

ARCADIS U.S., Inc. 1114 Benfield Boulevard

S. Bull, MDE

Copies:

Date:

Suite A

Millersville Maryland 21108

Tel 410 987 0032

Fax 410 987 4392

**ENVIRONMENT** 

**Transmittal Letter** 

To: Mr. Rob Hill

Maryland Department of the Environment Land Management Administration 1800 Washington Boulevard, Suite 620

Baltimore, MD 21230-1719

J. Richmond, MDE K. Brandt, NPS - CD J. Hewitt, NPS - CD M. Carter, NPS - CD

P. Penoyer, NPS - CD

P. Kurzanski, CSXT - PS&E Web

S. Jarvela, USEPA - CD L. Fischbeck, E&E - CD L. Bohn, FCHD - CD B. Cervi, E&E - CD

From:

November 26, 2013 Megan E. Kellner

ARCADIS Project No.: Subject: Revised Site Conceptual Model Addendum 1 MD843.11.05

CSXT Brunswick Yard, Brunswick, Maryland CSXT

Project # 9415381 We are sending you:

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Comments: On behalf of Mr. Paul Kurzanski of CSXT, please find enclosed a copy of the Revised Site Conceptual Model Addendum 1 with a copy on CD for the CSXT Brunswick Yard, Brunswick, Maryland. Two copies (one a complete hard copy) of the report were also delivered to Susan Bull with one electronic copy on CD. Please contact me with and questions. Thank you, Megan Kellner





**CSX Transportation, Inc.** 

# Revised Site Conceptual Model Addendum 1:

**C&O Canal Investigation and NPS MW- 18 Well Installation Summary Report** 

CSXT Brunswick Yard / C&O Canal, Brunswick, Maryland CSXT Project # 9415381

November 27, 2013



Katie Moran Staff Geologist

Josh Wilson Project Scientist

Michael Kladias, P.G.

Technical Expert, Modeling Services

Megan E. Kellner, P.G. Project Manager

Revised Site Conceptual Model Addendum 1-C&O Canal Investigation and NPS MW-18 Well Installation Summary Report

Brunswick Yard, Brunswick, Maryland CSXT Project # 9415381

Prepared for:

CSX Transportation, Inc.

Prepared by:
ARCADIS U.S., Inc.
1114 Benfield Boulevard
Suite A
Millersville
Maryland 21108
Tel 410 987 0032
Fax 410 987 4392

Our Ref.:

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Date:

November 26, 2013

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## **List of Acronyms and Abbreviations**

% percent

μg/kg micrograms per kilogram

μg/L micrograms per liter

AOC Area of concern

ARCADIS ARCADIS U.S., Inc.

AST aboveground storage tank

B laboratory qualifier indicating constituent was detected in a method

blank

bgs below ground surface

BRT barrier/recovery trench

CAP Corrective Action Plan

CCTV closed circuit television

C&O Chesapeake and Ohio

CAP Corrective Action Plan

CSXT CSX Transportation, Inc.

DPE dual-phase extraction

DPT direct-push technology

Eder Associates

E&E Ecology and Environment, Inc.

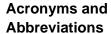
EFR enhanced fluid recovery

FID flame ionization detector

GP Geoprobe

J laboratory qualifier indicating constituent concentration is estimated

LPH liquid-phase hydrocarbon





## **Acronyms and Abbreviations (continued)**

LNAPL light non-aqueous phase liquid

MARC Maryland Rail Commuter service

MDE Maryland Department of the Environment

mg/kg milligrams per kilogram

mg/L milligrams per liter

msl mean sea level

MTBE methyl tert-butyl ether

MW monitoring well

NPS National Park Service

O&M operation and maintenance

ORP oxidation-reduction potential

OVA organic vapor analyzer

PID photoionization detector

ppm parts per million

PVC polyvinyl chloride

SI Supplemental Investigation

SCM Site Conceptual Model

SGC silica gel cleanup

SIWP Supplemental Investigation Work Plan

SVOC semi-volatile organic compound

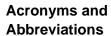
the Site CSXT Brunswick Rail Yard

TPH total petroleum hydrocarbon

TPH-DRO diesel-range total petroleum hydrocarbons

TPH-GRO gasoline-range total petroleum hydrocarbons

TPH-ORO oil-range total petroleum hydrocarbons





# **Acronyms and Abbreviations (continued)**

USEPA U.S. Environmental Protection Agency

UST underground storage tank

VOC volatile organic compound



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#### 1. Introduction

On behalf of CSX Transportation, Inc., (CSXT), ARCADIS U.S., Inc. (ARCADIS) has prepared this Revised Site Conceptual Model (SCM) Addendum 1 – C&O Canal Investigation and NPS MW-18 Well Installation Summary Report for the CSXT Brunswick Yard (the Site) in Brunswick, Maryland, as requested by the Maryland Department of the Environment (MDE) in letter correspondence dated September 6, 2012. This report is the first addendum to the Supplemental Investigation Report / Revised SCM (SI Report and Revised SCM), submitted to the MDE in April 2013 (ARCADIS 2013a). This Revised SCM Addendum presents data collected from May through October 2013, during the implementation of canal investigation activities detailed in the Revised Supplemental Investigation Work Plan (SIWP) (ARCADIS 2012) and the replacement of National Park Service (NPS) Monitoring Well (MW)-11 (previously destroyed) with new well NPS MW-18.

The SCM is the primary means to communicate and interpret technical data from both the Site and the NPS property located adjacent to the Site. The SCM consists of a narrative description of groundwater flow and solute transport at the Site and on NPS Property, including the locations and nature of contaminant sources. The original SCM was submitted to MDE on January 30, 2007, and has been revised four times (February 8, 2008; August 29, 2008; April 30, 2012; April 18, 2013) based upon data collected from several phases of Site investigations. In accordance with the approved CAP Addendum, this Revised SCM Addendum 1 presents data collected since the previous SCM submittal.

Liquid-phase hydrocarbon (LPH) recovery activities are currently conducted at the Site as required by the Consent Order between MDE and CSXT, signed on July 18, 2007 (MDE 2007). The primary goal, as stated in the Consent Order, is to remove light non-aqueous phase liquid (LNAPL) diesel fuel related to the aboveground storage tank (AST) system, to the extent practicable as determined by the MDE. The removal will alleviate the threat of migration of LNAPL, taking into consideration future re-watering of the Chesapeake and Ohio (C&O) canal. The Consent Order defines "extent practicable" as a sheen on the groundwater measurable to 1/8<sup>th</sup> of an inch using an interface probe capable of detecting oil and water to 0.01 feet. ARCADIS, on behalf of CSXT, submitted a CAP Addendum, per the Consent Order, on March 2, 2009 and MDE approved it on May 27, 2009 (MDE 2009). ARCADIS implemented the CAP Addendum in July 2009. The Consent Order specified a deadline of no longer than three years from approval of the CAP (Addendum), to be extended as reasonably



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necessary, for completing the cleanup, by mutual agreement of MDE and CSXT. The agreement was documented in an amended Consent Order.

## 1.1 Site Description

The Site, which has been an active rail yard since 1892, is located adjacent to the C&O Canal in Brunswick, Maryland (Figure 1). The Brunswick Yard is bounded to the north by East Potomac Street, to the west by a Maryland Rail Commuter service (MARC) train commuter parking lot, and the C&O Canal to the south. Site features include a former AST Fuel Pump House, former Roundhouse, and the currently-operating ASTs, Fueling Station and Oil-Water Separator. Historic and current potential source areas for diesel-range total petroleum hydrocarbons (TPH-DRO) in groundwater are the former AST system, which included a fuel pumping house and a 500,000-gallon diesel fuel AST, and a current fueling area located near the former roundhouse (Figure 1). The Brunswick Yard handles both commuter and freight traffic. The diesel fueling station is currently operated by MARC and their subcontractors. Other areas of the Brunswick Yard are used for rail-related staging activities.

The C&O Canal is located south of the Brunswick Yard, and is bounded on the south by the Potomac River. Directly north of the canal is a dirt access road that is occasionally used by CSXT vehicles. Just to the south of the canal is the historic C&O Canal tow path, which is a maintained dirt/gravel road that leads to the Brunswick Camp Ground. The tow path receives moderate use from vehicular, bike and pedestrian traffic. The canal itself is approximately 25 to 30 feet wide, with steep banks approximately three to four feet in height. The bottom of the canal is relatively flat, and standing water is occasionally observed in portions of the canal for extended periods of time. The canal banks are covered with a mix of dense brush and plant debris. Vegetation within the canal prism consists of young trees, with large logs and branches littered on the surface.

## 1.2 CSXT Site History and Activities

A short summary of Site history and active remediation is presented below; a more detailed history is presented in the SI Report and Revised SCM. A tabular history of previous and recent environmental activities associated with the Site and the C&O Canal is also included as Table 1.

Remedial activities conducted by CSXT and their consultants were initiated in 1992 with the removal of a 16,000 gallon diesel fuel underground storage tank (UST)



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adjacent to the fuel pumping house and approximately 100 cubic yards of petroleum impacted soil. A series of monitoring wells and piezometers were installed at the Site beginning in 1994, and efforts to recover LPH from Site wells began at CSXT MW-2 in January 1995. As requested by the MDE in 2002, a CAP prepared by Gannett Fleming, Inc. was submitted on April 19, 2002. The CAP proposed the installation of a barrier/recovery trench (BRT) with internal collection sumps in order to provide containment of LPH. The CAP was approved by MDE in November 2002, and construction of the BRT was completed in March 2004. Beginning in July 2004, enhanced fluid recovery (EFR) activities were initiated to increase LPH recovery. Approximately 32,466 gallons of total fluids (LPH and water) were recovered using EFR from July 2004 through June 2009. In September 2006, an automated product recovery pump was installed in CSXT MW-2 as requested by MDE. A total of 54 gallons of product were recovered by the pump from September 2006 through July 2008.

Subsequent to the August 2008 SCM revision (ARCADIS 2008), several phases of corrective measures were completed at the Site, including a dual-phase extraction (DPE) pilot study, implementation of the CAP, and additional well installations.

The CAP Addendum was approved by the MDE on May 27, 2009. Several actions were initiated in 2009 in accordance with the CAP Addendum, including the installation of three LPH skimmer pumps and five passive LPH skimmers to facilitate consistent LPH recovery. Three additional QED Environmental Systems ferret skimmer pumps were installed in September 2010. Operation and Maintenance (O&M) visits have been completed on a regular basis. O&M visits include gauging of wells which contained measurable LPH within the previous six months, and LPH recovery using a peristaltic pump or absorbent sock at wells containing measurable LPH where a skimmer pump or passive skimmer was not installed. Currently there are five active automated skimmer pumps, located in monitoring wells CSXT MW-41, CSXT MW-53, CSXT MW-54, CSXT MW-55, and CSXT MW-56. Total cumulative recovery by all methods since system implementation in July 2009 through September of 2013 is 799.8 gallons of LPH, with 626.1 gallons of LPH recovered via the skimmer pumps. LPH and water level monitoring data and LPH recovery data are presented in quarterly reports submitted to the MDE.

Groundwater sampling activities have been ongoing on at least a semi-annual basis since December 2006. Between 2006 and August 2008, all existing CSXT and NPS wells that did not contain measurable LPH were sampled. Following the August 2008 groundwater sampling event, the MDE approved a reduction in the number of



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monitoring wells included in the groundwater sampling monitoring well network. The MDE also approved a reduction in groundwater sampling frequency, from quarterly to semi-annually. Groundwater analytical data are presented in quarterly reports submitted to the MDE.

## 1.3 National Park Service Property History and Activities

Soil investigative activities were conducted on NPS property beginning in approximately 1991 as part of the permitting process to restore and re-water a section of the C&O Canal. Based on the results of the soil sampling conducted by NPS, CSXT conducted initial surface soil sampling in March 1992 and additional soil delineation sampling in July 1993. The March 1992 surface soil sampling results indicated elevated concentrations of total petroleum hydrocarbons (TPH) in three areas, with concentrations ranging from 509 milligrams per kilogram (mg/kg) at sample location EA-7 to 4,270 mg/kg at location EA-3. Further delineation conducted in July 1993 focused on the three Areas of Concern (AOC): AOC 1 near location EA-3, AOC 2 near location EA-5, and AOC 3 near locations EA-7 and EA-8. As agreed upon by CSXT and NPS at the time of the investigation, each area would be delineated where soil samples had concentrations of TPH above 400 mg/kg. These areas were not associated with constituent concentrations in groundwater samples. Soil delineation samples collected during the July 1993 event further refined the boundaries of Areas 1, 2, and 3 as described in the investigation report (Eder Associates (Eder) 1994).

On behalf of the NPS, in March 1996, Ecology and Environment, Inc. (E&E) prepared a Draft Site Assessment and Characterization Report based on additional sediment and soil sampling. The results of the collection and analysis of subsurface soils within the canal prism indicated there were no polycyclic aromatic hydrocarbon compounds exceeding the U.S. Environmental Protection Agency (USEPA) Region III Risk-Based Concentrations for industrial exposure (E&E 1996).

In order to evaluate groundwater quality along the C&O Canal, the NPS installed five monitoring wells (NPS MW-1 through NPS MW-5) along the canal in August 1996 (E&E 1997). The NPS collected four rounds of groundwater samples from these monitoring wells between 1996 and 1999 before installing additional wells (NPS MW-10 through NPS MW-17) in 2001. Only one NPS well, NPS MW-4, ever exhibited measurable LPH, at thicknesses ranging from 0.01 to 0.65 feet. LPH has not been observed at NPS MW-4 since October 2007. From December 2002 through January 2006, the NPS collected groundwater samples from the monitoring wells on their



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property approximately every six months (December 2002, June 2003, January 2004, July 2004, December 2004, July 2005, and January 2006).

Groundwater samples collected from the NPS wells have historically been analyzed for TPH-DRO. The current groundwater sampling program includes seven of the NPS monitoring wells, which are analyzed for TPH-DRO and full-suite volatile organic compounds (VOCs) including fuel oxygenates. Water-level and LPH measurements are collected at all NPS wells on a quarterly basis.

## 1.3.1 Groundwater Sampling Summary

All existing NPS monitoring wells were sampled during four consecutive quarterly groundwater sampling events in 2007. After the August 2008 groundwater sampling was completed, the MDE approved a reduction in the groundwater sampling monitoring well network and groundwater sampling frequency. The current groundwater sampling monitoring well network consists of CSXT MW-3, CSXT MW-6R, CSXT MW-22, CSXT MW-24, CSXT MW-25, CSXT MW-29, CSXT MW-43, CSXT MW-51, NPS MW-1, NPS MW-2, NPS MW-4, NPS MW-5, NPS MW-13, NPS MW-14, and NPS MW-16, which are sampled on a semi-annual basis. Additionally, groundwater samples are collected from new monitoring wells CSXT MW-59 through CSXT MW-70 (wells installed since March 2012) on a quarterly basis.



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## 2. Canal Investigation Activities

The Revised SIWP described several investigation activities to further characterize the nature and extent of the LPH pool and groundwater impacts from dissolved-phase constituents. A series of on-site investigations were completed in early 2013 to support characterization of LPH mobility at the Site, the results of which were presented in the fourth revision of the SCM (April 2013). However, the C&O Canal prism soil investigation was postponed due to access issues caused by standing water within the canal prism footprint. The canal prism became accessible in August 2013, and the investigation was completed. The objectives of the canal investigation were two-fold:

- Understand how potential petroleum impacts to soil/sediment in and below the canal prism would affect future use of the canal, including re-watering the canal; and,
- Further evaluate off-Site groundwater quality.

The investigation activities and results of the canal investigation are described below.

