil	06/20/2014	Chromium	4.6	mg/kg
BKG03	Soil	06/20/2014	Copper	6.5	mg/kg
041	Soil	06/20/2014	Arsenic	101	mg/kg
041	Soil	06/20/2014	Chromium	134	mg/kg
041	Soil	06/20/2014	Copper	75.5	mg/kg
045	Soil	06/20/2014	Arsenic	26.3	mg/kg
045	Soil	06/20/2014	Chromium	49.4	mg/kg
045	Soil	06/20/2014	Copper	22.3	mg/kg
062	Soil	06/20/2014	Arsenic	21.9	mg/kg
062	Soil	06/20/2014	Chromium	46.8	mg/kg
062	Soil	06/20/2014	Copper	25.7	mg/kg
067	Soil	06/20/2014	Arsenic	229	mg/kg
067	Soil	06/20/2014	Chromium	143	mg/kg
067	Soil	06/20/2014	Copper	332	mg/kg
073	Soil	06/20/2014	Arsenic	52.1	mg/kg
073	Soil	06/20/2014	Chromium	71.6	mg/kg
073	Soil	06/20/2014	Copper	69.2	mg/kg
075	Soil	06/20/2014	Arsenic	54.9	mg/kg
075	Soil	06/20/2014	Chromium	62.4	mg/kg
075	Soil	06/20/2014	Copper	47.1	mg/kg
080	Soil	06/20/2014	Arsenic	53.0	mg/kg
080	Soil	06/20/2014	Chromium	51.8	mg/kg
080	Soil	06/20/2014	Copper	29.0	mg/kg
092	Soil	06/20/2014	Arsenic	128	mg/kg
092	Soil	06/20/2014	Chromium	148	mg/kg
092	Soil	06/20/2014	Copper	96.4	mg/kg
093	Soil	06/20/2014	Arsenic	198	mg/kg
093	Soil	06/20/2014	Chromium	130	mg/kg
093	Soil	06/20/2014	Copper	96.4	mg/kg
094	Soil	06/20/2014	Arsenic	115	mg/kg
094	Soil	06/20/2014	Chromium	119	mg/kg
094	Soil	06/20/2014	Copper	76.1	mg/kg
096	Soil	06/20/2014	Arsenic	126	mg/kg
096	Soil	06/20/2014	Chromium	401	mg/kg
096	Soil	06/20/2014	Copper	99.8	mg/kg
097	Soil	06/20/2014	Arsenic	177	mg/kg
097	Soil	06/20/2014	Chromium	171	mg/kg
097	Soil	06/20/2014	Copper	123	mg/kg

**Table 2 Surface Soil Sample Results, June 2014 (Continued)**

Sample Location	Sample Matrix	Sample Date	Chemical Name	Result	Unit
098	Soil	06/20/2014	Arsenic	449	mg/kg
098	Soil	06/20/2014	Chromium	281	mg/kg
098	Soil	06/20/2014	Copper	1040	mg/kg
100	Soil	06/20/2014	Arsenic	51.0	mg/kg
100	Soil	06/20/2014	Chromium	77.7	mg/kg
100	Soil	06/20/2014	Copper	47.8	mg/kg
101	Soil	06/20/2014	Arsenic	53.6	mg/kg
101	Soil	06/20/2014	Chromium	73.1	mg/kg
101	Soil	06/20/2014	Copper	61.2	mg/kg
104	Soil	06/20/2014	Arsenic	24.9	mg/kg
104	Soil	06/20/2014	Chromium	26.3	mg/kg
104	Soil	06/20/2014	Copper	18.8	mg/kg
154	Soil	06/20/2014	Arsenic	287	mg/kg
154	Soil	06/20/2014	Chromium	335	mg/kg
154	Soil	06/20/2014	Copper	193	mg/kg

**Notes:**

All values are presented in milligrams per kilogram (mg/kg).

There were no laboratory validator qualifiers for any of the results shown.

## 4.2 SUBSURFACE SOIL SAMPLE RESULTS – SEPTEMBER 2014

Analytical results of the subsurface soil samples collected from the northeast corner of the Site inside the fence line indicated that all four samples exceeded or equaled the RSL for arsenic of 0.67 mg/kg. Analytical results indicated concentrations of arsenic at sample locations 201, 202, 203, and 204 of 3.3 mg/kg, 2.1 mg/kg, 1.3 mg/kg, and 0.67 mg/kg, respectively. No samples exceeded residential or industrial RSLs for chromium or copper. Chromium concentrations ranged from 5.4 mg/kg to 11.2 mg/kg and copper concentrations ranged from 1.2 mg/kg to 3.7 mg/kg. **Table 3** outlines the sample results of the September subsurface soil sampling event.



**Table 3 Subsurface Soil Sample Results, September 2014**

Sample Location	Sample Matrix	Sample Date	Chemical Name	Result	Unit	Validator Qualifier
201	Soil	09/09/2014	Arsenic	3.3	mg/kg	
201	Soil	09/09/2014	Chromium	11.2	mg/kg	
201	Soil	09/09/2014	Copper	3.7	mg/kg	
202	Soil	09/09/2014	Arsenic	2.1	mg/kg	
202	Soil	09/09/2014	Chromium	8.1	mg/kg	
202	Soil	09/09/2014	Copper	2.4	mg/kg	
203	Soil	09/09/2014	Arsenic	1.3	mg/kg	
203	Soil	09/09/2014	Chromium	6.7	mg/kg	
203	Soil	09/09/2014	Copper	1.6	mg/kg	J
204	Soil	09/09/2014	Arsenic	0.67	mg/kg	J
204	Soil	09/09/2014	Chromium	5.4	mg/kg	
204	Soil	09/09/2014	Copper	1.2	mg/kg	J

**Notes:**

All values are presented in milligrams per kilogram (mg/kg).

J = The result reported is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

### 4.3 RESIDENTIAL WELL SAMPLE RESULTS – SEPTEMBER 2014

Analytical results indicated that concentrations of arsenic, copper, and chromium and all SVOCs were either non-detect or below respective MCLs in all of the residential well samples collected. Aluminum was detected in the sample collected from location DW-01 above the secondary MCL of 50 – 200 micrograms per liter (µg/L) at a concentration of 759 µg/L. Chromium and copper were detected in sample DW-04 at concentrations of 2.1 µg/L and 17.5 µg/L, respectively; however, were below their respective MCLs of 100 µg/L and 1,300 µg/L, respectively. One SVOC, di-n-butylphthalate, was also detected in DW-04 at a concentration of 1.8 µg/L. Two SVOCs, di-n-butylphthalate and chloroacetic acid, were detected in sample DW-05 at concentrations of 1.2 µg/L and 2.0 µg/L, respectively. No metals were detected in sample DW-05. No SVOCs or metals were detected in samples DW-02 or DW-03. **Table 4** outlines the sample results of the September potable water and groundwater sampling event.

### 4.4 MONITORING WELL SAMPLE RESULTS – SEPTEMBER 2014

Original analytical results of the groundwater collected from the on-site monitoring wells indicated concentrations of arsenic, chromium, and copper in MW-04 at 7.6 µg/L, 34.5 µg/L, and 45.9 µg/L, respectively. Arsenic and chromium were detected in MW-05 at concentrations of



41.3 µg/L and 71.4 µg/L, respectively. Copper was not detected in the sample collected from MW-05. All detections in each groundwater sample are below respective MCLs. **Table 4** outlines the sample results of the September potable water and groundwater sampling event.

**Table 4 Potable Water and Groundwater Results, September 2014**

Sample Location	Sample Matrix	Sample Date	Chemical Name	Result	Unit	Validator Qualifiers
DW-01	Water	09/09/2014	Arsenic	10.0	µg/L	UJ
DW-01	Water	09/09/2014	Chromium	2.1	µg/L	J-
DW-01	Water	09/09/2014	Copper	17.5	µg/L	J
DW-02	Water	09/09/2014	Arsenic	10.0	µg/L	UJ
DW-02	Water	09/09/2014	Chromium	10.0	µg/L	UJ
DW-02	Water	09/09/2014	Copper	25.0	µg/L	UJ
DW-02	Water	09/09/2014	Arsenic	10.0	µg/L	UJ
DW-02	Water	09/09/2014	Chromium	10.0	µg/L	UJ
DW-02	Water	09/09/2014	Copper	25.0	µg/L	UJ
DW-03	Water	09/09/2014	Arsenic	10.0	µg/L	UJ
DW-03	Water	09/09/2014	Chromium	10.0	µg/L	UJ
DW-03	Water	09/09/2014	Copper	25.0	µg/L	UJ
DW-04	Water	09/09/2014	Arsenic	10.0	µg/L	UJ
DW-04	Water	09/09/2014	Chromium	10.0	µg/L	UJ
DW-04	Water	09/09/2014	Copper	25.0	µg/L	UJ
DW-05	Water	09/10/2014	Arsenic	10.0	µg/L	UJ
DW-05	Water	09/10/2014	Chromium	10.0	µg/L	UJ
DW-05	Water	09/10/2014	Copper	25.0	µg/L	UJ
MW-04	Water	09/09/2014	Arsenic	7.6	µg/L	J
MW-04	Water	09/09/2014	Chromium	34.5	µg/L	
MW-04	Water	09/09/2014	Copper	45.9	µg/L	
MW-05	Water	09/09/2014	Arsenic	41.3	µg/L	
MW-05	Water	09/09/2014	Chromium	71.4	µg/L	
MW-05	Water	09/09/2014	Copper	25.0	µg/L	UJ

Notes:

All values are presented in micrograms per liter (µg/L).

DW - Drinking (residential) Well

MW = Monitoring Well

J = The result reported is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

J- = The analyte was positively detected, but the value of the result is an estimate.

UJ = The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

#### 4.5 RESIDENTIAL WELL SAMPLE RESULTS – SEPTEMBER 2014 (RE-ANALYSES)

The water samples were re-analyzed in December for the same contaminants of concern using a different analytical method. The original analysis used the ICP-AES method and the re-analyses used the inductively coupled plasma-mass spectrometry (ICP-MS) method. The ICP-MS method

can achieve lower detection limits; therefore, a few of the samples that were previously noted as non-detects in **Table 4** were detected in the re-analyses, as shown in **Table 5**. Most notably, sample DW-02 originally was a non-detect for chromium via the ICP-AES method; however, was detected at a concentration of 48.7 µg/L via the ICP-MS method. Due to the discrepancies with these samples, the OSC directed that the water samples be re-sampled and analyzed under the ICP-MS method at a date to be determined. Samples collected in the next sampling event will be analyzed for total and dissolved metals as well as SVOCs. **Table 5** outlines the sample results of the September potable water and groundwater re-analysis.

**Table 5 Potable Water and Groundwater Results, September 2014 (Re-Analysis)**

Sample Name	Sample Matrix	Sample Date	Chemical Name	Result	Units	Validator Qualifier
DW-01	Water	09/09/2014	Arsenic	0.20	µg/L	B
DW-01	Water	09/09/2014	Chromium	2.1	µg/L	J
DW-01	Water	09/09/2014	Copper	19.9	µg/L	
DW-02	Water	09/09/2014	Arsenic	0.22	µg/L	B
DW-02	Water	09/09/2014	Chromium	23.9	µg/L	J
DW-02	Water	09/09/2014	Copper	1.7	µg/L	J
DW-02B	Water	09/09/2014	Arsenic	0.18	µg/L	B
DW-02B	Water	09/09/2014	Chromium	48.7	µg/L	J
DW-02B	Water	09/09/2014	Copper	7.4	µg/L	
DW-03	Water	09/09/2014	Arsenic	0.12	µg/L	B
DW-03	Water	09/09/2014	Chromium	0.44	µg/L	B
DW-03	Water	09/09/2014	Copper	1.3	µg/L	J
DW-04	Water	09/09/2014	Arsenic	0.22	µg/L	B
DW-04	Water	09/09/2014	Chromium	0.26	µg/L	B
DW-04	Water	09/09/2014	Copper	5.5	µg/L	
DW-05	Water	09/10/2014	Arsenic	1.0	µg/L	U
DW-05	Water	09/10/2014	Chromium	2.3	µg/L	J
DW-05	Water	09/10/2014	Copper	1.6	µg/L	J
MW-04	Water	09/09/2014	Arsenic	11.4	µg/L	
MW-04	Water	09/09/2014	Chromium	45.4	µg/L	J
MW-04	Water	09/09/2014	Copper	42.2	µg/L	
MW-05	Water	09/09/2014	Arsenic	51.1	µg/L	
MW-05	Water	09/09/2014	Chromium	94.0	µg/L	J
MW-05	Water	09/09/2014	Copper	2.9	µg/L	

Notes:

All values are presented in micrograms per liter (µg/L).

DW = Drinking/Potable Well

MW = Monitoring Well

B = The analyte was present in a blank sample associated with the sample set.

J = The result reported is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

U = The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

## 4.6 ESI SAMPLE RESULTS

The removal assessment sampling event was performed in conjunction with the ESI sampling event. The full ESI report is available in **Appendix A**. Sample matrices collected during the ESI sampling event include soil, sediment, and surface water.

### Soil

Soil samples were collected mainly within the property boundary of the Site concentrating on the areas inside the three drainage ditches and areas outside the former drip pad. **Figure 5** shows the locations and analytical results that exceeded three times the background levels for soil analyses. This figure presents both the samples collected during the ESI sampling event in September 2014, shown as samples with the NKWP-SS-XX identification, and the original soil samples collected in June 2014 as part of the removal assessment described in Sections 2.2 and 3.1 of this report, shown as samples with the NK-SS-XX identification. **Figure 5** shows that all drainage ditches contain multiple samples that exceed background levels for at least one of the contaminants of concern (arsenic, chromium, or copper) by a multiplier of 3. This figure shows that all soil samples collected in June also exceeded background levels for at least one of the contaminants of concern by a multiplier of 3. Of the 21 samples collected during the ESI event, 10 samples exceeded both the avian and non-avian Eco-SSL limit of 43 mg/kg and 46 mg/kg, respectively, and 15 samples exceeded the plant Eco-SSL of 18 mg/kg for arsenic. Fourteen of the 21 samples exceeded the avian Eco-SSL and 13 samples exceeded the non-avian Eco-SSL for Chromium III of 26 mg/kg and 34 mg/kg, respectively, and 6 samples exceeded the non-avian Eco-SSL for Chromium VI of 130 mg/kg. Eleven of the 21 samples exceeded the avian Eco-SSL and 10 samples exceeded the non-avian Eco-SSLs of 28 mg/kg and 49 mg/kg, respectively for copper. Ten samples exceeded the plant Eco-SSL of 70 mg/kg for copper. **Table 6** shows the analytical results for arsenic, chromium, and copper from the September 2014 ESI sampling event.

**Table 6 Analytical Results for Soil Samples from ESI**

Sample Location	Sample Name	Sample Matrix	Sample Date	Chemical Name	Result	Unit	Validator Qualifiers
NKWP-SS-01	MC0AD5	Soil	9/10/14	Arsenic	1140	mg/kg	
NKWP-SS-01	MC0AD5	Soil	9/10/14	Chromium	1250	mg/kg	
NKWP-SS-01	MC0AD5	Soil	9/10/14	Copper	598	mg/kg	
NKWP-SS-02	MC0AD4	Soil	9/10/14	Arsenic	309	mg/kg	
NKWP-SS-02	MC0AD4	Soil	9/10/14	Chromium	235	mg/kg	
NKWP-SS-02	MC0AD4	Soil	9/10/14	Copper	133	mg/kg	
NKWP-SS-03	MC0AD6	Soil	9/10/14	Arsenic	313	mg/kg	
NKWP-SS-03	MC0AD6	Soil	9/10/14	Chromium	339	mg/kg	
NKWP-SS-03	MC0AD6	Soil	9/10/14	Copper	223	mg/kg	
NKWP-SS-03-01	MC0AD7	Soil	9/10/14	Arsenic	876	mg/kg	
NKWP-SS-03-01	MC0AD7	Soil	9/10/14	Chromium	1020	mg/kg	
NKWP-SS-03-01	MC0AD7	Soil	9/10/14	Copper	524	mg/kg	
NKWP-SS-04	MC0AD8	Soil	9/10/14	Arsenic	9.3	mg/kg	
NKWP-SS-04	MC0AD8	Soil	9/10/14	Chromium	11.5	mg/kg	
NKWP-SS-04	MC0AD8	Soil	9/10/14	Copper	7.2	mg/kg	
NKWP-SS-05	MC0AD9	Soil	9/10/14	Arsenic	15	mg/kg	
NKWP-SS-05	MC0AD9	Soil	9/10/14	Chromium	17.7	mg/kg	
NKWP-SS-05	MC0AD9	Soil	9/10/14	Copper	13.6	mg/kg	
NKWP-SS-06	MC0AE0	Soil	9/10/14	Arsenic	80.8	mg/kg	
NKWP-SS-06	MC0AE0	Soil	9/10/14	Chromium	108	mg/kg	
NKWP-SS-06	MC0AE0	Soil	9/10/14	Copper	73.7	mg/kg	
NKWP-SS-07	MC0AE1	Soil	9/10/14	Arsenic	20.3	mg/kg	
NKWP-SS-07	MC0AE1	Soil	9/10/14	Chromium	22.2	mg/kg	
NKWP-SS-07	MC0AE1	Soil	9/10/14	Copper	14.3	mg/kg	
NKWP-SS-08	MC0AE2	Soil	9/10/14	Arsenic	82.2	mg/kg	
NKWP-SS-08	MC0AE2	Soil	9/10/14	Chromium	108	mg/kg	
NKWP-SS-08	MC0AE2	Soil	9/10/14	Copper	77.9	mg/kg	
NKWP-SS-09	MC0AE3	Soil	9/10/14	Arsenic	57.9	mg/kg	
NKWP-SS-09	MC0AE3	Soil	9/10/14	Chromium	91.9	mg/kg	
NKWP-SS-09	MC0AE3	Soil	9/10/14	Copper	81.1	mg/kg	
NKWP-SS-10	MC0AE6	Soil	9/10/14	Arsenic	48	mg/kg	
NKWP-SS-10	MC0AE6	Soil	9/10/14	Chromium	94.9	mg/kg	
NKWP-SS-10	MC0AE6	Soil	9/10/14	Copper	85.7	mg/kg	
NKWP-SS-11	MC0AE5	Soil	9/10/14	Arsenic	36.2	mg/kg	
NKWP-SS-11	MC0AE5	Soil	9/10/14	Chromium	64.2	mg/kg	
NKWP-SS-11	MC0AE5	Soil	9/10/14	Copper	16.4	mg/kg	
NKWP-SS-12	MC0AE7	Soil	9/10/14	Arsenic	10.6	mg/kg	
NKWP-SS-12	MC0AE7	Soil	9/10/14	Chromium	21.8	mg/kg	
NKWP-SS-12	MC0AE7	Soil	9/10/14	Copper	10.6	mg/kg	
NKWP-SS-13	MC0AE4	Soil	9/10/14	Arsenic	25.2	mg/kg	
NKWP-SS-13	MC0AE4	Soil	9/10/14	Chromium	72	mg/kg	
NKWP-SS-13	MC0AE4	Soil	9/10/14	Copper	34.8	mg/kg	

**Table 6 Analytical Results for Soil Samples from ESI (Continued)**

Sample Location	Sample Name	Sample Matrix	Sample Date	Chemical Name	Result	Unit	Validator Qualifiers
NKWP-SS-14	MC0AE8	Soil	9/10/14	Arsenic	28.5	mg/kg	
NKWP-SS-14	MC0AE8	Soil	9/10/14	Chromium	43.6	mg/kg	
NKWP-SS-14	MC0AE8	Soil	9/10/14	Copper	22.9	mg/kg	
NKWP-SS-15	MC0AE9	Soil	9/10/14	Arsenic	21.5	mg/kg	
NKWP-SS-15	MC0AE9	Soil	9/10/14	Chromium	31.1	mg/kg	
NKWP-SS-15	MC0AE9	Soil	9/10/14	Copper	21.5	mg/kg	
NKWP-SS-16	MC0AF0	Soil	9/10/14	Arsenic	9.5	mg/kg	
NKWP-SS-16	MC0AF0	Soil	9/10/14	Chromium	19.1	mg/kg	
NKWP-SS-16	MC0AF0	Soil	9/10/14	Copper	13	mg/kg	
NKWP-SS-17	MC0AF1	Soil	9/10/14	Arsenic	3.6	mg/kg	
NKWP-SS-17	MC0AF1	Soil	9/10/14	Chromium	19.5	mg/kg	
NKWP-SS-17	MC0AF1	Soil	9/10/14	Copper	22.9	mg/kg	
NKWP-SS-18	MC0AF2	Soil	9/10/14	Arsenic	5.3	mg/kg	
NKWP-SS-18	MC0AF2	Soil	9/10/14	Chromium	23.4	mg/kg	
NKWP-SS-18	MC0AF2	Soil	9/10/14	Copper	14.2	mg/kg	
NKWP-SS-19	MC0AF3	Soil	9/10/14	Arsenic	2.9	mg/kg	
NKWP-SS-19	MC0AF3	Soil	9/10/14	Chromium	8.1	mg/kg	
NKWP-SS-19	MC0AF3	Soil	9/10/14	Copper	4.1	mg/kg	
NKWP-SS-20	MC0AF4	Soil	9/10/14	Arsenic	340	mg/kg	
NKWP-SS-20	MC0AF4	Soil	9/10/14	Chromium	519	mg/kg	
NKWP-SS-20	MC0AF4	Soil	9/10/14	Copper	327	mg/kg	
NKWP-SS-21	MC0AF5	Soil	9/10/14	Arsenic	246	mg/kg	
NKWP-SS-21	MC0AF5	Soil	9/10/14	Chromium	340	mg/kg	
NKWP-SS-21	MC0AF5	Soil	9/10/14	Copper	169	mg/kg	

**Notes:**

All values are presented in milligrams per kilogram (mg/kg).

NKWP = New Kent Wood Preservers

SS = Surface Soil Sample

NKWP-SS-03-01 is a Duplicate Sample

\*Note: There were no Validated Qualifiers for this set of data.

## Sediment

Sediment samples were collected at locations in the wetlands that extended past the Site and at locations on the unnamed tributary where surface water samples were collected. **Figure 6** shows the locations of these samples and whether or not they exceeded the background level by a factor of three. Twenty-eight samples were collected, including six background samples. Eight of the 22 samples collected exceeded the background level by a factor of three for at least one of the following metals: arsenic, chromium, or copper. Two of these samples were on the outside of the

eastern drainage ditches where the wetland area starts. Three of the exceedances were in sediment by the water that flowed from the northern drainage ditch, north of the Site, just outside the site boundary. Of the sediment samples collected, four exceeded both the avian and non-avian Eco-SSL of 43 mg/kg and 46 mg/kg, respectively, and five exceeded the plant Eco-SSL of 18 mg/kg for arsenic. All the exceedances were from samples collected outside the surface water locations. Nine samples collected exceeded the avian Eco-SSL, and seven exceeded the non-avian Eco-SSL for Chromium III of 26 mg/kg and 34 mg/kg, respectively. Two samples exceeded the non-avian Eco-SSL of 130 mg/kg for Chromium VI. Five samples exceeded the avian Eco-SSL, and three exceeded the non-avian Eco-SSL for copper of 28 mg/kg and 49 mg/kg, respectively. Three samples exceeded the plant Eco-SSL of 70 mg/kg for copper. All copper Eco-SSL exceedances were from samples collected outside the surface water locations. **Table 7** below shows the results for the sediment samples collected inside the wetlands from locations where the surface water samples were not collected and **Table 8** shows the sediment sample results from the wetland area near the surface water samples.

**Table 7 Analytical Results for Wetland Sediment Samples from ESI where Surface Water Samples were not Collected**

Sample Location	Sample Name	Sample Matrix	Sample Date	Chemical Name	Result	Unit	Validator Qualifiers
NKWP-WS-01	MC0AF6	Soil	9/10/2014	Arsenic	99.5	mg/kg	
NKWP-WS-01	MC0AF6	Soil	9/10/2014	Chromium	122	mg/kg	
NKWP-WS-01	MC0AF6	Soil	9/10/2014	Copper	78.8	mg/kg	
NKWP-WS-01-01	MC0AF7	Soil	9/10/2014	Arsenic	116	mg/kg	
NKWP-WS-01-01	MC0AF7	Soil	9/10/2014	Chromium	151	mg/kg	
NKWP-WS-01-01	MC0AF7	Soil	9/10/2014	Copper	90.4	mg/kg	
NKWP-WS-02	MC0AF8	Soil	9/10/2014	Arsenic	9.7	mg/kg	
NKWP-WS-02	MC0AF8	Soil	9/10/2014	Chromium	35.4	mg/kg	
NKWP-WS-02	MC0AF8	Soil	9/10/2014	Copper	18.2	mg/kg	
NKWP-WS-03	MC0AF9	Soil	9/10/2014	Arsenic	7.2	mg/kg	
NKWP-WS-03	MC0AF9	Soil	9/10/2014	Chromium	16.7	mg/kg	
NKWP-WS-03	MC0AF9	Soil	9/10/2014	Copper	7.4	mg/kg	
NKWP-WS-04	MC0AG0	Soil	9/10/2014	Arsenic	504	mg/kg	
NKWP-WS-04	MC0AG0	Soil	9/10/2014	Chromium	764	mg/kg	
NKWP-WS-04	MC0AG0	Soil	9/10/2014	Copper	362	mg/kg	
NKWP-WS-05	MC0AG1	Soil	9/10/2014	Arsenic	18.0	mg/kg	
NKWP-WS-05	MC0AG1	Soil	9/10/2014	Chromium	43.6	mg/kg	
NKWP-WS-05	MC0AG1	Soil	9/10/2014	Copper	19.6	mg/kg	
NKWP-WS-06	MC0AG2	Soil	9/10/2014	Arsenic	15.9	mg/kg	
NKWP-WS-06	MC0AG2	Soil	9/10/2014	Chromium	46.7	mg/kg	



**Table 7 Analytical Results for Wetland Sediment Samples from ESI where Surface Water Samples were not Collected (Continued)**

Sample Location	Sample Name	Sample Matrix	Sample Date	Chemical Name	Result	Unit	Validator Qualifiers
NKWP-WS-06	MC0AG2	Soil	9/10/2014	Copper	20.6	mg/kg	
NKWP-WS-07	MC0AG3	Soil	9/10/2014	Arsenic	2.5	mg/kg	
NKWP-WS-07	MC0AG3	Soil	9/10/2014	Chromium	7.0	mg/kg	
NKWP-WS-07	MC0AG3	Soil	9/10/2014	Copper	5.4	mg/kg	
NKWP-WS-08	MC0AG4	Soil	9/10/2014	Arsenic	12.5	mg/kg	
NKWP-WS-08	MC0AG4	Soil	9/10/2014	Chromium	19.6	mg/kg	
NKWP-WS-08	MC0AG4	Soil	9/10/2014	Copper	11.9	mg/kg	
NKWP-WS-09	MC0AG5	Soil	9/10/2014	Arsenic	4.1	mg/kg	
NKWP-WS-09	MC0AG5	Soil	9/10/2014	Chromium	10.6	mg/kg	
NKWP-WS-09	MC0AG5	Soil	9/10/2014	Copper	7.8	mg/kg	
NKWP-WS-10	MC0AG6	Soil	9/10/2014	Arsenic	59.2	mg/kg	
NKWP-WS-10	MC0AG6	Soil	9/10/2014	Chromium	32.7	mg/kg	
NKWP-WS-10	MC0AG6	Soil	9/10/2014	Copper	35.5	mg/kg	
NKWP-WS-11	MC0AJ3	Soil	9/11/2014	Arsenic	4.2	mg/kg	J
NKWP-WS-11	MC0AJ3	Soil	9/11/2014	Chromium	18.0	mg/kg	
NKWP-WS-11	MC0AJ3	Soil	9/11/2014	Copper	47.9	mg/kg	
NKWP-WS-12	MC0AJ4	Soil	9/11/2014	Arsenic	14.6	mg/kg	J
NKWP-WS-12	MC0AJ4	Soil	9/11/2014	Chromium	21.0	mg/kg	
NKWP-WS-12	MC0AJ4	Soil	9/11/2014	Copper	27.4	mg/kg	
NKWP-WS-13	MC0AJ5	Soil	9/11/2014	Arsenic	5.0	mg/kg	J
NKWP-WS-13	MC0AJ5	Soil	9/11/2014	Chromium	15.9	mg/kg	
NKWP-WS-13	MC0AJ5	Soil	9/11/2014	Copper	12.9	mg/kg	

Notes:

All values are presented in milligrams per kilogram (mg/kg).

NKWP = New Kent Wood Preservers

WS = Wetland Sediment Sample

J = The result reported is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

NKWP-WS-03-01 is a Duplicate

Sample

**Table 8 Analytical Results for Wetland Sediment Samples from ESI Near Surface Water Sample Locations**

Sample Location	Sample Name	Sample Matrix	Sample Date	Chemical Name	Result	Unit	Validator Qualifiers
NKWP-SD-01	MC0AJ7	Soil	9/11/2014	Arsenic	1.1	mg/kg	J
NKWP-SD-01	MC0AJ7	Soil	9/11/2014	Chromium	2.5	mg/kg	J
NKWP-SD-01	MC0AJ7	Soil	9/11/2014	Copper	2.8	mg/kg	U
NKWP-SD-02	MC0AJ8	Soil	9/11/2014	Arsenic	13.0	mg/kg	J
NKWP-SD-02	MC0AJ8	Soil	9/11/2014	Chromium	9.2	mg/kg	
NKWP-SD-02	MC0AJ8	Soil	9/11/2014	Copper	9.1	mg/kg	
NKWP-SD-03	MC0AJ9	Soil	9/11/2014	Arsenic	1.5	mg/kg	J
NKWP-SD-03	MC0AJ9	Soil	9/11/2014	Chromium	2.8	mg/kg	
NKWP-SD-03	MC0AJ9	Soil	9/11/2014	Copper	1.4	mg/kg	
NKWP-SD-04	MC0AK0	Soil	9/11/2014	Arsenic	0.88	mg/kg	J
NKWP-SD-04	MC0AK0	Soil	9/11/2014	Chromium	2.5	mg/kg	J
NKWP-SD-04	MC0AK0	Soil	9/11/2014	Copper	1.3	mg/kg	J
NKWP-SD-04-01	MC0AK1	Soil	9/11/2014	Arsenic	0.51	mg/kg	J-
NKWP-SD-04-01	MC0AK1	Soil	9/11/2014	Chromium	2.1	mg/kg	J
NKWP-SD-04-01	MC0AK1	Soil	9/11/2014	Copper	0.38	mg/kg	J
NKWP-SD-05	MC0AK2	Soil	9/11/2014	Arsenic	0.46	mg/kg	J-
NKWP-SD-05	MC0AK2	Soil	9/11/2014	Chromium	1.9	mg/kg	J
NKWP-SD-05	MC0AK2	Soil	9/11/2014	Copper	0.48	mg/kg	J
NKWP-SD-06	MC0AK3	Soil	9/11/2014	Arsenic	3.7	mg/kg	J
NKWP-SD-06	MC0AK3	Soil	9/11/2014	Chromium	6.8	mg/kg	
NKWP-SD-06	MC0AK3	Soil	9/11/2014	Copper	2.9	mg/kg	
NKWP-SD-07	MC0AK4	Soil	9/11/2014	Arsenic	2.0	mg/kg	J
NKWP-SD-07	MC0AK4	Soil	9/11/2014	Chromium	5.0	mg/kg	
NKWP-SD-07	MC0AK4	Soil	9/11/2014	Copper	2.7	mg/kg	
NKWP-SD-08	MC0AK5	Soil	9/11/2014	Arsenic	2.0	mg/kg	J
NKWP-SD-08	MC0AK5	Soil	9/11/2014	Chromium	8.4	mg/kg	
NKWP-SD-08	MC0AK5	Soil	9/11/2014	Copper	1.9	mg/kg	
NKWP-SD-09	MC0AK6	Soil	9/11/2014	Arsenic	8.2	mg/kg	J
NKWP-SD-09	MC0AK6	Soil	9/11/2014	Chromium	12.1	mg/kg	
NKWP-SD-09	MC0AK6	Soil	9/11/2014	Copper	4.8	mg/kg	
NKWP-SD-10	MC0AK7	Soil	9/11/2014	Arsenic	1.9	mg/kg	J
NKWP-SD-10	MC0AK7	Soil	9/11/2014	Chromium	2.2	mg/kg	
NKWP-SD-10	MC0AK7	Soil	9/11/2014	Copper	1.7	mg/kg	
NKWP-SD-11	MC0AK8	Soil	9/11/2014	Arsenic	8.8	mg/kg	J
NKWP-SD-11	MC0AK8	Soil	9/11/2014	Chromium	47.6	mg/kg	
NKWP-SD-11	MC0AK8	Soil	9/11/2014	Copper	27.2	mg/kg	
NKWP-SD-12	MC0AK9	Soil	9/11/2014	Arsenic	2.5	mg/kg	J
NKWP-SD-12	MC0AK9	Soil	9/11/2014	Chromium	16.7	mg/kg	
NKWP-SD-12	MC0AK9	Soil	9/11/2014	Copper	7.7	mg/kg	



**Table 8 Analytical Results for Wetland Sediment Samples from ESI Near Surface Water  
Sample Locations (Continued)**

Sample Location	Sample Name	Sample Matrix	Sample Date	Chemical Name	Result	Unit	Validator Qualifiers
NKWP-SD-13	MC0AL0	Soil	9/11/2014	Arsenic	11.4	mg/kg	J
NKWP-SD-13	MC0AL0	Soil	9/11/2014	Chromium	26.3	mg/kg	
NKWP-SD-13	MC0AL0	Soil	9/11/2014	Copper	13.2	mg/kg	
NKWP-SD-14	MC0AL1	Soil	9/11/2014	Arsenic	0.93	mg/kg	UJ
NKWP-SD-14	MC0AL1	Soil	9/11/2014	Chromium	1.0	mg/kg	J
NKWP-SD-14	MC0AL1	Soil	9/11/2014	Copper	2.3	mg/kg	U
NKWP-SD-15	MC0AL2	Soil	9/11/2014	Arsenic	1.3	mg/kg	J
NKWP-SD-15	MC0AL2	Soil	9/11/2014	Chromium	3.8	mg/kg	
NKWP-SD-15	MC0AL2	Soil	9/11/2014	Copper	1.2	mg/kg	

Notes:

All values are presented in milligrams per kilogram (mg/kg).