## 2.1 Investigation of Canal Prism Soils

In order to fully characterize potential petroleum-related impacts to soil and groundwater within and beneath the C&O Canal prism, 30 soil borings were installed in the canal prism between towpath mile marker 55 and 54 in Brunswick, Maryland, as prescribed in the SIWP. A total of 60 soil/sediment and 6 groundwater samples were collected from three separate AOCs, shown on Figure 1, to characterize the geology and identify any soil and/or groundwater impacts beneath the canal. The samples were collected using a direct-push drill rig between August 19, 2013 and August 22, 2013. Figures 2, 3, and 4 depict the boring locations from each of the three AOCs, which were identified during a previous canal investigation in 1993 (Eder 1994). Each area is described below:

• AOC 1 begins approximately 240 feet east of South Maple Avenue, and extends approximately 300 feet to the east within the canal. Existing well CSXT MW-20 marks the approximate western extent of the AOC, and NPS MW-4 marks the approximate eastern extent of AOC 1, as shown on Figure 2. The eastern extent of AOC 1 was extended further east than was originally planned in the SIWP at the request of the NPS, to characterize the soils and sediment within the canal prism downgradient of the eastern extent of the BRT. AOC 1 also straddles a historic stone drainage culvert which transects the canal.



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- AOC 2 is located approximately 300 feet east of AOC 1. It extends approximately 200 feet to the east, along the canal. Existing well NPS MW-10 marks the approximate western extent of AOC 2 and NPS MW-13 marks the approximate eastern extent, as shown on Figure 3.
- AOC 3 is the eastern-most area, and is located approximately 300 feet east of the
  eastern boundary of AOC 2. AOC 3 extends approximately 200 feet along the
  canal to the east. Existing well NPS MW-14 marks the approximate western extent
  of AOC 3 and NPS MW-15 marks the approximate eastern extent, as shown on
  Figure 4.

Ten direct-push technology (DPT) boring locations were completed in each AOC as displayed on Figures 1 through 4. In AOC 2 and AOC 3, borings were located in two rows along the length of each AOC, with five boring locations per row. In AOC 1, the series of paired borings was altered to complete characterization of soil and sediments from a longer portion of the canal prism, as requested by NPS. Sample locations were evenly spaced in each AOC. Soil sample locations in each AOC are shown on Figures 2, 3 and 4.

## 2.1.1 Utility Location

Utility location due diligence was conducted prior to drilling activities to identify and avoid any existing infrastructure in the vicinity of the planned soil boring locations. Miss Utility was notified of the planned intrusive activities, and a private utility locating contractor, Underground Services of West Chester, PA, also completed utility locating and mark out services at the Site. Utility locating was completed using ground-penetrating radar and radio detection within the canal prism on June 24, 2013.

## 2.1.2 Soil Boring Installation

A total of thirty soil borings were installed during the canal investigation, ten soil borings in each AOC. Each soil boring was installed to approximately 10 feet below ground surface (bgs) using a small direct-push rig. An excavator was used to lift the drill rig in and out of the canal and between boring locations to minimize disturbance of the original surface of the canal. The canal was accessed under NPS Special Use Permit #NCR-3100-5700-12.076.

To install each boring, a core sampler with a clear acetate liner was hydraulically driven into the subsurface using a direct-push drill rig at each sample location. Soil samples were recovered in 4-foot intervals. The geology of each boring location, including the



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depth and thickness of the clay liner, was continuously logged and screened with a photo-ionization detector (PID) to the terminal depth of each boring, with soil lithology descriptions recorded on standard ARCADIS boring logs (Appendix A). A flame-ionization detector (FID) was also prescribed for screening soils in the SIWP, and was initially used for screening, but was discontinued due to unresolved drift in instrument calibration.

A total of six 1-inch temporary piezometers were constructed in the canal prism, at two representative soil borings within each AOC. Piezometers were constructed using 1-inch diameter polyvinyl chloride (PVC) riser, with five feet of 1-inch PVC 10-slot well screen. The temporary piezometers were used to measure water levels in the vicinity of the canal and for groundwater sample collection.

Each boring, including the borings where temporary piezometers were installed, were properly abandoned after sample collection by removing the well materials (if needed) and filling the boring with bentonite to the surface grade of the canal prism. The ground surface of each boring was then restored to the original condition of the canal.

## 2.1.3 Soil Sample Collection

Soil samples were collected from two depth intervals at each boring location; one sample from the sediments above the clay canal liner where the highest PID reading was observed, and one sample from the soils below the clay canal liner where the highest PID reading was observed. Nine of the thirty soil borings did not have a distinguishable clay liner. At boring locations without a detected clay liner, samples were collected from intervals consistent with depths above and below the clay liner as observed in nearby soil borings. PID soil screening yielded non-detect readings for the entire core length at seven of the thirty soil boring locations. At these locations, samples were collected from depths above and below the clay liner that were consistent with nearby locations. Soil and sediment investigation-derived waste was disposed of in a 55-gallon drum, which will be characterized and properly disposed of off-site.

All soil/sediment samples were shipped to TestAmerica Laboratories located in Pensacola, FL; Nashville, TN; and Savannah, GA for the following analyses:

Total Petroleum Hydrocarbon-Gasoline Range Organics (TPH-GRO) via USEPA method 8015 (TestAmerica Pensacola);



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Total Petroleum Hydrocarbon-Diesel Range Organics/Oil Range Organics (TPH-DRO/ORO) via USEPA method 8015C (TestAmerica Nashville);

Full-suite VOCs including fuel oxygenates via USEPA method 8260 (TestAmerica Pensacola); and

Semi-volatile Organic Compounds (SVOCs) via USEPA method 8270 (TestAmerica Savannah).

Additionally, soil and sediment samples from each of the sampled intervals were sent to Alpha Analytical in Mansfield, MA for preservation and fingerprint analysis to support characterization of any impacts to the subsurface at the Brunswick Yard and C&O Canal. Only ten of the soil/sediment samples were analyzed for fingerprinting. The samples that were analyzed for fingerprinting were selected based upon review of the TestAmerica analytical results and the location of each soil boring. The highest detections from each AOC were fingerprinted, while maintaining appropriate representation of the entire AOC.

## 2.2 Installation of Temporary Piezometers

A total of six temporary piezometers were constructed at two representative soil borings within each AOC. The temporary piezometers were installed at soil boring locations SB01-04, SB01-09, SB02-04, SB02-08, SB03-04 and SB03-08 (Figures 2, 3, and 4). In AOC 2 and 3, temporary piezometers were installed in the pre-determined locations. In AOC 1, temporary piezometers were installed in borings that ARCADIS field staff identified as the most likely to yield a sufficient volume of groundwater for sample collection, based on a higher proportion of coarser-grained materials at depth and observed moisture content of soil cores (Figure 1). The piezometers were constructed using 1-inch diameter PVC riser, with five feet of 1-inch PVC 10-slot well screen. Water levels were measured throughout the week and groundwater samples were collected from each of the temporary piezometers.

Temporary piezometers were properly abandoned following collection of groundwater samples. Each boring was then properly abandoned by filling the boring with bentonite to the surface grade of the canal prism.



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## 2.2.1 Groundwater Sample Collection

Groundwater samples were collected from each of the temporary piezometers using a peristaltic pump. Prior to purging, the depth-to-water in each piezometer was gauged and recorded. A three-volume purge and sample methodology was attempted at each piezometer; however, of the six piezometers, only PZ03-08 produced sufficient volume for a continuous purge. The remaining piezometers were purged dry then sampled following water level recovery. Field parameters [pH, conductivity, temperature, dissolved oxygen, and oxidation-reduction potential (ORP)] were measured and recorded (Appendix B) prior to sampling.

Groundwater samples were shipped to TestAmerica Laboratories under routine chainof-custody for the following analyses:

- TPH-GRO via USEPA method 8015C (TestAmerica Savannah);
- TPH-DRO/ORO with and without silica gel cleanup (SGC) via USEPA method 8015C (TestAmerica Nashville);
- Full-suite VOCs including fuel oxygenates via USEPA method 8260B (TestAmerica Pensacola); and
- SVOCs via USEPA method 8270D (TestAmerica Savannah).

The USEPA 8015C method for TPH-DRO encompasses the complex mixture of hydrocarbons in the diesel and heavy oil ranges, including the C-12 to C-28 petroleum hydrocarbons, reported in aggregate as a single TPH-DRO concentration.

The use of a SGC procedure for TPH-DRO can result in a more representative concentration of petroleum hydrocarbons, as detailed in the SI Report and Revised SCM. In addition, understanding the fraction of TPH-DRO concentrations that represents actual petroleum compounds, as opposed to naturally occurring and degradation compounds, allows for a more accurate and relevant comparison to risk-based regulatory standards.

#### 2.2.2 Water Levels

Water-level measurements were collected from the six temporary piezometers and at select nearby existing monitoring wells in order to characterize groundwater flow



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directions and gradients in the vicinity of the canal. Water levels were collected from existing Site monitoring wells NPS MW-1, CSXT MW-6R, CSXT-MW-8, CSXT-MW-9, NPS MW-10, NPS MW-13, NPS MW-14, NPS MW-15, NPS MW-17, NPS MW-18 and CSXT MW-20.

A contoured groundwater elevation map for each AOC showing the August 21, 2013 elevation data is included as Figure 5. The contour maps present groundwater elevations and inferred groundwater flow directions relative to each AOC. Groundwater flow conditions are discussed further in Section 3.2.

## 2.3 Site Survey

Soil boring locations were surveyed on September 10, 2013 by KCI Technologies of Fulton, MD. This survey included ground surface elevations and horizontal coordinates (northing and easting). Temporary piezometer casing stick-up measurements were collected and recorded by ARCADIS personnel prior to abandonment of each piezometer so that correct groundwater elevations could be calculated. Surveyed horizontal coordinates and elevation data for each boring are presented in Table 2, and the survey report is included as Appendix C.



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## 3. Canal Investigation Results

The following sections present the results of soil and groundwater investigation activities conducted as part of the canal investigation. They include a characterization of the lithology, groundwater flow, and extent of constituent detections at the Site and the C&O Canal.

## 3.1 Site Geology

## 3.1.1 General Site Geology

A full description of Site geology is presented in the SI Report and Revised SCM; however, a brief summary of the geologic setting is provided here. In general, site data indicate geologic conditions consistent with fluvial sediments deposited on a metamorphic bedrock surface. The alluvium is associated with the Potomac River and its tributaries, and consists of heterogeneous layers of clay, silt, sand, and gravel. Underlying the Site and NPS Property are two distinct overburden deposits. Directly overlying the saprolite is an orange-brown medium- to coarse-grained sand and gravel unit. The sand and gravel unit thins south of the Site approaching the Potomac River. Overlying the sand and gravel is a silty-clay unit, described as greenish-gray or brown and up to 15 feet thick. This unit varies in composition and thickness across the Site, and is thought to thin to the south as it approaches the Potomac River. Various types of fill materials, including sand and cinders, overlie the silty-clay unit. The thickness of the fill unit varies from two to ten feet at the Site.

The overburden units are illustrated in a series of geologic cross-sections. Each cross-section prepared is described in the following sections and included as Appendix D. Soil screening data, including PID/FID /organic vapor analyzer (OVA) concentrations recorded during boring activities (Appendix A), and the results of TPH-DRO analyses of soil samples, are also included on each cross-section. Duplicate or similar PID/FID/OVA results recorded at successive intervals were eliminated to reduce extraneous information on each cross-section. The locations of the cross-sections are shown on Figure D-1, Appendix D. New cross-sections were generated to present conditions across the C&O Canal, based on information collected during the Canal Investigation; these are described in detail in the following sections. In addition, existing cross-sections A-A', B-B', C-C', E-E', and F-F' were revised to incorporate new information, and are also discussed below. Existing cross-section G-G' was revised to include new well NPS MW-18; however, the lithology at this location was consistent with previous interpretation; therefore, this cross-section revision is not discussed



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below. Cross-sections not discussed below are presented in Appendix D; previous interpretations of these data were included in the SI Report and Revised SCM.

#### 3.1.2 C&O Canal Cross-sections

Initial characterization of canal geology and conditions was presented in a 1992 report submitted by Eder Associates, based on soil sampling conducted in the canal prism footprint (Eder 1992). This investigation characterized a discontinuous clay canal liner underlying the "canal proper", defined as the flat part of the canal. It also indicated that sections of the canal had been disturbed by "considerable earth movement" over time, due to the presence of cinders, metal fragments, and debris in surficial canal sediments and fill materials overlying the clay liner. This report did not indicate whether or not the clay canal liner extended along the banks of the canal.

Based on recent investigations, the unconsolidated materials observed in the canal consist of heterogeneous layers of clay, silt, sand, and gravel. Three distinct alluvial deposits were identified in the canal. Directly overlying the saprolite is a yellowishbrown medium- to coarse-grained sand and gravel unit. This unit appears within the last foot of several soil borings (SB01-01, SB01-03, SB01-04, SB01-09, and SB01-10), with the interpretation that it is continuous, but not present within 10 feet of ground surface along much of the canal. Overlying the sand and gravel is a silty-clay unit, described as dark olive-brown to reddish-brown. This unit was observed in all soil borings, but it appears to be thinner in AOC 1. Directly overlying the silty-clay is the clay canal liner, characterized as yellowish-brown to brownish-yellow sandy-clay with low plasticity. This clay canal liner varied between 0 and 3.5 feet thick and was dry at all soil boring locations where observed. The clay liner may have been originally derived from natural clays; therefore, the absence of a distinguishable clay liner in some soil boring locations may be due to the similarity of underlying native clays. The clay liner is thickest in the western-most reaches of the canal at the Site, thins in the region of the canal south of the former roundhouse, and appears again in the eastern AOC. Various types of fill materials, including sand, cinders, and brick, as well as natural sediments/organic debris and topsoil, overlie the clay liner. The thickness of the fill and sediment varies from 0.25 to 2.8 feet in the canal.

#### 3.1.2.1 Section L-L'

This section (Figure D-13, Appendix D) illustrates the continuity of the silty-clay unit on the western portion of the canal located on NPS property. The thickness and continuity of the upper clay canal liner is also evident in AOC 1. The clay canal liner is continuous



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throughout AOC 1, varying in thickness between 0.5 and 3.9 feet, and is consistently dry. The silty-clay unit is directly beneath the clay canal liner and is relatively uniform in composition in AOC 1. Five of the ten soil borings in this area penetrated the top of the sand and gravel unit, between 9 and 10 feet bgs. This does not indicate that the sand and gravel is not continuous within this area, but instead indicates that the contact between the two units occurs around 10 feet bgs. The composition of the sand and gravel unit in AOC 1, as encountered in soil borings, varies widely in particle size, from a sandy-clay to pebbles and gravels. The canal liner is overlain by fill and natural sediments, silt and sand with some pebbles toward the eastern extent of AOC 1.

The two temporary piezometers installed in AOC 1, PZ01-04 and PZ01-09, were screened through the silty-clay semi-confining unit and penetrated the sand and gravel below. Soil boring logs for SB01-01 through SB01-10 indicate that the clay is dry to a depth of 8-9 feet bgs, which indicates that this material acts as a confining unit in this location (with water levels at 3.9 and 1.4 feet bgs).

Soil screening concentrations (PID) for soil samples within AOC 1 vary between non-detect and 309 parts per million (ppm) (SB01-01). In general, soil screening concentrations are highest for samples collected from the clay canal liner and just below the liner. The highest concentrations measured in AOC 1, however, were encountered at SB01-01 and occur near the clay-silt and sand/gravel unit contact, at approximately 9 feet bgs. TPH-DRO concentrations for soil/sediment samples collected from AOC 1 vary between non-detect and 47 mg/kg. Except in the samples collected at SB01-04, TPH-DRO concentrations are generally higher in sediments collected above the clay canal liner than soils collected below the liner. TPH-DRO concentrations were non-detect at soil borings SB01-09 and SB01-10. All TPH-DRO soil results in AOC 1 are well below the MDE Residential Cleanup Standard of 230 mg/kg.