NKWP = New Kent Wood Preservers

SD = Sediment

Sample

NKWP-SD-04-01 is a Duplicate

Sample

J = The result reported is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

UJ = The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

U = The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

## Surface Water

The ESI included sampling of surface water from the Unnamed Tributary that runs outside the Site through the wetlands and into the Schiminoe Creek, and samples from Schiminoe Creek. Fifteen samples were collected, including three background samples. The locations of these samples are shown in **Figure 6** as samples with the NKWP-SD-XX identification. None of the surface water samples collected had detections of arsenic, chromium, or copper **Table 8** summarizes the sample results.

**Table 9 Analytical Results for Surface Water Samples from ESI**

Sample Location	Sample Name	Sample Matrix	Sample Date	Chemical Name	Result	Unit	Validator Qualifiers
NKWP-SW-01	MC0AG7	Water	9/11/2014	Arsenic	10.0	µg/L	U
NKWP-SW-01	MC0AG7	Water	9/11/2014	Chromium	10.0	µg/L	U
NKWP-SW-01	MC0AG7	Water	9/11/2014	Copper	25.0	µg/L	U
NKWP-SW-02	MC0AG8	Water	9/11/2014	Arsenic	10.0	µg/L	U
NKWP-SW-02	MC0AG8	Water	9/11/2014	Chromium	10.0	µg/L	U
NKWP-SW-02	MC0AG8	Water	9/11/2014	Copper	25.0	µg/L	U
NKWP-SW-03	MC0AG9	Water	9/11/2014	Arsenic	10.0	µg/L	U
NKWP-SW-03	MC0AG9	Water	9/11/2014	Chromium	10.0	µg/L	U
NKWP-SW-03	MC0AG9	Water	9/11/2014	Copper	25.0	µg/L	U
NKWP-SW-04	MC0AH0	Water	9/11/2014	Arsenic	10.0	µg/L	U
NKWP-SW-04	MC0AH0	Water	9/11/2014	Chromium	10.0	µg/L	U
NKWP-SW-04	MC0AH0	Water	9/11/2014	Copper	25.0	µg/L	U
NKWP-SW-04-01	MC0AH1	Water	9/11/2014	Arsenic	10.0	µg/L	U
NKWP-SW-04-01	MC0AH1	Water	9/11/2014	Chromium	10.0	µg/L	U
NKWP-SW-04-01	MC0AH1	Water	9/11/2014	Copper	25.0	µg/L	U
NKWP-SW-05	MC0AH2	Water	9/11/2014	Arsenic	10.0	µg/L	U
NKWP-SW-05	MC0AH2	Water	9/11/2014	Chromium	1.3	µg/L	J
NKWP-SW-05	MC0AH2	Water	9/11/2014	Copper	25.0	µg/L	U
NKWP-SW-06	MC0AH3	Water	9/11/2014	Arsenic	10.0	µg/L	U
NKWP-SW-06	MC0AH3	Water	9/11/2014	Chromium	0.69	µg/L	J
NKWP-SW-06	MC0AH3	Water	9/11/2014	Copper	25.0	µg/L	U
NKWP-SW-07	MC0AH4	Water	9/11/2014	Arsenic	10.0	µg/L	U
NKWP-SW-07	MC0AH4	Water	9/11/2014	Chromium	0.68	µg/L	J
NKWP-SW-07	MC0AH4	Water	9/11/2014	Copper	25.0	µg/L	U
NKWP-SW-08	MC0AH5	Water	9/11/2014	Arsenic	10.0	µg/L	U
NKWP-SW-08	MC0AH5	Water	9/11/2014	Chromium	10.0	µg/L	U
NKWP-SW-08	MC0AH5	Water	9/11/2014	Copper	25.0	µg/L	U
NKWP-SW-09	MC0AH6	Water	9/11/2014	Arsenic	10.0	µg/L	U
NKWP-SW-09	MC0AH6	Water	9/11/2014	Chromium	10.0	µg/L	U
NKWP-SW-09	MC0AH6	Water	9/11/2014	Copper	25.0	µg/L	U
NKWP-SW-10	MC0AH7	Water	9/11/2014	Arsenic	10.0	µg/L	U
NKWP-SW-10	MC0AH7	Water	9/11/2014	Chromium	10.0	µg/L	U
NKWP-SW-10	MC0AH7	Water	9/11/2014	Copper	25.0	µg/L	U
NKWP-SW-11	MC0AH8	Water	9/11/2014	Arsenic	10.0	µg/L	U
NKWP-SW-11	MC0AH8	Water	9/11/2014	Chromium	10.0	µg/L	U
NKWP-SW-11	MC0AH8	Water	9/11/2014	Copper	25.0	µg/L	U
NKWP-SW-12	MC0AH9	Water	9/11/2014	Arsenic	10.0	µg/L	U
NKWP-SW-12	MC0AH9	Water	9/11/2014	Chromium	10.0	µg/L	U
NKWP-SW-12	MC0AH9	Water	9/11/2014	Copper	25.0	µg/L	U
NKWP-SW-13	MC0AJ0	Water	9/11/2014	Arsenic	4.3	µg/L	J
NKWP-SW-13	MC0AJ0	Water	9/11/2014	Chromium	10.0	µg/L	U
NKWP-SW-13	MC0AJ0	Water	9/11/2014	Copper	25.0	µg/L	U

**Table 9 Analytical Results for Surface Water Samples from ESI (Continued)**

Sample Location	Sample Name	Sample Matrix	Sample Date	Chemical Name	Result	Unit	Validator Qualifiers
NKWP-SW-14	MC0AJ1	Water	9/11/2014	Arsenic	10.0	µg/L	U
NKWP-SW-14	MC0AJ1	Water	9/11/2014	Chromium	10.0	µg/L	U
NKWP-SW-14	MC0AJ1	Water	9/11/2014	Copper	25.0	µg/L	U
NKWP-SW-15	MC0AJ2	Water	9/11/2014	Arsenic	10.0	µg/L	U
NKWP-SW-15	MC0AJ2	Water	9/11/2014	Chromium	10.0	µg/L	U
NKWP-SW-15	MC0AJ2	Water	9/11/2014	Copper	25.0	µg/L	U

Notes:

All values are presented in micrograms per liter (ug/L).

NKWP = New Kent Wood Preservers

SW = Surface Water Sample

NKWP-SW-04-01 is a Duplicate Sample

J = The result reported is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

U = The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

## 5.0 REFERENCES

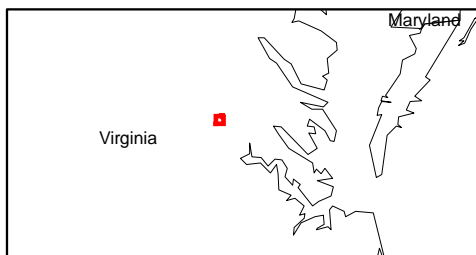
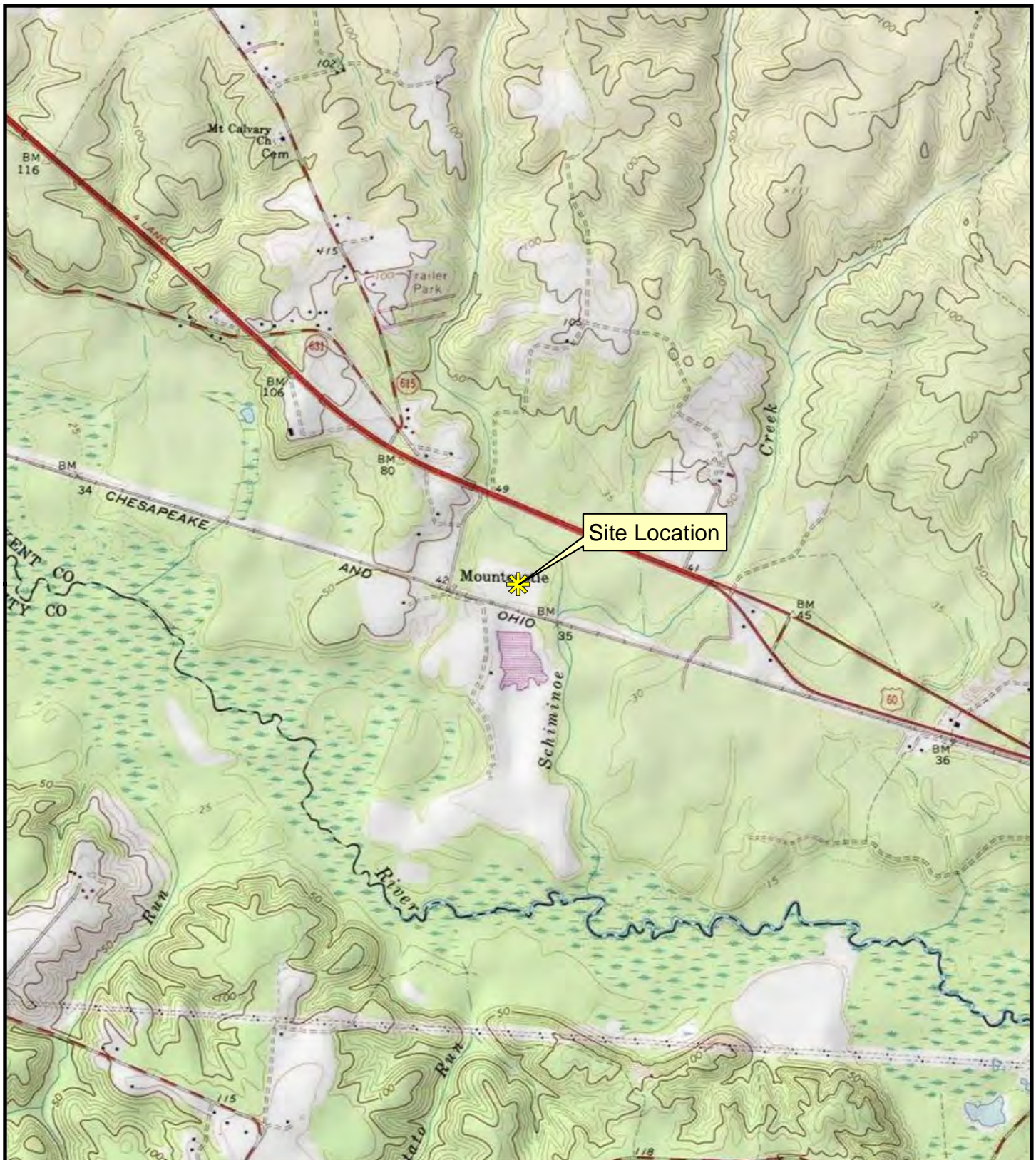
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## FIGURES

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USGS 7.5 Minute Quadrangle  
Providence Forge, Virginia. 1977



Coordinate System:  
WGS84 UTM Zone 18N Feet

0 2,000  
Feet

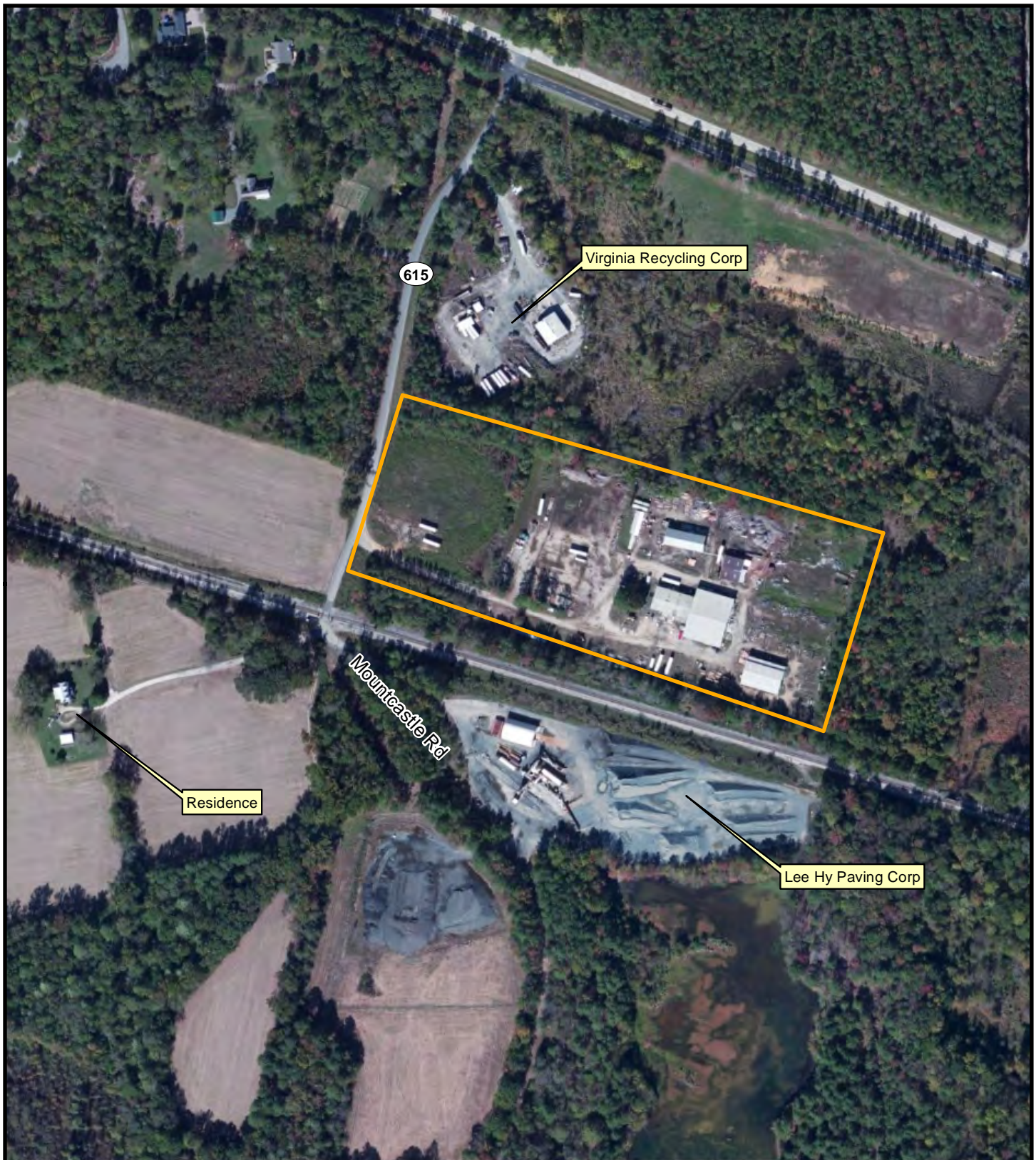
New Kent Wood Preservatives, Inc  
Providence Forge, New Kent County, VA

Figure 1  
Site Location Map

TDD#: WS03-12-09-001  
Contract: EP-S3-10-05  
Prepared: 7/17/2014







## Legend

Site Boundary

USGS 7.5 Minute Quadrangle  
Providence Forge, Virginia. 1977



Coordinate System:  
WGS84 UTM Zone 18N Feet

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Feet

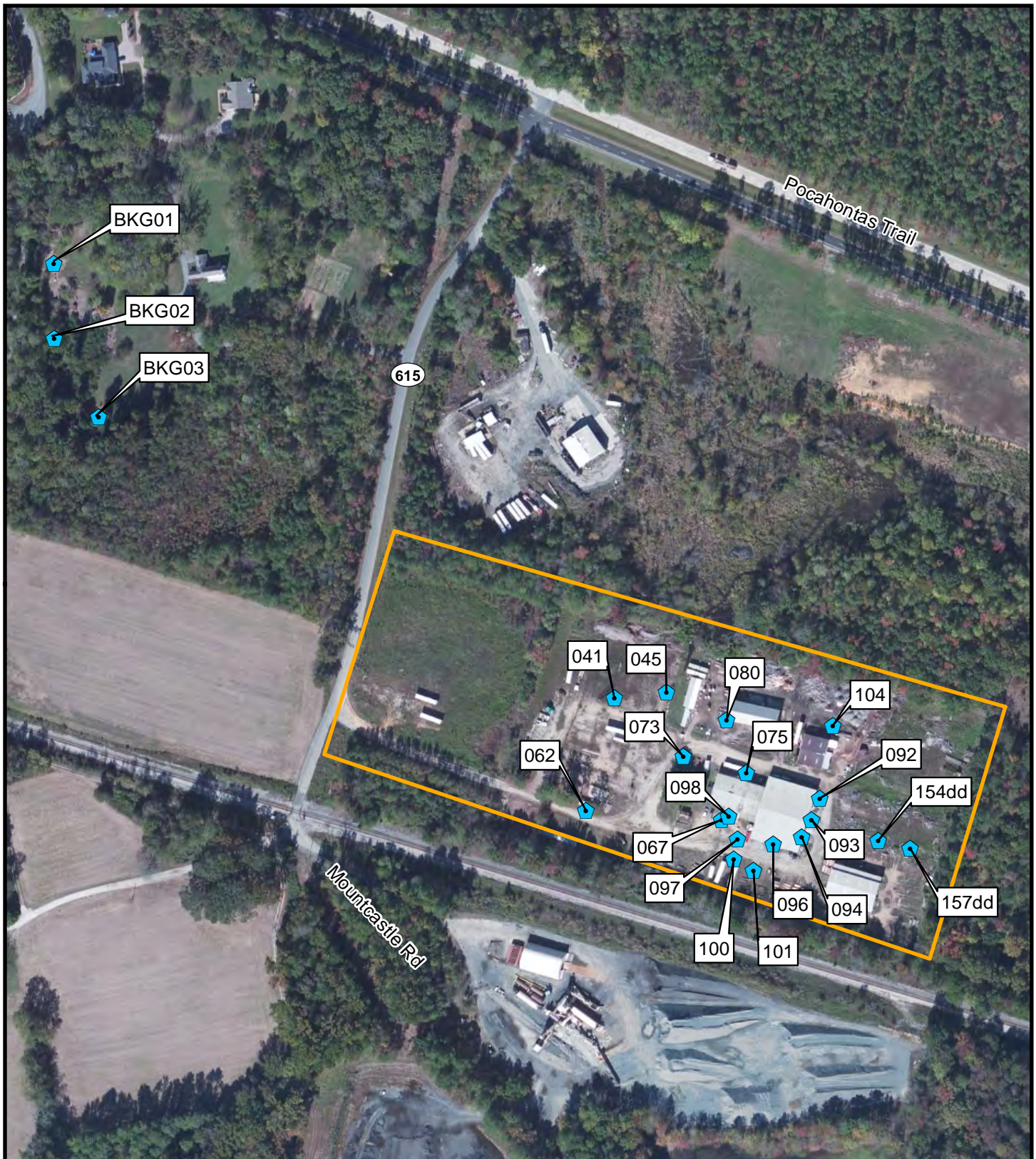
New Kent Wood Preservatives, Inc  
Providence Forge, New Kent County, VA

Figure 2  
Aerial Photograph

TDD#: WS03-12-09-001  
Contract: EP-S3-10-05  
Prepared: 7/16/2014







# Legend

- Site Boundary
- Sample Locations

Imagery: ESRI, GeoEye,  
Digital Globe 2013

Coordinate System:  
WGS84 UTM Zone 18N Feet



0 200  
Feet

New Kent Wood Preservatives  
Providence Forge, New Kent County, VA

Figure 3  
Sample Locations - June 2014

TDD#: WS01-14-05-003  
Contract: EP-S3-10-05  
Prepared: 7/10/2014







#### Legend

- Site Boundary
- NWI Wetlands
- Inferred stream channel from Topographic Map
- Drainage Ditch
- Sampling Locations
- ➔ Groundwater Flow Direction

Imagery: ESRI, USGS  
Mapping Service, 2013



Coordinate System:  
WGS84 UTM Zone 18N Feet

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Feet

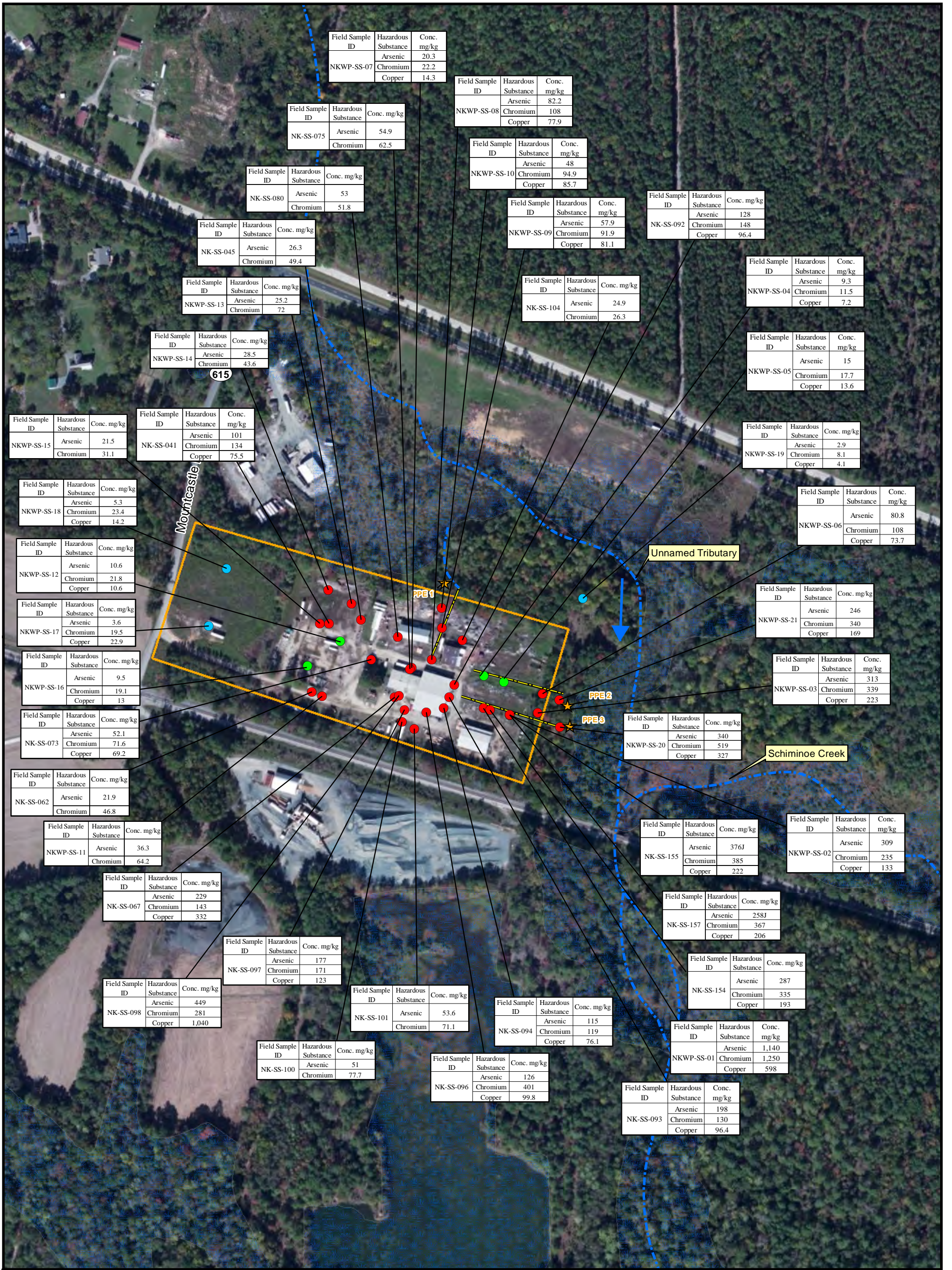
New Kent Wood Preservatives, Inc  
Providence Forge, New Kent County, VA

Figure 4  
Sample Locations - September 2014

TDD#: WS03-12-09-001  
Contract: EP-S3-10-05  
Prepared: 11/7/2014







Legend

Site Boundary

NWI Wetlands

Water Features

Drainage Ditch

Below 3x Background Soil Samples

Background Soil Samples

3x Background Soil Samples

Probable Point of Entry

Surface Water Flow Direction

Imagery: ESRI, USGS  
Mapping Service, 2013



Coordinate System:  
WGS84 UTM Zone 18N Feet

0 300  
Feet

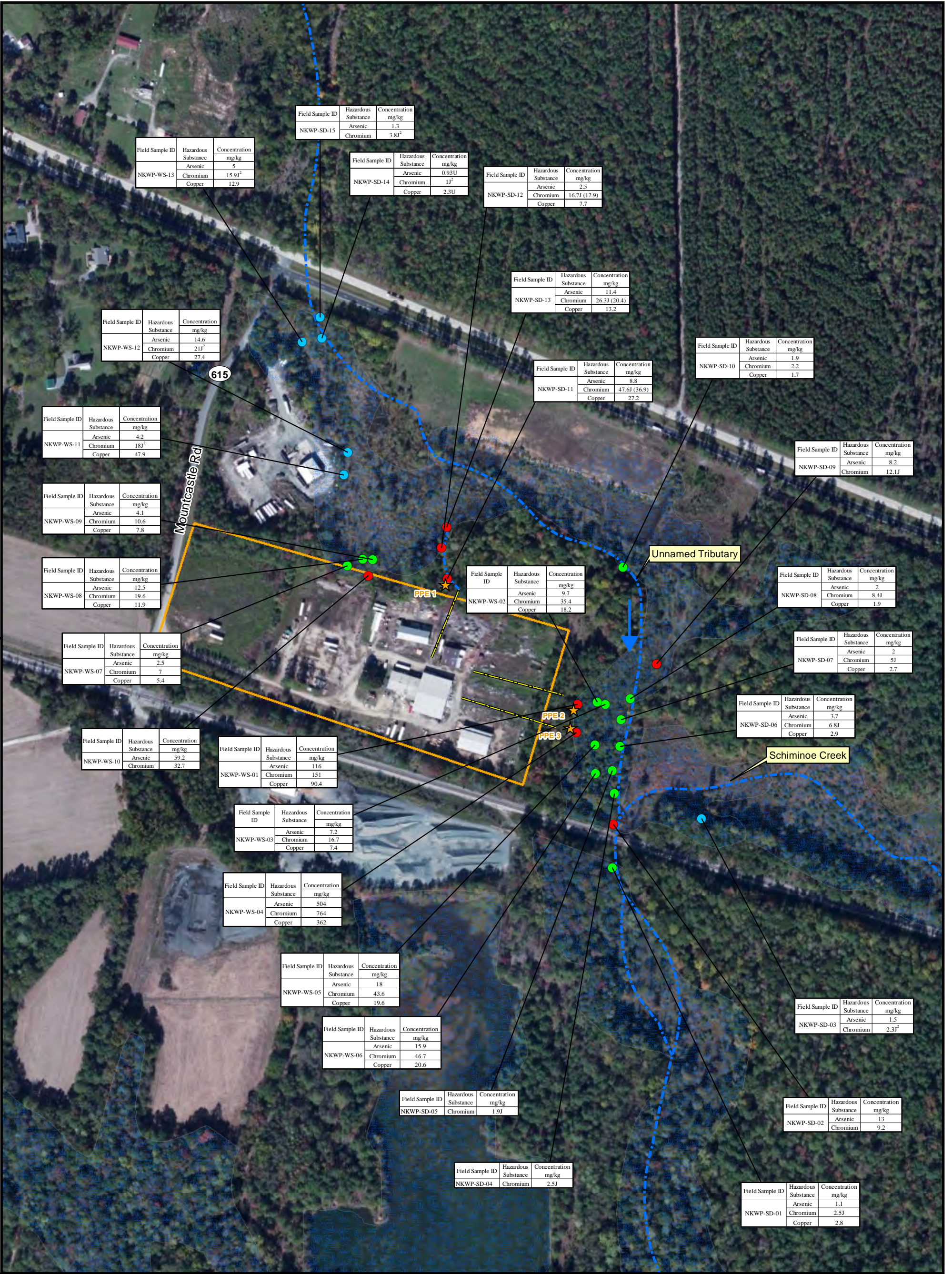
New Kent Wood Preservatives, Inc  
Providence Forge, New Kent County, VA

Figure 5  
Source Sample  
Location Map

TDD#: WS03-12-09-001  
Contract: EP-S3-10-05  
Prepared: 12/22/2014







Legend

Site Boundary

NWI Wetlands

Water Features

Drainage Ditch

Below 3x Background Soil Samples

Background Soil Samples

3x Background Soil Samples

★ Probable Point of Entry

➡ Surface Water Flow Direction

Imagery: ESRI, USGS  
Mapping Service, 2013

Coordinate System:  
WGS84 UTM Zone 18N Feet

0

300

Feet

New Kent Wood Preservatives, Inc  
Providence Forge, New Kent County, VA

Figure 6  
Sediment Sample  
Location Map

TDD#: WS03-12-09-001  
Contract: EP-S3-10-05  
Prepared: 12/22/2014

File: Y:\EPA\_Region\_III\New\_Kent\_Wood\_Preservers\MXD\Sed\_samp\_loc.mxd, 12/22/2014 10:48:09 AM, ricksc



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## **APPENDIX A**

### **ESI REPORT**

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*The Trusted Integrator for Sustainable Solutions*

**Weston Solutions, Inc.**  
1400 Weston Way  
West Chester, PA 19380  
610-701-3000 • Fax 610-701-3186  
[www.westonsolutions.com](http://www.westonsolutions.com)

February 22, 2015

Dawn Fulsher (3HS12)  
Remedial Project Manager  
U.S. Environmental Protection Agency  
1650 Arch Street  
Philadelphia, Pennsylvania 19103

Re: New Kent Preservatives, Inc.  
EPA Contract No. EP-S3-10-05  
TDD No. WS03-12-09-001  
Document Control No. W0134.1A.01147

Dear: Ms. Fulsher:

Weston Solutions, Inc. (Weston) is submitting the final Expanded Site Inspection (ESI) for the New Kent Wood Preservatives, Inc site located in Providence Forge, VA. If you have any questions regarding this FSP, please call me at (856) 581-4180.

Sincerely,

A handwritten signature in black ink that reads "Nancy Shannon". The signature is fluid and cursive, with the first name "Nancy" being more prominent than the last name "Shannon".

Nancy Shannon  
Principal Project Scientist

Attachment(s)

cc: TDD file

**FINAL EXPANDED SITE INSPECTION REPORT  
NEW KENT WOOD PRESERVATIVES INC  
PROVIDENCE FORGE, NEW KENT COUNTY, VIRGINIA**

Prepared for:



U.S. Environmental Protection Agency Region III  
Hazardous Site Cleanup Division  
1650 Arch Street  
Philadelphia, PA 19103

Prepared by:



**Region III Superfund Technical Assessment and Response Team IV**

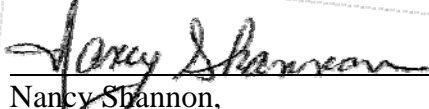
Weston Solutions, Inc.  
1400 Weston Way  
West Chester, Pennsylvania 19380

EPA Contract No.: EP-S3-10-05  
Technical Directive Document No.: WS03-12-09-001  
Document Control No.: W0134.1A.01147

January 21, 2015


**FINAL EXPANDED SITE INSPECTION  
NEW KENT WOOD PRESERVATIVES, INC  
PROVIDENCE FORGE, NEW KENT COUNTY, VIRGINIA**

Prepared by:

  
\_\_\_\_\_  
Nancy Shannon,  
HRS Specialist

Date: January 21, 2015

Approved by:

  
\_\_\_\_\_  
Robert McGlade,  
Program Manager

Date: February 2, 2015



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## LIST OF ABBREVIATIONS AND ACRONYMS

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µg/L	micrograms per liter
bgs	below ground surface
BTAG	Biological Technical Assistance Group
CCA	copper-chromate-arsenic
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
CLP	Contract Laboratory Program
CRQL	contract-required quantitation limit
CZMA	Coastal Zone Management Act
EPA	U.S. Environmental Protection Agency
ESI	Expanded Site Inspection
GIS	Geographic Information System
HRS	Hazard Ranking System
MCL	Maximum Contaminant Level
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
NPDES	National Pollutant Discharge Elimination System
PA	Preliminary Assessment
PAH	polycyclic aromatic hydrocarbon
ppb	parts per billion
PPE	probable point of entry
ppm	parts per million
RCRA	Resource Conservation and Recovery Act
Ref.	Reference
RPA	Resource Protection Area
RSL	Regional Screening Level
SATA	Site Assessment and Technical Assistance
SI	Site Inspection
START	Superfund Technical Assessment and Response Team
SVOC	semivolatile organic compound



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## LIST OF ABBREVIATIONS AND ACRONYMS (Continued)

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TAL	Target Analyte List
TCL	Target Compound List
TDD	Technical Direction Document
TDL	target distance limit
USGS	U.S. Geological Survey
VDEQ	Virginia Department of Environmental Quality
VDWM	Virginia Department of Waste Management
VWCB	Virginia Water Control Board
VWMB	Virginia Waste Management Board
WESTON®	Weston Solutions, Inc.