## 3.1.2.2 Section M-M'

This section (Figure D-14, Appendix D) also illustrates the thickness and continuity of the silty-clay unit. This unit is encountered at depths of 0.6–4.0 feet bgs and extends to the bottom of each of the ten borings. The uppermost five-to-seven feet of the silty-clay was dry in all borings, with moisture and/or saturation noted only in the bottom one-to-three feet at each boring. Unlike the previous section of the canal (AOC 1), the clay liner is discontinuous across AOC 2. This is likely a result of the clay liner's composition and proximity to the surface of the canal; the liner may have weathered away or mixed with the native lithology. Where present, the clay liner varies from 0.3 to



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2.9 feet thick and is dry. The clay liner (where present) and native silty-clays are overlain in AOC 2 by fill or sediments consisting of sands, silts, and pebbles.

Soil screening concentrations (PID) recorded at all boring locations within AOC 2 exhibit relatively few detections, with a maximum screening concentration of 27.2 ppm in SB02-04. TPH-DRO concentrations are also relatively low, ranging between non-detect and 6.7 mg/kg, which is well below the MDE residential cleanup standard for soils.

#### 3.1.2.3 Section N-N'

Similar to Section L-L', this section (Figure D-15, Appendix D) illustrates the continuity of the clay canal liner and the native silty-clay. The silty-clay unit is at least 8.0 feet thick in this section of the canal. This section of the canal is wetter than the previous two sections; borings in the canal indicate that clay became wetted at approximately 6 feet bgs. Although soil samples collected at SB03-07, SB03-09, and SB03-10 did not feature an identifiable clay canal liner, a dry clay liner between 0.2 and 1.0 feet thick was observed at the other boring locations in AOC 3. As in other areas of the canal prism, the clay liner is overlain by a combination of fill and natural sediments. The sand and gravel unit was not encountered at a depth of ten feet in AOC 3 soil borings; however, an isolated gravel bed was identified from 7.5 to 8.1 feet bgs in soil borings SB03-09 and SB03-10.

Detected soils screening (PID) concentrations were encountered within each of the soil borings in AOC 3, and ranged from non-detect to 211 ppm (SB03-07). In general, soil screening concentrations were highest in samples collected below the clay canal liner. TPH-DRO concentrations varied between 4.2 and 230 mg/kg. The TPH-DRO concentration of 230 mg/kg corresponds to the shallow sediment sample collected above the clay liner in SB03-06. This measurement is equal to the MDE Soil Residential Cleanup Standard of 230 mg/kg. In general, TPH-DRO concentrations in AOC 3 are higher in the sediments collected above the clay liner than in the soils below the clay liner.

## 3.1.3 Revisions to Existing Site Cross-sections

Revisions to several existing site cross-sections (A-A', B-B', C-C', E-E', F-F') were made to incorporate results of the recent canal investigation. Cross-sections that were not revised are not interpreted below, but are described in detail in the SI Report and Revised SCM.



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#### 3.1.3.1 Section A-A'

This section (Figure D-2, Appendix D) illustrates the continuity of the lower gravelly sand unit on the western portion of the Site and NPS Property. The wells installed on the western area of the Site, including CSXT MW-33, CSXT MW-29 and CSXT MW-20, are screened through the silty-clay semi-confining unit and penetrate the sand and gravel. The boring SB01-01 also passed through the silty-clay semi-confining unit and penetrated the sand unit below. Soil screening concentrations (PID) recorded at CSXT GP-44, CSXT MW-33, CSXT MW-29, and SB01-01 indicate that PID concentrations generally increase with depth at these locations. TPH-DRO concentrations are highest in the wells nearer the location of the historic LPH footprint (CSXT MW-29 and CSXT MW-33), and are two orders of magnitude lower in the canal area. Measurable LPH was recorded at CSXT MW-33 in 2009; however, free product has not been detected in any of the wells shown on this cross section since that time.

## 3.1.3.2 Section B-B'

This section (Figure D-3, Appendix D) illustrates the location of the BRT where it cuts across the entire thickness of the silty-clay unit, thereby restricting groundwater flow in the unit and reducing hydraulic gradients upgradient of the BRT. Because the BRT is only 15 feet deep and only partially completed in the lower gravelly sand unit, the increased hydraulic head upgradient of the BRT results in underflow of groundwater in the gravelly sand unit. Water-level data on the east side of the BRT also indicates that underflow of groundwater occurs rather than lateral flow around the BRT.

This section also illustrates the continuity of the lower sand and gravel unit across the canal. Taking into account boring log data from NPS MW-1 and GP-42A, (which are proximate to CSXT MW-9), CSXT MW-9 is screened across the same elevation as the gravelly sand unit observed in the boring logs for NPS MW-1 and GP-42A. Therefore, CSXT MW-9 is considered to be screened across the sand unit, and historical analytical sample data from CSXT MW-9 is valid for comparison with sample data from other wells also screened in the gravelly sand unit. Historically, samples from this well have shown no pattern of reported concentrations of TPH-DRO, which have always been at least one order of magnitude lower than concentrations in samples from the source area wells. TPH-DRO concentrations from the canal borings SB01-05 and SB01-06 are also at least one order of magnitude lower than concentrations closer to the source area. No detections were recorded during PID soil screening of CSXT MW-9, indicating minimal soil contamination at this location. The thickness and continuity of the upper silty-clay layer is also evident in this section. Boring log data for SB01-06 and



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SB01-05 further delineate the thickness and continuity of the upper silty-clay layer. PID readings in the canal borings are relatively low, with the highest readings recorded within the clay canal liner.

#### 3.1.3.3 Section C-C'

Similar to Section A-A', this section (Figure D-4, Appendix D) shows the continuity of the upper silty-clay and the lower sand and gravel units. The boring log for CSXT MW-51 indicates that the gravelly sand unit is present at the north boundary of the Site. Boring logs for wells on CSXT property (CSXT MW-22, CSXT MW-5, and CSXT MW-4R) and NPS property (NPS MW-4, SB01-09, and CSXT MW-8) also show the gravelly sand unit. At the south end of the cross-section, the boring log for GP-42A, installed adjacent to CSXT MW-8, indicates the top of the sand unit is located at approximately 213 feet above mean sea level (msl), which is across the screened intervals of monitoring wells CSXT MW-8 and CSXT MW-9.

PID soil screening concentrations for wells within this section indicate minimal contamination at the upgradient and downgradient edges of the Site (represented by CSXT MW-51 and CSXT MW-8/GP-42A). Soil screening concentrations above 0.0 ppm were not detected at CSXT MW-8/GP-42A. Soil screening concentrations at wells CSXT MW-22 and CSXT MW-4R, and at soil boring SB01-09, are relatively low in the unsaturated zone, increase within the saturated portion of the clayey-silt and sand, and decrease within the sand and gravel unit. TPH-DRO concentrations are highest near historically contaminated wells and are not detected downgradient of the BRT.

#### 3.1.3.4 Section E-E'

This section (Figure D-6, Appendix D) indicates that the geology present here is consistent with the geology across the Site. The upper silty-clay unit was observed at all GP locations (GP-53, GP-54, GP-56, GP-61, GP-63, and GP-66), at all monitoring well locations (NPS MW-11, NPS MW-18, and NPS MW-13), and at both canal boring locations (SB02-09 and SB02-10) in this cross-section. The lower sand and gravel unit is continuous in this section and has a greater amount of gravel as described in the boring logs for NPS MW-11, NPS MW-18 and NPS MW-13. LPH has never been observed in these NPS monitoring wells. The clay and silt unit is relatively thick at this location; PID soil screening data from CSXT GP-56 indicate that the highest soil vapor readings are near the center of this unit. Additionally, PID soil screening data from the canal indicate that the highest soil vapor readings occur in the middle of the clay unit.



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TPH-DRO concentrations indicate that levels of soil contamination at this area of the site are relatively low or not detected.

3.1.3.5 Section F-F'

This section (Figure D-7, Appendix D) indicates that site geology east of the oil-water separator in the vicinity of AOC 3 is consistent with the typical Site geology. The upper silty-clay unit is observed in all borings on the cross-section. Additionally, three wells in the section (CSXT MW-50, NPS MW-17, and NPS MW-14) are screened at least partially in the lower gravelly sand.

Soil screening data and TPH-DRO soil concentrations indicate that levels of soil contamination at this area of the Site are relatively low or below detection limits. The highest results were identified in canal soil boring SB03-02 and occur at a shallow depth bgs.

#### 3.2 Groundwater Occurrence and Flow

The SCM identifies three general hydrogeologic units in the surficial aquifer. These three units correspond to the fill materials and/or shallow sediments; the fine-grained silts and clays; and the underlying sand and gravel unit, which is partially confined by the silt and clays. The fate and transport of LPH and dissolved-phase TPH-DRO are governed by the shallow groundwater flow dynamics.

Initial soil moisture and/or saturated conditions were first observed at depths of approximately 5.5 to 6 feet bgs in canal investigation soil borings. Groundwater elevations collected from temporary piezometers and nearby existing wells during the canal investigation are presented on Table 3. Water-level measurements collected from temporary piezometers indicate that the potentiometric surface is encountered between 1.07 and 3.91 feet bgs at the bottom of the canal. In each of the six piezometers, the static depth-to-water measurement indicate that the potentiometric surface is higher than the top of wet or saturated material, which suggests that the silty-clay is a confining unit in this location.

Figure 5 presents contoured groundwater elevations in the vicinity of the canal. This figure indicates that flow directions and groundwater gradients in the vicinity of the canal are consistent with previous interpretations, with a primary inferred flow direction towards the Potomac River. This figure combines data collected from wells screened



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within the silt-clay confining unit and the sand and gravel unit below, and is intended only for general flow direction information.

## 3.3 Analytical Results

The analytical results of the samples collected during the canal investigation, submitted to TestAmerica Laboratories for analysis, are summarized in Tables 4 (soils) and 5 (groundwater), and discussed below. Full TestAmerica Laboratory Packages are included as Appendix E. Results of the chemical fingerprinting analysis performed by NewFields Companies, LLC, presented in Appendix F, are summarized in section 3.3.3.

#### 3.3.1 Soils and Sediments

A total of 60 soil and sediment samples were collected from the 30 soil borings in AOCs 1, 2, and 3. Samples were collected from intervals above and below the clay canal liner with the highest respective PID screening concentrations; these samples are referred to as sediment and soil samples, based on their location either above or below the liner, respectively. Typically, sediment samples were collected above three feet bgs (from 0.0 to 3.0 feet bgs) and soil samples were collected below 3 feet bgs (3.0 to 10.0 feet bgs). Table 4 presents analytical results from soil and sediment samples; concentrations are presented only for constituents that were detected in soils.

#### 3.3.1.1 AOC 1

In AOC 1, a total of five VOCs (2-Butanone, Acetone, CFC-11, Methyl tert-butyl ether [MTBE], and Methylcyclohexane) were detected in soil. These constituents were detected only in soils below the clay liner, with the exception of CFC-11, which was detected at a concentration of 2.4 (J) micrograms per kilogram ( $\mu$ g/kg) in sediments collected from SB01-07 (1.0-1.5).

A total of 23 SVOCs were detected in AOC 1. SVOCs were detected in eight of ten sediment samples and two of the ten soil samples. SVOCs were not detected in either the sediment or soil samples collected at SB01-05 or SB01-08.

TPH-GRO were detected in 15 of the 20 total samples from AOC 1, at concentrations up to 40 mg/kg from SB01-04 (5.0-5.5). TPH-GRO were not detected in either sample from SB01-01. SB01-03, SB01-09, and SB01-10 only had TPH-GRO detections from



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sediment samples collected above the clay liner, whereas SB01-06 had one detection from the soil sample collected below the liner.

TPH-DRO were detected in eight of ten AOC 1 borings, at concentrations up to 47 mg/kg from soil at SB01-04 (5.0-6.0). TPH-DRO were not detected in samples from borings SB01-09 and SB01-10. With the exception of borings SB01-04 and SB01-05, higher TPH-DRO concentrations were measured from sediment samples collected above the clay canal liner than from soil samples collected below the liner. TPH-ORO were detected in all twenty samples collected from soil borings in AOC 1. Concentrations ranged from 5.9 mg/kg in sediment collected above the liner from SB01-04 (0.0-1.0) to 2 mg/kg in soil collected below the liner from SB01-02 (5.0-6.0). All AOC 1 samples had measured concentrations of TPH-DRO well below the MDE Residential Cleanup Standard of 230 mg/kg.

## 3.3.1.2 AOC 2

Two VOCs, acetone and CFC-11, were detected in samples from AOC 2. SB02-03 and SB02-04 had detections from sediments above the liner; SB02-09 had detections from soils below the liner; and SB02-07 had detections in both the soil and sediment samples. CFC-11 was only detected in sediment samples collected above the clay liner.

A total of 22 SVOCs were detected in AOC 2, with SVOCs detected in eight of ten sediment samples and two of the ten soil samples. The three constituents detected in soils below the clay liner were fluoranthene, bis(2-Ethylhexyl)phthalate, and 2,6-Dinitrotoluene. SVOCs were not detected in either sample from borings SB02-03 and SB02-06.

Detections of TPH-GRO were observed in each of the AOC 2 sediment samples, and four of the ten soil samples. The highest concentration of TPH-GRO was 7.6 mg/kg from sediment at SB02-04 (0.5-1.0). TPH-DRO were detected in all but three of the sediment samples collected from AOC2; TPH-DRO were not detected in either sample from SB02-01, SB02-03, or SB02-05. TPH-DRO concentrations ranged from non-detect to 6.7 (J) mg/kg from sediments at SB02-07 (1.0-1.5); however, the range of detected concentrations is similar to the range of detection limits of TPH-DRO for these samples. All AOC 2 samples had measured concentrations of TPH-DRO well below the MDE Residential Cleanup Standard of 230 mg/kg.



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Detectable concentrations of TPH-ORO were measured in most of the AOC 2 samples. TPH-ORO were not detected in the samples from SB02-07 (soil), SB02-09 (sediment), or either sample from SB02-10. Concentrations ranged from non-detect to 7.9 mg/kg in sediment from SB02-02 (0.5-1.0).

3.3.1.3 AOC 3

VOCs were detected in each of the samples collected from AOC 3. A total of nine constituents were detected, including acetone, which was detected in 16 of the 20 samples. VOC concentrations were relatively low; other than acetone (measured at a concentration of 54  $\mu$ g/kg in the sediment sample from SB03-04 [0.5-1.0]), the highest concentration measured at AOC 3 was of 1,2-Dichlorobenzene, at a concentration of 13  $\mu$ g/kg in the sediment sample from SB03-06 (0.5-1.0). Measured ranges of VOCs were relatively similar to the range of reporting limits for these samples.

A total of 19 SVOCs were observed in soil borings from AOC 3. SVOCs were not detected in the soil samples collected from SB03-01, SB03-03, SB03-10, or in either of the samples collected at SB03-09.

TPH-GRO were not detected in either sample from SB03-01, SB03-09, or SB03-10, but were detected at concentrations up to 52 mg/kg (the soil sample from SB03-05 [4.0-4.5]) in other samples from AOC 3.

TPH-DRO were detected in each of the AOC 3 soil borings. The highest concentration measured was 230 mg/kg in sediment from SB03-06 (0.0-1.0). This concentration is equal to the MDE Residential Cleanup Standard for TPH-DRO. TPH-ORO were detected in all samples, except the sediment sample from SB03-04, at concentrations up to 79 mg/kg in soil from SB03-08 (3.0-4.0).