## **1.0 INTRODUCTION**

Under the Superfund Technical Assessment and Response Team (START) IV Contract No. EP-S3-10-05, Technical Direction Document (TDD) No. WS03-12-09-001, the U.S. Environmental Protection Agency (EPA) Region III tasked Weston Solutions, Inc. (WESTON®) to conduct an Expanded Site Inspection (ESI) of the New Kent Wood Preservatives, Inc (New Kent) site (the Site) located in Providence Forge, New Kent County, Virginia. EPA's Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) database identifies the Site with the EPA Identification No. VAD089028963.

This ESI was conducted in accordance with EPA's Guidance for Performing Site Inspections Under Comprehensive Environmental Response, Compensation, and Liability Act (Reference [Ref.] 1). The purpose of this ESI was to determine the need for additional action at the Site under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA). The scope of the ESI for the New Kent site included a review of available site information, a compilation and evaluation of potential targets, sampling, and an evaluation of the analytical data.

## **2.0 SITE BACKGROUND**

This section includes a discussion of the Site location and description, a brief history of the Site, its operational history and associated waste characteristics, and information on previous investigations conducted at the Site.

### **2.1 LOCATION AND DESCRIPTION**

The New Kent site is located at 4101 South Mountcastle Road in Providence Forge, Virginia, as shown in Figure 1, Site Location Map (Ref. 2). The geographic coordinates of the New Kent site, as recorded from the former main drip pad, are 37.453708° north latitude and 77.090753° west longitude (Ref. 3). The New Kent site is located approximately 1,500 feet south of the

intersection of U.S. Route 60 East and Route 615 in a rural area of New Kent County, Virginia. As shown on Figure 1 and Figure 2, Site Layout Map, land use in the Site vicinity is a mixture of industrial, agricultural, and residential.

As shown on Figure 2, Site Layout Map, directly surrounding the New Kent site to the north is undeveloped forested land and wetlands, to the east are wetlands, to the south are active railroad tracks, and to the west is Mountcastle Road. An active tire recycling facility (Virginia Recycling Corporation) is located 0.14 mile north of the Site and an active asphalt manufacturer and recycling plant (Lee Hy Paving Corporation) is located on the south side of the railroad tracks that border the Site to the south. The nearest residential property is located approximately 0.3 mile to the southwest. The nearest surface water is an unnamed tributary to Schiminoe Creek, located approximately 300 feet to the north and east of the Site from the property fence line. The unnamed tributary flows through the wetlands that border the Site and converges with Schiminoe Creek just upstream of the railroad tracks.

## **2.2 SITE DESCRIPTION**

Currently, the Site is occupied by two active businesses: McNeil Sales and Service Co. Inc. (McNeil Sales) and Museum Resources. McNeil Sales specializes in refractory supplies and services; Museum Resources specializes in historic woodwork and forest product manufacture for museums and 18th century restorative work. Specifically, McNeil Sales casts refractory cement into shaped steel forms. The cement molds are then dried in ovens. No hazardous substances are used in the process. Museum Resources uses raw wood materials in its reproduction work and does not treat or stain its finished products (Ref. 4, pp. 13-14). As shown on Figure 2, several buildings are located on-site and are occupied by these active businesses. These buildings were previously used by the wood-treating facilities as drip pads, a process/office building, a wood-cutting building, and a maintenance shed. The former drip pads are open-aired buildings consisting of concrete slab foundations and metal roofs. The cleared area located west of the on-site buildings was the treated wood storage area prior to shipment off-site. The undeveloped, western

end of the Site that borders Mountcastle Road (Route 615) appears to have been historically outside the facility fence line and vegetated, based on previous sketch maps of the Site (Ref. 5, pp. 55, 57, and 59).

During the site reconnaissance conducted by WESTON on May 28, 2014, green staining was observed on the concrete floor in the main open-air building (former main drip pad) (Ref. 4, p. 17). The observed green staining on the concrete floor of the former drip pad is consistent with the color of chromated copper arsenate (CCA) solution (Ref. 24, p. 2). The facilities manager for McNeil Sales showed WESTON a sump that is located on the former main drip pad to collect surface water runoff when it rains. The water is pumped from the sump to the ground surface outside the northwest corner of the building (Ref. 4, pp. 13-14). The ground surface at the New Kent site is either compacted dirt roads or brush. During the site reconnaissance, two drainage ditches were observed in the back portion (east end) of the Site, originating near the dirt road, running through the brush area, past the fence, and into the wetlands on the adjacent eastern property. Standing or flowing water was not observed in these ditches during the reconnaissance; however, indication of channel flow was observed (Ref. 4, pp. 16-17). A third ditch was observed on the north side of the Site beginning alongside the building occupied by Museum Resources (former maintenance shed), extending past the fence, and into the wetlands on the adjacent northern property. Water was observed in this drainage ditch on-site and flowing into the wetlands during the site reconnaissance (Ref. 4, p. 18).

## **2.3 OPERATIONAL HISTORY AND PREVIOUS INVESTIGATIONS**

In 1977, New Kent Wood began operations at the Site, which consisted of pressure treating lumber using a pressure/vacuum system to impregnate the lumber with a CCA solution. Lumber was placed in a cylinder into which a pre-mixed solution of CCA and water was forced. Once the cylinder was filled, excess solution was vacuumed off and the treated wood was removed from the cylinder and stored on a drip pad until dry. Any CCA solution not retained by the wood was drained into a sump and recycled back into the treatment system. The main drip pad was located

near the center of the Site; a secondary drip pad was located in the southeastern portion of the Site (Ref. 5, p. 6). Once the wood was treated and dried, the wood was moved to the storage area located on the western side of the main building on-site (Ref. 5, p. 57).

In 1978, New Kent applied for and received a Discharge Certificate, IW-ND-991, in accordance with Virginia Water Control Law. In August 1983, the facility was sold and renamed Midland Timber Company (Midland) then sold again in February 1985 and renamed Holland Forest Products, Inc. (Holland); however, operations at the facility remained the same throughout the change of names and ownership (Ref. 5, p. 6).

In August 1985, the Virginia Department of Waste Management (VDWM) performed a CERCLA preliminary assessment (PA) of the New Kent site. During the PA, a representative of Holland indicated that when the facility was operated by New Kent, the surface drainage was extremely poor. The subsequent property owners, Midland, reportedly regraded the property to address this issue. Following the site reconnaissance at the facility, VDWM was contacted by an employee of Holland who alleged that in the past CCA sludge was dumped in the wooded area adjacent to the facility. In October 1985, VDWM conducted a follow-up site reconnaissance based on the alleged dumping of contaminated sludge. According to an employee interviewed by VDWM who had worked at the facility for 6 years under each ownership, no dumping of sludge had occurred to his knowledge (Ref. 6, p. 6).

In September 1985, the Virginia Water Control Board (VWCB) contacted the new owner of the facility, Holland, for information in order to transfer the Discharge Certificate from the previous property owner, Midland. On September 25, 1985, the VWCB conducted an inspection of the property. No indications of chemical spillage were observed; however, it was noted that the treated wood was only being stored on the drip pad for 24 hours instead of the required 48 hours before it was moved to the storage yard. It was also noted that the drip pad was not bermed. The VWCB requested that the facility apply for a National Pollutant Discharge Elimination System



(NPDES) permit so that a determination could be made regarding whether a drainage ditch located near the drip pad contained contaminants (Ref. 5, p. 6; 6, pp. 59-60).

In 1986, Holland was classified as a small quantity Resource Conservation and Recovery Act (RCRA) generator facility for sludge removed from the treatment cylinder (EPA ID No. VAD089028963) (Ref. 5, p.7).

In May 1986, Holland developed and installed a groundwater monitoring well system to assess the groundwater quality in the area around the drip pad. Initially, a piezometer was installed at each corner of the property (a total of four) to determine the groundwater gradient. Three monitoring wells were subsequently installed downgradient of the drip pad and one was installed upgradient as a background well. The wells ranged in depth from 15 to 18 feet. Groundwater samples were collected from each monitoring well, and one surface water sample was collected from a pond identified as the "Beaver Pond" located to the east of the New Kent site. The samples were analyzed for arsenic, copper, and chromium. Analytical results indicated elevated concentrations of chromium (up to 20 milligrams per liter [mg/L]) and arsenic (up to 0.80 mg/L) in the downgradient wells relative to the concentrations detected in the background well (chromium reported at 0.08 mg/L and arsenic reported at 0.40 mg/L). The surface water sample contained 0.008 mg/L; however, chromium and copper were not detected (Ref. 6, pp. 62-68).

In September 1986, an extended development of one of the monitoring wells (M-1) that contained the highest concentration of chromium was conducted. The objective of the investigation was to determine whether the high level of chromium detected in that well in May 1986 was accurate. The well was pumped for a 24-hour period, and groundwater samples were collected every 6 hours and submitted for total chromium, total arsenic, and total copper analyses. A report dated October 10, 1986, indicates that the shallow aquifer was contaminated with chromium at a concentration of at least 16 mg/L and that the chromium concentrations did not decline over the time the aquifer was pumped. A sample collected from the sump on the drip

pad revealed a total chromium concentration of 23 mg/L and a total arsenic concentration of 0.38 mg/L (Ref. 6, pp. 69-72).

In 1987, Kel-wood Timber Products (Kel-wood) purchased the property. Subsequently, in May 1988, L-Wood Forest Products (L-Wood) began leasing the property from trustees of Kel-wood (Ref. 5, p. 8).

On June 7, 1988, VWCB performed a no-discharge inspection. VWCB observed the drip pad to be open and unbermed. CCA solution was observed at the perimeter of the pad and wood fragments were noted in the drainage ditches leaving the property (Ref. 6, p. 61).

A review of EPA's RCRA Information System (RCRA Info) indicates that, in 1988, RCRA ID Number VAD981944945 was issued for L-Wood. The facility name listed on RCRA Info is L-Wood Industries Southern Pine Specialists, Inc. Chemicals listed as being used by this facility are arsenic, copper, and chromium compounds. RCRA Info for this facility is listed for the years 1988 through 1992 (Ref 5, p. 8).

In October 1988, VDWM performed a CERCLA site inspection (SI) of the property. Soil samples were collected from around the drip pad and wood storage yard, groundwater samples were collected from the on-site monitoring wells and a water supply well, and surface water and sediment samples were collected from the on-site drainage ditches and the wetlands. Analytical results indicated significant levels of chromium (up to 37,800 micrograms per liter [ $\mu\text{g/L}$ ]) in one or more of the groundwater monitoring well samples. All soil samples collected adjacent to the drip pad contained significant levels of arsenic (up to 3,950 mg/kg), copper (up to 1,390 mg/kg), and chromium (up to 2,860 mg/kg) and numerous organic polycyclic aromatic hydrocarbons (PAHs). Significant levels of arsenic (up to 922 mg/kg) and chromium (up to 699 mg/kg) were also detected in soil samples collected from the drainage ditches. Additionally, the one surface water sample collected downstream contained 7.3  $\mu\text{g/L}$  chromium (Ref. 6, pp. 12-13, 17-22, and 36).

VWCB performed an inspection of the New Kent site in September 1991. VWCB observed that the operating area was diked correctly and that treated wood was held on the drip pad for 2 days before storage. Runoff from the pad was reportedly collected and recycled back through the treatment process (Ref. 5, p. 9).

In December 1992, a CERCLA ESI field investigation was conducted by VDWM. The previous plant manager was interviewed during the ESI investigation and stated that CCA solution was received at the facility as 50% concentrate and was stored in a 4,000-gallon above ground storage tank. This concentrate was delivered in tanker trucks that held 44,000 pounds of chemical per load. The plant manager stated that during the winter months the company used less than one truck load of solution per month; however, during the summer months, up to three loads of solution may have been used each month. The plant manager indicated that 21 drums of hazardous waste had been shipped off-site since L-Wood began leasing the property in 1988. However, because of the recycling process of the solution from the drip pad back into the treatment system, no liquid waste was generated during the lumber treatment process. It was noted during the ESI that dirt tracked onto the drip pad by a forklift was washed into the sump, collected in drums, allowed to dry, and was hauled off-site for disposal. However, it was indicated that, historically, wood chips knocked off the lumber by the forklifts were washed into the on-site drainage ditches. In response to a VWCB complaint pertaining to this issue, the facility placed gravel filters in the ditches to remove the chips, which were then placed in drums for off-site disposal. During the ESI, stained soil was observed in the drainage ditches; however, there was no evidence of wood chips (Ref 7, p. 10).

As part of the ESI, on-site soil samples were collected from waste/source areas, and surface water and sediment samples were collected from the unnamed tributary and associated wetlands. Groundwater samples were not collected during the ESI. Concentrations of arsenic (up to 400 parts per million [ppm]), chromium (up to 415 ppm), and copper (up to 305 ppm) were detected in on-site soil; and concentrations of arsenic (up to 1,230 parts per billion [ppb]) and chromium (up to 1,910 ppb) were detected in a surface water sample collected from the wetlands. The ESI

concluded that, based on the analytical results, a potential existed for on-site workers to be exposed to soils contaminated with inorganic compounds as well as the potential exposure of aquatic life to on-site contaminants (Ref. 7, pp. 11-13 and 20).

In May 1995, the Virginia Waste Management Board (VWMB), on behalf of the Virginia Department of Environmental Quality (VADEQ), issued an enforcement order to L-Wood. According to the findings outlined in the enforcement order, on June 25, 1993, VADEQ staff conducted a Compliance Evaluation Inspection at the facility. Following the inspection, VADEQ sent L-Wood a Notice of Violation letter documenting four violations. L-Wood subsequently addressed two of the violations: (1) failure to minimize the tracking of hazardous wastes off the drip pad and (2) failure to make arrangements with the Virginia Department of Emergency Services for assistance in an emergency. L-Wood, however, did not address the remaining two violations: (3) failure to obtain the requested professional engineer certification for the drip pad and (4) failure to prepare a closure plan and contingent post-closure plan for the drip pad. A schedule of compliance was prepared and included in the enforcement order, which ordered L-Wood to evaluate the drip pad within 60 days and to submit a closure plan for the drip pad to VADEQ within 90 days. L-Wood was also ordered to pay a civil penalty of \$6,400 to the Virginia Environmental Emergency Response Fund (Ref. 5, p. 10).

From April 9 through 11, 1996, the EPA Region III Site Assessment and Technical Assistance (SATA) team completed a sampling assessment of the New Kent site. Eleven soil samples, seven groundwater samples, three surface water samples, and three sediment samples were collected from the New Kent site during the assessment (Ref. 8, pp. 4-6). Concentrations of arsenic in the on-site soil samples ranged from 42.7 ppm to 1,100 ppm, concentrations of total chromium ranged from 52.3 ppm to 900 ppm, and concentrations of copper ranged from 27.7 ppm to 602 ppm (Ref. 8, p. 10). Concentrations of arsenic, total chromium, and copper were detected as high as 767 ppb, 6,840 ppb, and 892 ppb, respectively, in the shallow groundwater samples collected from the on-site piezometers (Ref. 8, p. 8). Arsenic and total chromium were detected

in one of the surface water samples at 113 ppb and 19.5 ppb, respectively; and arsenic, chromium, and copper were detected as high as 89.3 ppm, 20 ppm, and 64 ppm, respectively, in sediment samples (Ref. 8, pp. 8 and 10).

On April 25, 2000, VADEQ completed an inspection of the New Kent site. According to the inspection report, the property owner operated a trucking company on the property after closure of the wood preserving company. At the time of the inspection, the facility was deserted and a sign advertising the property for lease was posted at the entrance; thus, the condition of the on-site structures and their contents could not be determined (Ref. 5, p. 11).

VADEQ completed another inspection of the New Kent site on June 5, 2002. At the time of this inspection, the facility was occupied by Higgins Sales (currently McNeil Sales) and Museum Restorations, which was using the office space and storage facilities. The operations were reportedly “dry” and did not require permitting. The inspection report further indicates that the actions requested in the enforcement order were never completed. The inspection revealed abandoned equipment on the New Kent site, including one horizontal tank that contained a small quantity of liquid that reportedly smelled faintly of solvents/chemicals and a large vertical tank that appeared to be empty. A copy of this inspection report was sent to the address on record for the property owner, but could not be delivered. VADEQ requested that EPA take the lead on completing further assessments of the New Kent site. To date, there is no indication in the VADEQ site files that any soil remediation or closure of the drip pads has occurred (Ref. 5, p. 11).

### **3.0 SOURCE CHARACTERISTICS**

This section describes the sources associated with the Site and provides information on the source sampling locations and analytical data.

### 3.1 SOURCE DESCRIPTION

The source at the Site consists of an unknown quantity of contaminated soil as a result of the historical use of the property for CCA wood-treating operations. The source data presented in this section are not intended to define the entire source area(s).

### 3.2 SAMPLING LOCATIONS

In June and September 2014, as part of this ESI, WESTON collected a total of 48 surface soil (0 to 6 inches below ground surface [bgs]) samples, including duplicate and background samples, from potential source areas at the New Kent site including from areas around the former drip pad, the former storage yard, and the drainage ditches. In September 2014, three background samples were collected to document soil conditions not potentially impacted by source areas. In June 2014, three samples were collected from residential properties to document background conditions. However, these soil samples appear to be fill material and not native soil; therefore, these samples were not used to evaluate background conditions. The results of the three samples collected from residences are included in Appendix A, but are not included in the data summary table or discussed below. Sample locations are shown in Figure 3, Source Sample Location Map.

### 3.3 ANALYTICAL RESULTS

Surface soil samples collected in June 2014 were analyzed for Target Analyte List (TAL) metals through the EPA Contract Laboratory Program (CLP). Samples collected in September 2014 were analyzed for TAL metals and Target Compound List (TCL) semivolatile organic compounds (SVOCs) through the EPA CLP. The Data Validation Reports are provided as Appendix A.

The analytical results presented below include a discussion of the concentrations of “elevated” compounds or elements. “Elevated” concentrations indicate detections in soil samples at concentrations three times or greater than the concentrations detected in the background samples

(NKWP-SS-17, NKWP-SS-18, and NKWP-SS-19). For the most conservative evaluation, the highest concentration detected in the three background samples is used for comparison. However, if the compound or element was not detected in the background sample, the background contract required quantitation limit (CRQL) was used as the reference value. The CRQL is the minimum level of reliable quantitation acceptable under the CLP Statement of Work for each analytical method. These compounds or elements are “elevated” if they occurred at a value greater than the background CRQL.

The soil analytical results were also compared to EPA Regional Screening Levels (RSLs) for industrial soil. EPA RSLs are generic risk-based concentrations used for Site “screening.” RSLs are intended to assist risk assessors and others in initial screening-level evaluations of environmental measurements. RSLs combine human health toxicity values with standard exposure pathway (i.e., inhalation, dermal, and ingestion) factors to estimate contaminant concentrations in environmental media (soil, air, and water) that are considered by EPA to be health-protective of human exposures, over a lifetime. RSLs are included here for comparison purposes only; they are not legally enforceable standards (Ref. 9).

As shown in Table 1, arsenic was detected at elevated concentrations in 34 of the 42 soil samples collected from potential source areas ranging from 20.3 milligrams per kilogram (mg/kg) (NKWP-SS-07) to 1,140 mg/kg (NKWP-SS-01). Additionally, 38 of the 42 soil samples collected contained concentrations of arsenic that exceed the EPA RSL of 3 mg/kg for arsenic in industrial soil. Chromium was detected at elevated concentrations in 25 of the 42 soil samples ranging from 71.6 mg/kg (NK-SS-073-062014) to 1,250 mg/kg (NKWP-SS-01). Additionally, 41 of the 42 soil samples collected contained concentrations of chromium that exceed the EPA RSL of 6.3 mg/kg for hexavalent chromium in industrial soil. Copper was detected in 22 of the 42 soil samples at elevated concentrations ranging from 69.2 mg/kg to 1,040 mg/kg. Concentrations of copper did not exceed the EPA RSL of 4,700 mg/kg for copper in industrial soil. In addition, lead was detected in 2 samples at elevated concentrations and zinc was detected



in 15 samples at elevated concentrations. Concentrations of lead and zinc did not exceed applicable EPA RSLs for industrial soil.

With the exception of the detection of di-n-butylphthalate in the majority of the soil samples, including background sample NKWP-SS-19, and the detection of benzo(b)fluoranthene in two samples (NKWP-SS-02 and NKWP-SS-03), at concentrations just at or slightly exceeding the CRQL, SVOCs were not detected in the soil/source samples above the CRQL.

### **3.4 SOURCE SUMMARY**

WESTON performed surface soil sampling at the New Kent site as part of this ESI. Based on the analytical results, contaminated soil containing arsenic, chromium, copper, lead, and zinc has been documented throughout the site including in the former storage yard area, in soil surrounding the former main drip pad, and in the drainage ditches. Of these contaminants, concentrations of arsenic and chromium exceed the respective RSLs for industrial soil. Impacts to the current on-site worker populations are suspected because the majority of the ground surface is bare/unpaved.

## **4.0 GROUNDWATER MIGRATION PATHWAY**

This section describes the Site geologic and hydrogeologic setting, targets associated with the groundwater migration pathway, sampling locations, analytical data, and conclusions that can be reached for the groundwater migration pathway.

### **4.1 GEOLOGY AND HYDROGEOLOGIC SETTING**

The Site is located in the Coastal Plain physiographic province (Ref. 10). The Coastal Plain is underlain by a seaward-thickening wedge of regionally extensive, eastward-dipping strata of unconsolidated to partly consolidated sediments of Cretaceous, Tertiary, and Quaternary Age that unconformably overlie a basement of consolidated bedrock. The sediments were deposited by seaward progradation of fluvial plains and deltas along the North American continental

margin, followed by a series of transgressions and regressions by the Atlantic Ocean in response to changes in sea level. A thick sequence of nonmarine strata primarily of Cretaceous Age is overlain by a much thinner sequence of marine strata of Tertiary Age, which is in turn overlain by a veneer of nearly flat-lying terrace and flood-plain deposits primarily of Quaternary Age (Ref. 11, pp. 4 and 8).

In the Coastal Plain, groundwater is present in pores between the sediment grains. Groundwater in the Coastal Plain is recharged principally by precipitation infiltration and percolation to the water table. Most of the unconfined ground water flows relatively short distances and discharges to nearby streams; however, a small amount flows downward to recharge the deeper confined aquifers, primarily along the Fall Zone and beneath surface-drainage divides between major river valleys. Because of stratification of the Coastal Plain sediments, horizontal hydraulic conductivity generally is greater than vertical hydraulic conductivity (Ref. 11, pp. 5 and 8).

The Site is underlain by Quaternary Age river terrace deposits (Ref. 7, p. 14). On-site shallow monitoring well borings logs indicate that the river deposits are present to a depth of 13 to 14 feet bgs and are characterized by tan to brown fine sand and gray to white coarse sand (Refs. 6, pp. 63-65; 7, p. 14). Below this depth, a green glauconitic fine sand with clay is encountered, which is indicative of the Piney Point Formation (Refs. 5, p. 24; 6, pp. 63-65; 11 p. 71).

The Piney Point Aquifer is a homogeneous aquifer composed of several geologic formations that represent different periods of time; however, because all of the sediments were deposited under relatively uniform sediment-transport conditions across the Continental Shelf, they function hydraulically as a continuous medium through which water flows essentially uninterrupted at both local and regional scales. The aquifer dips generally eastward and ranges in thickness from approximately 150 feet in its northern reaches to less than 50 feet south of the James River (Ref. 11, pp. 6, 71, and 74). The Piney Point Aquifer provides public water supplies for some small towns and private supplies for low-density residential development in rural areas (Ref. 11, p. 71).

The Nanjemoy-Marlboro Confining Unit underlies the Piney Point Aquifer across most of its extent. The Nanjemoy-Marlboro Confining Unit consists primarily of marine, silty and clayey, fine-grained glauconitic quartz sands. The Nanjemoy-Marlboro Confining Unit dips generally eastward across its entire extent and has a maximum thickness of nearly 150 feet but thins to 50 feet or less south of the James River (Refs. 5, pp. 24-25; 11, pp. 6-7, and 59). The Nanjemoy-Marlboro Confining Unit is an extensive hydrogeologic unit that regionally impedes horizontal groundwater flow (Ref. 11, p. 60).

The Aquia Aquifer underlies the Nanjemoy-Marlboro Confining Unit across almost its entire extent. The Aquia Aquifer consists of marine, medium- to coarse-grained, glauconitic and fossiliferous quartz sands of the Aquia Formation of late Paleocene Age (Ref. 5, pp. 25; 11, pp. 6-7, 52, and 54). The Aquia Aquifer dips generally eastward across its entire extent and has a maximum thickness of nearly 150 feet across its upper reaches; however, it thins to generally 50 feet or less to the south and east (Ref. 11 pp. 54).

The Potomac Confining Unit underlies the Aquia Aquifer and is characterized by an uppermost clay that is interbedded with coarse-grained quartz and feldspar sands and gravels of the fluvial-deltaic Potomac Formation. The confining zone is widespread and is continuous through the 4-mile radius of the Site. The unit impedes groundwater flow into the underlying Potomac Aquifer (Ref. 11, pp. 6-7, 35-38).

The Potomac Aquifer underlies the Potomac Confining Unit and consists of 500 to 750 feet of interbedded sands and clays. The Potomac Aquifer is the largest, deepest, and most heavily used source of groundwater in the Virginia Coastal Plain. The aquifer supplies major industries, many towns and cities, and low-density residential developments in rural areas. It is a heterogeneous aquifer with sediments deposited by braided streams, meandering streams, and delta. The Potomac Aquifer is hydraulically continuous on a regional scale, but locally exhibits discontinuities where flow is impeded by fine-grained interbeds. Some studies of the Potomac Aquifer divide it into upper, middle, and lower aquifers separated by intervening confining units.

The Potomac Aquifer is underlain across its entire extent by basement bedrock consisting of mainly igneous and metamorphic rock (Ref. 11, pp. 6-7; 29-32).

The shallow water table aquifer comprises the sand and gravel of the river terrace deposits that underlie the Site. Groundwater flow within the shallow water table aquifer is anticipated to be topographically controlled. Furthermore, groundwater flow measurements taken at the Site indicate groundwater flows from the northwest to the southeast towards Schiminoe Creek (Re. 6, p. 10)

### **4.3 GROUNDWATER TARGETS**

There are four community wells located within a 4-mile radius of the Site. The Long Acres Mobile Home Park maintains one well located in the 0.5- to 1.0-mile radius ring that serves 48 persons. The depth of the well is unknown. A second 345-foot deep community supply well is located within the 2- to 3-mile radius ring and serves the 165 residents of the Minitree Glenn development. The Woodhaven Shores development maintains two community wells for the 1,428 residents of that development. The wells are located in the 3- to 4-mile radius ring and are 504 feet and 400 feet deep (Ref 5. p. 27). The location of the community wells within a 4-mile radius of the Site is shown on Figure 4.

A 100-foot well is located on the Site that is used for restroom and process water but is not used for drinking water. The two adjacent facilities also have wells that are used for restroom purposes but are also not used for drinking water. These wells are approximately 350 and 500 feet deep (Ref. 4, pp. 11-12). The nearest residential well to the Site is located 0.30 mile to the southwest. The remainder of the population surrounding the Site rely on private domestic wells for their potable supply. To determine the number of domestic private wells within each of the 4-mile target distance categories, a house count was completed on the 4-mile radius map (Figure 4). The number of individuals served by each well is estimated to be the average number of persons per household for the two counties (New Kent and Charles City) that are located within a

4-mile radius of the site. The average persons per household for New Kent County in 2010 was 2.70 and the average number of persons per household for Charles City in 2010 was 2.46. The private domestic wells are typically shallow and are less than 50 feet deep (Ref. 5, pp. 27-28).

The table below summarizes the total population within a 4-mile radius of the Site that relies on groundwater for their potable supply.

**ESTIMATED DRINKING WATER POPULATIONS SERVED BY GROUNDWATER  
WITHIN A 4-MILE RADIUS**

Distance Rings (miles)	Domestic Wells New Kent County	Domestic Wells Charles City County	Estimated Population Served by Domestic Wells	Public Supply Wells	Estimated Population Served by Public Wells	Total Population
≥0.0-0.25	0	0	0	0	0	0
>0.25-0.5	12	0	32	0	0	32
>0.5-1.0	41	0	111	1	48	159
>1.0-2.0	125	24	346	0	0	397
>2.0-3.0	123	103	585	1	165	750
>3.0-4.0	65	112	451	2	1,428	1,880

Ref. 5, p. 28

#### 4.4 SAMPLING LOCATIONS

As part of a concurrent Removal Assessment, a total of seven groundwater samples were collected in September 2014 to determine whether there has been a release of hazardous substances associated with New Kent sources to groundwater. Samples were collected from two of the shallow on-site monitoring wells, MW-1/5 (well depth 23 feet bgs) and MW-4 (well depth 14 bgs); the on-site potable well, DW-05 (well depth 100 feet bgs); the potable wells located on the adjacent commercial properties, DW-02 (well depth 350 feet bgs) and DW-03 (well depth 500 feet bgs); and from two nearby residential wells, DW-01 and DW-04. The well depth of the

residential wells is unknown. Groundwater sample locations are shown in Figure 5, Groundwater Sample Location Map. A background groundwater sample was not collected as part of this ESI.

#### **4.5 ANALYTICAL RESULTS**

Groundwater samples were analyzed for TAL metals and TCL SVOCs through the EPA CLP. The Data Validation Reports are provided as Appendix A. The groundwater analytical data results were compared to EPA National Primary Contaminant Drinking Water Regulations Maximum Contaminant Levels (MCLs) (Ref. 12). EPA MCLs are legally enforceable standards that apply to public drinking water systems only. However, for the purpose of this ESI, they are used for comparison purposes only.

As shown in Table 2, potentially site-attributable contaminants (i.e. arsenic, chromium, copper, and lead) were not detected in samples DW-02, DW-03, DW-04, and DW-05 above the method detection limit (MDL). The MDL is the minimum concentration that can be measured and reported with 99 percent confidence that the concentration is greater than zero. Sample DW-01 contained estimated concentrations of chromium and copper at 2.1 µg/L and 15.9 µg/L, respectively. Arsenic was not detected in this well. The chromium and copper concentrations were qualified as estimated as they were detected above the MDL but below the CRQL; the minimum level of reliable quantitation acceptable under the CLP Statement of Work for each analytical method. Estimated concentrations of zinc were detected in the samples collected from all five deeper drinking water wells. However, concentrations of detected metals in the samples collected from the deeper drinking water wells did not meet or exceed applicable MCLs.

The sample collected from the shallow monitoring well located adjacent to and downgradient of the former treated wood storage yard, MW-04, contained 34.5 µg/L of chromium and 45.9 µg/L of copper. Additionally, arsenic was detected in this well at an estimated concentration of 7.9 µg/L as it was detected above the MDL but below the CRQL. Additionally, lead and zinc were



detected in MW-04 at 22.8 µg/L and 158 µg/L, respectively. The sample collected from the shallow monitoring well located adjacent to the southeastern corner of the former main drip pad, MW-01/05, contained 41.3 µg/L of arsenic and 71.4 µg/L of chromium. Copper was not detected in this well. The concentrations of chromium and copper detected in the shallow monitoring wells do not exceed their applicable MCLs of 100 µg/L and 1,300 µg/L, respectively; however, the concentration of arsenic in sample MW-1/5 did exceed the MCL of 10 µg/L. Additionally, the concentration of lead detected in MW-04 exceeds the MCL of 15 µg/L.

SVOCs were not detected in either the deep or shallow wells at concentrations above the CRQL.

#### **4.6 GROUNDWATER CONCLUSIONS**

WESTON performed groundwater sampling as part of this ESI. Groundwater samples collected from on-site shallow monitoring wells contained concentrations of arsenic, chromium, copper, lead, and zinc; the concentration of arsenic in one of the shallow wells exceeded the MCL. These contaminants were also detected in on-site soil samples at elevated concentrations; therefore, it appears that site-attributable hazardous substances, arsenic, chromium, copper, lead, and zinc, may be impacting shallow groundwater; however, a background shallow groundwater sample was not collected. With the exception of the estimated concentrations of chromium and copper detected in sample DW0-1, the samples collected from the on-site deep well and the off-site wells did not contain concentrations of these contaminants above detection limits. The estimated concentrations of chromium and copper in DW-01 were well below applicable MCLs.

#### **5.0 SURFACE WATER MIGRATION PATHWAY**

This section describes the Site hydrologic setting, targets associated with the surface water migration pathway, surface water and sediment sampling locations, analytical results, and conclusions reached for the surface water migration pathway.

## 5.1 HYDROLOGIC SETTING

The Site is surrounded primarily by a mixture of undeveloped woodland and wetlands. Site elevation varies from approximately 30 feet to 50 feet above sea level [Refs. 2; 13, p. 4]. In general, runoff flows overland to the east, southeast into wetlands that are contiguous with an unnamed tributary to Schiminoe Creek. However, a drainage channel located on the north side of the property also conveys surface water runoff from the property and into the adjacent wetlands to the north. Impoundments of the stream system by the local beaver (*Castor canadensis*) population have resulted in the establishment of wetlands and impeded the flow of the unnamed tributary, creating a ponded area immediately adjacent to the northern boundary of the Site [Refs. 4, pp. 18, 19; 13, pp. 5, 12, 13]. There is minimal discernible flow or channelized stream bed in the unnamed tributary or Schiminoe Creek in the vicinity of the Site, north of the railroad tracks that border the property to the south [Refs. 4 pp. 18, 19; 13, pp. 5, 12, 13].

As shown on Figure 7, the most upstream probable point-of-entry (PPE1) to surface water is at the northern drainage ditch that connects to the unnamed tributary. The northern drainage ditch receives surface water runoff from the northern portion of the Site, including the former wood storage area, as well as the discharge from the sump pump from the former main drip pad (Ref. 10, p. 13). The northern drainage ditch flows into the wetlands bordering the Site to the north and joins the unnamed tributary. A second PPE (PPE2) to the surface water migration pathway is into the wetlands adjacent to the eastern boundary of the property directly downgradient of the discharge point of the northernmost drainage ditch located on the eastern portion of the property. A third PPE (PPE3) to the surface water migration pathway is into the wetlands adjacent to the eastern boundary of the property directly downgradient of the discharge point of the southernmost drainage ditch located on the eastern portion of the property (Ref. 10, pp. 7 and 10]. The wetlands are contiguous to the unnamed tributary of Schiminoe Creek. From PPE3, the surface water migration pathway flows southeast through the wetlands and possibly via the unnamed tributary; however, there is not a discernible channel in this area. The pathway joins Schiminoe Creek approximately 300 feet downstream of PPE3, just north of the railroad tracks.

Schiminoe Creek then flows in a southerly direction for approximately 0.75 mile until it discharges into the Chickahominy River. The 15-mile downstream target distance limit (TDL) is completed in the Chickahominy River.

## **5.2 SURFACE WATER TARGETS**

Targets associated with the surface water migration pathway include drinking water targets, fisheries, and sensitive environments. As shown on Figure 6, the Newport News Waterworks maintains a drinking water intake on the Chickahominy River approximately 13.5 miles downstream from the Site. The Newport News Waterworks supplies drinking water to over 400,000 people (Ref. 4, p. 15).

Both the Schiminoe Creek and Chickahominy River are used for recreational fishing within the 15-mile TDL. The nearest identified fishing location to the Site is located on the Schiminoe Creek, approximately 0.73 mile from the Site, directly upstream of its discharge point into the Chickahominy River (Ref. 14, p. 1). The nearest access point to the Chickahominy River is at Crawford State Forest (Ref. 15, pp. 17 and 46). Fish species upstream of Walker's Dam include anadromous fish such as blueback herring and striped bass (Ref. 16, p. 1).

As depicted on Figures 6 and 7, wetlands border the Site to the north and east (Refs. 13, pp. 5, 6, 8, 15-17; 17, pp. 1-3). A wetland delineation conducted in June 2014, confirmed the wetland boundary as mapped by the National Wetland Inventory Maps (Refs. 13, pp. 5, 6, 8, 15-17; 17, pp. 1-3). There are 1,715.52 feet of wetlands associated with the unnamed tributary and Schiminoe Creek north of the railroad tracks (Ref. 17, pp. 1-3). An additional 21.2 miles of wetland frontage are located along the TDL in the Schiminoe Creek and Chickahominy River (Ref. 17, pp. 1-3).

The National Wetlands Inventory (NWI) map of the project area indicates the occurrence of palustrine forested, seasonally flooded (PF01C) and palustrine forested seasonally flooded, saturated (PF01E) wetlands surrounding the Site (USFWS, 1977). Dominant wetland plant

species within the project area include the tree species of river birch (*Betula nigra*), red maple (*Acer rubrum*), black willow (*Salix nigra*), the shrub hazel alder (*Alnus serrulata*) and the herbaceous species of touch-me-not (*Impatiens* spp., likely *pallida* given the nearly closed canopy), sweetflag (*Acorus calamus*), and smallspike false nettle (*Boehmeria cylindrica*). Other wetland species include bald-cypress (*Taxodium distichum*), swamp white oak (*Quercus bicolor*), Jack-in-the-pulpit (*Arisaema triphyllum*), and beyond the forested wetland and fringing beaver dam impoundments, the broad-leaved cattail (*Typha latifolia*). Above the wetland boundary upland tree species include willow oak (*Quercus phellos*), sweetgum (*Liquidambar styraciflua*), tulip poplar (*Liriodendron tulipifera*), and American holly (*Ilex opaca*) with an understory dominated by catbrier (*Smilax* spp.). The boundary between the upland and wetland follows the topography and is well-defined with little overlap between wetland and upland species.

The New Kent County Geographic Information System (GIS) website identified the wetlands which the Site drains into as Resource Protection Areas (RPA) (Ref. 18, pp. 1-2). RPAs are areas designated under the Chesapeake Bay Preservation Act that are composed of lands at or near the shoreline that have intrinsic water quality value or are sensitive to impacts that may degrade the quality of Commonwealth water. Examples of RPAs include tidal wetlands and shores, perennial streams and associated non-tidal wetlands, and a 10-foot buffer area adjacent to and landward of the designated RPAs (Refs. 19, pp. 2-3; 20, pp. 1-2). The Chesapeake Bay Preservation Act is an enforceable program under Virginia's Coastal Zone Management Program, which was established pursuant to the federal Coastal Zone Management Act (CZMA) (Ref. 19, p. 1).

Other sensitive environments identified within the 15-mile TDL include habitat for state or federally listed threatened species. A Virginia Natural Heritage database search for New Kent County identified the presence of a state threatened species, the Bald Eagle (*Haliaeetus leucocephalus*) and several state and federally listed threatened vascular plant species within

New Kent County. The small whorled pogonia (*Isotria medeoloides*), the sensitive joint vetch (*Aeschynomene virginica*), and the Bald Eagle (*Haliaeetus leucocephalus*) (all state listed threatened species under Virginia law) have been observed with the 15-mile TDL (Ref. 6, p. 34).

### 5.3 SAMPLING LOCATIONS

In September 2014, as part of this ESI, WESTON collected 15 pairs of co-located surface water and sediment samples from inundated wetland areas bordering the Site, the unnamed tributary to Schiminoe Creek, and Schiminoe Creek, including three locations upstream of source areas to document background conditions. Additionally, 13 sediment samples were collected from noninundated wetland areas bordering the Site, including a duplicate and three background locations to document conditions not potentially impacted by source areas. The surface water and sediment samples were collected to determine whether there has been a release of hazardous substances associated with on-site sources to the surface water pathway. Sediment sample locations are shown on Figure 7, Sediment Sample Location Map.

### 5.4 ANALYTICAL RESULTS

Surface water and sediment samples collected in in September 2014 were analyzed for TAL metals and TCL semivolatile organic compounds (SVOCs) through the EPA CLP. The Data Validation Reports are provided as Appendix A.

The analytical results presented below discuss the “elevated” compounds or elements that were detected in the surface water and sediment samples three times above the concentrations detected in the background samples (NKWP-SW/SD-03, NKWP-SW/SD-14, and NKWP-SW/SD-15 for the inundated wetlands, the unnamed tributary, and Schiminoe Creek, and NKWP-WS-11, NKWP-WS-12, and NKWP-WS-13 for the noninundated wetlands). For the most conservative evaluation, the highest concentration detected in the respective three background samples is used for comparison. However, if the compound or element was not detected in the background

sample, the background CRQL was used as the reference value. The compounds or elements are “elevated” if they occurred at a value greater than the background CRQL.

As shown in Table 3, the surface water samples did not contain elevated concentrations of metals. Additionally, SVOCs were not detected above the CRQL.

The sediment analytical results were compared to EPA Region III Biological Technical Assistance Group (BTAG) freshwater screening benchmarks (Ref. 21). Region III BTAG screening benchmarks are media-specific ecotoxicological benchmarks that can be used in developing a screening level assessment. The EPA BTAG benchmarks are included here for comparison purposes only.

As shown in Table 4, a total of four sediment samples that were collected from the inundated wetlands, the unnamed tributary, and Schiminoe Creek contained elevated concentrations of arsenic ranging from 8.2 mg/kg to 13 mg/kg, three contained elevated concentrations of chromium ranging from 16.7 mg/kg to 47.6 mg/kg, and four contained elevated concentrations of copper ranging from 7.7 mg/kg to 27.2. The EPA BTAG benchmarks for arsenic, chromium, and copper are 9.8 mg/kg, 43.4 mg/kg, and 31.6 mg/kg, respectively. Additionally, six samples contained elevated concentrations of zinc and one sample contained an elevated concentration of manganese. The concentrations of zinc did not exceed the EPA BTAG level of 121 mg/kg; however, the elevated manganese concentration did exceed the EPA BTAG benchmark of 460 mg/kg.

As shown in Table 4, four samples collected from the noninundated wetlands contained elevated concentrations of arsenic ranging from 59.2 mg/kg to 504 mg/kg, three contained elevated concentrations of chromium ranging from 519 mg/kg to 764 mg/kg, and one contained an elevated concentration of copper of 362 mg/kg. Eight of the noninundated wetland samples, including one of the background samples, contained concentrations of arsenic exceeding the EPA BTAG level of 9.8 mg/kg; five of the noninundated wetlands samples contained



concentrations of chromium exceeding the EPA BTAG level of 43.4 mg/kg; and four of the noninundated wetland samples, including one of the background samples, contained concentrations of copper exceeding the EPA BTAG level of 43.4 mg/kg. Additionally, one non-inundated wetland sample contained an elevated concentration of manganese above the EPA BTAG level of 460 mg/kg.

The sediment samples did not contain concentrations of SVOCs above the CRQL.

## **5.5 SURFACE WATER CONCLUSIONS**

WESTON performed surface water and sediment sampling as part of this ESI. No hazardous substances were detected at elevated concentrations in the surface water samples. Elevated concentrations of arsenic, chromium, copper, and zinc were detected in the sediment samples collected from the wetlands, the unnamed tributary, and Schiminoe Creek. Arsenic, chromium, copper, and zinc were also detected at elevated concentrations in soil samples collected from the Site; therefore, a release of hazardous substances attributable to the Site-to-surface-water migration pathway has been documented. As a result of the release, over 1,700 feet of wetlands located along the unnamed tributary have been impacted. Potential targets associated with the surface water pathway include the 400,000 people supplied with drinking water via a surface water intake on the Chickahominy River, the use of Schiminoe Creek and Chickahominy River as fisheries, and the 21.2 miles of wetland frontage located along the 15-mile TDL.

## **6.0 SOIL EXPOSURE AND AIR MIGRATION PATHWAYS**

This section provides information regarding physical conditions at the Site, targets associated with the soil exposure and air migration pathways, and conclusions reached for the soil exposure and air migration pathways. Soil samples collected as part of this ESI and associated analytical results are discussed in Sections 3.2 and 3.3, respectively.

## 6.1 PHYSICAL CONDITIONS

As shown in Figure 2 and the photographic documentation log (Ref. 4), with the exception of the footprint of the on-site buildings, the New Kent property is consists primarily of bare soil and overgrown brush areas. The majority of the property, particularly the portion historically used for wood-treating, is enclosed within a fence. The western portion of the property is accessible; however, based on available information and analytical data of surface soil samples, it does not appear that wood-treating operations or treated wood was stored in this area. As a result of overland flow migration of contaminated soil via the on-site drainage ditches, soil and sediment in the drainage ditches beyond the fence-line contain concentrations of arsenic, chromium, copper, and zinc above background levels.

## 6.2 SOIL AND AIR TARGETS

No schools, daycare centers, or residences are located on-site or within 200 feet of documented soil contamination. There are approximately 10 workers located on-site. The estimated population and wetland acreage within a 4-mile radius of the Site are summarized in the tables below.

### ESTIMATED POPULATION WITHIN 4 –MILES OF SITE

Radial Distance from Site (miles)	Population (number of persons)
0.0 – 0.25	12
0.25 – 0.50	36
0.50 – 1.0	146
1.0 – 2.0	601
2.0 – 3.0	1,050
3.0 – 4.0	2,429
Total	4,274

Ref. 22

### WETLAND ACREAGE WITHIN 4 MILES OF SITE

Radial Distance from Site (miles)	Wetlands (acreage)
≥0.00 - 0.25	30.97
>0.25 - 0.50	80.49
>0.50 - 1.0	496.40
>1.0 - 2.0	1,502.92
>2.0 - 3.0	1,642.86
>3.0 - 4.0	1,789.51
Total	5,543.15

Ref. 17

### 6.3 SOIL EXPOSURE AND AIR MIGRATION PATHWAY CONCLUSIONS

WESTON performed surface soil sampling at the New Kent site as part of this ESI. Based on the analytical results, contaminated surface soil containing arsenic, chromium, copper, and zinc has been documented on-site at concentrations exceeding EPA RSLs for industrial soil. Because the majority of the ground surface is bare, it is likely that on-site workers could come in contact with contaminated soil. The distance to the nearest residence is greater than 200 feet.

WESTON did not collect ambient air samples as part of this ESI. No laboratory quantitative or qualitative air samples are known to have been collected from the New Kent site. Based on available data, no release of hazardous substances to the ambient air from on-site sources is known or suspected to have occurred, and no impacts to nearby residential populations or sensitive environments are known or suspected.

## 7.0 SUMMARY AND CONCLUSIONS

From approximately 1977 to the late 1990s, wood treating operations were conducted on the property under several property owners. Lumber was pressure treated by means of a pressure/vacuum system saturated with CCA solution. Lumber was placed in a cylinder into which a pre-mixed solution of CCA and water was forced. Once the cylinder was filled, excess solution was vacuumed off and the treated wood was removed from the cylinder and stored on a drip pad until dry. CCA solution not retained by the wood was drained into a sump and recycled

back into the treatment system. Past inspections conducted on the property noted that the drip pad was not bermed, stained soil was observed surrounding the drip pad and in drainage ditches that convey surface water runoff from the Site, treated wood chips were observed in the drainage ditches, and the treated wood was moved from the drip pad to the storage yard prior to regulations.

Historical and current analytical data indicate elevated concentrations of arsenic, chromium, copper, and zinc in on-site soil. Based on current analytical results, arsenic, chromium, copper, and zinc are present in sediment samples collected from wetlands, the unnamed tributary, and Schiminoe Creek at elevated concentrations, documenting an observed release to the surface water migration pathway. These contaminants were also detected in the groundwater samples collected from the on-site shallow monitoring wells. It appears that site-attributable hazardous substances, arsenic, chromium, copper, lead, and zinc, may be impacting shallow groundwater; however, a background shallow groundwater sample was not collected.

Groundwater is the sole source of drinking water within a 4-mile radius of the Site. However, groundwater samples collected from the on-site deep well and nearby wells did not contain elevated concentrations of site-attributable contaminants. Therefore, at the present time and based on available information, the groundwater migration pathway is not a significant pathway of concern.

The Site is bordered to the north and east by wetlands. Sediment samples collected from the wetlands contained elevated concentrations of site-attributable contaminants. Additionally, sediment samples collected from the unnamed tributary and Schiminoe Creek contained elevated concentrations of arsenic, chromium, and copper. Schiminoe Creek and Chickahominy River are documented recreational fisheries. In addition, approximately 4000,000 persons are supplied with drinking water via a surface water intake on the Chickahominy River.

The ground surface at the Site consists primarily of bare soil and vegetated areas. There are no residences, schools, or daycare centers located on or within 200 feet of documented contaminated soil; however, there are at a maximum 10 on-site workers who could potentially be exposed to concentrations of arsenic, chromium, and copper at levels exceeding EPA RSLs for industrial soil.

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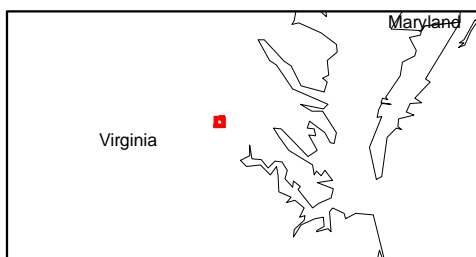


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## FIGURES

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USGS 7.5 Minute Quadrangle  
Providence Forge, Virginia. 1977



Coordinate System:  
WGS84 UTM Zone 18N Feet

0 2,000  
Feet

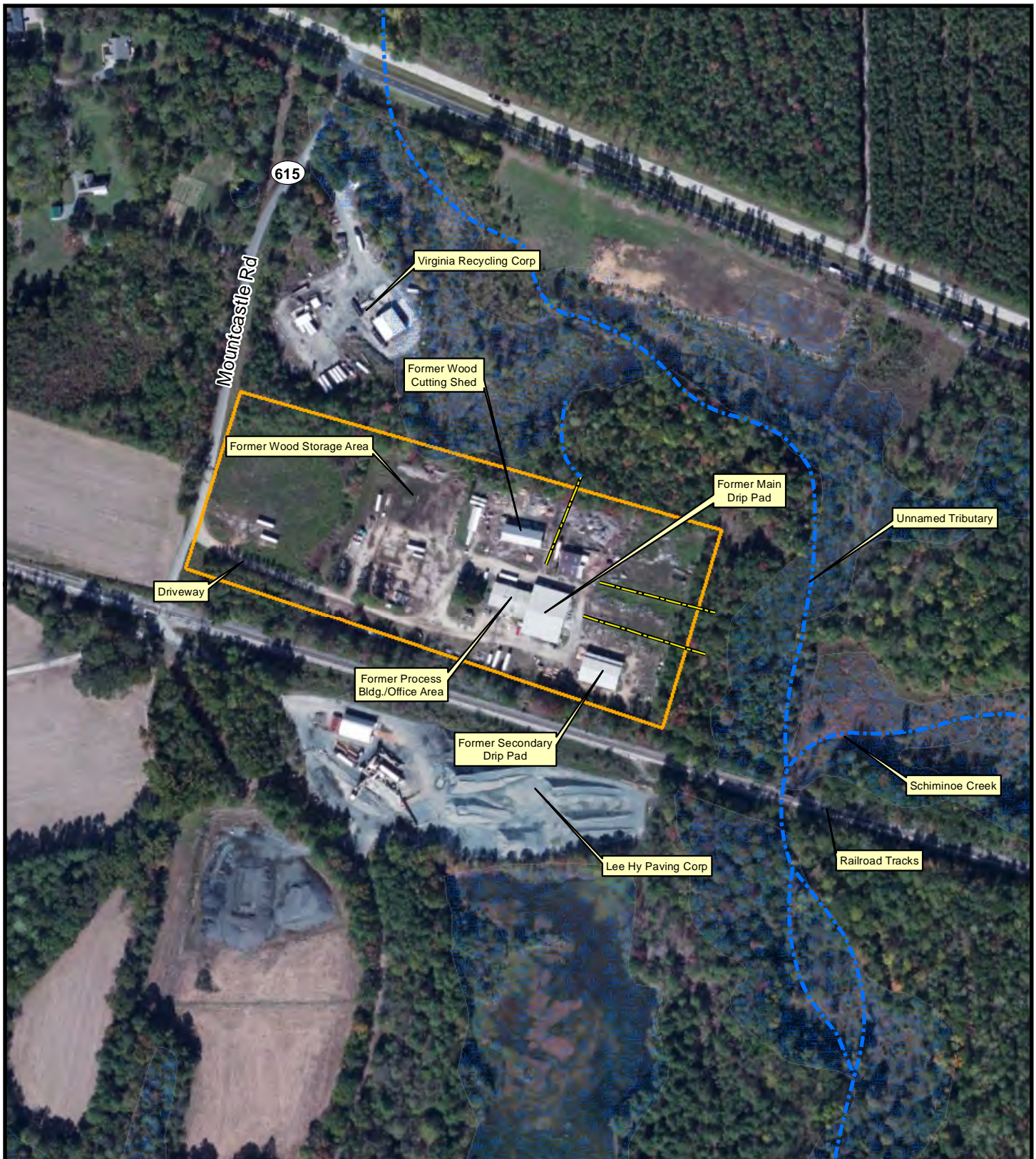
New Kent Wood Preservatives, Inc  
Providence Forge, New Kent County, VA

Figure 1  
Site Location Map

TDD#: WS03-12-09-001  
Contract: EP-S3-10-05  
Prepared: 7/17/2014







## Legend

- Site Boundary
- NWI Wetlands
- Inferred stream channel from Topographic Map
- Drainage Ditch

Imagery: ESRI, USGS  
Mapping Service, 2013



Coordinate System:  
WGS84 UTM Zone 18N Feet

0 350  
Feet

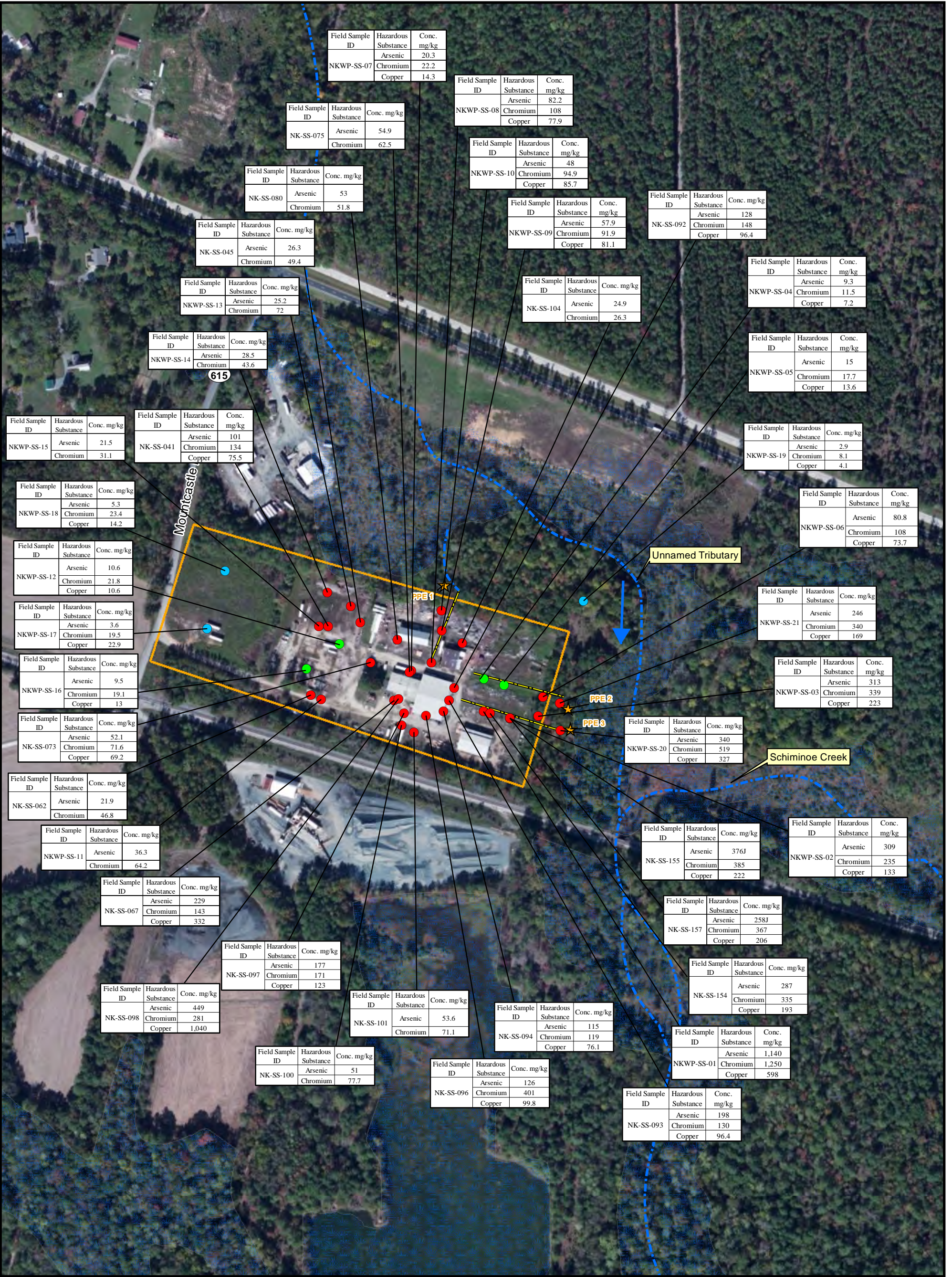
New Kent Wood Preservatives, Inc  
Providence Forge, New Kent County, VA

Figure 2  
Site Layout Map

TDD#: WS03-12-09-001  
Contract: EP-S3-10-05  
Prepared: 12/12/2014







Legend

- Site Boundary
- NWI Wetlands
- Water Features
- Drainage Ditch
- Below 3x Background Soil Samples
- Background Soil Samples
- 3x Background Soil Samples

- Probable Point of Entry
- Surface Water Flow Direction

Imagery: ESRI, USGS  
Mapping Service, 2013



Coordinate System:  
WGS84 UTM Zone 18N Feet

0 300  
Feet

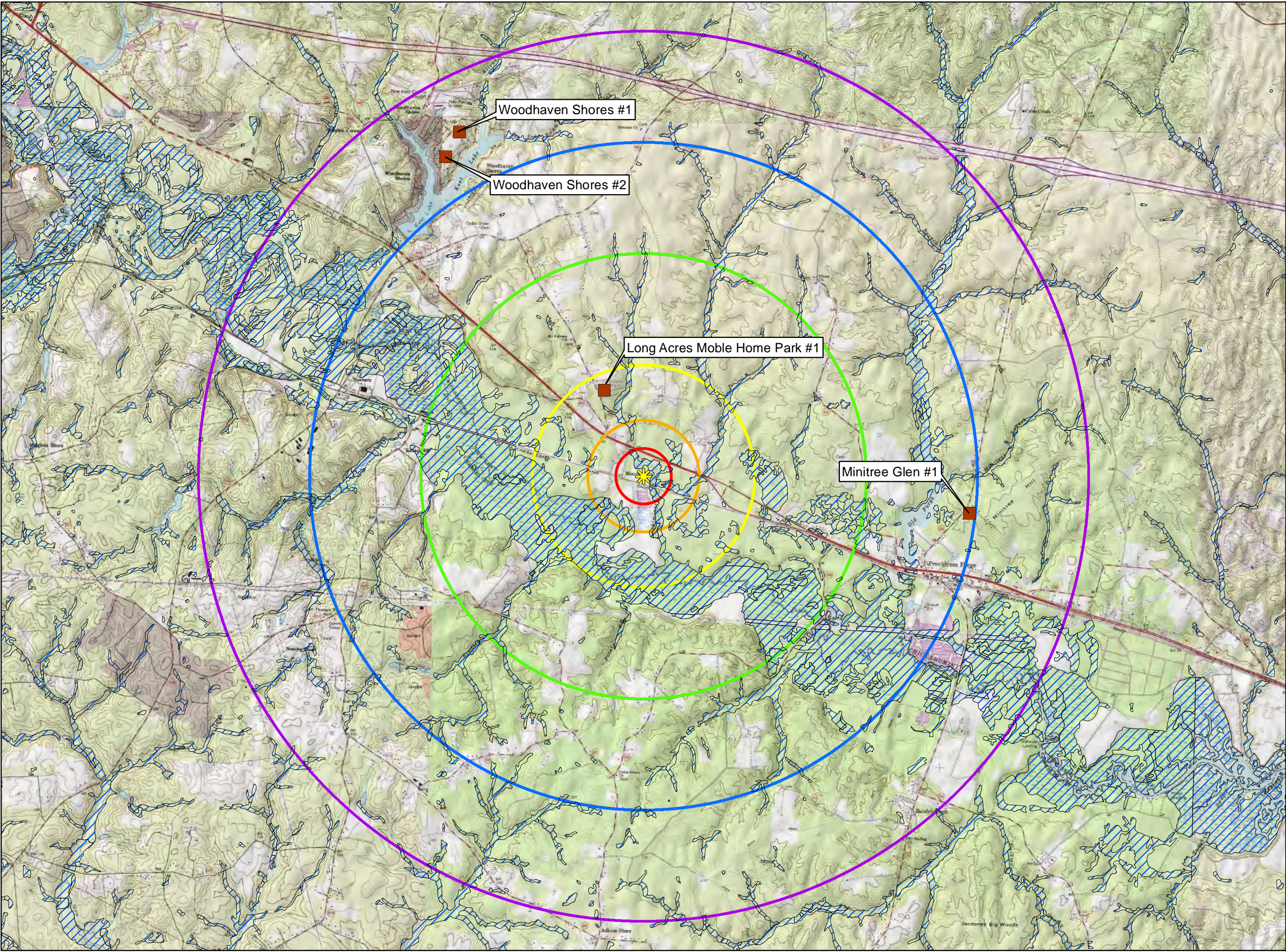
New Kent Wood Preservatives, Inc  
Providence Forge, New Kent County, VA

Figure 3  
Source Sample  
Location Map

TDD#: WS03-12-09-001  
Contract: EP-S3-10-05  
Prepared: 12/22/2014









**Legend**


 Wetlands

**Distance Buffers**


 0.25 Miles

 0.5 Miles

 1 Miles

 2 Miles

 3 Miles


 4 Miles

 Community Supply Well

**Data Sources**  
Imagery: USGS 7.5-Minute Series  
Topographic Quadrangles  
Shapefiles: Weston generated

**Coordinate System:**  
WGS 1984 UTM Zone 18N  
Linear Unit: Foot US

**Datum:** WGS 1984

 0 2,250 4,500  
Feet

New Kent Wood Preservatives, Inc  
Providence Forge, New Kent County, VA

**Figure 4**  
4-mile Radius Map with  
Distance Rings

TDD#: WS03-12-09-001  
Contract: EP-S3-10-05  
Prepared: 12/11/2014







#### Legend

- Site Boundary
- NWI Wetlands
- Inferred stream channel from Topographic Map
- Drainage Ditch
- X Sampling Locations

Imagery: ESRI, USGS  
Mapping Service, 2013



Coordinate System:  
WGS84 UTM Zone 18N Feet

0 400  
Feet

New Kent Wood Preservatives, Inc  
Providence Forge, New Kent County, VA

Figure 5  
Groundwater Sample  
Location Map

TDD#: WS03-12-09-001  
Contract: EP-S3-10-05  
Prepared: 12/22/2014











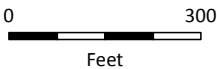
- Legend**

  - Site Boundary
  - NWI Wetlands
  - Water Features
  - Drainage Ditch
  - Below 3x Background Soil Samples
  - Background Soil Samples
  - 3x Background Soil Samples
- Probable Point of Entry
  - Surface Water Flow Direction

Imagery: ESRI, USGS  
Mapping Service, 2013



Coordinate System:  
WGS84 UTM Zone 18N Feet



New Kent Wood Preservatives, Inc  
Providence Forge, New Kent County, VA

Figure 7  
Sediment Sample  
Location Map

TDD#: WS03-12-09-001  
Contract: EP-S3-10-05  
Prepared: 12/22/2014





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## TABLES

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<b>Table 1</b>	<b>Analytical Results for Metals in Soil Samples</b>
<b>Table 2</b>	<b>Analytical Results for Metals in Groundwater Samples</b>
<b>Table 3</b>	<b>Analytical Results for Metals in Surface Water Samples</b>
<b>Table 4</b>	<b>Analytical Results for Metals in Sediment Samples</b>

Table 1  
New Kent Wood Preservatives, Inc  
Analytical Results for Metals in Soil Samples

	Sample Number:		NK-SS-041-062014		NK-SS-045-062014		NK-SS-062-062014		NK-SS-067-062014		NK-SS-073-062014		NK-SS-075-062014	
	Sampling Location:		41		45		62		67		73		75	
	Sample Type:		Field Sample		Field Sample		Field Sample		Field Sample		Field Sample		Field Sample	
	Matrix:		Soil		Soil		Soil		Soil		Soil		Soil	
	Date Sampled:		6/20/2014		6/20/2014		6/20/2014		6/20/2014		6/20/2014		6/20/2014	
	CLP Sample ID:		MCOAA3		MCOAA4		MCOAA5		MCOAA6		MCOAA7		MCOAA8	
	Units:		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg	
	CRQL	RSL	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Aluminum	20	1.1E+05	2360		4170		3020		2570		5780		1620	
Antimony	6	4.7E+01	5.6	UJ	4.3	UJ	5.1	UJ	0.33	J	6.4	UJ	6.2	UJ
Arsenic	1	3.0E+00	<b>101</b>		<b>26.3</b>		<b>21.9</b>		<b>229</b>		<b>52.1</b>		<b>54.9</b>	
Barium	20	2.2E+04	22.2		31.9		29.8		35.8		61.2		20.7	U
Beryllium	0.5	2.3E+02	0.47	U	0.36	U	0.42	U	0.39	U	0.53	U	0.52	U
Cadmium	0.5	9.8E+01	0.47	U	0.36	U	0.42	U	0.39	U	0.53	U	0.52	U
Calcium	500	NL	1690	J	831	J	4650	J	12900	J	5830	J	1910	J
Chromium	1	6.3E+00*	<b>134</b>		49.4		46.8		<b>143</b>		<b>71.6</b>		62.4	
Cobalt	5	3.5E+01	4.7	U	8.3		4.2	U	3.9	U	5.3	U	5.2	U
Copper	2.5	4.7E+03	<b>75.5</b>		22.3		25.7		<b>332</b>		<b>69.2</b>		47.1	
Iron	10	8.2E+04	8120	J	13500	J	9050	J	5330	J	11400	J	3250	J
Lead	1	8.0E+02	12.9		16.9		10.2		19		24		8.8	
Magnesium	500	NL	345	J	204	J	896		5210		1090		318	J
Manganese	1.5	2.60E+03	82.3		166		116		87.4		208		48.5	
Nickel	4	NL	3.7	U	7.1		4.6		3.2		5.9		4.1	U
Potassium	500	NL	468	U	361	U	423	U	391	U	534	U	519	U
Selenium	3.5	5.80E+02	3.3	U	0.39	J	3	U	2.7	U	0.68	J	3.6	U
Silver	1	5.80E+02	0.94	U	0.72	U	0.85	U	0.78	U	1.1	U	1	U
Sodium	500	NL	468	U	361	U	423	U	391	U	534	U	519	U
Thallium	2.5	NL	2.3	U	1.8	U	2.1	U	2	U	2.7	U	2.6	U
Vanadium	5	5.8E+02	7.2		12.9		9.5		6.6		15.8		5.2	U
Zinc	6	3.5E+04	41.1		16		22.7		93.7		73		25.4	

Notes:

RSL - Based on May 2014 concentrations for Industrial Soil with Target Risk of 1.0 and hazard quotient of 0.1

\* - Listed value for chromium is for hexavalent chromium

Bolded value indicates concentration is 3X background

Shaded value indicates concentration exceeds the RSL

CRQL - Contract required quantitation Limit

RSL - Regional Screening Level

J - Estimated value.