## 3.3.2 Groundwater

Groundwater samples were collected at six temporary piezometers in August 2013, and submitted for laboratory analysis for TPH-GRO, TPH-DRO with and without SGC, VOCs, and SVOCs. Analytical results are presented in Table 5, for detected constituents only.

Two VOCs were detected in temporary piezometers PZ01-04, PZ01-09, and PZ03-04. Acetone was detected in PZ03-04 at a concentration of 16 micrograms per liter ( $\mu$ g/L), and MTBE was detected in PZ01-04 at 0. 87  $\mu$ g/L and PZ01-09 at 3  $\mu$ g/L. SVOCs



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were detected in four of the six groundwater samples. A single constituent, caprolactam, was detected at a concentration of 6.1 (J)  $\mu$ g/L in the sample from PZ02-08. Two, five, and seven constituents were detected in the samples from PZ03-08, PZ03-04, and PZ01-04, respectively. SVOC concentrations, where detected, were relatively low, with a maximum concentration of 12  $\mu$ g/L (benzo(g,h,i)perylene at PZ01-04).

TPH-GRO were detected in each of the six samples, at concentrations from 0.013 milligrams per liter (mg/L) (JB) (PZ02-08) to 0.079 mg/L (B) (PZ03-08).TPH-DRO were also detected in each of the six groundwater samples. The highest concentration of TPH-DRO was 27 mg/L (B), detected in the sample from PZ03-04. In general, the concentrations from AOC 3 samples were approximately an order of magnitude higher than the concentrations measured at the other areas.

The TPH-DRO concentrations following SGC, which removes naturally-occurring DRO compounds and products of petroleum hydrocarbon degradation, are marginally lower than the original TPH-DRO concentrations, indicating that for the most part, these TPH-DRO concentrations are representative of petroleum hydrocarbons.

#### 3.3.3 Chemical Fingerprinting

NewFields Companies, LLC performed a chemical fingerprinting analysis of five LPH samples collected from Site monitoring wells and ten soil/sediment samples collected from canal investigation soil borings. The selection for fingerprinting of ten of the sixty soil/sediment samples collected from the canal prism was based upon the results of the TestAmerica analyses, relative sampling location, and soil screening data. The objectives of this analysis were to characterize the potential sources and age of LPH and dissolved-phase TPH present at the Site and the C&O Canal. The complete analysis is provided as Appendix F. The primary conclusions of the chemical fingerprinting analysis are summarized below:

- The LPH present at the Site consists only of diesel fuel compounds (diesel fuel #2).
- LPH samples from locations west of the former roundhouse, within the extent of
  the historic LPH pool, are very similar, and exhibit significant effects of weathering.
  The sample from CSXT MW-70, located east of the former roundhouse in the area
  of recent LPH detections, shows minimal weathering.



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- Sulfur concentrations of the LPH samples indicate that the source of the LPH pool located west of the former roundhouse is historic high-sulfur diesel, which has not been permitted in on-road diesel fuel since 1993 or in off-road diesel fuel since 2007. The sulfur concentration of the sample from CSXT MW-70 is significantly lower, indicating that a significant proportion of the original source of diesel at this location is from low-sulfur diesel fuel, required for off-road diesel after 2007.
- Fingerprinting of soils and sediments identified impacts from weathered diesel fuel
  in AOC 1 (soils below the clay canal liner) and AOC 3 (above and below the clay
  liner). However, the TPH chemical fingerprints for the majority of these samples
  were identified as natural organic matter and/or urban runoff, rather than
  weathered diesel fuel. Characteristics of urban runoff were identified in sediment
  samples (collected above the clay liner) in each AOC; however, fingerprints
  consistent with urban runoff were not identified for any samples collected below the
  clay liner.



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#### 4. NPS MW-18 Well Installation

NPS MW-18 was installed at the Site in June 2013 in accordance with email correspondence from MDE received on March 15, 2013. The primary purpose of installing this well was to replace monitoring well NPS MW-11, which was destroyed in 2012. An additional objective was to install a monitoring point within the silty-clay hydrostratigraphic unit, to facilitate additional characterization of these materials at the Site.

#### 4.1 Well installation and Development

Utility location due diligence was conducted prior to drilling activities to identify and avoid any existing infrastructure in the vicinity of the planned well location. The utility locate contractor, SoftDig, conducted an on-site ground-penetrating radar and radio detection survey of the planned well location on June 24, 2013.

The drilling subcontractor, DTCI of Jarrettsville, Maryland, installed NPS MW-18 on June 24, 2013 using a hollow-stem auger. The well was constructed of 4-inch PVC riser and 4-inch PVC 20-slot screen. NPS MW-18 was screened from 7 to 15 feet bgs. Well construction details for NPS MW-18 are presented in Table 3. NPS MW-18 boring and well construction logs are included in Appendix G.

NPS MW-18 was developed on July 3, 2013 via surging and pumping. Purge water generated during development was containerized and disposed of in the on-site CSXT oil/water separator. LPH was not observed in the purge water during development. Soil cuttings generated during drilling were containerized in 55-gallon drums for off-site disposal. All activities on NPS property were conducted in accordance with the requirements of the NPS Special Use Permit #NCR 3100-5700-12.047.

NPS MW-18 was surveyed on September 10, 2013 by KCI Technologies of Fulton, Maryland. The survey included top of casing and ground surface elevations, and horizontal coordinates (northing and easting). Survey data are presented on Table 3. The survey report is included as Appendix C. The location of NPS MW-18 is presented on Figure 1.

## 4.2 Soil Screening and Soil Sampling Results

Split-spoon samplers were driven ahead of the hollow-stem auger during drilling and continuous soil samples were collected at each boring from ground surface to final



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boring depth. Soil samples were screened using a PID during logging of the lithology. PID readings varied between 0 ppm to 35 ppm, which was observed at a depth of 8.0 to 8.5 feet bgs. PID screening values and subsurface lithology are presented on the NPS MW-18 boring log (Appendix G). Soil cuttings were containerized in glass jars and released to NPS on June 25, 2013, immediately following the completion of drilling activities.

Grab soil samples for laboratory analysis were collected from split-spoon samples retrieved at each boring. One sample was collected from the depth interval exhibiting the highest PID reading, 8.0 to 8.5 feet bgs (8.0 to 9.0 feet bgs for samples collected for TPH-DRO/ORO and SVOCs). Soil samples were shipped to TestAmerica Laboratories in Savannah, Georgia under routine chain-of-custody for the following analyses:

- TPH-GRO via USEPA method 8015;
- TPH-DRO/ORO via USEPA method 8015;
- Full-suite VOCs including fuel oxygenates via USEPA method 8260; and
- SVOCs via USEPA method 8270.

Analytical results are summarized in Table 6. The complete laboratory analytical report is included as Appendix E. A summary of soil analytical results from the sampling event conducted on June 24, 2013 is included below:

Just one VOC was detected in NPS MW-18 soil samples. CFC-11 was detected at a concentrations of 6.3  $\mu$ g/kg. TPH-DRO was detected at concentrations of 12 mg/kg. TPH-GRO was detected at concentrations of 0.034 (J) mg/kg. TPH-ORO was not detected in NPS MW-18 soil samples.

## 4.3 Hydraulic Testing

Rising head tests (slug tests) were performed at NPS MW-18 on July 25, 2013. Slug testing was conducted in accordance with the procedures presented in the revised SIWP, with water-levels recorded via submerged transducers at a 0.25-second frequency. Testing was comprised of three rising head tests, using two different size slugs (disposable bailers) with calculated displacements of 1.7 feet and 0.4 feet for a 4-inch casing diameter. Response data (elapsed time and corresponding changes in



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water levels) collected during each test were converted to displacement data, plotted as normalized head versus time to identify coincidence of repeat tests, and analyzed using AQTESOLV for Windows® (Duffield 2007) to obtain near-well hydraulic conductivity estimates. Appropriate analytical solutions available in AQTESOLV were applied following the guidelines presented in *The Design, Performance, and Analysis of Slug Tests* (Butler 1998).

Normalized test data for NPS MW-18 indicated coincident curves for tests 1 and 2, which were performed using the larger bailer (1.7-feet displacement); however, the data for test 3 (0.4-feet displacement) did not match tests 1 and 2. The lack of coincidence of test data for different slug sizes (different initial displacements) indicates the presence of a low-permeability well skin at NPS MW-18. This inference was confirmed by diagnostic testing in AQTESOLV; application of the Cooper et al. solution (Cooper et al. 1967) yielded implausibly-low storativity estimates, which indicates the presence of well skin or significant vertical flow components.

Tests 1 and 3 were analyzed using the Peres (1989) solution. Hydraulic conductivity estimates of 0.26 feet/day (test 1) and 0.34 feet/day (test 3) were calculated by dividing estimated transmissivity by the screen length (8 feet). The normalized displacement curves for NPS MW-18 and AQTESOLV plots are presented in Appendix H.

#### 4.4 Summary of NPS MW-18 Results

The primary objective of constructing well NPS MW-18 was to isolate the silty-clay material in order to collect additional, high-quality physical and chemical characterization data for the silty-clay unit that is encountered at most boring locations at the Site. As indicated in Appendix G, NPS MW-18 is screened exclusively within the silty-clay unit, but did not fully penetrate the unit, which indicates that this unit is at least 10.7 feet thick at this location, and relatively homogeneous with little to no interbedded sand or gravel zones. Water-level measurements collected during development indicate that the silty-clay unit is confining at this location. This well does not penetrate the underlying sand and gravel unit, but the presence of confined conditions within the silty-clay indicates that the alluvium is likely also confined at this location.



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## 5. Evaluation of the Site Conceptual Model

Canal investigation activities collected a significant amount of additional Site data for characterization of conditions in the vicinity of the C&O Canal. The following sections discuss the results of the canal investigation and NPS MW-18 installation in the context of the SCM.

## 5.1 Geology of the Canal

Completion of thirty soil borings within the three AOCs along the canal indicates that the geology of the canal is largely consistent with previous investigations and interpretations. The distinguishing functional feature of the canal prism is the clay canal liner. This liner is as thick as 3.5 feet, where present. The absence of a distinguishable liner in some borings from AOCs 2 and 3 indicates that this feature is discontinuous. The clay canal liner is overlain by 0.25 to 2.8 feet of fill, sediments, and topsoil. The composition of the material superficial to the liner varies by location. Soil borings were not completed along the banks of the canal; as such, it is unknown if the clay canal liner extends upwards along the banks of the canal or is only present within the canal proper.

Subsurface units beneath the clay canal liner are consistent with those observed across the Site, and are comprised of a fine-grained silty-clay unit underlain by sands and gravels. The sand and gravel unit was not encountered in all of the canal investigation soil borings, likely due to the termination of each boring at approximately 10 feet bgs. Beneath the canal, the silty-clay unit is relatively uniform in composition, with few to no interbedded coarser materials, and was observed to be a minimum of 5.9 feet thick at SB01-04.

#### 5.2 Site Hydrogeology

Soil sample logging within the canal proper indicated that the clay canal liner and a variable thickness of underlying clays and silts were dry in all soil boring locations. Comparison of the depths of initial soil moisture and saturated conditions to water-level measurements collected at temporary piezometers completed within the silty-clays and/or sands and gravels beneath indicate that the silty-clay functions as a confining unit in the vicinity of the canal. Confining conditions were also observed at NPS MW-18.



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The clay canal liner and underlying fine-grained materials are assumed to limit vertical flow within the canal proper, due to the unsaturated conditions observed in these materials. This is further evidenced by the presence of standing water in sections of the canal over a period of several months in early-to-mid 2013.

Results of slug testing conducted at NPS MW-18 indicates that the hydraulic conductivity of the silty-clay is relatively low (average hydraulic conductivity of 0.3 feet/day). Low conductivity is also assumed based on relatively poor production of temporary piezometers located within the canal; however, the rate of water-level recovery in the temporary piezometers may not be a reliable indicator of material permeability due to the use of pre-packed well screens.

Water-level measurements collected from temporary piezometers within the canal proper are similar to water-levels at nearby existing Site wells. Interpreted flow directions and groundwater gradients are consistent with previous interpretations of groundwater flow at the Site.

### 5.3 Site Chemistry

### 5.3.1 LPH Assessment

Comprehensive fingerprinting analysis of LPH samples at the Site confirms previous interpretations of the nature of the historic diesel pool located west of the former roundhouse. The LPH in this area was characterized as highly-weathered, high-sulfur diesel, which indicates that the original diesel release(s) were of historic (non-modern) diesel fuel that has been subject to environmental degradation in the subsurface for a relatively long period of time. Chemical fingerprinting of these samples indicate that they show relatively similar characteristics. Alternatively, the LPH sample collected from CSXT MW-70 was characterized as a modern diesel mixture, with relatively little weathering, which indicates that potential release(s) to this area are relatively recent and consist of primarily modern low-sulfur diesel fuel. This is consistent with the results of a closed circuit television (CCTV) survey conducted on October 9, 2013 which identifies an underground pipe linking the Maryland Transit Authority fueling station spill pans to the Site oil-water separator as a potential source of the recently-observed LPH in well locations east of the former roundhouse (CSXT MW-70 and CSXT MW-39). Preliminary findings of this CCTV investigation were submitted to MDE via email correspondence on October 17, 2013. Further investigation in this area will be conducted before the end of 2013 as detailed in the Supplemental LPH Delineation Work Plan, submitted to the MDE on October 23, 2013 (ARCADIS 2013b).



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LPH fingerprinting analysis was unable to conclusively link the TPH-DRO signature in soil/sediment samples collected during the canal investigation to the on-site LPH sample characteristics; therefore, it is unknown if the original source of TPH-DRO in the vicinity of the canal is derived from releases originating on-Site or off-Site.

#### 5.3.2 Constituent Concentrations in Soil

In general, the most constituents were detected in soil boring samples from AOC 1 and AOC 3, while AOC 2 showed relatively few detections and low concentrations. VOCs were detected in samples from each area, at relatively low concentrations on the order of 5 to 50  $\mu$ g/kg. Acetone was the most-frequently detected VOC in soil and sediment samples. SVOCs were also detected in samples from each AOC; however, these constituents were detected more frequently in sediment samples (above the clay canal liner) than the soils below the clay liner. Chemical fingerprinting analysis of the samples with the highest SVOC concentrations in each AOC indicates that these chemical signatures are consistent with urban runoff. TPH-GRO were detected in samples collected from all but four canal soil borings. TPH-GRO concentrations were generally higher in the sediment sample than the soil sample from each soil boring.

TPH-DRO concentrations in soils and sediments beneath the canal showed significant variation among each of the three AOCs. The lowest concentrations were observed in AOC 2; TPH-DRO were detected at concentrations up to an order-of-magnitude higher in AOC 1, and an additional order-of-magnitude higher in AOC 3. TPH-DRO were detected in each sample collected from AOC 3. The relatively low concentrations of TPH identified in AOC 2 are consistent with the fingerprinting analysis, which identifies the sources of these constituents as natural organic matter and/or trace urban runoff. However, the TPH-DRO measured in all of the canal soil and sediment samples were at concentrations at or below the MDE Residential Cleanup Standard of 230 mg/kg.

Chemical fingerprinting results indicate that much of the TPH present in canal soil boring samples are derived from natural organic matter and/or urban runoff. However, one sample collected from AOC 1 (SB01-04) and four samples from AOC 3 are characterized as having components of weathered diesel fuel.



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### 5.3.3 Dissolved-phase Constituent Concentrations

Groundwater sampling results from temporary piezometers installed within the canal prism are generally consistent with the trends noted from soil sample analysis. Samples from AOC 2 feature few detections, and relatively low concentrations of TPH-DRO and TPH-GRO. Samples from AOC 3 exhibit the highest concentrations of TPH-DRO and TPH-GRO. The relatively high number of constituents detected at PZ01-04 may be due to the completion of this temporary piezometer well screen into the sand-and-gravel unit as well as the silty-clay; this is consistent with the role of the sand and gravel hydrostratigraphic unit as the primary zone for constituent migration at the Site. In addition, PZ01-04 is located in close proximity to well CSXT MW-06R, which has shown detections of TPH-DRO, TPH-GRO, SVOCs, and fuel-derived VOCs in recent sampling events.

Comparison of results from groundwater samples collected from temporary piezometers to samples collected from permanent Site monitoring wells should be considered on a qualitative basis only, due to the use of pre-packed screens and lack of well development at the temporary piezometers. In general, dissolved-phase constituents and concentrations identified in samples collected beneath the canal prism are consistent with historic Site data, with the exception of the relatively higher TPH-DRO concentrations identified in AOC 3.



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### 6. Conclusions

The following conclusions summarize the results of recent Site investigations and the current understanding of the Site conditions as they relate to the SCM.

- The geology of the canal is consistent with previous interpretations and Site cross-sections. Water-level data for the area of the canal indicate the silty-clay unit is confining in this location. A relatively low hydraulic conductivity of 0.3 feet/day was estimated from slug tests performed at NPS MW-18, which is screened within this hydrostratigraphic unit. This hydraulic conductivity is lower than the values estimated for the sand and gravel hydrostratigraphic unit at the site from slug testing conducted in January 2013, and indicates a low potential for horizontal migration of contaminants at the Site within this unit.
- Soil and groundwater sample analysis results from the canal investigation and installation of NPS MW-18 are similar to recent and historic constituent concentrations detected in these areas. LPH was not detected in any of the thirty soil borings installed within the canal prism footprint.
- TPH-DRO concentrations in soil were at or below the MDE Residential Cleanup Standard of 230 mg/kg in each of the sixty soil samples collected within the C&O Canal.
- Chemical fingerprinting of LPH collected from Site monitoring wells indicates that
  the LPH recently-detected at wells CSXT MW-39 and CSXT MW-70 is significantly
  different from the existing LPH found in areas to the west of the former
  roundhouse. This analysis concludes that the LPH from the sample collected at
  CSXT MW-70 is unweathered and fits the profile of a modern diesel fuel.
- Chemical fingerprinting of soil samples collected in the canal indicate that these samples contain petroleum hydrocarbons derived from weathered diesel fuel, natural organic matter, and urban runoff sources. Comparison of soil samples to LPH fingerprints was inconclusive and did not provide a definite link between on-Site LPH and the TPH-DRO in soils and sediments of the C&O Canal.

Further investigation and delineation of the LPH encountered in 2013 at wells CSXT MW-70 and CSXT MW-39 is ongoing. The laser induced fluorescence investigation is planned for December 2013 as outlined in the Revised Supplemental LPH Delineation Work Plan originally submitted to MDE on October 23, 2013.



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### 7. References

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**Tables** 

Date/Year	Company/Agency	Action Type	Description
September 1991	NPS	Investigation	National Park Service (NPS) conducted a soil survey evaluating the presence of petroleum residuals in the C&O canal silt near CSXT property in support of a bid for a rewatering permit. Reportedly, visual identification of petroleum was made in three areas; however, no samples were submitted for analysis of petroleum constituents.
March 1992	CSXT/Eder	Remediation	CSXT/Eder Associates (Eder) provided oversight for removal of a 16,000 gallon diesel underground storage tank (UST) adjacent to the former pump house and 500,000 gallon aboveground storage tank (former AST System). The UST had been previously pumped out and taken out of service in 1974. Approximately 100 cubic yards of impacted soils related to the UST were excavated and properly treated/disposed off-site. Analysis of soil confirmation sampling from the excavation showed total petroleum hydrocarbon (TPH) concentrations below the current MDE non-residential cleanup level of 620 mg/kg.
March 1992	CSXT/Eder	Investigation	CSXT/Eder collected soil samples to characterize soils identified in the 1991 NPS report as petroleum impacted.
July 1993	CSXT/Eder	Investigation	CSXT/Eder conducted a focused sediment/soil boring investigation performed to further investigate the extent of residual petroleum compounds in the C&O Canal in the three primary areas of concern and a small area near Lock #30.
January 20, 1994	MDE	Correspondence	Maryland Department of the Environment (MDE) required that CSXT install four monitoring wells on CSXT property between the C&O Canal and four suspected source areas, including the 500,000 gallon AST, the tank car diesel fuel unloading racks, the diesel fueling pump house, and the roundhouse.
July 1994	CSXT/Eder	Investigation	CSXT/Eder installed four monitoring wells (CSXT MW-1, 2, 3, and 4) to investigate the groundwater quality between the suspected source areas and the C&O Canal. Groundwater samples collected from the four monitoring wells were analyzed for BTEX and TPH-DRO. Liquid-phase hydrocarbons (LPH) were later observed at MW-2. CSXT/Eder recommended installation of two additional monitoring wells downgradient of CSXT MW-1, 2, and 4 on the northern canal tow path.
August 30, 1994	MDE	Correspondence	MDE approves the installation of the two additional wells and requests that CSXT install three additional monitoring wells with at least one installed on the south side of the C&O Canal.

Date/Year	Company/Agency	Action Type	Description
November 1994	CSXT/Eder	Investigation	CSXT/Eder conducts a product baildown test at MW-2. Results indicate a very slow LPH recovery rate. Based upon the slow recovery rate, a passive product recovery system was recommended by Eder.
January 1995	CSXT/Eder	Remediation	CSXT/Eder initiated passive free product recovery utilizing a Siphons Without a Pump (SWAP) 4 unit at MW-2.
August- September 1995	CSXT/Eder	Investigation	After coordination with NPS for property access, CSXT/Eder installed additional monitoring wells (CSXT MW-5, 6, 8, and 9) to further evaluate groundwater quality downgradient and in the vicinity of the former AST System. Groundwater samples were collected from CSXT MW-1, 3, 5, 6, 8, & 9 (LPH at CSXT MW-2 and CSXT MW-4). Groundwater samples were analyzed for BTEX, naphthalene, and TPH-DRO.
March 1996	NPS/E&E	Site Assessment and Characterization	On behalf of the NPS, Ecology and Environment, Inc. (E&E) prepared a Draft Site Assessment and Characterization Report based on additional sediment and soil sampling. The results of the collection of subsurface soils within the canal prism indicated that there were no PAH compounds exceeding the EPA Region III Risk-Based Concentrations for industrial exposure.
August – September 1996	NPS/E&E	Investigation	E&E installed five monitoring wells (NPS MW-1, 2, 3, 4, and 5) along the Canal on NPS property to determine if there has been any migration of residual petroleum compounds onto NPS property. Groundwater samples were collected from the five NPS wells and three CSXT wells (MW-6, 8, and 9) by NPS and analyzed for VOCs, SVOCs, and TPH. Dissolved phase total petroleum hydrocarbons (TPH) were detected in seven of the eight samples (all except NPS MW-4). PAH concentrations in groundwater were detected at two monitoring wells (NPS MW-4, and MW-6). These results were reported in the July 1997 Investigation Report (below).

Date/Year	Company/Agency	Action Type	Description
July 1997	NPS/E&E	Investigation Report	On behalf of the NPS, E&E prepared and submitted an investigation report including the results of the surface and subsurface soil sampling conducted in August and September 1996 and monitoring well installation and groundwater sampling conducted during the same timeframe. Groundwater sampling results are discussed above. Surface soil analytical results indicated detectable PAH concentrations below screening criteria in all three samples and one TPH concentration above the MDE cleanup standard at NPS-SS-1 collected in the canal. The other TPH concentrations collected from surface soils were below MDE cleanup standards. Results of subsurface soil sampling (10 samples collected from 9 borings) indicated detectable PAH concentrations in 8 of the samples (all below screening criteria) and one TPH concentration (1,000 mg/kg) above the MDE cleanup standard detected in sample NPS-SB-4 collect from 8 to 10 ft below ground surface.
February 1998	CSXT/Eder	Investigation	LPH baildown tests were conducted at two CSXT wells (MW-1 and MW-6). The results of the baildown tests indicated that free product entered both wells at an extremely low rate. The water table rose several feet in November and no product was measured in either well, suggesting a strong association between water table fluctuations and the presence of free product.
1998	CSXT/Eder/ Gannett-Fleming	Remediation	CSXT/Gannett Fleming (purchased Eder) expanded LPH recovery to include MWs 1, 2, 4, and 6.
February 8, 1999	CSXT/Gannett- Fleming	Investigation	CSXT/Gannett Fleming submitted a Conceptual Investigation Plan (CIP) to evaluate any potential threat to surface water and to consider scenarios for adjusting the product recovery program, if necessary. The CIP also included a remedial alternatives analysis.
November 1999 – August 2000	CSXT/Gannett- Fleming	Investigation	Eleven soil borings and temporary piezometers (TP-1 through TP-11) were installed near the area with LPH to delineate the extent of LPH. Two soil samples are collected for geotechnical purposes.
December 2000	CSXT/Gannett- Fleming	Feasibility Report	CSXT/Gannett-Fleming submitted a Site Investigation Report including feasibility of remedial alternatives. The conclusion of the evaluation of remedial alternatives was that a collection trench recovery system located along the CSXT/NPS property line should be considered, carefully evaluating safety and constructability due to rail operations.

Date/Year	Company/Agency	Action Type	Description
2001	NPS/E&E	Investigation	E&E installed eight additional wells NPS MW-10 through NPS MW-17.
June 2003	NPS/E&E	Investigation	E&E conducted groundwater sampling of the NPS wells for analysis of TPH-DRO, LPH is observed at NPS-MW-4.
October 2003 – March 2004	CSXT/Gannett- Fleming	Remediation	CSXT/Gannett-Fleming constructs a barrier/recovery trench to stop migration of petroleum to NPS property. The initial design was to approximately 525 ft long and 12-15 feet deep. However, the design was revised after it could not be constructed solely on CSXT property. The design was revised a second time when the trench, running from west to east, could not be extended to a point south of TP-4 because construction would subvert a utility pole. The trench as constructed includes five collector sumps, accumulated LPH is removed via a vacuum truck. CSXT/Gannett Fleming installed barrier/recovery trench (BRT) with 5 internal collection sumps (CS-1 through CS-5).
July 2004	CSXT/Gannett- Fleming	Remediation	CSXT/Gannett-Fleming initiated monthly enhanced fluid recovery (EFR) events at monitoring wells/collector sumps with LPH. CSXT/Gannett Fleming began enhanced fluid recovery (EFR) activities to reduce measurable liquid phase hydrocarbons (LPH) at MW-2, EW-3, EW-4, and EW-5 and BRT collections sumps. EFR activities expanded to include all wells with measurable LPH.
January 2005	CSXT/ARCADIS	Remediation	CSXT/ARCADIS continued with monthly EFR events, Approximately 32,466 gallons of total fluids (LPH and water) were removed from July 2004 through June 2009.
September 2006	CSXT/ARCADIS	Remediation	CSXT/ARCADIS installed an automated LPH recovery pump in MW-2. A total of 54 gallons of LPH were recovered from September 2006 through July 2008.
January 30, 2007	CSXT/ARCADIS	SCM and Work Plan Submittal	CSXT/ARCADIS submitted the Site Conceptual Model and Supplemental Work Plan including installation of additional monitoring wells and abandonment of temporary wells.
April 16, 2007	MDE	Correspondence	MDE approved the Site Conceptual Model and Supplemental Work Plan dated January 30, 2007.
June 2007	CSXT/ARCADIS	Investigation	CSXT/ARCADIS abandoned 6 temporary wells (TP-1, TP-3, TP-4, TP-5, TP-10, and TP-11) and installed 8 permanent groundwater monitoring wells (MW-4R and MW-21 through MW-27).

Date/Year	Company/Agency	Action Type	Description
July 18, 2007	CSXT/MDE	Consent Order	MDE and CSXT signed the Consent Order.
July/August 2007	CSXT/ARCADIS	Investigation	CSXT/ARCADIS installed 24 direct-push borings (GP-20 and GP-26 through GP-49) with soil and groundwater sampling.
October 3, 2007	CSXT/ARCADIS	Work Plan Submittal	CSXT/ARCADIS submitted the Work Plan for Monitoring Well Installation and Groundwater Sampling.
November 9, 2007	MDE	Correspondence	MDE approved the Work Plan for Monitoring Well Installation and Groundwater Sampling dated October 3, 2007.
November 2007	CSXT/ARCADIS	Investigation	CSXT/ARCADIS installed 17 permanent groundwater monitoring wells (MW-20, MW-28 through MW-33, MW-35, MW-37, MW-38, MW-39, MW-41, MW-43, and MW-49 through MW-52).
February 8, 2008	CSXT/ARCADIS	SCM Submittal	CSXT/ARCADIS submitted the <i>Revised Site Conceptual Model (SCM)</i> (second version of the SCM).
March 12, 2008	CSXT/ARCADIS	Work Plan Submittal	CSXT/ARCADIS submitted the Additional Site Characterization Work Plan.
May 30, 2008	MDE	Correspondence	MDE approved the Additional Site Characterization Work Plan dated March 12, 2008.
June 2008	CSXT/ARCADIS	Investigation	CSXT/ARCADIS installed 24 direct-push borings (GP-53 through GP-76) with soil and groundwater sampling.
August 29, 2008	CSXT/ARCADIS	SCM and CAP Submittal	CSXT/ARCADIS submitted the Revised SCM (third version of the SCM) and the Corrective Action Plan, including the Dual-Phase Extraction (DPE) pilot test.
October 28, 2008	MDE	Correspondence	MDE approved the DPE pilot test portion of the Corrective Action Plan, with modifications.
December 16-18, 2008	CSXT/ARCADIS	Investigation	CSXT/ARCADIS installed 6 permanent groundwater monitoring wells (MW-53 to MW-58) as monitoring points for the DPE pilot test.
January 7 - 13, 2009	CSXT/ARCADIS	Investigation	CSXT/ARCADIS conducted DPE Pilot Test at MW-41 and EW-2.

Date/Year	Company/Agency	Action Type	Description
March 2, 2009	CSXT/ARCADIS	CAP Addendum Submittal	CSXT/ARCADIS submitted the Corrective Action Plan Addendum which included the Dual-Phase Extraction Pilot Test Results.
May 27, 2009	MDE	Consent Order Milestone	MDE approved the <i>Corrective Action Plan Addendum</i> dated March 2, 2009, start of three year remedial goal specified in Consent Order.
July 14, 2009	CSXT/ARCADIS	Remediation	CSXT/ARCADIS implemented LPH removal activities in accordance with the <i>Corrective Action Plan Addendum</i> dated March 2, 2009. Activities included the installation of 3 LPH skimmer pumps and 5 passive LPH skimmers.
May 2010	CSXT/ARCADIS	Remediation	Approximately 267 gallons of LPH recovered since implementation of LPH removal activities in accordance with the <i>Corrective Action Plan Addendum</i> in July 2009.
June 4, 2010	CSXT/ARCADIS	Remediation	CSXT/ARCADIS submitted Proposed LPH Recovery System Enhancements.
July 8, 2010	MDE	Correspondence	MDE approved Proposed LPH Recovery System Enhancements, dated June 4, 2010.
September 2, 2010	CSXT/ARCADIS	Remediation	CSXT/ARCADIS installed 3 additional LPH skimmer pumps per the <i>Proposed LPH Recovery System Enhancements</i> , dated June 4, 2010.
December 15, 2011	CSXT/ARCADIS	Investigation	CSXT/ARCADIS submitted a Proposed Additional Well Installation Letter Work Plan which included the installation of 8 additional monitoring wells (MW-59 through MW-66).
January 25, 2012	MDE	Correspondence	MDE approved the Proposed Additional Well Installation Letter Work Plan and requested the submittal of a Well Installation Summary Report by March 31, 2012 and an Updated SCM by April 30, 2012. CSXT/ARCADIS requested that the documents be combined into one for submittal on April 30, 2012.
March 2012	CSXT/ARCADIS	Investigation	Seven of the 8 proposed monitoring wells (MW-59 through MW-65) were installed and developed. MW-66 could not be installed due to subsurface infrastructure obstructions (i.e. the former roundhouse foundation).
April 30, 2012	CSXT/ARCADIS	Remediation	Approximately 600 gallons of LPH have been recovered since implementation of LPH removal activities in accordance with the <i>Corrective Action Plan Addendum</i> in July 2009. A Revised Site Conceptual Model was submitted to MDE.