J+ - Estimated value, biased high.

J- - Estimated value, biased low.

mg/kg - milligrams per kilogram

NL - No listing in RSL table

U - Result not detected above the detection limit.

UJ - Result is estimated above the detection limit, but below the reporting limit.

Table 1  
New Kent Wood Preservatives, Inc  
Analytical Results for Metals in Soil Samples

	Sample Number:		NK-SS-080-062014		NK-SS-092-062014		NK-SS-093-062014		NK-SS-094-062014		NK-SS-096-062014		NK-SS-097-062014	
	Sampling Location:		80		92		93		94		96		97	
	Sample Type:		Field Sample		Field Sample		Field Sample		Field Sample		Field Sample		Field Sample	
	Matrix:		Soil		Soil		Soil		Soil		Soil		Soil	
	Date Sampled:		6/20/2014		6/20/2014		6/20/2014		6/20/2014		6/20/2014		6/20/2014	
	CLP Sample ID:		MCOAA9		MCOAB0		MCOAB1		MCOAB2		MCOAB3		MCOAB4	
	Units:		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg	
	CRQL	RSL	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Aluminum	20	1.1E+05	3110		4260		4240		5980		9990		5760	
Antimony	6	4.7E+01	0.3	J	5.4	UJ	6	UJ	0.42	J	6.1	UJ	0.44	J
Arsenic	1	3.0E+00	53		128		198		115		126		177	
Barium	20	2.2E+04	43.2		38.9		30.3		48.4		82.2		133	
Beryllium	0.5	2.3E+02	0.4	U	0.45	U	0.5	U	0.51	U	0.51	U	0.45	U
Cadmium	0.5	9.8E+01	0.4	U	0.49		0.5	U	0.51	U	0.51	U	1.5	
Calcium	500	NL	2080	J	8530	J	2010	J	3830	J	6470	J	3040	J
Chromium	1	6.3E+00*	51.8		148		130		119		401		171	
Cobalt	5	3.5E+01	4	U	4.5	U	5	U	5.1	U	8.3		15.6	
Copper	2.5	4.7E+03	29		96.4		96.4		76.1		99.8		123	
Iron	10	8.2E+04	8960	J	15600	J	4360	J	6740	J	22400	J	10500	J
Lead	1	8.0E+02	20.9		17.8		5.2		12.3		16.5		39.4	
Magnesium	500	NL	433		924		324	J	947		1990		764	
Manganese	1.5	2.60E+03	165		149		45.6		84.4		195		177	
Nickel	4	NL	8.5		12.9		4	U	4.6		42.8		14.2	
Potassium	500	NL	398	U	453	U	498	U	544	J+	598	J+	486	J+
Selenium	3.5	5.80E+02	2.8	U	3.2	U	3.5	U	3.6	U	3.6	U	3.1	U
Silver	1	5.80E+02	0.8	U	0.91	U	1	U	1	U	1	U	0.89	U
Sodium	500	NL	398	U	453	U	498	U	512	U	510	U	445	U
Thallium	2.5	NL	2	U	2.3	U	2.5	U	2.6	U	2.6	U	2.2	U
Vanadium	5	5.8E+02	7.1		9.7		7.7		12		22.3		13.3	
Zinc	6	3.5E+04	333		156		19.9		25.6		283		120	



Table 1  
New Kent Wood Preservatives, Inc  
Analytical Results for Metals in Soil Samples

	Sample Number:		NK-SS-098-062014		NK-SS-100-062014		NK-SS-101-062014		NK-SS-104-062014		NK-SS-154-062014		NK-SS-155-062014	
	Sampling Location:		98		100		101		104		154		155	
	Sample Type:		Field Sample		Field Sample		Field Sample		Field Sample		Field Sample		Field Sample	
	Matrix:		Soil		Soil		Soil		Soil		Soil		Soil	
	Date Sampled:		6/20/2014		6/20/2014		6/20/2014		6/20/2014		6/20/2014		6/20/2014	
	CLP Sample ID:		MCOAB5		MCOAB6		MCOAB7		MCOAB8		MCOAB9		MCOAC0	
	Units:		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg	
	CRQL	RSL	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Aluminum	20	1.1E+05	2470		4760		3680		2650		9410		19100	J
Antimony	6	4.7E+01	1	J	6.1	UJ	6.3	UJ	6.3	UJ	0.66	J	0.95	J
Arsenic	1	3.0E+00	449		51		53.6		24.9		287		376	J
Barium	20	2.2E+04	71.5		46.6		68.2		44.7		60.5		117	
Beryllium	0.5	2.3E+02	0.49	U	0.51	U	0.52	U	0.53	U	0.55	U	0.67	
Cadmium	0.5	9.8E+01	0.7		0.51	U	0.52	U	0.53	U	0.55	U	0.64	U
Calcium	500	NL	19900	J	4160	J	2150	J	6240	J	2310	J	5180	
Chromium	1	6.3E+00*	281		77.7		73.1		26.3		335		385	
Cobalt	5	3.5E+01	4.9	U	5.6		5.2	U	5.3	U	7.6		16.1	
Copper	2.5	4.7E+03	1040		47.8		61.2		18.8		193		222	
Iron	10	8.2E+04	6400	J	10600	J	17800	J	6820	J	17100	J	25400	
Lead	1	8.0E+02	47.4		23.7		14.3		12		23.9		41.5	J
Magnesium	500	NL	9400		618		560		1040		785		1470	
Manganese	1.5	2.60E+03	125		166		173		95.3		150		456	J
Nickel	4	NL	3.9	U	6.3		9.5		4.2	U	8.9		14	
Potassium	500	NL	493	U	508	U	523	U	822	J+	580	J+	1010	
Selenium	3.5	5.80E+02	3.5	U	3.6	U	3.7	U	3.7	U	3.8	U	1	J
Silver	1	5.80E+02	0.99	U	1	U	1	U	1.1	U	1.1	U	1.3	U
Sodium	500	NL	493	U	508	U	523	U	526	U	546	U	641	U
Thallium	2.5	NL	2.5	U	2.5	U	2.6	U	2.6	U	2.7	U	3.2	U
Vanadium	5	5.8E+02	6.5		13.3		10.9		8.6		23.8		35.3	J
Zinc	6	3.5E+04	210		53.3		155		50.5		121		206	J

Table 1  
New Kent Wood Preservatives, Inc  
Analytical Results for Metals in Soil Samples

	Sample Number:		NK-SS-157-062014		NK-SS-201-090914		NK-SS-202-090914		NK-SS-203-090914		NK-SS-204-090914	
	Sampling Location:		157		201		202		203		204	
	Sample Type:		Field Sample		Field Sample		Field Sample		Field Sample		Field Sample	
	Matrix:		Soil		Soil		Soil		Soil		Soil	
	Date Sampled:		6/20/2014		9/9/2014		9/9/2014		9/9/2014		9/9/2014	
	CLP Sample ID:		MCOAC1		MCOAC7		MCOAC8		MCOAC9		MCOAD0	
	Units:		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg	
	CRQL	RSL	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Aluminum	20	1.1E+05	9510	J	3080		2150		1160		1890	
Antimony	6	4.7E+01	0.7	J	5.4	U	4.6	U	5.6	U	5.4	U
Arsenic	1	3.0E+00	278	J	3.3		2.1		1.3		0.67	J
Barium	20	2.2E+04	85.8		25.3		20.4		11.9	J	20.6	
Beryllium	0.5	2.3E+02	0.45	U	0.097	J	0.091	J	0.46	U	0.45	U
Cadmium	0.5	9.8E+01	0.48		0.45	UJ	0.38	UJ	0.46	UJ	0.45	UJ
Calcium	500	NL	4220		454	U	379	U	464	U	450	U
Chromium	1	6.3E+00*	367		11.2		8.1		6.7		5.4	
Cobalt	5	3.5E+01	11.8		0.64	J	0.47	J	0.22	J	0.33	J
Copper	2.5	4.7E+03	206		3.7		2.4		1.6	J	1.2	J
Iron	10	8.2E+04	19100		4210		3060		2190		3100	
Lead	1	8.0E+02	27.6	J	3.5		2.5		1.8		2.1	
Magnesium	500	NL	768		311	J	216	J	128	J-	188	J
Manganese	1.5	2.60E+03	305	J	43.2		52.8		18.4		22	
Nickel	4	NL	8.6		3	J	3.2		2.2	J	2.1	J
Potassium	500	NL	531		454	U	379	U	464	U	450	U
Selenium	3.5	5.80E+02	3.1	U	3.2	UJ	2.7	UJ	3.2	UJ	3.1	UJ
Silver	1	5.80E+02	0.89	U	0.91	U	0.76	U	0.93	U	0.9	U
Sodium	500	NL	447	U	454	U	379	U	464	U	450	U
Thallium	2.5	NL	2.2	U	2.3	U	1.9	U	2.3	U	2.2	U
Vanadium	5	5.8E+02	23.5	J	9		5.1		3.6	J	5.6	
Zinc	6	3.5E+04	111	J	8.7		16.5		8		9.3	

Table 1  
New Kent Wood Preservatives, Inc  
Analytical Results for Metals in Soil Samples

	Sample Number:		NKWP-SS-01		NKWP-SS-02		NKWP-SS-03		NKWP-SS-03-01		NKWP-SS-04		NKWP-SS-05	
	Sampling Location:		SS01		SS02		SS03		SS03		SS04		SS05	
	Sample Type:		Field Sample		Field Sample		Field Sample		Field Sample		Field Sample		Field Sample	
	Matrix:		Soil		Soil		Soil		Soil		Soil		Soil	
	Date Sampled:		9/10/2014		9/10/2014		9/10/2014		9/10/2014		9/10/2014		9/10/2014	
	CLP Sample ID:		MCOAD5		MCOAD4		MCOAD6		MCOAD7		MCOAD8		MCOAD9	
	Units:		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg	
	CRQL	RSL	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Aluminum	20	1.1E+05	21200		8930		10200		17300		3100		3640	
Antimony	6	4.7E+01	4.6	J	2.4	J	2.3	J	4.1	J	0.19	J	0.16	J
Arsenic	1	3.0E+00	1140		309		313		876		9.3		15	
Barium	20	2.2E+04	150		62.3		76.4		135		21.9		28.9	
Beryllium	0.5	2.3E+02	1.5		0.59		0.51		1.1		0.16	J	0.23	J
Cadmium	0.5	9.8E+01	0.93	J	0.2	J	0.3	J	0.76	J	0.039	J	0.053	J
Calcium	500	NL	6240		1650		2780		5300		453		617	
Chromium	1	6.3E+00*	1250		235		339		1020		11.5		17.7	
Cobalt	5	3.5E+01	31.3		11.3		8.2		26.6		0.56	J	0.84	J
Copper	2.5	4.7E+03	598		133		223		524		7.2		13.6	
Iron	10	8.2E+04	53600		20600		15200		38800		2830		3770	
Lead	1	8.0E+02	68.5		20.8		21		58.8		3.8		5.3	
Magnesium	500	NL	1400		478		808		1380		255	J	342	J
Manganese	1.5	2.60E+03	716		321		215		726		49.2		61.9	
Nickel	4	NL	22.1		7.4		7.1		17		1.6	J	3.6	
Potassium	500	NL	1030		458	U	471	U	920		407	U	395	U
Selenium	3.5	5.80E+02	8.3	J+	3.5	J+	2.8	J+	6.2	J+	0.68	J+	0.52	J+
Silver	1	5.80E+02	1.2	U	0.92	U	0.94	U	1.1	U	0.81	U	0.79	U
Sodium	500	NL	150	J	48.1	J	61.9	J	139	J	407	U	23.7	J
Thallium	2.5	NL	2.9	U	2.3	U	2.4	U	2.7	U	2	U	2	U
Vanadium	5	5.8E+02	57.8		27.9		19.7		45.1		5.4		7	
Zinc	6	3.5E+04	190		36.4		89.5		174		23.3		27.2	

Table 1  
New Kent Wood Preservatives, Inc  
Analytical Results for Metals in Soil Samples

	Sample Number:		NKWP-SS-06		NKWP-SS-07		NKWP-SS-08		NKWP-SS-09		NKWP-SS-10		NKWP-SS-11	
	Sampling Location:		SS06		SS07		SS08		SS09		SS10		SS11	
	Sample Type:		Field Sample		Field Sample		Field Sample		Field Sample		Field Sample		Field Sample	
	Matrix:		Soil		Soil		Soil		Soil		Soil		Soil	
	Date Sampled:		9/10/2014		9/10/2014		9/10/2014		9/10/2014		9/10/2014		9/10/2014	
	CLP Sample ID:		MCOAE0		MCOAE1		MCOAE2		MCOAE3		MCOAE6		MCOAE5	
	Units:		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg	
	CRQL	RSL	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Aluminum	20	1.1E+05	5060		3660		3970		8980		8280		4190	
Antimony	6	4.7E+01	0.5	J	0.29	J	0.46	J	1	J	0.88	J	1.1	J
Arsenic	1	3.0E+00	<b>80.8</b>		<b>20.3</b>		<b>82.2</b>		<b>57.9</b>		<b>48</b>		<b>36.2</b>	
Barium	20	2.2E+04	49.9		23.1		31.9		188		171		126	
Beryllium	0.5	2.3E+02	0.32	J	0.2	J	0.23	J	0.48	J	0.48	J	0.84	
Cadmium	0.5	9.8E+01	0.25	J	0.064	J	0.095	J	0.53	J	0.47	J	0.3	J
Calcium	500	NL	1490		1310		1790		16500		7170		3750	
Chromium	1	6.3E+00*	<b>108</b>		22.2		<b>108</b>		<b>91.9</b>		<b>94.9</b>		64.2	
Cobalt	5	3.5E+01	3.8	J	0.58	J	1.9	J	8.3	J	6.9	J	4	J
Copper	2.5	4.7E+03	<b>73.7</b>		14.3		<b>77.9</b>		<b>81.1</b>		<b>85.7</b>		16.4	
Iron	10	8.2E+04	9120		3890		6270		19800		17000		36200	
Lead	1	8.0E+02	16.8		9.1		11.4		39.4		38.5		17.6	
Magnesium	500	NL	534		285	J	470		2440		1940		689	
Manganese	1.5	2.60E+03	170		67.1		84.4		375		264		158	
Nickel	4	NL	4.4		2	J	3.1	J	11		9.3	J	4.8	
Potassium	500	NL	428	U	448	U	459	U	1850		1410		408	U
Selenium	3.5	5.80E+02	1.6	J+	0.81	J+	1.2	J+	3.1	J+	2.9	J+	5.8	J+
Silver	1	5.80E+02	0.86	U	0.9	U	0.92	U	1.7	U	2.3	U	0.82	U
Sodium	500	NL	36	J	448	U	31.1	J	111	J	108	J	60	J
Thallium	2.5	NL	2.1	U	2.2	U	2.3	U	4.3	U	5.9	U	2	U
Vanadium	5	5.8E+02	12.8		7.2		9.6		28.1		25.9		24.4	
Zinc	6	3.5E+04	92.5		17.2		26.9		<b>165</b>		<b>171</b>		30.7	

Table 1  
New Kent Wood Preservatives, Inc  
Analytical Results for Metals in Soil Samples

	Sample Number:		NKWP-SS-12		NKWP-SS-13		NKWP-SS-14		NKWP-SS-15		NKWP-SS-16	
	Sampling Location:		SS12		SS13		SS14		SS15		SS16	
	Sample Type:		Field Sample		Field Sample		Field Sample		Field Sample		Field Sample	
	Matrix:		Soil		Soil		Soil		Soil		Soil	
	Date Sampled:		9/10/2014		9/10/2014		9/10/2014		9/10/2014		9/10/2014	
	CLP Sample ID:		MCOAE7		MCOAE4		MCOAE8		MCOAE9		MCOAF0	
	Units:		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg	
	CRQL	RSL	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Aluminum	20	1.1E+05	4770		2370		3310		2610		4410	
Antimony	6	4.7E+01	0.29	J	0.33	J	0.35	J	0.22	J	0.42	J
Arsenic	1	3.0E+00	10.6		25.2		28.5		21.5		9.5	
Barium	20	2.2E+04	20		30.7		23.6		20		34.7	
Beryllium	0.5	2.3E+02	0.39	J	0.27	J	0.36	J	0.31	J	0.59	
Cadmium	0.5	9.8E+01	0.09	J	0.086	J	0.1	J	0.067	J	0.24	J
Calcium	500	NL	5100		1600		1530		1090		35600	
Chromium	1	6.3E+00*	21.8		72		43.6		31.1		19.1	
Cobalt	5	3.5E+01	2.8	J	4.1		3.9		2.9	J	9	
Copper	2.5	4.7E+03	10.6		34.8		22.9		21.5		13	
Iron	10	8.2E+04	9300		8060		11200		7400		13800	
Lead	1	8.0E+02	10.5		10.8		8.1		8.7		13.5	
Magnesium	500	NL	1240		556		313	J	323	J	1690	
Manganese	1.5	2.60E+03	112		159		126		93		252	
Nickel	4	NL	4.3		3.6		4.1		2.6	J	5.3	
Potassium	500	NL	443	U	408	U	389	U	409	U	429	U
Selenium	3.5	5.80E+02	1.6	J+	1.5	J+	1.8	J+	1.3	J+	2.3	J+
Silver	1	5.80E+02	0.89	U	0.82	U	0.78	U	0.82	U	0.86	U
Sodium	500	NL	35.1	J	408	U	30.9	J	25.1	J	119	J
Thallium	2.5	NL	2.2	U	2	U	1.9	U	2	U	2.1	U
Vanadium	5	5.8E+02	15.8		8.2		10.9		8.2		13	
Zinc	6	3.5E+04	22.8		19.3		16.6		18		28.5	



Table 1  
New Kent Wood Preservatives, Inc  
Analytical Results for Metals in Soil Samples

	Sample Number:		NKWP-SS-17		NKWP-SS-18		NKWP-SS-19		NKWP-SS-20		NKWP-SS-21	
	Sampling Location:		SS17		SS18		SS19		SS20		SS21	
	Sample Type:		Background Sample		Background Sample		Background Sample		Field Sample		Field Sample	
	Matrix:		Soil		Soil		Soil		Soil		Soil	
	Date Sampled:		9/10/2014		9/10/2014		9/10/2014		9/10/2014		9/10/2014	
	CLP Sample ID:		MCOAF1		MCOAF2		MCOAF3		MCOAF4		MCOAF5	
	Units:		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg	
	CRQL	RSL	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Aluminum	20	1.1E+05	11000		12700		5580		8700		7550	
Antimony	6	4.7E+01	0.54	J	0.77	J	0.16	J	1.6	J	0.99	J
Arsenic	1	3.0E+00	3.6		5.3		2.9		340		246	
Barium	20	2.2E+04	66.2		52.4		34.1		105		70.8	
Beryllium	0.5	2.3E+02	0.44	J	0.53		0.39	J	0.51		0.55	
Cadmium	0.5	9.8E+01	0.29	J	0.39	J	0.088	J	0.65		0.55	
Calcium	500	NL	3700		2210		160	J	4630		2270	
Chromium	1	6.3E+00*	19.5		23.4		8.1		519		340	
Cobalt	5	3.5E+01	6.1		4.3	J	2.5	J	13.8		9.4	
Copper	2.5	4.7E+03	22.9		14.2		4.1		327		169	
Iron	10	8.2E+04	24400		32500		6200		17200		17900	
Lead	1	8.0E+02	7.4		12.3		16.5		30.4		25.7	
Magnesium	500	NL	4740		2520		390	J	830		643	
Manganese	1.5	2.60E+03	259		137		193		934		385	
Nickel	4	NL	11.3		6.9		3.6		8.6		7.4	
Potassium	500	NL	2870		1660		415	U	493	U	464	U
Selenium	3.5	5.80E+02	3.8	J+	5.3	J+	1.1	J+	2.9	J+	3	J+
Silver	1	5.80E+02	0.88	U	0.89	U	0.83	U	0.99	U	0.93	U
Sodium	500	NL	110	J	91.6	J	34.1	J	73.7	J	70.2	J
Thallium	2.5	NL	2.2	U	2.2	U	2.1	U	2.5	U	2.3	U
Vanadium	5	5.8E+02	41.1		50.5		12.8		21.3		20.3	
Zinc	6	3.5E+04	35.8		23.5		16		115		117	

Table 2  
New Kent Wood Preservatives, Inc.  
Analytical Results for Metals in Groundwater Samples

	Sample Number:		NK-DW-01-09092014		NK-DW-02-09092014		NK-DW-02B-09092014		NK-DW-03-09092014	
	Sampling Location:		DW-01		DW-02		DW-02		DW-03	
	Sample Type:		Field Sample		Field Sample		Duplicate of MCOAC3		Field Sample	
	Sample Matrix:		Water		Water		Water		Water	
	Date Sampled:		9/9/2014		9/9/2014		9/9/2014		9/9/2014	
	CLP Sample ID:		MCOAC2		MCOAC3		MCOAC6		MCOAC4	
	Units:		ug/L		ug/L		ug/L		ug/L	
Parameter	CRQL	MCL	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Aluminum	20	50*	18.1	B	3	B	3.7	B	3.1	B
Antimony	2	6	0.29	B	0.12	B	0.35	B	0.16	B
Arsenic	1	10	0.2	B	0.22	B	0.18	B	0.12	B
Barium	10	2,000	1.2	J	0.93	J	1	J	0.92	J
Beryllium	1	4	1	U	1	U	1	U	1	U
Cadmium	1	5	1	U	1	U	1	U	1	U
Calcium	500	NL	25600		500		480	J	594	
Chromium	2	100	2.1	J	23.9	J	48.7	J	0.44	B
Cobalt	1	NL	0.54	J	0.29	J	1.3		1	U
Copper	2	1,300	19.9		1.7	J	7.4		1.3	J
Iron	200	300*	262		77.8	B	223		9.5	B
Lead	1	15	2.5		0.16	B	0.2	B	0.35	B
Magnesium	500	NL	13300		91.7	B	84.4	B	77.8	B
Manganese	1	50*	2	J	3.5	J	12	J	0.98	B
Nickel	1	NL	2.3	J	15	J	74.4	J	0.16	J
Potassium	500	NL	12400	J	3710	J	3490	J	2900	J
Selenium	5	50	5	U	5	U	5	U	5	U
Silver	1	100*	1	U	1	U	1	U	1	U
Sodium	500	NL	18400	J	86000	J	80500	J	77900	J
Thallium	1	2	1	U	1	U	1	U	0.037	B
Vanadium	5	NL	0.24	J	5	U	5	U	5	U
Zinc	2	5,000*	49.1		21.6		19.3		26.5	

Notes:

\* Indicates secondary MCL that may impact taste, odor, color but not associated with a health hazard

Shaded value indicates concentration exceeds primary MCL

B - Value observed in blank. Appears to be blank contamination.

CRQL - Contract-required quantitation limit

J - Estimated value.

MCL - Maximum Contaminant Level (EPA, 2009)

NL - No listed value

U - Result not detected above the detection limit.

ug/L - micrograms per liter

Table 2  
New Kent Wood Preservatives, Inc.  
Analytical Results for Metals in Groundwater Samples

	Sample Number:		NK-DW-04-09092014		NK-DW-05-09102014		NK-MW-04-09102014		NK-MW-05-09102014	
	Sampling Location:		DW-04		DW-05		MW-04		MW-01/05	
	Sample Type:		Field Sample		Field Sample		Field Sample		Field Sample	
	Sample Matrix:		Water		Water		Water		Water	
	Date Sampled:		9/9/2014		9/10/2014		9/9/2014		9/9/2014	
	CLP Sample ID:		MCOAC5		MCOAD1		MCOAD2		MCOAD3	
	Units:		ug/L		ug/L		ug/L		ug/L	
Parameter	CRQL	MCL	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Aluminum	20	50*	1.6	B	3.3	B	57700		477	
Antimony	2	6	0.32	B	0.2	B	2	U	2	U
Arsenic	1	10	0.22	B	1	U	11.4		51.1	
Barium	10	2,000	0.98	J	1.6	J	212		11.1	
Beryllium	1	4	1	U	1	U	2.1		1	U
Cadmium	1	5	1	U	0.074	J	0.44	J	0.073	J
Calcium	500	NL	26000		1120		14500		10100	
Chromium	2	100	0.26	B	2.3	J	45.4	J	94	J
Cobalt	1	NL	0.42	J	0.044	J	13		6.2	
Copper	2	1,300	5.5		1.6	J	42.2		2.9	
Iron	200	300*	224		76.1	B	20700		17400	
Lead	1	15	0.49	B	1.6		29.5		2.1	
Magnesium	500	NL	13400		365	B	4090		1590	
Manganese	1	50*	2	J	1.9	J	831	J	603	J
Nickel	1	NL	0.6	J	0.89	J	11	J	27.1	J
Potassium	500	NL	12500	J	6300	J	3830	J	1420	J
Selenium	5	50	0.25	B	5	U	5	U	5	U
Silver	1	100*	1	U	1	U	0.24	J	1	U
Sodium	500	NL	15500	J	114000	J	3620	J	3320	J
Thallium	1	2	0.049	B	1	U	1	U	1	U
Vanadium	5	NL	5	U	5	U	48.6		3.1	J
Zinc	2	5,000*	49.7		15.5		67.7		12.5	

Table 3  
New Kent Wood Preservatives, Inc.  
Analytical Results for Metals in Surface Water Samples

	Sample Number:	NKWP-SW-01		NKWP-SW-02		NKWP-SW-03		NKWP-SW-04		NKWP-SW-04-01		NKWP-SW-05		NKWP-SW-06		NKWP-SW-07		NKWP-SW-08	
	Sampling Location:	SW01		SW02		SW03		SW04		SW04		SW05		SW06		SW07		SW08	
	Sample Type:	Field Sample		Field Sample		Background Sample		Field Sample		Duplicate Sample		Field Sample		Field Sample		Field Sample		Field Sample	
	Sample Matrix:	Water		Water		Water		Water		Water		Water		Water		Water		Water	
	Date Sampled:	9/11/2014		9/11/2014		9/11/2014		9/11/2014		9/11/2014		9/11/2014		9/11/2014		9/11/2014		9/11/2014	
	CLP Sample ID:	MCOAG7		MCOAG8		MCOAG9		MCOAH0		MCOAH1		MCOAH2		MCOAH3		MCOAH4		MCOAH5	
	Units:	ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L	
	CRQL	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Aluminum	200	200	U	200	U	200	U	200	U	200	U	200	U	200	U	200	U	200	U
Antimony	60.0	60	U	60	U	60	U	60	U	60	U	60	U	60	U	60	U	60	U
Arsenic	10.0	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Barium	200	30.4	J	39	J	30.2	J	37.7	J	39.3	J	39.9	J	41.6	J	40.9	J	39	J
Beryllium	5.0	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
Cadmium	5.0	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
Calcium	5000	12600		23100		11900		24200		24700		25100		26800		25600		23900	
Chromium	10.0	10	U	10	U	10	U	10	U	10	U	1.3	J	0.69	J	0.68	J	10	U
Cobalt	50.0	50	U	50	U	50	U	50	U	50	U	50	U	50	U	50	U	50	U
Copper	25.0	25	U	25	U	25	U	25	U	25	U	25	U	25	U	25	U	25	U
Iron	100	2510		2440		2620		2350		2600		2680		2690		2880		2670	
Lead	10.0	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Magnesium	5000	760	J	1010	J	747	J	1010	J	996	J	998	J	1050	J	1010	J	923	J
Manganese	15.0	198	J+	107	J+	205	J+	94.5	J+	98.8	J+	102	J+	106	J+	140	J+	114	J+
Nickel	40.0	40	U	40	U	40	U	1.4	J	1.6	J	40	U	40	U	40	U	40	U
Potassium	5000	5000	UJ	5000	UJ	5000	UJ	488	J-	5000	UJ	5000	UJ	5000	UJ	5000	UJ	5000	UJ
Selenium	35.0	35	U	35	U	35	U	35	U	35	U	4	J+	35	U	4	J+	35	U
Silver	10.0	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Sodium	5000	5620		2480	J	6200		2700	J	2660	J	2440	J	2650	J	2520	J	2320	J
Thallium	25.0	25	U	25	U	25	U	25	U	25	U	25	U	25	U	25	U	25	U
Vanadium	50.0	50	U	50	U	50	U	50	U	50	U	50	U	50	U	50	U	50	U
Zinc	60.0	60	U	60	U	60	U	60	U	11.1	J	60	U	60	U	60	U	5.1	J

Notes:

B - Value observed in blank. Appears to be blank contamination.

CRQL - Contract-required quantitation limit

J - Estimated value.

J+ - Estimated value, biased high.

J- - Estimated value, biased low.

U - Result not detected above the detection limit.