Date/Year	Company/Agency	Action Type	Description
July 18, 2012	CSXT/ARCADIS	Investigation	The Supplemental Investigation Work Plan (SIWP) was submitted to the MDE. The SIWP outlined investigation activities to support soil characterization of the C&O Canal prism, dissolved phase hydrocarbon fate and transport evaluation (monitoring well development, groundwater sampling, and rising head testing), and further evaluation of liquid phase hydrocarbons (monitoring well installation, LPH characterization, short-term LPH stress testing, and a LPH mobility/recoverability analysis) at the Site.
August 17, 2012	NPS	Correspondence	NPS provided comments to CSXT regarding the SIWP.
September 6, 2012	MDE	Correspondence	MDE conditionally approved the SIWP, provided several modifications were made to the SIWP.
October 12, 2012	CSXT/ARCADIS	Investigation	The SIWP was revised based on the comments provided by the MDE and NPS, and was resubmitted.
November 2012	CSXT/ARCADIS	Investigation	Well redevelopment activities outlined in the SIWP were completed.
January 15, 2013	MDE	Correspondence	MDE conditionally approved the Revised SIWP, provided several modifications were made to the Revised SIWP.
January 2013	CSXT/ARCADIS	Investigation	Well installations, semi-annual and SIWP groundwater sampling, hydraulic testing, and LPH stress testing was completed as outlined in the SIWP.
February 1, 2013	CSXT/ARCADIS	Correspondence	SIWP progress update was provided to the MDE.
March 5, 2013	MDE/CSXT/ARCA DIS	Correspondence	MDE correspondence was provided approving the progress schedule CSXT/ARCADIS submitted on February 1, 2013. CSXT/ARCADIS letter was submitted to MDE, documenting the presence of LPH in new well CSXT MW-70.
March 8, 2013	CSXT/ARCADIS	Investigation	A Well Installation Summary Report was submitted to the MDE, documenting well installation activities at four new wells, CSXT MW-67, CSXT MW-68, CSXT MW-69, and CSXT MW-70.
March 15, 2013	CSXT/ARCADIS	Remediation	Approximately 720 gallons of LPH have been recovered since implementation of LPH removal activities in accordance with the <i>Corrective Action Plan Addendum</i> in July 2009.
April 19, 2013	CSXT/ARCADIS	Remediation	The Supplemental Investigation Report and Revised Site Conceptual Model was submitted to MDE.
May, 2013	CSXT/ ARCADIS	Investigation	Site wide gauging and quarterly groundwater sampling of wells installed in 2012 and 2013 completed as outlined in the SIWP.
June 18, 2013	MDE/CSXT/ARCA DIS	Correspondence	MDE correspondence was provided acknowledging ARCADIS development of a work plan to investigate the presence of LPH in CSXT MW-39 and CSXT MW-70.

Date/Year	Company/Agency	Action Type	Description
June 24, 2013	CSXT/ ARCADIS	Investigation	Well installed at NPS MW-18 to replace NPS MW-11.
July 25, 2013	CSXT/ ARCADIS	Investigation	Hydraulic testing (slug tests) conducted at NPS MW-18.
August 20, 2013	MDE/CSXT/ARCA DIS	Investigation	A Supplemental LPH Delineation Work Plan aimed at delineating LPH occurrence near CSXT MW-39 and CSXT MW-70 was submitted to MDE.
August, 2013	CSXT/ ARCADIS	Investigation	Direct push C&O Canal Investigation installed 30 soil borings and 6 temporary piezometers in the C&O Canal, and collected soil and water samples as outlined in the SIWP.
September 12 and 16, 2013	CSXT/ ARCADIS	Investigation	LPH samples were collected from 5 on site monitoring wells for chemical fingerprinting by NewFields Companies, LLC. as part of the Canal Investigation.
September, 2013	CSXT/ ARCADIS	Investigation	Semi-annual and SIWP groundwater sampling was completed as outlined in the SIWP.
October 9, 2013	CSXT/ ARCADIS	Investigation	Closed circuit television investigation (CCTV) conducted for the underground pipe connecting the MTA fueling station spill pans with the oil-water separator.
October 25, 2013	MDE/CSXT/ARCA DIS	Remediation	A revised Supplemental LPH Delineation Work Plan was submitted to MDE. The revised work plan included observations made during the CCTV investigation.

## Table 2 Soil Boring Summary CSXT Brunswick Yard, Brunswick, Maryland

Soil Boring ID	Installation Date	Easting Coordinates	Northing Coordinates	Ground Surface Elevation (ft amsl)	Total Depth (ft bgs)	Depth to clay canal liner (ft bgs)	Thickness of Clay Liner (feet)	Shallow sample interval - sediment (ft bgs)*	Deep sample interval - soil (ft bgs)*
SB01-01	8/19/2013	1134997.5	599429.2	229.7	10.8	2.8	0.9	1.0 - 1.5 (1.0 - 2.0)	9.0 - 9.5 (9.0 - 10.0)
SB01-02	8/19/2013	1135040.7	599407.7	230.1	10.1	1.3	3.5	1.0 - 1.5 (0.5 - 1.5)	5.0 - 5.5 (5.0 - 6.0 )
SB01-03	8/19/2013	1135040.3	599427	230.1	9.9	1.65	3.05	1.0 - 1.5 (0.5 - 1.5)	5.0 - 5.5 (5.0 - 6.0 )
SB01-04	8/19/2013	1135091	599398.3	229.5	9.5	1.1	2.1	0.5 - 1.0 (0.0 - 1.0)	5.0 - 5.5 (5.0 - 6.0 )
SB01-05	8/19/2013	1135142.6	599365.6	229.8	9.6	2.5	2.7	2.0 - 2.5 (1.5 - 2.5)	8.5 - 9.0 (8.5 - 9.5)
SB01-06	8/19/2013	1135153.6	599384.3	229.9	8.4	2.3	2.9	1.5 - 2.0 (1.0 - 2.0)	6.5 - 7.0 (6.5 - 7.5)
SB01-07	8/20/2013	1135178.8	599352.6	229.6	8.8	1.6	3.9	1.0 - 1.5 (0.5 - 1.5)	9.5 - 10.0 (9.0 - 10.0)
SB01-08	8/20/2013	1135187.9	599367	229.8	10	2.5	3	2.0 - 2.5 (1.5 - 2.5)	9.0 - 9.5 (9.0 - 10.0)
SB01-09	8/20/2013	1135241.4	599332.9	229.5	11.9	0.9	1.4	0.5 - 1.0 (0.0 - 1.0)	4.0 - 4.5 (4.0 - 5.0)
SB01-10	8/20/2013	1135281.1	599323	229.4	11.85	0.85	1.45	0.5 - 1.0 (0.0 - 1.0)	4.0 - 4.5 (4.0 - 5.0)
SB02-01	8/20/2013	1135539.2	599194.2	229.5	11.7	1.1	2.9	0.5 - 1.0 (0.0 - 1.0)	7.5 - 8.0 (7.0 - 8.0)
SB02-02	8/20/2013	1135549.3	599210.4	230	11.8	1	2	0.5 - 1.0 (0.0 - 1.0)	4.5 - 5.0 (4.5 - 5.5)
SB02-03	8/20/2013	1135585.9	599189.3	230.6	10	ND	ND	0.5 - 1.0 (0.5 - 1.5)	5.5 - 6.0 (5.0 - 6.0)
SB02-04	8/20/2013	1135577.8	599171.8	229.8	9.8	ND	ND	0.5 - 1.0 (0.5 - 1.5)	7.0 - 7.5 (7.0 - 8.0)
SB02-05	8/20/2013	1135616.8	599165.2	230.4	10.2	ND	ND	1.0 - 1.5 (0.5 - 1.5)	7.0 - 7.5 (7.0 - 8.0)
SB02-06	8/20/2013	1135609.3	599152.9	230	10.1	ND	ND	1.0 - 1.5 (0.5 - 1.5)	6.5 - 7.0 (6.5 - 7.5)
SB02-07	8/21/2013	1135801.5	599095.1	240.1	9.6	1.4	0.3	1.0 - 1.5 (0.5 - 1.5)	5.5 - 6.0 (5.5 - 6.5)
SB02-08	8/21/2013	1135801.5	599095.1	240.1	11	1.5	1.5	1.0 - 1.5 (0.5 - 1.5)	7.0 - 7.5 (7.0 - 8.0)
SB02-09	8/21/2013	1135801.5	599095.1	240.1	10.1	1.75	0.35	1.0 - 1.5 (0.5 - 1.5)	4.5 - 5.0 (4.5 - 5.5)
SB02-10	8/21/2013	1135659.1	599122.2	229.8	10.1	ND	ND	1.0 - 1.5 (0.5 - 1.5)	5.0 - 5.5 (5.0 - 6.0)
SB03-01	8/21/2013	1136014.7	598943.3	229.7	10	1.25	0.65	1.0 - 1.5 (0.5 - 1.5)	5.5 - 6.0 (5.0 - 6.0)
SB03-02	8/21/2013	1136003.9	598928.8	229.4	10.2	0.4	0.2	0.5 - 1.0 (0.0 - 1.0)	3.0 - 3.5 (3.0 - 4.0)
SB03-03	8/21/2013	1136032.3	598931.7	229.9	7.6	1.4	0.2	1.0 - 1.5 (0.5 - 1.5)	3.5 - 4.0 (3.0 - 4.0)
SB03-04	8/21/2013	1136023.5	598917.2	229.6	8.75	1.3	0.5	0.5 - 1.0 (0.5 - 1.5)	4.0 - 4.5 (4.0 - 5.0)
SB03-05	8/22/2013	1135801.5	599095.1	240.1	9.15	1.1	0.9	0.5 - 1.0 (0.0 - 1.0)	4.0 - 4.5 (3.5 - 4.5)
SB03-06	8/22/2013	1135801.5	599095.1	240.1	7.1	0.25	0.5	0.5 - 1.0 (0.0 - 1.0)	3.0 - 3.5 (2.5 - 3.5)
SB03-07	8/22/2013	1135801.5	599095.1	240.1	8.7	ND	ND	1.5 - 2.0 (1.5 - 2.5)	4.5 - 5.0 (4.5 - 5.5)
SB03-08	8/22/2013	1136073.1	598893.6	230.6	8.3	2.15	0.55	1.5 - 2.0 (1.0 - 2.0)	3.0 - 3.5 (3.0 - 4.0)
SB03-09	8/22/2013	1135801.5	599095.1	240.1	9.8	2.3	1	1.5 - 2.0 (1.0 - 2.0)	3.5 - 4.0 (3.5 - 4.5)
SB03-10	8/22/2013	1135801.5	599095.1	240.1	10.15	ND	ND	0.5 - 1.0 (0.5 - 1.5)	5.5 - 6.0 (5.5 - 6.5)

### Notes:

ND = No clay liner detected

ft amsl = feet above mean sea level

ft bgs = feet below ground surface

<sup>\*</sup> Sampling interval was expanded to a one-foot interval of split-spoon samples to allow collection of larger volume for SVOC and TPH-DRO analysis. Coordinate data in MD SP NAD 83/91, NAVD88, ft

Table 3
Temporary Piezometer Summary and Groundwater Elevations
CSXT Brunswick Yard, Brunswick, Maryland

Piezometer / Monitoring Well ID	Installation Date	Abandonment Date	Easting Coordinates	Northing Coordinates	Ground Surface Elevation (ft amsl)	Top of casing Elevation (ft amsl)	Top of Screen Elevation (ft amsl)	Bottom of Screen Elevation (ft amsl)	Date of Water Level Measurement	Groundwater Elevation (ft amsl)	Depth to water (ft bTOC)
Canal Investigation	Temporary P	iezometers									
PZ01-04	8/19/2013	8/20/2013	1135091	599398.3	229.50	229.85	224.85	219.85	8/19/2013	225.59	3.91
PZ01-09	8/20/2013	8/21/2013	1135241.4	599332.9	229.50	229.70	224.70	219.70	8/20/2013	228.10	1.40
PZ02-04	8/20/2013	8/23/2013	1135577.8	599171.8	229.80	230.70	225.70	220.70	8/21/2013	227.51	2.29
PZ02-08	8/21/2013	8/23/2013	1135633.4	599141.6	229.90	230.20	225.20	220.20	8/21/2013	227.39	2.51
PZ03-04	8/21/2013	8/23/2013	1136023.5	598917.2	229.60	229.60	224.60	219.60	8/21/2013	228.53	1.07
PZ03-08	8/22/2013	8/23/2013	1136073.1	598893.6	230.60	230.90	225.90	220.90	8/22/2013	228.26	2.34
Permanent Site Mon	itoring Wells										
NPS MW-1	8/29/1996	NA	1135189.62	599332.935	235.27	234.94	224.94	214.94	8/21/2013	227.73	7.54
NPS MW-10	11/27/2001	NA	1135580.2	599215.1075	235.72	237.73	231.93	216.93	8/21/2013	228.61	7.11
NPS MW-13	11/28/2001	NA	1135662.04	599097.0312	235.26	234.72	220.42	210.42	8/21/2013	222.18	13.08
NPS MW-14	11/29/2001	NA	1136003.6	598904.9064	235.18	234.74	227.44	207.44	8/21/2013	225.01	10.17
NPS MW-15	11/30/2001	NA	1136110.04	598850.4938	234.83	234.38	226.58	211.58	8/21/2013	225.03	9.80
NPS MW-17	12/3/2001	NA	1136002.86	598994.5053	240.07	242.71	226.91	211.91	8/21/2013	223.78	16.29
NPS MW-18	6/24/2013	NA	1135665.9	599155.1	234.62	234.15	227.453	219.453	8/21/2013	231.57	3.05
CSXT MW-20	9/27/2007	NA	1135015.9	599454.6	236.88	236.27	233.77	213.77	8/21/2013	228.04	8.84
CSXT MW-6R	3/29/2004	NA	1135134.63	599418.6105	233.63	233.63	228.13	218.13	8/21/2013	226.73	6.90
CSXT MW-8	8/31/1995	NA	1135245.5	599282	234.81	235.51	229.06	209.06	8/21/2013	220.62	14.19
CSXT MW-9	8/31/1995	NA	1135100.1	599338.7	234.97	237.54	229.25	209.25	8/21/2013	221.24	13.73