UJ - Result is estimated above the detection limit, but below the reporting limit

ug/L - Micrograms per liter

Table 3  
New Kent Wood Preservatives, Inc.  
Analytical Results for Metals in Surface Water Samples

	Sample Number:	NKWP-SW-09		NKWP-SW-10		NKWP-SW-11		NKWP-SW-12		NKWP-SW-13		NKWP-SW-14		NKWP-SW-15	
	Sampling Location:	SW09		SW10		SW11		SW12		SW13		SW14		SW15	
	Sample Type:	Field Sample		Field Sample		Field Sample		Field Sample		Field Sample		Background Sample		Background Sample	
	Sample Matrix:	Water		Water		Water		Water		Water		Water		Water	
	Date Sampled:	9/11/2014		9/11/2014		9/11/2014		9/11/2014		9/11/2014		9/11/2014		9/11/2014	
	CLP Sample ID:	MCOAH6		MCOAH7		MCOAH8		MCOAH9		MCOAJ0		MCOAJ1		MCOAJ2	
	Units:	ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L	
	CRQL	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Aluminum	200	200	U	200	U	200	U	200	U	143	J	50.2	J	200	U
Antimony	60.0	60	U	60	U	60	U	60	U	60	U	60	U	60	U
Arsenic	10.0	10	U	10	U	10	U	10	U	4.3	J	10	U	10	U
Barium	200	40.3	J	40.1	J	39.3	J	41.7	J	47.4	J	29.9	J	30.4	J
Beryllium	5.0	5	U	5	U	5	U	5	U	5	U	5	U	5	U
Cadmium	5.0	5	U	5	U	5	U	5	U	5	U	5	U	5	U
Calcium	5000	25200		25200		27100		27400		25900		25900		27300	
Chromium	10.0	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Cobalt	50.0	50	U	50	U	50	U	50	U	2.6	J	50	U	50	U
Copper	25.0	25	U	25	U	25	U	25	U	25	U	25	U	25	U
Iron	100	2250		2760		3060		3470		6280		2120		1780	
Lead	10.0	10	U	10	U	10	U	10	U	2.6	J+	10	U	2	J+
Magnesium	5000	977	J	925	J	924	J	919	J	853	J	767	J	794	J
Manganese	15.0	103	J+	97.5	J+	87.7	J+	131	J+	222	J+	43.6	J+	23.3	J+
Nickel	40.0	1.8	J	40	U	40	U	1.4	J	40	U	40	U	40	U
Potassium	5000	5000	UJ	5000	UJ	5000	UJ	5000	UJ	5000	UJ	5000	UJ	5000	UJ
Selenium	35.0	35	U	35	U	35	U	35	U	35	U	35	U	35	U
Silver	10.0	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Sodium	5000	2490	J	2440	J	2240	J	2390	J	2300	J	2090	J	2250	J
Thallium	25.0	25	U	25	U	25	U	25	U	25	U	25	U	25	U
Vanadium	50.0	50	U	50	U	50	U	50	U	50	U	50	U	50	U
Zinc	60.0	6.9	J	4.4	J	60	U	5.7	J	14.5	J	60	U	60	U



Table 4  
New Kent Wood Preservatives, Inc  
Analytical Results for Metals in Sediment Samples

	Sample Number:		NKWP-WS-01		NKWP-WS-01-01		NKWP-WS-02		NKWP-WS-03		NKWP-WS-04	
	Sampling Location:		WS01		WS01		WS02		WS03		WS04	
	Sample Type:		Field Sample		Field Duplicate		Field Sample		Field Sample		Field Sample	
	Sample Matrix:		Sediment		Sediment		Sediment		Sediment		Sediment	
	Date Sampled:		9/10/2014		9/10/2014		9/10/2014		9/10/2014		9/10/2014	
	CLP Sample ID:		MC0AF6		MC0AF7		MC0AF8		MC0AF9		MC0AG0	
	Units:		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg	
	CRQL	BTAG	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Aluminum	20	NL	6150		6850		10600		9940		9650	
Antimony	6	2	0.75	J	0.79	J	0.34	J	0.52	J	1.5	J
Arsenic	1	9.8	<b>99.5</b>		<b>116</b>		9.7		7.2		<b>504</b>	
Barium	20	NL	90.9		90.8		100		90.3		90.5	
Beryllium	0.5	NL	0.37	J	0.48	J	1.3		1.2		0.65	
Cadmium	0.5	0.99	0.36	J	0.37	J	0.41	J	0.45	J	0.54	J
Calcium	500	NL	4290		4110		2370		1680		3270	
Chromium	1	43.4	<b>122</b>		<b>151</b>		35.4		16.7		<b>764</b>	
Cobalt	5	50	4.7	J	5	J	7.2	J	8.2		17.8	
Copper	2.5	31.6	78.8		90.4		18.2		7.4		<b>362</b>	
Iron	10	20,000	11200		13400		13800		14200		21800	
Lead	1	35.8	24.4		22.4		24.4		27.6		32.8	
Magnesium	500	NL	810		786		577	J	493	J	941	
Manganese	1.5	460	522		467		119		154		<b>835</b>	
Nickel	4	NL	5.3		5.7	J	7.8		7		9.5	
Potassium	500	NL	617	U	743	U	760	U	732	U	565	U
Selenium	3.5	2	2.3	J+	2.6	J+	2.7	J+	2.7	J+	3.6	J+
Silver	1	1	1.2	U	1.5	U	1.5	U	1.5	U	1.1	U
Sodium	500	NL	131	J	107	J	87.2	J	85.4	J	90.4	J
Thallium	2.5	NL	3.1	U	3.7	U	3.8	U	3.7	U	2.8	U
Vanadium	5	NL	15.5		17.8		30.3		27.9		25.1	
Zinc	6	121	100		98.3		53.9		36.7		82.2	

Notes:

BTAG - EPA freshwater sediments screening benchmarks (EPA, 2004)

Bolded value indicates concentration is 3X background

Shaded value indicates concentration exceeds BTAG standard

CRQL - Contract required quantitation Limit

RSL - Regional Screening Level

J - Estimated value.

J+ - Estimated value, biased high.

mg/kg - milligrams per kilogram

NL - No listing

U - Result not detected above the detection limit.

UJ - Result is estimated above the detection limit, but below the reporting limit.

Table 4  
New Kent Wood Preservatives, Inc  
Analytical Results for Metals in Sediment Samples

	Sample Number:		NKWP-WS-05		NKWP-WS-06		NKWP-WS-07		NKWP-WS-08		NKWP-WS-09	
	Sampling Location:		WS05		WS06		WS07		WS08		WS09	
	Sample Type:		Field Sample		Field Sample		Field Sample		Field Sample		Field Sample	
	Sample Matrix:		Sediment		Sediment		Sediment		Sediment		Sediment	
	Date Sampled:		9/10/2014		9/10/2014		9/10/2014		9/10/2014		9/10/2014	
	CLP Sample ID:		MC0AG1		MC0AG2		MC0AG3		MC0AG4		MC0AG5	
	Units:		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg	
	CRQL	BTAG	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Aluminum	20	NL	13200		13800		3240		4330		6660	
Antimony	6	2	0.33 J		12.7 UJ		6.7 UJ		6.4 UJ		0.29 J	
Arsenic	1	9.8	18		15.9		2.5		12.5		4.1	
Barium	20	NL	119		113		41.4		40.5		52.5	
Beryllium	0.5	NL	1.4		1.4		0.15 J		0.22 J		0.23 J	
Cadmium	0.5	0.99	0.53 J		0.37 J		0.27 J		0.15 J		0.19 J	
Calcium	500	NL	2730		1720		3090		1400		2160	
Chromium	1	43.4	43.6		46.7		7		19.6		10.6	
Cobalt	5	50	11.1		5.9 J		0.76 J		1.4 J		2.1 J	
Copper	2.5	31.6	19.6		20.6		5.4		11.9		7.8	
Iron	10	20,000	19300		12600		4710		5730		8550	
Lead	1	35.8	30.7		32.6		10.7		15.7		17.2	
Magnesium	500	NL	714 J		707 J		350 J		394 J		738	
Manganese	1.5	460	307		68.1		185		281		323	
Nickel	4	NL	9.2		8.3 J		2.2 J		2.6 J		3.4 J	
Potassium	500	NL	856 U		1060 UJ		555 UJ		535 U		515 U	
Selenium	3.5	2	3.7 J+		2.6 J+		0.9 J+		1 J+		1.5 J+	
Silver	1	1	1.7 U		2.1 U		1.1 U		1.1 U		1 U	
Sodium	500	NL	111 J		103 J		30.2 J		535 U		30.1 J	
Thallium	2.5	NL	4.3 U		5.3 U		2.8 U		2.7 U		2.6 U	
Vanadium	5	NL	36.1		40.8		11.5		12.1		19.2	
Zinc	6	121	55.2		43.2		15.8		39.5		35.7	



Table 4  
New Kent Wood Preservatives, Inc  
Analytical Results for Metals in Sediment Samples

	Sample Number:		NKWP-WS-10		NKWP-WS-11		NKWP-WS-12		NKWP-WS-13	
	Sampling Location:		WS10		WS11		WS12		WS13	
	Sample Type:		Field Sample		Background Sample		Background Sample		Background Sample	
	Sample Matrix:		Sediment		Sediment		Sediment		Sediment	
	Date Sampled:		9/10/2014		9/11/2014		9/11/2014		9/11/2014	
	CLP Sample ID:		MC0AG6		MC0AJ4		MC0AJ5		MC0AJ6	
	Units:		mg/kg		mg/kg		mg/kg		mg/kg	
	CRQL	BTAG	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Aluminum	20	NL	4600		10400		11100		11100	
Antimony	6	2	0.52 J		0.96 J		1.4 J		0.34 J	
Arsenic	1	9.8	59.2		4.2		14.6		5	
Barium	20	NL	34.3		91.3		118		44.4	
Beryllium	0.5	NL	0.3 J		0.51 J		1.4		0.64 J	
Cadmium	0.5	0.99	0.5 J		0.4 J		0.89 J		0.23 J	
Calcium	500	NL	809		2240		3250		640 J	
Chromium	1	43.4	32.7		18 J		21 J		15.9 J	
Cobalt	5	50	1.5 J		6.2 J		12.6		2.7 J	
Copper	2.5	31.6	35.5		47.9		27.4		12.9	
Iron	10	20,000	9390		18300		36400		12100	
Lead	1	35.8	30.9		37		46.3		49.9	
Magnesium	500	NL	366 J		1340		1290		760	
Manganese	1.5	460	175		152		166		29.6	
Nickel	4	NL	3.1 J		11.6		12.8		8.9	
Potassium	500	NL	445 U		895 J-		902 U		708 U	
Selenium	3.5	2	1.6 J+		5.1 U		6.3 U		5 U	
Silver	1	1	0.89 U		1.5 U		1.8 U		1.4 U	
Sodium	500	NL	44.1 J		110 J		176 J		129 J	
Thallium	2.5	NL	2.2 U		3.7 U		4.5 U		3.5 U	
Vanadium	5	NL	12.1		29.1		43.7		29	
Zinc	6	121	93.2		767		498		31.3	

Table 4  
New Kent Wood Preservatives, Inc  
Analytical Results for Metals in Sediment Samples

	Sample Number:		NKWP-SD-01		NKWP-SD-02		NKWP-SD-03		NKWP-SD-04		NKWP-SD-04-01	
	Sampling Location:		SD01		SD02		SD03		SD04		SD04	
	Sample Type:		Field Sample		Field Sample		Background Sample		Field Sample		Field Sample	
	Sample Matrix:		Sediment		Sediment		Sediment		Sediment		Sediment	
	Date Sampled:		9/11/2014		9/11/2014		9/11/2014		9/11/2014		9/11/2014	
	CLP Sample ID:		MC0AJ7		MC0AJ8		MC0AJ9		MC0AK0		MC0AK1	
	Units:		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg	
	CRQL	BTAG	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Aluminum	20	NL	1060		3630		1550		1210		1210	
Antimony	6	2	6.6	U	0.56	J	7.7	U	8.2	U	8.2	U
Arsenic	1	9.8	1.1	J	13		1.5		0.88	J	0.88	J
Barium	20	NL	16.9	J	53.4		23	J	15.2	J	15.2	J
Beryllium	0.5	NL	0.29	J	0.54	J	0.36	J	0.37	J	0.37	J
Cadmium	0.5	0.99	0.12	J	0.23	J	0.049	J	0.059	J	0.059	J
Calcium	500	NL	893		1950		563	J	1260		1260	
Chromium	1	43.4	2.5	J	9.2	J	2.8	J	2.5	J	2.5	J
Cobalt	5	50	4.7	J	3.9	J	1.6	J	1.4	J	1.4	J
Copper	2.5	31.6	2.8	U	9.1		1.4	J	1.3	J	1.3	J
Iron	10	20,000	2800		9200		2110		3190		3190	
Lead	1	35.8	8		21.4		22.1		4.8		4.8	
Magnesium	500	NL	157	J	245	J	82.8	J	58.4	J	58.4	J
Manganese	1.5	460	36.9		1540		59.7		70.8		70.8	
Nickel	4	NL	1.6	J	4.9	J	1.2	J	1.2	J	1.2	J
Potassium	500	NL	552	UJ	683	UJ	642	UJ	687	UJ	687	UJ
Selenium	3.5	2	3.9	U	4.8	U	4.5	U	4.8	U	4.8	U
Silver	1	1	1.1	U	1.4	U	1.3	U	1.4	U	1.4	U
Sodium	500	NL	552	U	50.2	J	642	U	687	U	687	U
Thallium	2.5	NL	2.8	U	3.4	U	3.2	U	3.4	U	3.4	U
Vanadium	5	NL	4.7	J	11.8		3.5	J	5.7	J	5.7	J
Zinc	6	121	13.9		29.2		7.7	U	9.5		9.5	



Table 4  
New Kent Wood Preservatives, Inc  
Analytical Results for Metals in Sediment Samples

	Sample Number:		NKWP-SD-05		NKWP-SD-06		NKWP-SD-07		NKWP-SD-08		NKWP-SD-09		NKWP-SD-10	
	Sampling Location:		SD05		SD06		SD07		SD08		SD09		SD10	
	Sample Type:		Field Sample		Field Sample		Field Sample		Field Sample		Field Sample		Field Sample	
	Sample Matrix:		Sediment		Sediment		Sediment		Sediment		Sediment		Sediment	
	Date Sampled:		9/11/2014		9/11/2014		9/11/2014		9/11/2014		9/11/2014		9/11/2014	
	CLP Sample ID:		MC0AK2		MC0AK3		MC0AK4		MC0AK5		MC0AK6		MC0AK7	
	Units:		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg	
	CRQL	BTAG	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Aluminum	20	NL	743		3890		2830		5460		6820		617	
Antimony	6	2	6.1	U	0.26	J	6.4	U	6.1	U	10.4	U	6.1	U
Arsenic	1	9.8	0.46	J-	3.7		2		2		8.2		1.9	
Barium	20	NL	7.3	J	41.5		36.3		42.8		83.1		6.8	J
Beryllium	0.5	NL	0.15	J	0.68	J	0.94		0.49	J	1.2		0.18	J
Cadmium	0.5	0.99	0.51	U	0.098	J	0.94		0.5	U	0.11	J	0.51	U
Calcium	500	NL	170	J	1300		1560		404	J	1640		184	J
Chromium	1	43.4	1.9	J	6.8	J	5	J	8.4	J	12.1	J	2.2	J
Cobalt	5	50	0.92	J	7	J	2.8	J	3.3	J	14.2		0.97	J
Copper	2.5	31.6	0.48	J	2.9	J	2.7		1.9	J	4.8		1.7	J
Iron	10	20,000	1810		11500		5460		6350		20900		6810	
Lead	1	35.8	2.7		10.1		9.6		9.4		15.2		1.9	
Magnesium	500	NL	36	J	184	J	127	J	253	J	308	J	38.6	J
Manganese	1.5	460	18.6		95.2		60.9		38.1		534		50	
Nickel	4	NL	0.65	J	3.6	J	2.7	J	2.9	J	6.3	J	1	J
Potassium	500	NL	510	UJ	746	U	535	U	504	U	870	U	512	UJ
Selenium	3.5	2	3.6	U	5.2	U	3.7	U	3.5	U	6.1	U	3.6	U
Silver	1	1	1	U	1.5	U	1.1	U	1	U	1.7	U	1	U
Sodium	500	NL	510	U	746	U	535	U	504	U	870	U	512	U
Thallium	2.5	NL	2.6	U	3.7	U	2.7	U	2.5	U	4.4	U	2.6	U
Vanadium	5	NL	2.9	J	13.1		13.2		15		21.4		2.3	J
Zinc	6	121	6.1	U	29.1		21.9		11.9		43.5		9.4	

Table 4  
New Kent Wood Preservatives, Inc  
Analytical Results for Metals in Sediment Samples

	Sample Number:		NKWP-SD-11		NKWP-SD-12		NKWP-SD-13		NKWP-SD-14		NKWP-SD-15	
	Sampling Location:		SD11		SD12		SD13		SD14		SD15	
	Sample Type:		Field Sample		Field Sample		Field Sample		Background Sample		Background Sample	
	Sample Matrix:		Sediment		Sediment		Sediment		Sediment		Sediment	
	Date Sampled:		9/11/2014		9/11/2014		9/11/2014		9/11/2014		9/11/2014	
	CLP Sample ID:		MC0AK8		MC0AK9		MC0AL0		MC0AL1		MC0AL2	
	Units:		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg	
	CRQL	BTAG	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Aluminum	20	NL	7140		3230		8600		288		2070	
Antimony	6	2	0.29	J	6.9	U	0.26	J	5.6	U	6.4	U
Arsenic	1	9.8	8.8		2.5		11.4		0.93	UJ	1.3	
Barium	20	NL	66.2		29.8		68.7		2.7	J	17.2	J
Beryllium	0.5	NL	0.61	J	0.29	J	0.8		0.47	U	0.36	J
Cadmium	0.5	0.99	0.13	J	0.029	J	0.044	J	0.47	U	0.53	U
Calcium	500	NL	2890		970		818		85.9	J	343	J
Chromium	1	43.4	47.6	J	16.7	J	26.3	J	1	J	3.8	J
Cobalt	5	50	3.9	J	2.3	J	5.1	J	0.3	J	1.5	J
Copper	2.5	31.6	27.2		7.7		13.2		2.3	U	1.2	J
Iron	10	20,000	8170		4260		9800		776		4530	
Lead	1	35.8	12.9		5.6		21.4		1		12.6	
Magnesium	500	NL	569	J	267	J	433	J	15.7	J	94.9	J
Manganese	1.5	460	62		37.3		77.3		10		26.6	
Nickel	4	NL	5.7		2.5	J	4.6	J	0.29	J	1.3	J
Potassium	500	NL	694	U	579	U	751	U	465	UJ	533	U
Selenium	3.5	2	4.9	U	4	U	5.3	U	3.3	U	3.7	U
Silver	1	1	1.4	U	1.2	U	1.5	U	0.93	U	1.1	U
Sodium	500	NL	694	U	579	U	751	U	465	U	533	U
Thallium	2.5	NL	3.5	U	2.9	U	3.8	U	2.3	U	2.7	U
Vanadium	5	NL	14.8		8.6		22.4		1.6	J	7.6	
Zinc	6	121	96.8		39.5		50.7		5.6	U	8.9	



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## **APPENDIX A**

### **ANALYTICAL DATA VALIDATION REPORTS**

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## **APPENDIX B**

### **DATA VALIDATION REPORTS AND VALIDATED ANALYTICAL RESULTS PACKAGES**

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION III  
Environmental Sciences Center  
701 Mapes Road  
Fort Meade, Maryland 20755-5350

DATE: October 16, 2014

SUBJECT: Region III Data QA Review

FROM: Brandon McDonald   
Region III ESAT PO (3EA22)

TO: Ruth Scharr  
On-Scene Coordinator (3HS31)

Attached is the organic data validation report for the New Kent Wood Preservatives, Inc. site for Case 44673; SDG#:C0AC2 completed by the Region III Environmental Services Assistance Team (ESAT), ICF International, contractor under the direction of Region III EAID.

If you have any questions regarding this review, please call me at (410) 305-2607.

Attachment

cc: Laura Mathew (WESTON)

TO: #0002 TDF: #10140149

OFFICE OF ANALYTICAL SERVICES AND QUALITY ASSURANCE







ICF International  
ESAT Region 3  
US Environmental Protection Agency Environmental Science Center  
701 Mapes Road Ft. Meade, MD 20755-5350  
Phone 410-305-3011

**Date:** October 16, 2014

**To:** Brandon McDonald  
ESAT Region 3 Project Officer

**From:** Kurt Roby  
Data Reviewer

Jeffrey Wilmoth  
ESAT Region 3 Team Manager

**Subject:** Organic Data Validation (S4VEM)  
Site: New Kent Wood Preservatives, Inc.  
Case: 44673 SDG: C0AC2

### **Overview**

Case 44673, Sample Delivery Group (SDG) C0AC2, consisted of two (2) aqueous samples as well as six (6) potable water samples including one (1) field duplicate pair analyzed for semivolatile compounds. All analyses were performed by Spectrum Analytical, Inc. (MITKEM) in accordance with Contract Laboratory Program (CLP) Statement of Work (SOW) SOM01.2 through the Routine Analytical Services (RAS) program.

### **Summary**

Data were validated according to organic National Functional Guidelines, utilizing Environmental Data Exchange and Evaluation System (EXES) and is assigned the Superfund Data Validation Label S4VEM (Stage\_4\_Validation\_Electronic\_Manual). The following validation narrative is an evaluation of laboratory reported data for the purpose of usability.

No drinking water sample in this SDG reported a result which exceeded the National Primary Drinking Water Regulations (NPDWRs) Maximum Contaminant Level (MCL), nor did they exceed the Numeric Removal Action Levels for Drinking Water promulgated by the Office of Solid Waste and Emergency Response (OSWER).

### **Major Problem**

Recoveries for Deuterated Monitoring Compound (DMC) benzo(a)pyrene-d<sub>12</sub> were extremely low (<10%) for sample C0AD2. No positive results were reported for compounds associated with this DMC in this sample; quantitation limits for these compounds are unusable and have been qualified “R”.

### **Notes**

Compounds detected below Contract Required Quantitation Limits (CRQLs) are qualified “J”.

There were no contaminants found in the analysis of the associated blank in this data set.

The sample cooler containing semivolatile samples had an interior temperature of 6.5 °C when received by the laboratory, which exceeded the criteria of 4 °C<sub>±</sub>2 °C. No data were qualified based on this finding.

No positive results were reported in field duplicate pair C0AC3/C0AC6. No data were qualified based on this finding.

Manual integrations, which were performed and identified by the laboratory, were evaluated by the reviewer to be accurate and consistent. No action was taken by the reviewer based on manual integrations.

Tentatively Identified Compounds (TICs) were not validated. The “NJ” qualifier is applied to all non-target compounds listed in the Sample Summary Report (SSR) and Electronic Data Deliverable (EDD) in addition to other laboratory qualifiers. This is a regional modification to the National Functional Guidelines for the reporting of TICs. The SSR may not reflect the complete list of TICs included in the EDD. Additionally, the validation level “NV” (Not Validated) is applied to these data.

**Glossary of Data Qualifier Codes (ORGANIC)**

- U      The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the adjusted Contract Required Quantitation Limit (CRQL) for sample and method.
- J      The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample (due either to the quality of the data generated because certain quality control criteria were not met, or the concentration of the analyte was below the CRQL).
- B      The result is presumed a blank contaminant. This qualifier is used only for drinking water samples.
- NJ     The analysis indicates the presence of an analyte that has been “tentatively indentified” and the associated numerical value represents its approximate concentration.
- UJ     The analyte was not detected at a level greater than or equal to the adjusted CRQL. However, the reported adjusted CRQL is approximate and may be inaccurate or imprecise.
- R      The sample results are unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.
- C      This qualifier applies to pesticide and Aroclor results when the identification has been confirmed by Gas Chromatograph/Mass Spectrometer (GC/MS).
- X      This qualifier applies to pesticide and Aroclor results when GC/MS analysis was attempted but was unsuccessful.

DCN: R3ESAT-2014-V559



Sample Summary Report

Case No:	44673	Contract:	EPW11033	SDG No:	C0AC2	Lab Code:	MITKEM
Sample Number:	C0AC2	Method:	BNA	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	DW-01	pH:	7.0	Sample Date:	09/09/2014	Sample Time:	09:50:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Benzaldehyde	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Phenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Bis(2-chloroethyl)ether	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2-Chlorophenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2-Methylphenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2,2'-Oxybis(1-chloropropane)	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Acetophenone	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
4-Methylphenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
N-Nitroso-di-n-propylamine	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Hexachloroethane	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Nitrobenzene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Isophorone	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2-Nitrophenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2,4-Dimethylphenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Bis(2-chloroethoxy)methane	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2,4-Dichlorophenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Naphthalene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
4-Chloroaniline	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Hexachlorobutadiene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Caprolactam	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
4-Chloro-3-methylphenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2-Methylnaphthalene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Hexachlorocyclopentadiene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2,4,6-Trichlorophenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2,4,5-Trichlorophenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
1,1'-Biphenyl	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
2-Chloronaphthalene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2-Nitroaniline	Target	10	U	ug/L	10.000000	U	1.0	Yes	S4VEM
Dimethylphthalate	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2,6-Dinitrotoluene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Acenaphthylene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
3-Nitroaniline	Target	10	U	ug/L	10.000000	U	1.0	Yes	S4VEM
Acenaphthene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2,4-Dinitrophenol	Target	10	U	ug/L	10.000000	U	1.0	Yes	S4VEM
4-Nitrophenol	Target	10	U	ug/L	10.000000	U	1.0	Yes	S4VEM
Dibenzofuran	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2,4-Dinitrotoluene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Diethylphthalate	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Fluorene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
4-Chlorophenyl-phenylether	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
4-Nitroaniline	Target	10	U	ug/L	10.000000	U	1.0	Yes	S4VEM
4,6-Dinitro-2-methylphenol	Target	10	U	ug/L	10.000000	U	1.0	Yes	S4VEM
N-Nitrosodiphenylamine	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
1,2,4,5-Tetrachlorobenzene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
4-Bromophenyl-phenylether	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Hexachlorobenzene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Atrazine	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Pentachlorophenol	Target	10	U	ug/L	10.000000	U	1.0	Yes	S4VEM
Phenanthrene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Anthracene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Carbazole	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Di-n-butylphthalate	Target	1.8	J	ug/L	1.8	J	1.0	Yes	S4VEM
Fluoranthene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Pyrene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Butylbenzylphthalate	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
3,3'-Dichlorobenzidine	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Benzo(a)anthracene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Chrysene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Bis(2-ethylhexyl)phthalate	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Di-n-octylphthalate	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Benzo(b)fluoranthene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Benzo(k)fluoranthene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Benzo(a)pyrene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Indeno(1,2,3-cd)pyrene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Dibenzo(a,h)anthracene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Benzo(g,h,i)perylene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2,3,4,6-Tetrachlorophenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM



Case No:	44673	Contract:	EPW11033	SDG No:	C0AC2	Lab Code:	MITKEM
Sample Number:	C0AC3	Method:	BNA	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	DW-02	pH:	7.0	Sample Date:	09/09/2014	Sample Time:	10:30:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Benzaldehyde	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Phenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Bis(2-chloroethyl)ether	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2-Chlorophenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2-Methylphenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2,2'-Oxybis(1-chloropropane)	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Acetophenone	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
4-Methylphenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
N-Nitroso-di-n-propylamine	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Hexachloroethane	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Nitrobenzene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Isophorone	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2-Nitrophenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2,4-Dimethylphenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Bis(2-chloroethoxy)methane	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2,4-Dichlorophenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Naphthalene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
4-Chloroaniline	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Hexachlorobutadiene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Caprolactam	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
4-Chloro-3-methylphenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2-Methylnaphthalene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Hexachlorocyclopentadiene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2,4,6-Trichlorophenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2,4,5-Trichlorophenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
1,1'-Biphenyl	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2-Chloronaphthalene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
2-Nitroaniline	Target	10	U	ug/L	10.000000	U	1.0	Yes	S4VEM
Dimethylphthalate	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2,6-Dinitrotoluene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Acenaphthylene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
3-Nitroaniline	Target	10	U	ug/L	10.000000	U	1.0	Yes	S4VEM
Acenaphthene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2,4-Dinitrophenol	Target	10	U	ug/L	10.000000	U	1.0	Yes	S4VEM
4-Nitrophenol	Target	10	U	ug/L	10.000000	U	1.0	Yes	S4VEM
Dibenzofuran	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2,4-Dinitrotoluene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Diethylphthalate	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Fluorene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
4-Chlorophenyl-phenylether	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
4-Nitroaniline	Target	10	U	ug/L	10.000000	U	1.0	Yes	S4VEM
4,6-Dinitro-2-methylphenol	Target	10	U	ug/L	10.000000	U	1.0	Yes	S4VEM
N-Nitrosodiphenylamine	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
1,2,4,5-Tetrachlorobenzene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
4-Bromophenyl-phenylether	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Hexachlorobenzene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Atrazine	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Pentachlorophenol	Target	10	U	ug/L	10.000000	U	1.0	Yes	S4VEM
Phenanthrene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Anthracene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Carbazole	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Di-n-butylphthalate	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Fluoranthene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Pyrene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Butylbenzylphthalate	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
3,3'-Dichlorobenzidine	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Benzo(a)anthracene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Chrysene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Bis(2-	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
ethylhexyl)phthalate	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Di-n-octylphthalate	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Benzo(b)fluoranthene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Benzo(k)fluoranthene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Benzo(a)pyrene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Indeno(1,2,3-cd)pyrene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Dibenzo(a,h)anthracene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Benzo(g,h,i)perylene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2,3,4,6-Tetrachlorophenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM



Case No:	44673	Contract:	EPW11033	SDG No:	C0AC2	Lab Code:	MITKEM
Sample Number:	C0AC4	Method:	BNA	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	DW-03	pH:	7.0	Sample Date:	09/09/2014	Sample Time:	11:13:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Benzaldehyde	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Phenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Bis(2-chloroethyl)ether	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2-Chlorophenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2-Methylphenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2,2'-Oxybis(1-chloropropane)	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Acetophenone	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
4-Methylphenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
N-Nitroso-di-n-propylamine	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Hexachloroethane	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Nitrobenzene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Isophorone	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2-Nitrophenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2,4-Dimethylphenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Bis(2-chloroethoxy)methane	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2,4-Dichlorophenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Naphthalene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
4-Chloroaniline	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Hexachlorobutadiene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Caprolactam	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
4-Chloro-3-methylphenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2-Methylnaphthalene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Hexachlorocyclopentadiene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2,4,6-Trichlorophenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2,4,5-Trichlorophenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
1,1'-Biphenyl	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2-Chloronaphthalene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
2-Nitroaniline	Target	10	U	ug/L	10.000000	U	1.0	Yes	S4VEM
Dimethylphthalate	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2,6-Dinitrotoluene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Acenaphthylene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
3-Nitroaniline	Target	10	U	ug/L	10.000000	U	1.0	Yes	S4VEM
Acenaphthene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2,4-Dinitrophenol	Target	10	U	ug/L	10.000000	U	1.0	Yes	S4VEM
4-Nitrophenol	Target	10	U	ug/L	10.000000	U	1.0	Yes	S4VEM
Dibenzofuran	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2,4-Dinitrotoluene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Diethylphthalate	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Fluorene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
4-Chlorophenyl-phenylether	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
4-Nitroaniline	Target	10	U	ug/L	10.000000	U	1.0	Yes	S4VEM
4,6-Dinitro-2-methylphenol	Target	10	U	ug/L	10.000000	U	1.0	Yes	S4VEM
N-Nitrosodiphenylamine	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
1,2,4,5-Tetrachlorobenzene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
4-Bromophenyl-phenylether	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Hexachlorobenzene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Atrazine	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Pentachlorophenol	Target	10	U	ug/L	10.000000	U	1.0	Yes	S4VEM
Phenanthrene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Anthracene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Carbazole	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Di-n-butylphthalate	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Fluoranthene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Pyrene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Butylbenzylphthalate	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
3,3'-Dichlorobenzidine	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Benzo(a)anthracene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Chrysene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Bis(2-	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
ethylhexyl)phthalate	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Di-n-octylphthalate	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Benzo(b)fluoranthene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Benzo(k)fluoranthene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Benzo(a)pyrene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Indeno(1,2,3-cd)pyrene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Dibenzo(a,h)anthracene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Benzo(g,h,i)perylene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2,3,4,6-Tetrachlorophenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM



Case No:	44673	Contract:	EPW11033	SDG No:	C0AC2	Lab Code:	MITKEM
Sample Number:	C0AC5	Method:	BNA	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	DW-04	pH:	7.0	Sample Date:	09/09/2014	Sample Time:	11:54:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Benzaldehyde	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Phenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Bis(2-chloroethyl)ether	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2-Chlorophenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2-Methylphenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2,2'-Oxybis(1-chloropropane)	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Acetophenone	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
4-Methylphenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
N-Nitroso-di-n-propylamine	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Hexachloroethane	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Nitrobenzene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Isophorone	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2-Nitrophenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2,4-Dimethylphenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Bis(2-chloroethoxy)methane	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2,4-Dichlorophenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Naphthalene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
4-Chloroaniline	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Hexachlorobutadiene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Caprolactam	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
4-Chloro-3-methylphenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2-Methylnaphthalene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Hexachlorocyclopentadiene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2,4,6-Trichlorophenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2,4,5-Trichlorophenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
1,1'-Biphenyl	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2-Chloronaphthalene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
2-Nitroaniline	Target	10	U	ug/L	10.000000	U	1.0	Yes	S4VEM
Dimethylphthalate	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2,6-Dinitrotoluene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Acenaphthylene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
3-Nitroaniline	Target	10	U	ug/L	10.000000	U	1.0	Yes	S4VEM
Acenaphthene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2,4-Dinitrophenol	Target	10	U	ug/L	10.000000	U	1.0	Yes	S4VEM
4-Nitrophenol	Target	10	U	ug/L	10.000000	U	1.0	Yes	S4VEM
Dibenzofuran	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2,4-Dinitrotoluene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Diethylphthalate	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Fluorene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
4-Chlorophenyl-phenylether	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
4-Nitroaniline	Target	10	U	ug/L	10.000000	U	1.0	Yes	S4VEM
4,6-Dinitro-2-methylphenol	Target	10	U	ug/L	10.000000	U	1.0	Yes	S4VEM
N-Nitrosodiphenylamine	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
1,2,4,5-Tetrachlorobenzene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
4-Bromophenyl-phenylether	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Hexachlorobenzene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Atrazine	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Pentachlorophenol	Target	10	U	ug/L	10.000000	U	1.0	Yes	S4VEM
Phenanthrene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Anthracene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Carbazole	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Di-n-butylphthalate	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Fluoranthene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Pyrene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Butylbenzylphthalate	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
3,3'-Dichlorobenzidine	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Benzo(a)anthracene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Chrysene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Bis(2-	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
ethylhexyl)phthalate	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Di-n-octylphthalate	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Benzo(b)fluoranthene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Benzo(k)fluoranthene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Benzo(a)pyrene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Indeno(1,2,3-cd)pyrene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Dibenzo(a,h)anthracene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Benzo(g,h,i)perylene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2,3,4,6-Tetrachlorophenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM



Case No:	44673	Contract:	EPW11033	SDG No:	C0AC2	Lab Code:	MITKEM
Sample Number:	C0AC6	Method:	BNA	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	DW-02	pH:	7.0	Sample Date:	09/09/2014	Sample Time:	10:30:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Benzaldehyde	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Phenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Bis(2-chloroethyl)ether	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2-Chlorophenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2-Methylphenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2,2'-Oxybis(1-chloropropane)	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Acetophenone	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
4-Methylphenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
N-Nitroso-di-n-propylamine	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Hexachloroethane	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Nitrobenzene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Isophorone	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2-Nitrophenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2,4-Dimethylphenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Bis(2-chloroethoxy)methane	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2,4-Dichlorophenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Naphthalene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
4-Chloroaniline	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Hexachlorobutadiene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Caprolactam	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
4-Chloro-3-methylphenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2-Methylnaphthalene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Hexachlorocyclopentadiene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2,4,6-Trichlorophenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2,4,5-Trichlorophenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
1,1'-Biphenyl	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2-Chloronaphthalene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
2-Nitroaniline	Target	10	U	ug/L	10.000000	U	1.0	Yes	S4VEM
Dimethylphthalate	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2,6-Dinitrotoluene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Acenaphthylene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
3-Nitroaniline	Target	10	U	ug/L	10.000000	U	1.0	Yes	S4VEM
Acenaphthene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2,4-Dinitrophenol	Target	10	U	ug/L	10.000000	U	1.0	Yes	S4VEM
4-Nitrophenol	Target	10	U	ug/L	10.000000	U	1.0	Yes	S4VEM
Dibenzofuran	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2,4-Dinitrotoluene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Diethylphthalate	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Fluorene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
4-Chlorophenyl-phenylether	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
4-Nitroaniline	Target	10	U	ug/L	10.000000	U	1.0	Yes	S4VEM
4,6-Dinitro-2-methylphenol	Target	10	U	ug/L	10.000000	U	1.0	Yes	S4VEM
N-Nitrosodiphenylamine	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
1,2,4,5-Tetrachlorobenzene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
4-Bromophenyl-phenylether	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Hexachlorobenzene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Atrazine	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Pentachlorophenol	Target	10	U	ug/L	10.000000	U	1.0	Yes	S4VEM
Phenanthrene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Anthracene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Carbazole	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Di-n-butylphthalate	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Fluoranthene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Pyrene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Butylbenzylphthalate	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
3,3'-Dichlorobenzidine	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Benzo(a)anthracene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Chrysene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Bis(2-	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
ethylhexyl)phthalate	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Di-n-octylphthalate	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Benzo(b)fluoranthene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Benzo(k)fluoranthene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Benzo(a)pyrene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Indeno(1,2,3-cd)pyrene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Dibenzo(a,h)anthracene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Benzo(g,h,i)perylene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2,3,4,6-Tetrachlorophenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM



Case No:	44673	Contract:	EPW11033	SDG No:	C0AC2	Lab Code:	MITKEM
Sample Number:	C0AD1	Method:	BNA	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	DW-05	pH:	7.0	Sample Date:	09/10/2014	Sample Time:	14:25:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Benzaldehyde	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Phenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Bis(2-chloroethyl)ether	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2-Chlorophenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2-Methylphenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2,2'-Oxybis(1-chloropropane)	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Acetophenone	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
4-Methylphenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
N-Nitroso-di-n-propylamine	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Hexachloroethane	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Nitrobenzene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Isophorone	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2-Nitrophenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2,4-Dimethylphenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Bis(2-chloroethoxy)methane	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2,4-Dichlorophenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Naphthalene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
4-Chloroaniline	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Hexachlorobutadiene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Caprolactam	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
4-Chloro-3-methylphenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2-Methylnaphthalene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Hexachlorocyclopentadiene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2,4,6-Trichlorophenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2,4,5-Trichlorophenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
1,1'-Biphenyl	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2-Chloronaphthalene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
2-Nitroaniline	Target	10	U	ug/L	10.000000	U	1.0	Yes	S4VEM
Dimethylphthalate	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2,6-Dinitrotoluene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Acenaphthylene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
3-Nitroaniline	Target	10	U	ug/L	10.000000	U	1.0	Yes	S4VEM
Acenaphthene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2,4-Dinitrophenol	Target	10	U	ug/L	10.000000	U	1.0	Yes	S4VEM
4-Nitrophenol	Target	10	U	ug/L	10.000000	U	1.0	Yes	S4VEM
Dibenzofuran	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2,4-Dinitrotoluene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Diethylphthalate	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Fluorene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
4-Chlorophenyl-phenylether	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
4-Nitroaniline	Target	10	U	ug/L	10.000000	U	1.0	Yes	S4VEM
4,6-Dinitro-2-methylphenol	Target	10	U	ug/L	10.000000	U	1.0	Yes	S4VEM
N-Nitrosodiphenylamine	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
1,2,4,5-Tetrachlorobenzene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
4-Bromophenyl-phenylether	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Hexachlorobenzene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Atrazine	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Pentachlorophenol	Target	10	U	ug/L	10.000000	U	1.0	Yes	S4VEM
Phenanthrene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Anthracene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Carbazole	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Di-n-butylphthalate	Target	1.2	J	ug/L	1.2	J	1.0	Yes	S4VEM
Fluoranthene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Pyrene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Butylbenzylphthalate	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
3,3'-Dichlorobenzidine	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Benzo(a)anthracene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Chrysene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Bis(2-	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
ethylhexyl)phthalate	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Di-n-octylphthalate	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Benzo(b)fluoranthene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Benzo(k)fluoranthene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Benzo(a)pyrene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Indeno(1,2,3-cd)pyrene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Dibenzo(a,h)anthracene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Benzo(g,h,i)perylene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2,3,4,6-Tetrachlorophenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Chloroacetic acid, tridecyl ester	TIC	2.0	NJ	ug/L	2.0	NJ	1.0	Yes	NV



Case No:	44673	Contract:	EPW11033	SDG No:	C0AC2	Lab Code:	MITKEM
Sample Number:	C0AD2	Method:	BNA	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	MW-04	pH:	7.0	Sample Date:	09/09/2014	Sample Time:	16:04:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Benzaldehyde	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Phenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Bis(2-chloroethyl)ether	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2-Chlorophenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2-Methylphenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2,2'-Oxybis(1-chloropropane)	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Acetophenone	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
4-Methylphenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
N-Nitroso-di-n-propylamine	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Hexachloroethane	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Nitrobenzene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Isophorone	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2-Nitrophenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2,4-Dimethylphenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Bis(2-chloroethoxy)methane	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2,4-Dichlorophenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Naphthalene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
4-Chloroaniline	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Hexachlorobutadiene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Caprolactam	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
4-Chloro-3-methylphenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2-Methylnaphthalene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Hexachlorocyclopentadiene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2,4,6-Trichlorophenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2,4,5-Trichlorophenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
1,1'-Biphenyl	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2-Chloronaphthalene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
2-Nitroaniline	Target	10	U	ug/L	10.000000	U	1.0	Yes	S4VEM
Dimethylphthalate	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2,6-Dinitrotoluene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Acenaphthylene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
3-Nitroaniline	Target	10	U	ug/L	10.000000	U	1.0	Yes	S4VEM
Acenaphthene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2,4-Dinitrophenol	Target	10	U	ug/L	10.000000	U	1.0	Yes	S4VEM
4-Nitrophenol	Target	10	U	ug/L	10.000000	U	1.0	Yes	S4VEM
Dibenzofuran	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2,4-Dinitrotoluene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Diethylphthalate	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Fluorene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
4-Chlorophenyl-phenylether	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
4-Nitroaniline	Target	10	U	ug/L	10.000000	U	1.0	Yes	S4VEM
4,6-Dinitro-2-methylphenol	Target	10	U	ug/L	10.000000	U	1.0	Yes	S4VEM
N-Nitrosodiphenylamine	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
1,2,4,5-Tetrachlorobenzene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
4-Bromophenyl-phenylether	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Hexachlorobenzene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Atrazine	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Pentachlorophenol	Target	10	U	ug/L	10.000000	U	1.0	Yes	S4VEM
Phenanthrene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Anthracene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Carbazole	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Di-n-butylphthalate	Target	1.1	J	ug/L	1.1	J	1.0	Yes	S4VEM
Fluoranthene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Pyrene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Butylbenzylphthalate	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
3,3'-Dichlorobenzidine	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Benzo(a)anthracene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Chrysene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Bis(2-	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
ethylhexyl)phthalate	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Di-n-octylphthalate	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Benzo(b)fluoranthene	Target	5.0	R	ug/L	5.000000	U	1.0	Yes	S4VEM
Benzo(k)fluoranthene	Target	5.0	R	ug/L	5.000000	U	1.0	Yes	S4VEM
Benzo(a)pyrene	Target	5.0	R	ug/L	5.000000	U	1.0	Yes	S4VEM
Indeno(1,2,3-cd)pyrene	Target	5.0	R	ug/L	5.000000	U	1.0	Yes	S4VEM
Dibenzo(a,h)anthracene	Target	5.0	R	ug/L	5.000000	U	1.0	Yes	S4VEM
Benzo(g,h,i)perylene	Target	5.0	R	ug/L	5.000000	U	1.0	Yes	S4VEM
2,3,4,6-Tetrachlorophenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Tetradecanoic acid	TIC	2.1	NJ	ug/L	2.1	NJ	1.0	Yes	NV
Cyclopentasiloxane, decamethyl-	TIC	7.9	NJ	ug/L	7.9	NJ	1.0	Yes	NV



Case No:	44673	Contract:	EPW11033	SDG No:	C0AC2	Lab Code:	MITKEM
Sample Number:	C0AD3	Method:	BNA	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	MW-05	pH:	7.0	Sample Date:	09/09/2014	Sample Time:	16:35:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Benzaldehyde	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Phenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Bis(2-chloroethyl)ether	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2-Chlorophenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2-Methylphenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2,2'-Oxybis(1-chloropropane)	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Acetophenone	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
4-Methylphenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
N-Nitroso-di-n-propylamine	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Hexachloroethane	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Nitrobenzene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Isophorone	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2-Nitrophenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2,4-Dimethylphenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Bis(2-chloroethoxy)methane	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2,4-Dichlorophenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Naphthalene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
4-Chloroaniline	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Hexachlorobutadiene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Caprolactam	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
4-Chloro-3-methylphenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2-Methylnaphthalene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Hexachlorocyclopentadiene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2,4,6-Trichlorophenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2,4,5-Trichlorophenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
1,1'-Biphenyl	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2-Chloronaphthalene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
2-Nitroaniline	Target	10	U	ug/L	10.000000	U	1.0	Yes	S4VEM
Dimethylphthalate	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2,6-Dinitrotoluene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Acenaphthylene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
3-Nitroaniline	Target	10	U	ug/L	10.000000	U	1.0	Yes	S4VEM
Acenaphthene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2,4-Dinitrophenol	Target	10	U	ug/L	10.000000	U	1.0	Yes	S4VEM
4-Nitrophenol	Target	10	U	ug/L	10.000000	U	1.0	Yes	S4VEM
Dibenzofuran	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2,4-Dinitrotoluene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Diethylphthalate	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Fluorene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
4-Chlorophenyl-phenylether	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
4-Nitroaniline	Target	10	U	ug/L	10.000000	U	1.0	Yes	S4VEM
4,6-Dinitro-2-methylphenol	Target	10	U	ug/L	10.000000	U	1.0	Yes	S4VEM
N-Nitrosodiphenylamine	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
1,2,4,5-Tetrachlorobenzene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
4-Bromophenyl-phenylether	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Hexachlorobenzene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Atrazine	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Pentachlorophenol	Target	10	U	ug/L	10.000000	U	1.0	Yes	S4VEM
Phenanthrene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Anthracene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Carbazole	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Di-n-butylphthalate	Target	1.4	J	ug/L	1.4	J	1.0	Yes	S4VEM
Fluoranthene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Pyrene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Butylbenzylphthalate	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
3,3'-Dichlorobenzidine	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Benzo(a)anthracene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Chrysene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Bis(2-	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
ethylhexyl)phthalate	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Di-n-octylphthalate	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Benzo(b)fluoranthene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Benzo(k)fluoranthene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Benzo(a)pyrene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Indeno(1,2,3-cd)pyrene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Dibenzo(a,h)anthracene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Benzo(g,h,i)perylene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2,3,4,6-Tetrachlorophenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Diethyltoluamid	TIC	2.4	NJ	ug/L	2.4	NJ	1.0	Yes	NV



Case No:	44673	Contract:	EPW11033	SDG No:	C0AC2	Lab Code:	MITKEM
Sample Number:	SBLK4L	Method:	BNA	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	MB-78980	pH:	7.0	Sample Date:	09/19/2014	Sample Time:	11:31:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Benzaldehyde	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Phenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Bis(2-chloroethyl)ether	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2-Chlorophenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2-Methylphenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2,2'-Oxybis(1-chloropropane)	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Acetophenone	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
4-Methylphenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
N-Nitroso-di-n-propylamine	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Hexachloroethane	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Nitrobenzene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Isophorone	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2-Nitrophenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2,4-Dimethylphenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Bis(2-chloroethoxy)methane	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2,4-Dichlorophenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Naphthalene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
4-Chloroaniline	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Hexachlorobutadiene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Caprolactam	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
4-Chloro-3-methylphenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2-Methylnaphthalene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Hexachlorocyclopentadiene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2,4,6-Trichlorophenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2,4,5-Trichlorophenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
1,1'-Biphenyl	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2-Chloronaphthalene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
2-Nitroaniline	Target	10	U	ug/L	10.000000	U	1.0	Yes	S4VEM
Dimethylphthalate	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2,6-Dinitrotoluene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Acenaphthylene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
3-Nitroaniline	Target	10	U	ug/L	10.000000	U	1.0	Yes	S4VEM
Acenaphthene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2,4-Dinitrophenol	Target	10	U	ug/L	10.000000	U	1.0	Yes	S4VEM
4-Nitrophenol	Target	10	U	ug/L	10.000000	U	1.0	Yes	S4VEM
Dibenzofuran	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2,4-Dinitrotoluene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Diethylphthalate	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Fluorene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
4-Chlorophenyl-phenylether	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
4-Nitroaniline	Target	10	U	ug/L	10.000000	U	1.0	Yes	S4VEM
4,6-Dinitro-2-methylphenol	Target	10	U	ug/L	10.000000	U	1.0	Yes	S4VEM
N-Nitrosodiphenylamine	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
1,2,4,5-Tetrachlorobenzene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
4-Bromophenyl-phenylether	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Hexachlorobenzene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Atrazine	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Pentachlorophenol	Target	10	U	ug/L	10.000000	U	1.0	Yes	S4VEM
Phenanthrene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Anthracene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Carbazole	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Di-n-butylphthalate	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Fluoranthene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Pyrene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Butylbenzylphthalate	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
3,3'-Dichlorobenzidine	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Benzo(a)anthracene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Chrysene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Bis(2-	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
ethylhexyl)phthalate	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Di-n-octylphthalate	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Benzo(b)fluoranthene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Benzo(k)fluoranthene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Benzo(a)pyrene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Indeno(1,2,3-cd)pyrene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Dibenzo(a,h)anthracene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
Benzo(g,h,i)perylene	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM
2,3,4,6-Tetrachlorophenol	Target	5.0	U	ug/L	5.000000	U	1.0	Yes	S4VEM









ICF International  
ESAT Region 3  
US Environmental Protection Agency Environmental Science Center  
701 Mapes Road Ft. Meade, MD 20755-5350  
Phone 410-305-3011

**Date:** October 15, 2014

**To:** Brandon McDonald  
ESAT Region 3 Project Officer

**From:** Mahboobeh Mecanic  
Data Review Chemist

Lisa D. Penix  
Oversight Chemist

**Subject:** Inorganic Data Validation (S4VEM)  
Site: New Kent Wood Preservatives, Inc.  
Case: 44673, SDG MC0AC2

## **OVERVIEW**

Case 44673, Sample Delivery Group (SDG) MC0AC2, consisted of four (4) soil samples, six (6) potable water samples including one (1) field duplicate pair and two (2) ground water samples analyzed for metals by ICP AES. All samples were analyzed by Chemtech (CHEM) according to Contract Laboratory Program (CLP) Statement of Work (SOW) ISM01.3 through the Routine Analytical Services (RAS) program.

## **SUMMARY**

Data were validated according to Inorganic National Functional Guidelines utilizing Environmental Data Exchange and Evaluation System (EXES) and is assigned the Superfund Data Validation Label S4VEM (Stage\_4\_Validation\_Electronic\_Manual). Areas of concern with respect to data usability are discussed below.

Samples MC0AC2 through MC0AC6 and sample MC0AD1 were listed as potable water on the chain of custody records. These samples were evaluated utilizing drinking water criteria by the reviewer. None of the positive results detected in these samples exceeded the National Primary Drinking Water Regulations (NPDWRs) Maximum Contaminant Levels (MCLs).

## **MINOR PROBLEMS**

Laboratory instrumentation reported negative values for several analytes greater than absolute values of the Method Detection Limits (MDLs) in blank analyses. Positive results reported for these analytes in field samples which were less than two times ( $<2X$ ) the absolute values of the blank concentrations may be biased low and have been qualified "J-". Quantitation limits for these analytes are estimated and qualified "UJ". Results reported for these analytes attributed to positive blank contamination were not qualified based on these outliers.



Laboratory instrumentation reported negative values for potassium (K) in the ICP interference check standard ICSAB greater than the absolute value of the MDL; however, this analyte was not included in this standard. Positive results reported for this analyte in field samples which were less than ten times (<10X) the absolute value of the interference check standard concentration may be estimated low due to possible elemental interferences and have been qualified “J-”; quantitation limits for this analyte are estimated due to possible elemental interferences and have been qualified “UJ”. Positive results reported for this analyte attributed to blank contamination were not qualified due to this outlier.

## **NOTES**

Aluminum (Al), calcium (Ca), iron (Fe), lead (Pb) and K have been positively identified in laboratory blanks associated with the samples in this SDG. Samples which reported positive results for these analytes less than the Contract Required Quantitation Limit (CRQL) have been qualified "B" for drinking water samples or have been reported at the CRQL and qualified “U” for all other samples.

Analytes detected below CRQLs not attributed to blank contamination are qualified “J”.


Results for the field duplicate pair, samples MC0AC3/MC0AC6, were within laboratory duplicate precision.

## **GLOSSARY OF DATA QUALIFIER CODES (INORGANIC)**

U	The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
B	The result is presumed a blank contaminant. This qualifier is used only for drinking water samples.
J+	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting Quality Control (QC) criteria. The analyte may or may not be present in the sample.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION III  
Environmental Sciences Center  
701 Mapes Road  
Fort Meade, Maryland 20755-5350

DATE: October 16, 2014  
SUBJECT: Region III Data QA Review  
FROM: Brandon McDonald   
Region III ESAT PO (3EA22)  
TO: Ruth Scharr  
On-Scene Coordinator (3HS31)

Attached is the inorganic data validation report for the New Kent Wood Preservatives, Inc. site for Case 44673; SDG#:MC0AC2 completed by the Region III Environmental Services Assistance Team (ESAT), ICF International, contractor under the direction of Region III EAID.

If you have any questions regarding this review, please call me at (410) 305-2607.

Attachment

cc: Laura Mathew (WESTON)

TO: #0002 TDF: #0914080

OFFICE OF ANALYTICAL SERVICES AND QUALITY ASSURANCE



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# Sample Summary Report

Case No:	44673	Contract:	EPW09038	SDG No:	MC0AC2	Lab Code:	CHEM
Sample Number:	LCS	Method:	ICP_AES	Matrix:	Water	MA Number:	DEFAULT
Sample Location:		pH:		Sample Date:	09/12/2014	Sample Time:	16:56:16
% Moisture :				% Solids :	100		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Spike	300		ug/L	300.10		1	Yes	S4VEM
Aluminum	Spike	29.5		mg/kg	29.5		1	Yes	S4VEM
Antimony	Spike	10.9		mg/kg	10.9		1	Yes	S4VEM
Antimony	Spike	111		ug/L	110.70		1	Yes	S4VEM
Arsenic	Spike	1.7		mg/kg	1.7		1	Yes	S4VEM
Arsenic	Spike	15.8		ug/L	15.84		1	Yes	S4VEM
Barium	Spike	39.3		mg/kg	39.3		1	Yes	S4VEM
Barium	Spike	404		ug/L	404.02		1	Yes	S4VEM
Beryllium	Spike	9.6		ug/L	9.58		1	Yes	S4VEM
Beryllium	Spike	0.94		mg/kg	0.94		1	Yes	S4VEM
Cadmium	Spike	0.92		mg/kg	0.92		1	Yes	S4VEM
Cadmium	Spike	9.4		ug/L	9.42		1	Yes	S4VEM
Chromium	Spike	1.8		mg/kg	1.82		1	Yes	S4VEM
Chromium	Spike	19.1		ug/L	19.05		1	Yes	S4VEM
Cobalt	Spike	9.4		mg/kg	9.4		1	Yes	S4VEM
Cobalt	Spike	95.1		ug/L	95.10		1	Yes	S4VEM
Copper	Spike	4.4		mg/kg	4.4		1	Yes	S4VEM
Copper	Spike	47.4		ug/L	47.39		1	Yes	S4VEM
Iron	Spike	146		ug/L	145.87		1	Yes	S4VEM
Iron	Spike	14.0		mg/kg	14.0		1	Yes	S4VEM
Lead	Spike	1.5		mg/kg	1.5		1	Yes	S4VEM
Lead	Spike	16.0		ug/L	16.02		1	Yes	S4VEM
Manganese	Spike	2.5		mg/kg	2.5		1	Yes	S4VEM
Manganese	Spike	26.2		ug/L	26.24		1	Yes	S4VEM
Nickel	Spike	77.8		ug/L	77.82		1	Yes	S4VEM
Nickel	Spike	7.6		mg/kg	7.64		1	Yes	S4VEM
Selenium	Spike	6.3		mg/kg	6.3		1	Yes	S4VEM
Selenium	Spike	63.3		ug/L	63.34		1	Yes	S4VEM



Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Silver	Spike	18.2		ug/L	18.19		1	Yes	S4VEM
Silver	Spike	1.8		mg/kg	1.80		1	Yes	S4VEM
Thallium	Spike	48.5		ug/L	48.47		1	Yes	S4VEM
Thallium	Spike	4.8		mg/kg	4.8		1	Yes	S4VEM
Vanadium	Spike	10.1		mg/kg	10.1		1	Yes	S4VEM
Vanadium	Spike	106		ug/L	106.47		1	Yes	S4VEM
Zinc	Spike	111		ug/L	110.59		1	Yes	S4VEM
Zinc	Spike	10.8		mg/kg	10.8		1	Yes	S4VEM
Calcium	Spike	10300		ug/L	10250.66		1	Yes	S4VEM
Sodium	Spike	9840		ug/L	9843.77		1	Yes	S4VEM
Magnesium	Spike	9830		ug/L	9832.76		1	Yes	S4VEM
Magnesium	Spike	949		mg/kg	949.1		1	Yes	S4VEM
Calcium	Spike	996		mg/kg	995.6		1	Yes	S4VEM
Potassium	Spike	9870		ug/L	9866.76		1	Yes	S4VEM
Sodium	Spike	957		mg/kg	957.3		1	Yes	S4VEM
Potassium	Spike	965		mg/kg	965.4		1	Yes	S4VEM

Case No:	44673	Contract:	EPW09038	SDG No:	MC0AC2	Lab Code:	CHEM
Sample Number:	LCS	Method:	ICP_AES	Matrix:	Soil	MA Number:	DEFAULT
Sample Location:		pH:		Sample Date:	09/12/2014	Sample Time:	19:08:21
% Moisture :				% Solids :	100		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Spike	29.5		mg/kg	29.5		1	Yes	S4VEM
Aluminum	Spike	300		ug/L	300.10		1	Yes	S4VEM
Antimony	Spike	10.9		mg/kg	10.9		1	Yes	S4VEM
Antimony	Spike	111		ug/L	110.70		1	Yes	S4VEM
Arsenic	Spike	15.8		ug/L	15.84		1	Yes	S4VEM
Arsenic	Spike	1.7		mg/kg	1.7		1	Yes	S4VEM
Barium	Spike	404		ug/L	404.02		1	Yes	S4VEM
Barium	Spike	39.3		mg/kg	39.3		1	Yes	S4VEM
Beryllium	Spike	0.94		mg/kg	0.94		1	Yes	S4VEM
Beryllium	Spike	9.6		ug/L	9.58		1	Yes	S4VEM
Cadmium	Spike	0.92		mg/kg	0.92		1	Yes	S4VEM
Cadmium	Spike	9.4		ug/L	9.42		1	Yes	S4VEM
Chromium	Spike	19.1		ug/L	19.05		1	Yes	S4VEM
Chromium	Spike	1.8		mg/kg	1.82		1	Yes	S4VEM
Cobalt	Spike	95.1		ug/L	95.10		1	Yes	S4VEM
Cobalt	Spike	9.4		mg/kg	9.4		1	Yes	S4VEM
Copper	Spike	47.4		ug/L	47.39		1	Yes	S4VEM
Copper	Spike	4.4		mg/kg	4.4		1	Yes	S4VEM
Iron	Spike	146		ug/L	145.87		1	Yes	S4VEM
Iron	Spike	14.0		mg/kg	14.0		1	Yes	S4VEM
Lead	Spike	16.0		ug/L	16.02		1	Yes	S4VEM
Lead	Spike	1.5		mg/kg	1.5		1	Yes	S4VEM
Manganese	Spike	2.5		mg/kg	2.5		1	Yes	S4VEM
Manganese	Spike	26.2		ug/L	26.24		1	Yes	S4VEM
Nickel	Spike	7.6		mg/kg	7.64		1	Yes	S4VEM
Nickel	Spike	77.8		ug/L	77.82		1	Yes	S4VEM
Selenium	Spike	6.3		mg/kg	6.3		1	Yes	S4VEM
Selenium	Spike	63.3		ug/L	63.34		1	Yes	S4VEM
Silver	Spike	1.8		mg/kg	1.80		1	Yes	S4VEM
Silver	Spike	18.2		ug/L	18.19		1	Yes	S4VEM
Thallium	Spike	48.5		ug/L	48.47		1	Yes	S4VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Thallium	Spike	4.8		mg/kg	4.8		1	Yes	S4VEM
Vanadium	Spike	106		ug/L	106.47		1	Yes	S4VEM
Vanadium	Spike	10.1		mg/kg	10.1		1	Yes	S4VEM
Zinc	Spike	10.8		mg/kg	10.8		1	Yes	S4VEM
Zinc	Spike	111		ug/L	110.59		1	Yes	S4VEM
Calcium	Spike	10300		ug/L	10250.66		1	Yes	S4VEM
Magnesium	Spike	9830		ug/L	9832.76		1	Yes	S4VEM
Potassium	Spike	9870		ug/L	9866.76		1	Yes	S4VEM
Potassium	Spike	965		mg/kg	965.4		1	Yes	S4VEM
Calcium	Spike	996		mg/kg	995.6		1	Yes	S4VEM
Magnesium	Spike	949		mg/kg	949.1		1	Yes	S4VEM
Sodium	Spike	957		mg/kg	957.3		1	Yes	S4VEM
Sodium	Spike	9840		ug/L	9843.77		1	Yes	S4VEM



Case No:	44673	Contract:	EPW09038	SDG No:	MC0AC2	Lab Code:	CHEM
Sample Number:	MC0AC2	Method:	ICP_AES	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	DW-01	pH:	2	Sample Date:	09/09/2014	Sample Time:	09:50:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	200	UJ	ug/L	200	U	1	Yes	S4VEM
Antimony	Target	60.0	U	ug/L	60.0	U	1	Yes	S4VEM
Arsenic	Target	10.0	UJ	ug/L	10.0	U	1	Yes	S4VEM
Barium	Target	200	UJ	ug/L	200	U	1	Yes	S4VEM
Beryllium	Target	5.0	U	ug/L	5.0	U	1	Yes	S4VEM
Cadmium	Target	5.0	UJ	ug/L	5.0	U	1	Yes	S4VEM
Calcium	Target	27600		ug/L	27600		1	Yes	S4VEM
Chromium	Target	2.1	J-	ug/L	2.1	J	1	Yes	S4VEM
Cobalt	Target	50.0	U	ug/L	50.0	U	1	Yes	S4VEM
Copper	Target	17.5	J	ug/L	17.5	J	1	Yes	S4VEM
Iron	Target	131		ug/L	131		1	Yes	S4VEM
Lead	Target	4.4	B	ug/L	4.4	J	1	Yes	S4VEM
Magnesium	Target	13200		ug/L	13200		1	Yes	S4VEM
Manganese	Target	15.0	UJ	ug/L	15.0	U	1	Yes	S4VEM
Nickel	Target	40.0	U	ug/L	40.0	U	1	Yes	S4VEM
Potassium	Target	8990		ug/L	8990		1	Yes	S4VEM
Selenium	Target	35.0	UJ	ug/L	35.0	U	1	Yes	S4VEM
Silver	Target	10.0	U	ug/L	10.0	U	1	Yes	S4VEM
Sodium	Target	18700		ug/L	18700		1	Yes	S4VEM
Thallium	Target	25.0	U	ug/L	25.0	U	1	Yes	S4VEM
Vanadium	Target	50.0	U	ug/L	50.0	U	1	Yes	S4VEM
Zinc	Target	37.5	J	ug/L	37.5	J	1	Yes	S4VEM

Case No:	44673	Contract:	EPW09038	SDG No:	MC0AC2	Lab Code:	CHEM
Sample Number:	MC0AC3	Method:	ICP_AES	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	DW-02	pH:	2	Sample Date:	09/09/2014	Sample Time:	10:30:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	200	UJ	ug/L	200	U	1	Yes	S4VEM
Antimony	Target	60.0	U	ug/L	60.0	U	1	Yes	S4VEM
Arsenic	Target	10.0	UJ	ug/L	10.0	U	1	Yes	S4VEM
Barium	Target	200	UJ	ug/L	200	U	1	Yes	S4VEM
Beryllium	Target	5.0	U	ug/L	5.0	U	1	Yes	S4VEM
Cadmium	Target	5.0	UJ	ug/L	5.0	U	1	Yes	S4VEM
Calcium	Target	267	J	ug/L	267	J	1	Yes	S4VEM
Chromium	Target	10.0	UJ	ug/L	10.0	U	1	Yes	S4VEM
Cobalt	Target	50.0	U	ug/L	50.0	U	1	Yes	S4VEM
Copper	Target	25.0	UJ	ug/L	25.0	U	1	Yes	S4VEM
Iron	Target	100	UJ	ug/L	100	U	1	Yes	S4VEM
Lead	Target	10.0	UJ	ug/L	10.0	U	1	Yes	S4VEM
Magnesium	Target	5000	UJ	ug/L	5000	U	1	Yes	S4VEM
Manganese	Target	15.0	UJ	ug/L	15.0	U	1	Yes	S4VEM
Nickel	Target	40.0	U	ug/L	40.0	U	1	Yes	S4VEM
Potassium	Target	5000	UJ	ug/L	5000	U	1	Yes	S4VEM
Selenium	Target	35.0	UJ	ug/L	35.0	U	1	Yes	S4VEM
Silver	Target	10.0	U	ug/L	10.0	U	1	Yes	S4VEM
Sodium	Target	79000		ug/L	79000		1	Yes	S4VEM
Thallium	Target	25.0	U	ug/L	25.0	U	1	Yes	S4VEM
Vanadium	Target	50.0	U	ug/L	50.0	U	1	Yes	S4VEM
Zinc	Target	11.4	J	ug/L	11.4	J	1	Yes	S4VEM

Case No:	44673	Contract:	EPW09038	SDG No:	MC0AC2	Lab Code:	CHEM
Sample Number:	MC0AC4	Method:	ICP_AES	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	DW-03	pH:	2	Sample Date:	09/09/2014	Sample Time:	11:13:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	200	UJ	ug/L	200	U	1	Yes	S4VEM
Antimony	Target	60.0	U	ug/L	60.0	U	1	Yes	S4VEM
Arsenic	Target	10.0	UJ	ug/L	10.0	U	1	Yes	S4VEM
Barium	Target	200	UJ	ug/L	200	U	1	Yes	S4VEM
Beryllium	Target	5.0	U	ug/L	5.0	U	1	Yes	S4VEM
Cadmium	Target	5.0	UJ	ug/L	5.0	U	1	Yes	S4VEM
Calcium	Target	469	J	ug/L	469	J	1	Yes	S4VEM
Chromium	Target	10.0	UJ	ug/L	10.0	U	1	Yes	S4VEM
Cobalt	Target	50.0	U	ug/L	50.0	U	1	Yes	S4VEM
Copper	Target	25.0	UJ	ug/L	25.0	U	1	Yes	S4VEM
Iron	Target	100	UJ	ug/L	100	U	1	Yes	S4VEM
Lead	Target	10.0	UJ	ug/L	10.0	U	1	Yes	S4VEM
Magnesium	Target	5000	UJ	ug/L	5000	U	1	Yes	S4VEM
Manganese	Target	15.0	UJ	ug/L	15.0	U	1	Yes	S4VEM
Nickel	Target	2.0	J	ug/L	2.0	J	1	Yes	S4VEM
Potassium	Target	5000	UJ	ug/L	5000	U	1	Yes	S4VEM
Selenium	Target	35.0	UJ	ug/L	35.0	U	1	Yes	S4VEM
Silver	Target	10.0	U	ug/L	10.0	U	1	Yes	S4VEM
Sodium	Target	79200		ug/L	79200		1	Yes	S4VEM
Thallium	Target	25.0	U	ug/L	25.0	U	1	Yes	S4VEM
Vanadium	Target	50.0	U	ug/L	50.0	U	1	Yes	S4VEM
Zinc	Target	20.9	J	ug/L	20.9	J	1	Yes	S4VEM