### Notes:

ft amsl = feet above mean sea level

ft bTOC = feet below top of casing

NA = not abandoned

Coordinate data in MD SP NAD 83/91, NAVD88, ft

Table 4
Analytical Results - Soil
CSXT Brunswick Yard, Brunswick, Maryland

	Location ID	SB01-01	SB01-01	SB01-02	SB01-02	SB01-03	SB01-03	SB01-04	SB01-04	SB01-05	SB01-05
	ample Date	8/19/2013	8/19/2013	8/19/2013	8/19/2013	8/19/2013	8/19/2013	8/19/2013		8/19/2013	8/19/2013
	•			1 - 1.5		1 - 1.5		0.5 - 1	8/19/2013	2 - 2.5	8/19/2013 8.5 - 9
Sample Interval (ft bgs)		1 - 1.5	9 - 9.5		5 - 5.5		5 - 5.5		5 - 5.5		
Secondary Sample Interv	,	1 - 2	9 - 10	0 .5 - 1.5	5 - 6	0.5 - 1.5	5 - 6	0 - 1	5 - 6	1.5 - 2.5	8.5 - 9.5
Constituent <sup>2</sup>	Units										
VOCs - USEPA Method SW8260B			I								
1,2-Dichlorobenzene	μg/kg	< 5.9 U	< 4.1 U	< 3.9 U	< 11 U	< 5.6 U	< 4.7 U	< 8.1 U	< 540 U	< 4.5 U	< 5.5 U
2-Butanone	μg/kg	< 30 U	< 20 U	< 20 U	< 57 U	< 28 U	< 23 U	< 41 U	< 2700 U	< 22 U	32
Acetone	μg/kg	< 30 U	< 20 U	< 20 U	< 57 U	< 28 U	< 23 U	< 41 U	< 2700 U	< 22 U	150
Carbon Disulfide	μg/kg	< 5.9 U	< 4.1 U	< 3.9 U	< 11 U	< 5.6 U	< 4.7 U	< 8.1 U	< 540 U	< 4.5 U	< 5.5 U
CFC-11	μg/kg	< 5.9 U	< 4.1 U	< 3.9 U	< 11 U	< 5.6 U	< 4.7 U	< 8.1 U	< 540 U	< 4.5 U	< 5.5 U
Ethylbenzene	μg/kg	< 5.9 U	< 4.1 U	< 3.9 U	< 11 U	< 5.6 U	< 4.7 U	< 8.1 U	< 540 U	< 4.5 U	< 5.5 U
m-Dichlorobenzene	μg/kg	< 5.9 U	< 4.1 U	< 3.9 U	< 11 U	< 5.6 U	< 4.7 U	< 8.1 U	< 540 U	< 4.5 U	< 5.5 U
Methyl tert-butyl ether	μg/kg	< 5.9 U	< 4.1 U	< 3.9 U	< 11 U	< 5.6 U	< 4.7 U	< 8.1 U	< 540 U	< 4.5 U	< 5.5 U
Methylcyclohexane	μg/kg	< 5.9 U	< 4.1 U	< 3.9 U	< 11 U	< 5.6 U	< 4.7 U	< 8.1 U	< 540 U	< 4.5 U	< 5.5 U
Toluene	μg/kg	< 5.9 U	< 4.1 U	< 3.9 U	< 11 U	< 5.6 U	< 4.7 U	< 8.1 U	< 540 U	< 4.5 U	< 5.5 U
Xylenes, Total	μg/kg	< 12 U	< 8.1 U	< 7.9 U	< 23 U	< 11 U	< 9.4 U	< 16 U	< 1100 U	< 9 U	< 11 U
SVOCs - USEPA Method SW8270D											
1,2-Benz-phenanthracene	μg/kg	38 J	< 400 U	78 J	< 430 U	34 J	< 400 U	96 J	< 430 U	< 380 U	< 430 U
2,6-Dinitrotoluene	μg/kg	< 440 U	< 400 U	< 380 U	< 430 U	< 390 U	< 400 U	< 410 U	< 430 U	< 380 U	< 430 U
2-Methyl naphthalene	μg/kg	140 J	< 400 U	93 J	< 430 U	86 J	< 400 U	180 J	82 J	< 380 U	< 430 U
Acenaphthene	μg/kg	< 440 U	< 400 U	< 380 U	< 430 U	< 390 U	< 400 U	< 410 U	150 J	< 380 U	< 430 U
Acenaphthylene	μg/kg	< 440 U	< 400 U	< 380 U	< 430 U	< 390 U	< 400 U	< 410 U	< 430 U	< 380 U	< 430 U
Acetophenone	μg/kg	< 440 U	< 400 U	< 380 U	< 430 U	< 390 U	< 400 U	< 410 U	< 430 U	< 380 U	< 430 U
Anthracene	μg/kg	< 440 U	< 400 U	< 380 U	< 430 U	< 390 U	< 400 U	< 410 U	110 J	< 380 U	< 430 U
Benzaldehyde	μg/kg	< 440 U	< 400 U	< 380 U	< 430 U	< 390 U	< 400 U	87 J	< 430 U	< 380 U	< 430 U
Benzo(a)anthracene	μg/kg	< 440 U	< 400 U	47 J	< 430 U	< 390 U	< 400 U	55 J	< 430 U	< 380 U	< 430 U
Benzo(a)pyrene	μg/kg	< 440 U	< 400 U	79 J	< 430 U	< 390 U	< 400 U	< 410 U	< 430 U	< 380 U	< 430 U
Benzo(b)fluoranthene	μg/kg	< 440 U	< 400 U	130 J	< 430 U	< 390 U	< 400 U	89 J	< 430 U	< 380 U	< 430 U
Benzo(g,h,i)perylene	μg/kg	< 440 U	< 400 U	94 J	< 430 U	86 J	< 400 U	34 J	< 430 U	< 380 U	< 430 U
Benzo(k)fluoranthene	μg/kg	< 440 U	< 400 U	< 380 U	< 430 U	< 390 U	< 400 U	< 410 U	< 430 U	< 380 U	< 430 U
bis(2-Ethylhexyl)phthalate	μg/kg	< 440 U	< 400 U	< 380 U	< 430 U	65 J	< 400 U	< 410 U	50 J	< 380 U	< 430 U
Caprolactam	μg/kg	< 440 U	< 400 U	< 380 U	< 430 U	< 390 U	< 400 U	< 410 U	< 430 U	< 380 U	< 430 U
Carbazole	μg/kg	< 440 U	< 400 U	< 380 U	< 430 U	< 390 U	< 400 U	< 410 U	< 430 U	< 380 U	< 430 U
Dibenzo(a,h)anthracene	μg/kg	< 440 U	< 400 U	< 380 U	< 430 U	< 390 U	< 400 U	< 410 U	< 430 U	< 380 U	< 430 U
Dibenzofuran	μg/kg	< 440 U	< 400 U	< 380 U	< 430 U	46 J	< 400 U	57 J	45 J	< 380 U	< 430 U
Di-n-octyl phthalate	μg/kg	< 440 U	< 400 U	< 380 U	< 430 U	< 390 U	< 400 U	< 410 U	< 430 U	< 380 U	< 430 U
Fluoranthene	μg/kg	< 440 U	< 400 U	58 J	< 430 U	66 J	< 400 U	110 J	< 430 U	< 380 U	< 430 U
Fluorene	μg/kg	< 440 U	< 400 U	< 380 U	< 430 U	< 390 U	< 400 U	< 410 U	510	< 380 U	< 430 U
Indeno(1,2,3-cd)pyrene	μg/kg	< 440 U	< 400 U	74 J	< 430 U	54 J	< 400 U	< 410 U	< 430 U	< 380 U	< 430 U
Naphthalene	μg/kg	100 J	< 400 U	72 J	< 430 U	170 J	< 400 U	130 J	< 430 U	< 380 U	< 430 U
N-Nitrosodiphenylamine	μg/kg	< 440 U	< 400 U	< 380 U	< 430 U	< 390 U	< 400 U	< 410 U	500	< 380 U	< 430 U
Phenanthrene	μg/kg	81 J	< 400 U	64 J	< 430 U	75 J	< 400 U	150 J	79 J	< 380 U	< 430 U
Phenol	μg/kg	53 J	< 400 U	< 380 U	< 430 U	< 390 U	< 400 U	< 410 U	< 430 U	< 380 U	< 430 U
Pyrene	μg/kg	< 440 U	< 400 U	42 J	< 430 U	35 J	< 400 U	76 J	< 430 U	< 380 U	< 430 U
TPH - USEPA Method SW8015C											
Diesel Range Organics [C10-C28]	mg/kg	4.6 J	2.7 J	37	1.8 JB	21	1.8 JB	34	47	16	25
Gasoline Range Organics (GRO)-C6-C10	mg/kg	< 0.33 U	< .32 U	0.38 J	0.29	0.26 J	< 0.24 U	1.4	40	0.25	0.5
ORO C24-C40	mg/kg	7.6 B	3.40 JB	50 B	2 JB	43 B	2.4 JB	5.9 B	7.3 B	26 B	43 B

Table 4
Analytical Results - Soil
CSXT Brunswick Yard, Brunswick, Maryland

				SB01-07	SB01-07	SB01-08	SB01-08	SB01-09	SB01-09	SB01-10	SB01-10
Sample Inter	ample Date	8/19/2013	8/19/2013	8/20/2013	8/20/2013	8/20/2013	8/20/2013	8/20/2013	8/20/2013	8/20/2013	8/20/2013
Sample mier	Sample Interval (ft bgs)		6.5 - 7	1 - 1.5	9.5 - 10	2 - 2.5	9 - 9.5	0.5 - 1	4 - 4.5	0.5 - 1	4 - 4.5
Secondary Sample Interv	` - 1	1 - 2	6.5 - 7.5	0.5 - 1.5	9 - 10	1.5 - 2.5	9 - 10	0 - 1	4 - 5	0 - 1	4 - 5
Constituent <sup>2</sup>	Units										
VOCs - USEPA Method SW8260B											
1,2-Dichlorobenzene	μg/kg	< 5.2 U	< 5.3 U	< 9 U	< 5.7 U	< 6.7 U	< 3.6 U	< 5.4 U	< 5.3 U	< 5.2 U	< 4.8 U
2-Butanone	μg/kg	< 26 U	< 26 U	< 45 U	23 J	< 34 U	< 18 U	< 27 U	< 26 U	< 26 U	< 24 U
Acetone	μg/kg	< 26 U	65	< 45 U	110	< 34 U	22	< 27 U	< 26 U	< 26 U	< 24 U
Carbon Disulfide	μg/kg	< 5.2 U	< 5.3 U	< 9 U	< 5.7 U	< 6.7 U	< 3.6 U	< 5.4 U	< 5.3 U	< 5.2 U	< 4.8 U
CFC-11	μg/kg	< 5.2 U	< 5.3 U	2.4 J	< 5.7 U	< 6.7 U	< 3.6 U	< 5.4 U	< 5.3 U	< 5.2 U	< 4.8 U
Ethylbenzene	μg/kg	< 5.2 U	< 5.3 U	< 9 U	< 5.7 U	< 6.7 U	< 3.6 U	< 5.4 U	< 5.3 U	< 5.2 U	< 4.8 U
m-Dichlorobenzene	μg/kg	< 5.2 U	< 5.3 U	< 9 U	< 5.7 U	< 6.7 U	< 3.6 U	< 5.4 U	< 5.3 U	< 5.2 U	< 4.8 U
Methyl tert-butyl ether	μg/kg	< 5.2 U	< 5.3 U	< 9 U	2.1 J	< 6.7 U	< 3.6 U	< 5.4 U	1.7 J	< 5.2 U	< 4.8 U
Methylcyclohexane	μg/kg	< 5.2 U	< 5.3 U	< 9 U	18	< 6.7 U	< 3.6 U	< 5.4 U	< 5.3 U	< 5.2 U	< 4.8 U
Toluene	μg/kg	< 5.2 U	< 5.3 U	< 9 U	< 5.7 U	< 6.7 U	< 3.6 U	< 5.4 U	< 5.3 U	< 5.2 U	< 4.8 U
Xylenes, Total	μg/kg	< 10 U	< 11 U	< 18 U	< 11 U	< 13 U	< 7.2 U	< 11 U	< 11 U	< 10 U	< 9.6 U
SVOCs - USEPA Method SW8270D	13 3							,,,,			0.0
1,2-Benz-phenanthracene	μg/kg	57 J	< 480 U	440 J	< 440 U	< 420 U	< 410 U	84 J	< 390 U	40 J	< 450 U
2,6-Dinitrotoluene	μg/kg	< 390 U	< 480 U	< 450 U	< 440 U	< 420 U	< 410 U	< 460 U	< 390 U	< 420 U	< 450 U
2-Methyl naphthalene	μg/kg	55 J	< 480 U	570	< 440 U	< 420 U	< 410 U	310 J	< 390 U	54 J	< 450 U
Acenaphthene	μg/kg	< 390 U	< 480 U	< 450 U	< 440 U	< 420 U	< 410 U	< 460 U	< 390 U	< 420 U	< 450 U
Acenaphthylene	μg/kg	< 390 U	< 480 U	< 450 U	< 440 U	< 420 U	< 410 U	< 460 U	< 390 U	< 420 U	< 450 U
Acetophenone	μg/kg	< 390 U	< 480 U	74 J	< 440 U	< 420 U	< 410 U	< 460 U	< 390 U	< 420 U	< 450 U
Anthracene	μg/kg	< 390 U	< 480 U	71 J	< 440 U	< 420 U	< 410 U	< 460 U	< 390 U	< 420 U	< 450 U
Benzaldehyde	μg/kg	< 390 U	< 480 U	100 J	< 440 U	< 420 U	< 410 U	< 460 U	< 390 U	< 420 U	< 450 U
Benzo(a)anthracene	μg/kg	34 J	< 480 U	280 J	< 440 U	< 420 U	< 410 U	< 460 U	< 390 U	< 420 U	< 450 U
Benzo(a)pyrene	μg/kg	< 390 U	< 480 U	280 J	< 440 U	< 420 U	< 410 U	< 460 U	< 390 U	< 420 U	< 450 U
Benzo(b)fluoranthene	μg/kg	54 J	< 480 U	500	< 440 U	< 420 U	< 410 U	75 J	< 390 U	< 420 U	< 450 U
Benzo(g,h,i)perylene	μg/kg	< 390 U	< 480 U	320 JB	< 440 U	< 420 U	< 410 U	34 JB	< 390 U	< 420 U	< 450 U
Benzo(k)fluoranthene	μg/kg	< 390 U	< 480 U	180 J	< 440 U	< 420 U	< 410 U	< 460 U	< 390 U	< 420 U	< 450 U
bis(2-Ethylhexyl)phthalate	μg/kg	< 390 U	43 J	< 450 U	< 440 U	< 420 U	< 410 U	< 460 U	< 390 U	< 420 U	< 450 U
Caprolactam	μg/kg	< 390 U	< 480 U	< 450 U	< 440 U	< 420 U	< 410 U	< 460 U	< 390 U	< 420 U	< 450 U
Carbazole	μg/kg	< 390 U	< 480 U	45 J	< 440 U	< 420 U	< 410 U	< 460 U	< 390 U	< 420 U	< 450 U
Dibenzo(a,h)anthracene	μg/kg	< 390 U	< 480 U	240 JB	< 440 U	< 420 U	< 410 U	< 460 U	< 390 U	< 420 U	< 450 U
Dibenzofuran	μg/kg	< 390 U	< 480 U	200 J	< 440 U	< 420 U	< 410 U	88 J	< 390 U	< 420 U	< 450 U
Di-n-octyl phthalate	μg/kg	< 390 U	< 480 U	< 450 U	< 440 U	< 420 U	< 410 U	< 460 U	< 390 U	< 420 U	< 450 U
Fluoranthene	μg/kg	76 J	< 480 U	750	< 440 U	< 420 U	< 410 U	110 J	< 390 U	49 J	< 450 U
Fluorene	μg/kg	< 390 U	< 480 U	< 450 U	< 440 U	< 420 U	< 410 U	< 460 U	< 390 U	< 420 U	< 450 U
Indeno(1,2,3-cd)pyrene	μg/kg	< 390 U	< 480 U	320 JB	< 440 U	< 420 U	< 410 U	< 460 U	< 390 U	< 420 U	< 450 U
Naphthalene	μg/kg	< 390 U	< 480 U	490	< 440 U	< 420 U	< 410 U	< 460 U	< 390 U	38 J	< 450 U
N-Nitrosodiphenylamine	μg/kg μg/kg	< 390 U	< 480 U	< 450 U	< 440 U	< 420 U	< 410 U	< 460 U	< 390 U	< 420 U	< 450 U
Phenanthrene	μg/kg μg/kg	71 J	< 480 U	<b>750</b>	< 440 U	< 420 U	< 410 U	180 J	< 390 U	50 J	< 450 U
Phenol	μg/kg μg/kg	< 390 U	< 480 U	< 450 U	< 440 U	< 420 U	< 410 U	< 460 U	< 390 U	< 420 U	< 450 U
Pyrene	μg/kg μg/kg	44 J	< 480 U	450 450	< 440 U	< 420 U	< 410 U	69 J	< 390 U	< 420 U	< 450 U
TPH - USEPA Method SW8015C	M9/119	-T-T <b>V</b>	- 700 0	700	• नन्	- 720 0	. 4100		1 000 0	- 720 0	7 700 0
Diesel Range Organics [C10-C28]	mg/kg	5.9	2.5 J	38	1.8 J	9.7	1.8 J	< 6.8 U	< 5.9 U	< 6.3 U	< 6.8 U
Gasoline Range Organics (GRO)-C6-C10	mg/kg	< 0.29 U	0.29 J	28	4.5	0.86	0.32	0.26 J	< 0.22 U	0.31 J	< 0.8 U
ORO C24-C40	mg/kg	7.3 B	6.4 JB	25 B	4.4 JB	9.7 B	4.8 JB	4.4 JB	3.5 JB	3.4 JB	2.3 JB