Case No:	44673	Contract:	EPW09038	SDG No:	MC0AC2	Lab Code:	CHEM
Sample Number:	MC0AC4D	Method:	ICP_AES	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	F3883-04	pH:	2	Sample Date:	09/09/2014	Sample Time:	11:13:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	200	UJ	ug/L	200.0000	U	1	Yes	S4VEM
Antimony	Target	60.0	U	ug/L	60.0000	U	1	Yes	S4VEM
Arsenic	Target	10.0	UJ	ug/L	10.0000	U	1	Yes	S4VEM
Barium	Target	200	UJ	ug/L	200.0000	U	1	Yes	S4VEM
Beryllium	Target	5.0	U	ug/L	5.0000	U	1	Yes	S4VEM
Cadmium	Target	5.0	UJ	ug/L	5.0000	U	1	Yes	S4VEM
Calcium	Target	463	J	ug/L	463.4039	J	1	Yes	S4VEM
Chromium	Target	10.0	UJ	ug/L	10.0000	U	1	Yes	S4VEM
Cobalt	Target	50.0	U	ug/L	50.0000	U	1	Yes	S4VEM
Copper	Target	25.0	UJ	ug/L	25.0000	U	1	Yes	S4VEM
Iron	Target	100	UJ	ug/L	100.0000	U	1	Yes	S4VEM
Lead	Target	10.0	UJ	ug/L	10.0000	U	1	Yes	S4VEM
Magnesium	Target	5000	UJ	ug/L	5000.0000	U	1	Yes	S4VEM
Manganese	Target	15.0	UJ	ug/L	15.0000	U	1	Yes	S4VEM
Nickel	Target	40.0	U	ug/L	40.0000	U	1	Yes	S4VEM
Potassium	Target	193	J-	ug/L	193.0255	J	1	Yes	S4VEM
Selenium	Target	35.0	UJ	ug/L	35.0000	U	1	Yes	S4VEM
Silver	Target	10.0	U	ug/L	10.0000	U	1	Yes	S4VEM
Sodium	Target	94100		ug/L	94098.2700		1	Yes	S4VEM
Thallium	Target	25.0	U	ug/L	25.0000	U	1	Yes	S4VEM
Vanadium	Target	50.0	U	ug/L	50.0000	U	1	Yes	S4VEM
Zinc	Target	24.4	J	ug/L	24.4225	J	1	Yes	S4VEM



Case No:	44673	Contract:	EPW09038	SDG No:	MC0AC2	Lab Code:	CHEM
Sample Number:	MC0AC4S	Method:	ICP_AES	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	F3883-05	pH:	2	Sample Date:	09/09/2014	Sample Time:	11:13:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Spike	1900		ug/L	1896.3680		1	Yes	S4VEM
Antimony	Spike	93.9		ug/L	93.9157		1	Yes	S4VEM
Arsenic	Spike	36.3		ug/L	36.3210		1	Yes	S4VEM
Barium	Spike	2060		ug/L	2063.4730		1	Yes	S4VEM
Beryllium	Spike	50.6		ug/L	50.6336		1	Yes	S4VEM
Cadmium	Spike	50.5		ug/L	50.5324		1	Yes	S4VEM
Chromium	Spike	219		ug/L	218.6024		1	Yes	S4VEM
Cobalt	Spike	496		ug/L	495.8475		1	Yes	S4VEM
Copper	Spike	255		ug/L	254.9853		1	Yes	S4VEM
Iron	Spike	1070		ug/L	1068.9260		1	Yes	S4VEM
Lead	Spike	20.8		ug/L	20.8176		1	Yes	S4VEM
Manganese	Spike	533		ug/L	532.9058		1	Yes	S4VEM
Nickel	Spike	508		ug/L	507.5934		1	Yes	S4VEM
Selenium	Spike	47.7		ug/L	47.6987		1	Yes	S4VEM
Silver	Spike	48.0		ug/L	47.9731		1	Yes	S4VEM
Thallium	Spike	46.2		ug/L	46.2064		1	Yes	S4VEM
Vanadium	Spike	521		ug/L	521.0057		1	Yes	S4VEM
Zinc	Spike	509		ug/L	508.9482		1	Yes	S4VEM

Case No:	44673	Contract:	EPW09038	SDG No:	MC0AC2	Lab Code:	CHEM
Sample Number:	MC0AC5	Method:	ICP_AES	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	DW-04	pH:	2	Sample Date:	09/09/2014	Sample Time:	11:54:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	759.	B	ug/L	75.9	J	1	Yes	S4VEM
Antimony	Target	60.0	U	ug/L	60.0	U	1	Yes	S4VEM
Arsenic	Target	10.0	UJ	ug/L	10.0	U	1	Yes	S4VEM
Barium	Target	3.3	J-	ug/L	3.3	J	1	Yes	S4VEM
Beryllium	Target	5.0	U	ug/L	5.0	U	1	Yes	S4VEM
Cadmium	Target	5.0	UJ	ug/L	5.0	U	1	Yes	S4VEM
Calcium	Target	29600		ug/L	29600		1	Yes	S4VEM
Chromium	Target	10.0	UJ	ug/L	10.0	U	1	Yes	S4VEM
Cobalt	Target	50.0	U	ug/L	50.0	U	1	Yes	S4VEM
Copper	Target	25.0	UJ	ug/L	25.0	U	1	Yes	S4VEM
Iron	Target	477		ug/L	477		1	Yes	S4VEM
Lead	Target	5.3	B	ug/L	5.3	J	1	Yes	S4VEM
Magnesium	Target	14100		ug/L	14100		1	Yes	S4VEM
Manganese	Target	11.1	J	ug/L	11.1	J	1	Yes	S4VEM
Nickel	Target	40.0	U	ug/L	40.0	U	1	Yes	S4VEM
Potassium	Target	10000		ug/L	10000		1	Yes	S4VEM
Selenium	Target	35.0	UJ	ug/L	35.0	U	1	Yes	S4VEM
Silver	Target	10.0	U	ug/L	10.0	U	1	Yes	S4VEM
Sodium	Target	16800		ug/L	16800		1	Yes	S4VEM
Thallium	Target	25.0	U	ug/L	25.0	U	1	Yes	S4VEM
Vanadium	Target	50.0	U	ug/L	50.0	U	1	Yes	S4VEM
Zinc	Target	52.0	J	ug/L	52.0	J	1	Yes	S4VEM

Case No:	44673	Contract:	EPW09038	SDG No:	MC0AC2	Lab Code:	CHEM
Sample Number:	MC0AC6	Method:	ICP_AES	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	DW-02	pH:	2	Sample Date:	09/09/2014	Sample Time:	10:30:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	27.8	B	ug/L	27.8	J	1	Yes	S4VEM
Antimony	Target	60.0	U	ug/L	60.0	U	1	Yes	S4VEM
Arsenic	Target	10.0	UJ	ug/L	10.0	U	1	Yes	S4VEM
Barium	Target	200	UJ	ug/L	200	U	1	Yes	S4VEM
Beryllium	Target	5.0	U	ug/L	5.0	U	1	Yes	S4VEM
Cadmium	Target	5.0	UJ	ug/L	5.0	U	1	Yes	S4VEM
Calcium	Target	319	J	ug/L	319	J	1	Yes	S4VEM
Chromium	Target	10.0	UJ	ug/L	10.0	U	1	Yes	S4VEM
Cobalt	Target	50.0	U	ug/L	50.0	U	1	Yes	S4VEM
Copper	Target	25.0	UJ	ug/L	25.0	U	1	Yes	S4VEM
Iron	Target	99.1	B	ug/L	99.1	J	1	Yes	S4VEM
Lead	Target	10.0	UJ	ug/L	10.0	U	1	Yes	S4VEM
Magnesium	Target	5000	UJ	ug/L	5000	U	1	Yes	S4VEM
Manganese	Target	1.6	J-	ug/L	1.6	J	1	Yes	S4VEM
Nickel	Target	1.3	J	ug/L	1.3	J	1	Yes	S4VEM
Potassium	Target	420	J-	ug/L	420	J	1	Yes	S4VEM
Selenium	Target	35.0	UJ	ug/L	35.0	U	1	Yes	S4VEM
Silver	Target	10.0	U	ug/L	10.0	U	1	Yes	S4VEM
Sodium	Target	77700		ug/L	77700		1	Yes	S4VEM
Thallium	Target	25.0	U	ug/L	25.0	U	1	Yes	S4VEM
Vanadium	Target	50.0	U	ug/L	50.0	U	1	Yes	S4VEM
Zinc	Target	22.0	J	ug/L	22.0	J	1	Yes	S4VEM

Case No:	44673	Contract:	EPW09038	SDG No:	MC0AC2	Lab Code:	CHEM
Sample Number:	MC0AC7	Method:	ICP_AES	Matrix:	Soil	MA Number:	DEFAULT
Sample Location:	201	pH:	2	Sample Date:	09/09/2014	Sample Time:	13:57:00
% Moisture :				% Solids :	88.2		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	3080		mg/kg	3080		1	Yes	S4VEM
Antimony	Target	5.4	U	mg/kg	5.4	U	1	Yes	S4VEM
Arsenic	Target	3.3		mg/kg	3.3		1	Yes	S4VEM
Barium	Target	25.3		mg/kg	25.3		1	Yes	S4VEM
Beryllium	Target	0.097	J	mg/kg	0.097	J	1	Yes	S4VEM
Cadmium	Target	0.45	UJ	mg/kg	0.45	U	1	Yes	S4VEM
Calcium	Target	454	U	mg/kg	401	J	1	Yes	S4VEM
Chromium	Target	11.2		mg/kg	11.2		1	Yes	S4VEM
Cobalt	Target	0.64	J	mg/kg	0.64	J	1	Yes	S4VEM
Copper	Target	3.7		mg/kg	3.7		1	Yes	S4VEM
Iron	Target	4210		mg/kg	4210		1	Yes	S4VEM
Lead	Target	3.5		mg/kg	3.5		1	Yes	S4VEM
Magnesium	Target	311	J	mg/kg	311	J	1	Yes	S4VEM
Manganese	Target	43.2		mg/kg	43.2		1	Yes	S4VEM
Nickel	Target	3.0	J	mg/kg	3.0	J	1	Yes	S4VEM
Potassium	Target	454	U	mg/kg	143	J	1	Yes	S4VEM
Selenium	Target	3.2	UJ	mg/kg	3.2	U	1	Yes	S4VEM
Silver	Target	0.91	U	mg/kg	0.91	U	1	Yes	S4VEM
Sodium	Target	454	U	mg/kg	454	U	1	Yes	S4VEM
Thallium	Target	2.3	U	mg/kg	2.3	U	1	Yes	S4VEM
Vanadium	Target	9.0		mg/kg	9.0		1	Yes	S4VEM
Zinc	Target	8.7		mg/kg	8.7		1	Yes	S4VEM



Case No:	44673	Contract:	EPW09038	SDG No:	MC0AC2	Lab Code:	CHEM
Sample Number:	MC0AC7D	Method:	ICP_AES	Matrix:	Soil	MA Number:	DEFAULT
Sample Location:	F3883-09	pH:	2	Sample Date:	09/09/2014	Sample Time:	13:57:00
% Moisture :				% Solids :	88.2		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	3060		mg/kg	3056.5580		1	Yes	S4VEM
Antimony	Target	5.4	U	mg/kg	5.3990	U	1	Yes	S4VEM
Arsenic	Target	3.3		mg/kg	3.2853		1	Yes	S4VEM
Barium	Target	25.3		mg/kg	25.2773		1	Yes	S4VEM
Beryllium	Target	0.12	J	mg/kg	0.1220	J	1	Yes	S4VEM
Cadmium	Target	0.45	UJ	mg/kg	0.4499	U	1	Yes	S4VEM
Calcium	Target	450	U	mg/kg	401.4658	J	1	Yes	S4VEM
Chromium	Target	11.1		mg/kg	11.1389		1	Yes	S4VEM
Cobalt	Target	0.62	J	mg/kg	0.6234	J	1	Yes	S4VEM
Copper	Target	3.9		mg/kg	3.9198		1	Yes	S4VEM
Iron	Target	4250		mg/kg	4247.1040		1	Yes	S4VEM
Lead	Target	3.6		mg/kg	3.6043		1	Yes	S4VEM
Magnesium	Target	310	J	mg/kg	309.9062	J	1	Yes	S4VEM
Manganese	Target	43.2		mg/kg	43.2483		1	Yes	S4VEM
Nickel	Target	2.9	J	mg/kg	2.9290	J	1	Yes	S4VEM
Potassium	Target	450	U	mg/kg	141.6921	J	1	Yes	S4VEM
Selenium	Target	3.1	UJ	mg/kg	3.1494	U	1	Yes	S4VEM
Silver	Target	0.90	U	mg/kg	0.8998	U	1	Yes	S4VEM
Sodium	Target	450	U	mg/kg	449.9154	U	1	Yes	S4VEM
Thallium	Target	2.2	U	mg/kg	2.2496	U	1	Yes	S4VEM
Vanadium	Target	8.9		mg/kg	8.9123		1	Yes	S4VEM
Zinc	Target	8.8		mg/kg	8.8317		1	Yes	S4VEM

Case No:	44673	Contract:	EPW09038	SDG No:	MC0AC2	Lab Code:	CHEM
Sample Number:	MC0AC7S	Method:	ICP_AES	Matrix:	Soil	MA Number:	DEFAULT
Sample Location:	F3883-10	pH:	2	Sample Date:	09/09/2014	Sample Time:	13:57:00
% Moisture :				% Solids :	88.2		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Spike	17.7		mg/kg	17.7282		1	Yes	S4VEM
Arsenic	Spike	10.9		mg/kg	10.8674		1	Yes	S4VEM
Barium	Spike	520		mg/kg	520.0764		1	Yes	S4VEM
Beryllium	Spike	11.6		mg/kg	11.5766		1	Yes	S4VEM
Cadmium	Spike	11.2		mg/kg	11.2185		1	Yes	S4VEM
Chromium	Spike	62.3		mg/kg	62.2753		1	Yes	S4VEM
Cobalt	Spike	115		mg/kg	115.1235		1	Yes	S4VEM
Copper	Spike	62.5		mg/kg	62.5270		1	Yes	S4VEM
Lead	Spike	8.3		mg/kg	8.2598		1	Yes	S4VEM
Manganese	Spike	174		mg/kg	173.9315		1	Yes	S4VEM
Nickel	Spike	119		mg/kg	118.7567		1	Yes	S4VEM
Selenium	Spike	10.1		mg/kg	10.1424		1	Yes	S4VEM
Silver	Spike	10.9		mg/kg	10.9044		1	Yes	S4VEM
Thallium	Spike	10.1		mg/kg	10.0655		1	Yes	S4VEM
Vanadium	Spike	130		mg/kg	129.8354		1	Yes	S4VEM
Zinc	Spike	126		mg/kg	125.7529		1	Yes	S4VEM

Case No:	44673	Contract:	EPW09038	SDG No:	MC0AC2	Lab Code:	CHEM
Sample Number:	MC0AC8	Method:	ICP_AES	Matrix:	Soil	MA Number:	DEFAULT
Sample Location:	202	pH:	2	Sample Date:	09/09/2014	Sample Time:	14:08:00
% Moisture :				% Solids :	90.9		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	2150		mg/kg	2150		1	Yes	S4VEM
Antimony	Target	4.6	U	mg/kg	4.6	U	1	Yes	S4VEM
Arsenic	Target	2.1		mg/kg	2.1		1	Yes	S4VEM
Barium	Target	20.4		mg/kg	20.4		1	Yes	S4VEM
Beryllium	Target	0.091	J	mg/kg	0.091	J	1	Yes	S4VEM
Cadmium	Target	0.38	UJ	mg/kg	0.38	U	1	Yes	S4VEM
Calcium	Target	379	U	mg/kg	358	J	1	Yes	S4VEM
Chromium	Target	8.1		mg/kg	8.1		1	Yes	S4VEM
Cobalt	Target	0.47	J	mg/kg	0.47	J	1	Yes	S4VEM
Copper	Target	2.4		mg/kg	2.4		1	Yes	S4VEM
Iron	Target	3060		mg/kg	3060		1	Yes	S4VEM
Lead	Target	2.5		mg/kg	2.5		1	Yes	S4VEM
Magnesium	Target	216	J	mg/kg	216	J	1	Yes	S4VEM
Manganese	Target	52.8		mg/kg	52.8		1	Yes	S4VEM
Nickel	Target	3.2		mg/kg	3.2		1	Yes	S4VEM
Potassium	Target	379	U	mg/kg	40.4	J	1	Yes	S4VEM
Selenium	Target	2.7	UJ	mg/kg	2.7	U	1	Yes	S4VEM
Silver	Target	0.76	U	mg/kg	0.76	U	1	Yes	S4VEM
Sodium	Target	379	U	mg/kg	379	U	1	Yes	S4VEM
Thallium	Target	1.9	U	mg/kg	1.9	U	1	Yes	S4VEM
Vanadium	Target	5.1		mg/kg	5.1		1	Yes	S4VEM
Zinc	Target	16.5		mg/kg	16.5		1	Yes	S4VEM

Case No:	44673	Contract:	EPW09038	SDG No:	MC0AC2	Lab Code:	CHEM
Sample Number:	MC0AC9	Method:	ICP_AES	Matrix:	Soil	MA Number:	DEFAULT
Sample Location:	203	pH:	2	Sample Date:	09/09/2014	Sample Time:	14:24:00
% Moisture :				% Solids :	84.9		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	1160		mg/kg	1160		1	Yes	S4VEM
Antimony	Target	5.6	U	mg/kg	5.6	U	1	Yes	S4VEM
Arsenic	Target	1.3		mg/kg	1.3		1	Yes	S4VEM
Barium	Target	11.9	J	mg/kg	11.9	J	1	Yes	S4VEM
Beryllium	Target	0.46	U	mg/kg	0.46	U	1	Yes	S4VEM
Cadmium	Target	0.46	UJ	mg/kg	0.46	U	1	Yes	S4VEM
Calcium	Target	464	U	mg/kg	200	J	1	Yes	S4VEM
Chromium	Target	6.7		mg/kg	6.7		1	Yes	S4VEM
Cobalt	Target	0.22	J	mg/kg	0.22	J	1	Yes	S4VEM
Copper	Target	1.6	J	mg/kg	1.6	J	1	Yes	S4VEM
Iron	Target	2190		mg/kg	2190		1	Yes	S4VEM
Lead	Target	1.8		mg/kg	1.8		1	Yes	S4VEM
Magnesium	Target	128	J-	mg/kg	128	J	1	Yes	S4VEM
Manganese	Target	18.4		mg/kg	18.4		1	Yes	S4VEM
Nickel	Target	2.2	J	mg/kg	2.2	J	1	Yes	S4VEM
Potassium	Target	464	U	mg/kg	26.4	J	1	Yes	S4VEM
Selenium	Target	3.2	UJ	mg/kg	3.2	U	1	Yes	S4VEM
Silver	Target	0.93	U	mg/kg	0.93	U	1	Yes	S4VEM
Sodium	Target	464	U	mg/kg	464	U	1	Yes	S4VEM
Thallium	Target	2.3	U	mg/kg	2.3	U	1	Yes	S4VEM
Vanadium	Target	3.6	J	mg/kg	3.6	J	1	Yes	S4VEM
Zinc	Target	8.0		mg/kg	8.0		1	Yes	S4VEM



Case No:	44673	Contract:	EPW09038	SDG No:	MC0AC2	Lab Code:	CHEM
Sample Number:	MC0AD0	Method:	ICP_AES	Matrix:	Soil	MA Number:	DEFAULT
Sample Location:	204	pH:	2	Sample Date:	09/09/2014	Sample Time:	14:35:00
% Moisture :				% Solids :	86.9		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	1890		mg/kg	1890		1	Yes	S4VEM
Antimony	Target	5.4	U	mg/kg	5.4	U	1	Yes	S4VEM
Arsenic	Target	0.67	J	mg/kg	0.67	J	1	Yes	S4VEM
Barium	Target	20.6		mg/kg	20.6		1	Yes	S4VEM
Beryllium	Target	0.45	U	mg/kg	0.45	U	1	Yes	S4VEM
Cadmium	Target	0.45	UJ	mg/kg	0.45	U	1	Yes	S4VEM
Calcium	Target	450	U	mg/kg	231	J	1	Yes	S4VEM
Chromium	Target	5.4		mg/kg	5.4		1	Yes	S4VEM
Cobalt	Target	0.33	J	mg/kg	0.33	J	1	Yes	S4VEM
Copper	Target	1.2	J	mg/kg	1.2	J	1	Yes	S4VEM
Iron	Target	3100		mg/kg	3100		1	Yes	S4VEM
Lead	Target	2.1		mg/kg	2.1		1	Yes	S4VEM
Magnesium	Target	188	J	mg/kg	188	J	1	Yes	S4VEM
Manganese	Target	22.0		mg/kg	22.0		1	Yes	S4VEM
Nickel	Target	2.1	J	mg/kg	2.1	J	1	Yes	S4VEM
Potassium	Target	450	U	mg/kg	50.0	J	1	Yes	S4VEM
Selenium	Target	3.1	UJ	mg/kg	3.1	U	1	Yes	S4VEM
Silver	Target	0.90	U	mg/kg	0.90	U	1	Yes	S4VEM
Sodium	Target	450	U	mg/kg	450	U	1	Yes	S4VEM
Thallium	Target	2.2	U	mg/kg	2.2	U	1	Yes	S4VEM
Vanadium	Target	5.6		mg/kg	5.6		1	Yes	S4VEM
Zinc	Target	9.3		mg/kg	9.3		1	Yes	S4VEM

Case No:	44673	Contract:	EPW09038	SDG No:	MC0AC2	Lab Code:	CHEM
Sample Number:	MC0AD1	Method:	ICP_AES	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	DW-05	pH:	2	Sample Date:	09/10/2014	Sample Time:	14:25:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	200	UJ	ug/L	200	U	1	Yes	S4VEM
Antimony	Target	60.0	U	ug/L	60.0	U	1	Yes	S4VEM
Arsenic	Target	10.0	UJ	ug/L	10.0	U	1	Yes	S4VEM
Barium	Target	200	UJ	ug/L	200	U	1	Yes	S4VEM
Beryllium	Target	5.0	U	ug/L	5.0	U	1	Yes	S4VEM
Cadmium	Target	5.0	UJ	ug/L	5.0	U	1	Yes	S4VEM
Calcium	Target	1250	J	ug/L	1250	J	1	Yes	S4VEM
Chromium	Target	10.0	UJ	ug/L	10.0	U	1	Yes	S4VEM
Cobalt	Target	50.0	U	ug/L	50.0	U	1	Yes	S4VEM
Copper	Target	25.0	UJ	ug/L	25.0	U	1	Yes	S4VEM
Iron	Target	78.9	B	ug/L	78.9	J	1	Yes	S4VEM
Lead	Target	10.0	UJ	ug/L	10.0	U	1	Yes	S4VEM
Magnesium	Target	344	J	ug/L	344	J	1	Yes	S4VEM
Manganese	Target	15.0	UJ	ug/L	15.0	U	1	Yes	S4VEM
Nickel	Target	40.0	U	ug/L	40.0	U	1	Yes	S4VEM
Potassium	Target	4160	J	ug/L	4160	J	1	Yes	S4VEM
Selenium	Target	35.0	UJ	ug/L	35.0	U	1	Yes	S4VEM
Silver	Target	10.0	U	ug/L	10.0	U	1	Yes	S4VEM
Sodium	Target	145000		ug/L	145000		1	Yes	S4VEM
Thallium	Target	25.0	U	ug/L	25.0	U	1	Yes	S4VEM
Vanadium	Target	50.0	U	ug/L	50.0	U	1	Yes	S4VEM
Zinc	Target	12.1	J	ug/L	12.1	J	1	Yes	S4VEM

Case No:	44673	Contract:	EPW09038	SDG No:	MC0AC2	Lab Code:	CHEM
Sample Number:	MC0AD2	Method:	ICP_AES	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	MW-04	pH:	2	Sample Date:	09/09/2014	Sample Time:	16:04:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	15200		ug/L	15200		1	Yes	S4VEM
Antimony	Target	60.0	U	ug/L	60.0	U	1	Yes	S4VEM
Arsenic	Target	7.6	J	ug/L	7.6	J	1	Yes	S4VEM
Barium	Target	167	J	ug/L	167	J	1	Yes	S4VEM
Beryllium	Target	1.1	J	ug/L	1.1	J	1	Yes	S4VEM
Cadmium	Target	5.0	UJ	ug/L	5.0	U	1	Yes	S4VEM
Calcium	Target	13600		ug/L	13600		1	Yes	S4VEM
Chromium	Target	34.5		ug/L	34.5		1	Yes	S4VEM
Cobalt	Target	8.9	J	ug/L	8.9	J	1	Yes	S4VEM
Copper	Target	45.9		ug/L	45.9		1	Yes	S4VEM
Iron	Target	15300		ug/L	15300		1	Yes	S4VEM
Lead	Target	22.8		ug/L	22.8		1	Yes	S4VEM
Magnesium	Target	2950	J	ug/L	2950	J	1	Yes	S4VEM
Manganese	Target	706		ug/L	706		1	Yes	S4VEM
Nickel	Target	27.0	J	ug/L	27.0	J	1	Yes	S4VEM
Potassium	Target	5000	UJ	ug/L	5000	U	1	Yes	S4VEM
Selenium	Target	35.0	UJ	ug/L	35.0	U	1	Yes	S4VEM
Silver	Target	10.0	U	ug/L	10.0	U	1	Yes	S4VEM
Sodium	Target	3500	J	ug/L	3500	J	1	Yes	S4VEM
Thallium	Target	25.0	U	ug/L	25.0	U	1	Yes	S4VEM
Vanadium	Target	37.3	J	ug/L	37.3	J	1	Yes	S4VEM
Zinc	Target	158		ug/L	158		1	Yes	S4VEM

Case No:	44673	Contract:	EPW09038	SDG No:	MC0AC2	Lab Code:	CHEM
Sample Number:	MC0AD3	Method:	ICP_AES	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	MW-05	pH:	2	Sample Date:	09/09/2014	Sample Time:	16:35:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	306		ug/L	306		1	Yes	S4VEM
Antimony	Target	60.0	U	ug/L	60.0	U	1	Yes	S4VEM
Arsenic	Target	41.3		ug/L	41.3		1	Yes	S4VEM
Barium	Target	6.9	J-	ug/L	6.9	J	1	Yes	S4VEM
Beryllium	Target	5.0	U	ug/L	5.0	U	1	Yes	S4VEM
Cadmium	Target	5.0	UJ	ug/L	5.0	U	1	Yes	S4VEM
Calcium	Target	9520		ug/L	9520		1	Yes	S4VEM
Chromium	Target	71.4		ug/L	71.4		1	Yes	S4VEM
Cobalt	Target	4.2	J	ug/L	4.2	J	1	Yes	S4VEM
Copper	Target	25.0	UJ	ug/L	25.0	U	1	Yes	S4VEM
Iron	Target	16600		ug/L	16600		1	Yes	S4VEM
Lead	Target	10.0	UJ	ug/L	10.0	U	1	Yes	S4VEM
Magnesium	Target	1230	J	ug/L	1230	J	1	Yes	S4VEM
Manganese	Target	538		ug/L	538		1	Yes	S4VEM
Nickel	Target	3.9	J	ug/L	3.9	J	1	Yes	S4VEM
Potassium	Target	5000	UJ	ug/L	5000	U	1	Yes	S4VEM
Selenium	Target	35.0	UJ	ug/L	35.0	U	1	Yes	S4VEM
Silver	Target	10.0	U	ug/L	10.0	U	1	Yes	S4VEM
Sodium	Target	3140	J	ug/L	3140	J	1	Yes	S4VEM
Thallium	Target	25.0	U	ug/L	25.0	U	1	Yes	S4VEM
Vanadium	Target	50.0	U	ug/L	50.0	U	1	Yes	S4VEM
Zinc	Target	8.1	J-	ug/L	8.1	J	1	Yes	S4VEM



Case No:	44673	Contract:	EPW09038	SDG No:	MC0AC2	Lab Code:	CHEM
Sample Number:	PBS01	Method:	ICP_AES	Matrix:	Soil	MA Number:	DEFAULT
Sample Location:		pH:		Sample Date:	09/12/2014	Sample Time:	19:04:14
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	-5.8	J	mg/kg	-5.761	J	1	Yes	S4VEM
Antimony	Target	6.0	U	mg/kg	6.000	U	1	Yes	S4VEM
Arsenic	Target	1.0	U	mg/kg	1.000	U	1	Yes	S4VEM
Barium	Target	-0.44	J	mg/kg	-0.445	J	1	Yes	S4VEM
Beryllium	Target	0.50	U	mg/kg	0.500	U	1	Yes	S4VEM
Cadmium	Target	-0.041	J	mg/kg	-0.041	J	1	Yes	S4VEM
Calcium	Target	-9.2	J	mg/kg	-9.208	J	1	Yes	S4VEM
Chromium	Target	-0.19	J	mg/kg	-0.195	J	1	Yes	S4VEM
Cobalt	Target	5.0	U	mg/kg	5.000	U	1	Yes	S4VEM
Copper	Target	-0.33	J	mg/kg	-0.335	J	1	Yes	S4VEM
Iron	Target	-5.7	J	mg/kg	-5.720	J	1	Yes	S4VEM
Lead	Target	-0.23	J	mg/kg	-0.231	J	1	Yes	S4VEM
Magnesium	Target	-9.6	J	mg/kg	-9.573	J	1	Yes	S4VEM
Manganese	Target	-0.51	J	mg/kg	-0.506	J	1	Yes	S4VEM
Nickel	Target	4.0	U	mg/kg	4.000	U	1	Yes	S4VEM
Potassium	Target	500	U	mg/kg	500.000	U	1	Yes	S4VEM
Selenium	Target	-0.29	J	mg/kg	-0.286	J	1	Yes	S4VEM
Silver	Target	1.0	U	mg/kg	1.000	U	1	Yes	S4VEM
Sodium	Target	500	U	mg/kg	500.000	U	1	Yes	S4VEM
Thallium	Target	2.5	U	mg/kg	2.500	U	1	Yes	S4VEM
Vanadium	Target	5.0	U	mg/kg	5.000	U	1	Yes	S4VEM
Zinc	Target	6.0	U	mg/kg	6.000	U	1	Yes	S4VEM

Case No:	44673	Contract:	EPW09038	SDG No:	MC0AC2	Lab Code:	CHEM
Sample Number:	PBW01	Method:	ICP_AES	Matrix:	Water	MA Number:	DEFAULT
Sample Location:		pH:		Sample Date:	09/12/2014	Sample Time:	16:02:52
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	-22	J	ug/L	-21.661	J	1	Yes	S4VEM
Antimony	Target	60.0	U	ug/L	60.000	U	1	Yes	S4VEM
Arsenic	Target	-3.0	J	ug/L	-2.961	J	1	Yes	S4VEM
Barium	Target	-3.8	J	ug/L	-3.819	J	1	Yes	S4VEM
Beryllium	Target	5.0	U	ug/L	5.000	U	1	Yes	S4VEM
Cadmium	Target	0.189	J	ug/L	0.189	J	1	Yes	S4VEM
Calcium	Target	5000	U	ug/L	5000.000	U	1	Yes	S4VEM
Chromium	Target	-1.7	J	ug/L	-1.728	J	1	Yes	S4VEM
Cobalt	Target	50.0	U	ug/L	50.000	U	1	Yes	S4VEM
Copper	Target	-3.5	J	ug/L	-3.503	J	1	Yes	S4VEM
Iron	Target	-26	J	ug/L	-26.067	J	1	Yes	S4VEM
Lead	Target	10.0	U	ug/L	10.000	U	1	Yes	S4VEM
Magnesium	Target	5000	U	ug/L	5000.000	U	1	Yes	S4VEM
Manganese	Target	-4.4	J	ug/L	-4.439	J	1	Yes	S4VEM
Nickel	Target	40.0	U	ug/L	40.000	U	1	Yes	S4VEM
Potassium	Target	5000	U	ug/L	5000.000	U	1	Yes	S4VEM
Selenium	Target	-3.3	J	ug/L	-3.314	J	1	Yes	S4VEM
Silver	Target	10.0	U	ug/L	10.000	U	1	Yes	S4VEM
Sodium	Target	5000	U	ug/L	5000.000	U	1	Yes	S4VEM
Thallium	Target	25.0	U	ug/L	25.000	U	1	Yes	S4VEM
Vanadium	Target	50.0	U	ug/L	50.000	U	1	Yes	S4VEM
Zinc	Target	-4.7	J	ug/L	-4.685	J	1	Yes	S4VEM