Table 4
Analytical Results - Soil
CSXT Brunswick Yard, Brunswick, Maryland

	Location ID	SB02-01	SB02-01	SB02-02	SB02-02	SB02-03	SB02-03	SB02-04	SB02-04	SB02-05	SB02-05
	Sample Date	8/20/2013	8/20/2013	8/20/2013	8/20/2013	8/20/2013	8/20/2013	8/20/2013	8/20/2013	8/20/2013	8/20/2013
	erval (ft bgs)	0.5 - 1	7.5 - 8	0.5 - 1	4.5 - 5	0.5 - 1	5.5 - 6	0.5 - 1	7 - 7.5	1 - 1.5	7 - 7.5
Secondary Sample Inter	` ' '	0.5 - 1	7.5-8	0.5 - 1	4.5 - 5 4.5 - 5.5	0.5 - 1	5 - 6	0.5 - 1.5	7 - 7.5	0.5 - 1.5	7 - 7.3 7 - 8
		0 - 1	7 - 0	0 - 1	4.5 - 5.5	0.5-1.5	5-6	0.5 - 1.5	7 - 0	0.5 - 1.5	7 - 0
Constituent <sup>2</sup>	Units										
VOCs - USEPA Method SW8260B											
1,2-Dichlorobenzene	μg/kg	< 7.6 U	< 4.2 U	< 5.2 U	< 4.5 U	< 6.5 U	< 4.4 U	< 8.4 U	< 4.8 U	< 7.6 U	< 4.3 U
2-Butanone	μg/kg	< 38 U	< 21 U	< 26 U	< 22 U	< 33 U	< 22 U	< 42 U	< 24 U	< 38 U	< 22 U
Acetone	μg/kg	< 38 U	< 21 U	< 26 U	< 22 U	< 33 U	< 22 U	14 J	< 24 U	< 38 U	< 22 U
Carbon Disulfide	μg/kg	< 7.6 U	< 4.2 U	< 5.2 U	< 4.5 U	< 6.5 U	< 4.4 U	< 8.4 U	< 4.8 U	< 7.6 U	< 4.3 U
CFC-11	μg/kg	< 7.6 U	< 4.2 U	< 5.2 U	< 4.5 U	3.4 J	< 4.4 U	< 8.4 U	< 4.8 U	< 7.6 U	< 4.3 U
Ethylbenzene	μg/kg	< 7.6 U	< 4.2 U	< 5.2 U	< 4.5 U	< 6.5 U	< 4.4 U	< 8.4 U	< 4.8 U	< 7.6 U	< 4.3 U
m-Dichlorobenzene	μg/kg	< 7.6 U	< 4.2 U	< 5.2 U	< 4.5 U	< 6.5 U	< 4.4 U	< 8.4 U	< 4.8 U	< 7.6 U	< 4.3 U
Methyl tert-butyl ether	μg/kg	< 7.6 U	< 4.2 U	< 5.2 U	< 4.5 U	< 6.5 U	< 4.4 U	< 8.4 U	< 4.8 U	< 7.6 U	< 4.3 U
Methylcyclohexane	μg/kg	< 7.6 U	< 4.2 U	< 5.2 U	< 4.5 U	< 6.5 U	< 4.4 U	< 8.4 U	< 4.8 U	< 7.6 U	< 4.3 U
Toluene	μg/kg	< 7.6 U	< 4.2 U	< 5.2 U	< 4.5 U	< 6.5 U	< 4.4 U	< 8.4 U	< 4.8 U	< 7.6 U	< 4.3 U
Xylenes, Total	μg/kg	< 15 U	< 8.5 U	< 10 U	< 9 U	< 13 U	< 8.9 U	< 17 U	< 9.7 U	< 15 U	< 8.6 U
SVOCs - USEPA Method SW8270D											
1,2-Benz-phenanthracene	μg/kg	37 J	< 400 U	47 J	< 400 U	< 410 U	< 400 U	45 J	< 420 U	390 J	< 390 U
2,6-Dinitrotoluene	μg/kg	< 550 U	< 400 U	< 420 U	720	< 410 U	< 400 U	< 560 U	< 420 U	< 550 U	< 390 U
2-Methyl naphthalene	μg/kg	78 J	< 400 U	130 J	< 400 U	< 410 U	< 400 U	76 J	< 420 U	1400	< 390 U
Acenaphthene	μg/kg	< 550 U	< 400 U	< 420 U	< 400 U	< 410 U	< 400 U	< 560 U	< 420 U	< 550 U	< 390 U
Acenaphthylene	μg/kg	< 550 U	< 400 U	< 420 U	< 400 U	< 410 U	< 400 U	< 560 U	< 420 U	< 550 U	< 390 U
Acetophenone	μg/kg	< 550 U	< 400 U	< 420 U	< 400 U	< 410 U	< 400 U	< 560 U	< 420 U	< 550 U	< 390 U
Anthracene	μg/kg	< 550 U	< 400 U	< 420 U	< 400 U	< 410 U	< 400 U	< 560 U	< 420 U	92 J	< 390 U
Benzaldehyde	μg/kg	< 550 U	< 400 U	< 420 U	< 400 U	< 410 U	< 400 U	< 560 U	< 420 U	220 J	< 390 U
Benzo(a)anthracene	μg/kg	< 550 U	< 400 U	< 420 U	< 400 U	< 410 U	< 400 U	< 560 U	< 420 U	< 550 U	< 390 U
Benzo(a)pyrene	μg/kg	< 550 U	< 400 U	< 420 U	< 400 U	< 410 U	< 400 U	< 560 U	< 420 U	130 J	< 390 U
Benzo(b)fluoranthene	μg/kg	< 550 U	< 400 U	52 J	< 400 U	< 410 U	< 400 U	< 560 U	< 420 U	380 J	< 390 U
Benzo(g,h,i)perylene	μg/kg	< 550 U	< 400 U	< 420 U	< 400 U	< 410 U	< 400 U	< 560 U	< 420 U	110 JB	< 390 U
Benzo(k)fluoranthene	μg/kg	< 550 U	< 400 U	< 420 U	< 400 U	< 410 U	< 400 U	< 560 U	< 420 U	120 J	< 390 U
bis(2-Ethylhexyl)phthalate	μg/kg	< 550 U	< 400 U	< 420 U	45 J	< 410 U	< 400 U	< 560 U	< 420 U	< 550 U	< 390 U
Caprolactam	μg/kg	< 550 U	< 400 U	< 420 U	< 400 U	< 410 U	< 400 U	< 560 U	< 420 U	< 550 U	< 390 U
Carbazole	μg/kg	< 550 U	< 400 U	< 420 U	< 400 U	< 410 U	< 400 U	< 560 U	< 420 U	57 J	< 390 U
Dibenzo(a,h)anthracene	μg/kg	< 550 U	< 400 U	< 420 U	< 400 U	< 410 U	< 400 U	< 560 U	< 420 U	< 550 U	< 390 U
Dibenzofuran	μg/kg	< 550 U	< 400 U	50 J	< 400 U	< 410 U	< 400 U	< 560 U	< 420 U	420 J	< 390 U
Di-n-octyl phthalate	μg/kg	< 550 U	< 400 U	< 420 U	< 400 U	< 410 U	< 400 U	< 560 U	< 420 U	< 550 U	< 390 U
Fluoranthene	μg/kg	< 550 U	< 400 U	70 J	< 400 U	< 410 U	< 400 U	59 J	< 420 U	540 J	< 390 U
Fluorene	μg/kg	< 550 U	< 400 U	< 420 U	< 400 U	< 410 U	< 400 U	< 560 U	< 420 U	< 550 U	< 390 U
Indeno(1,2,3-cd)pyrene	μg/kg	< 550 U	< 400 U	< 420 U	< 400 U	< 410 U	< 400 U	< 560 U	< 420 U	120 JB	< 390 U
Naphthalene	μg/kg	< 550 U	< 400 U	110 J	< 400 U	< 410 U	< 400 U	81 J	< 420 U	1100	< 390 U
N-Nitrosodiphenylamine	μg/kg	< 550 U	< 400 U	< 420 U	< 400 U	< 410 U	< 400 U	< 560 U	< 420 U	< 550 U	< 390 U
Phenanthrene	μg/kg	79 J	< 400 U	110 J	< 400 U	< 410 U	< 400 U	85 J	< 420 U	920	< 390 U
Phenol	μg/kg	< 550 U	< 400 U	< 420 U	< 400 U	< 410 U	< 400 U	< 560 U	< 420 U	< 550 U	< 390 U
Pyrene	μg/kg	< 550 U	< 400 U	51 J	< 400 U	< 410 U	< 400 U	< 560 U	< 420 U	330 J	< 390 U
TPH - USEPA Method SW8015C											
Diesel Range Organics [C10-C28]	mg/kg	< 8.1 U	< 6 U	4.1 J	< 6 U	< 6.1 U	< 6.1 U	3.9 JB	< 6.2 U	< 8.4 U	< 5.9 U
Gasoline Range Organics (GRO)-C6-C10	mg/kg	3.4	< 0.21 U	0.24 J	< 0.24 U	0.58	< 0.23 U	7.6	0.34	1.5	< 0.27 U
ORO C24-C40	mg/kg	2.8 JB	2.7 JB	7.9 B	2.5 JB	2 JB	3.3 JB	6.5 JB	3.5 JB	7.2 JB	3 JB

Table 4
Analytical Results - Soil
CSXT Brunswick Yard, Brunswick, Maryland

	Location ID	SB02-06	SB02-06	SB02-07	SB02-07	SB02-08	SB02-08	SB02-09	SB02-09	SB02-10	SB02-10
•	Sample Date	8/20/2013	8/20/2013	8/21/2013	8/21/2013	8/21/2013	8/21/2013	8/21/2013	8/21/2013	8/21/2013	8/21/2013
	erval (ft bgs)	1 - 1.5	6.5 - 7	1 - 1.5	5.5 - 6	1 - 1.5	7 - 7.5	1 - 1.5	4.5 - 5	1 - 1.5	5 - 5.5
Secondary Sample Inte		0.5 - 1.5	6.5 - 7.5	0.5 - 1.5	5.5 - 6.5	0.5 - 1.5	7 - 8	0.5 - 1.5	4.5 - 5.5	0.5 - 1.5	5 - 6
Constituent <sup>2</sup>	Units										
VOCs - USEPA Method SW8260B	96										
1,2-Dichlorobenzene	μg/kg	< 5.5 U	< 4.7 U	< 9.3 U	< 4.4 U	< 5.6 U	< 4.4 U	< 9.8 U	< 3.9 U	< 6.8 U	< 4.8 U
2-Butanone	μg/kg	< 27 U	< 24 U	< 46 U	< 22 U	< 28 U	< 22 U	< 49 U	< 20 U	< 34 U	< 24 U
Acetone	μg/kg	< 27 U	< 24 U	< 46 U	24 *	< 28 U	< 22 U	< 49 U	8.1 J*	< 34 U	< 24 U
Carbon Disulfide	μg/kg	< 5.5 U	< 4.7 U	< 9.3 U	< 4.4 U	< 5.6 U	< 4.4 U	< 9.8 U	< 3.9 U	< 6.8 U	< 4.8 U
CFC-11	μg/kg	< 5.5 U	< 4.7 U	6.6 J	< 4.4 U	< 5.6 U	< 4.4 U	< 9.8 U	< 3.9 U	< 6.8 U	< 4.8 U
Ethylbenzene	μg/kg	< 5.5 U	< 4.7 U	< 9.3 U	< 4.4 U	< 5.6 U	< 4.4 U	< 9.8 U	< 3.9 U	< 6.8 U	< 4.8 U
m-Dichlorobenzene	μg/kg	< 5.5 U	< 4.7 U	< 9.3 U	< 4.4 U	< 5.6 U	< 4.4 U	< 9.8 U	< 3.9 U	< 6.8 U	< 4.8 U
Methyl tert-butyl ether	μg/kg	< 5.5 U	< 4.7 U	< 9.3 U	< 4.4 U	< 5.6 U	< 4.4 U	< 9.8 U	< 3.9 U	< 6.8 U	< 4.8 U
Methylcyclohexane	μg/kg	< 5.5 U	< 4.7 U	< 9.3 U	< 4.4 U	< 5.6 U	< 4.4 U	< 9.8 U	< 3.9 U	< 6.8 U	< 4.8 U
Toluene	μg/kg	< 5.5 U	< 4.7 U	< 9.3 U	< 4.4 U	< 5.6 U	< 4.4 U	< 9.8 U	< 3.9 U	< 6.8 U	< 4.8 U
Xylenes, Total	μg/kg	< 11 U	< 9.4 U	< 19 U	< 8.9 U	< 11 U	< 8.8 U	< 20 U	< 7.8 U	< 14 U	< 9.6 U
SVOCs - USEPA Method SW8270D											
1,2-Benz-phenanthracene	μg/kg	< 530 U	< 400 U	120 J	< 400 U	260 J	< 390 U	560 J	< 390 U	< 580 U	< 400 U
2,6-Dinitrotoluene	μg/kg	< 530 U	< 400 U	< 620 U	< 400 U	< 450 U	< 390 U	< 620 U	< 390 U	< 580 U	< 400 U
2-Methyl naphthalene	μg/kg	< 530 U	< 400 U	590 J	< 400 U	670	< 390 U	1800	< 390 U	78 J	< 400 U
Acenaphthene	μg/kg	< 530 U	< 400 U	< 620 U	< 400 U	< 450 U	< 390 U	< 620 U	< 390 U	< 580 U	< 400 U
Acenaphthylene	μg/kg	< 530 U	< 400 U	< 620 U	< 400 U	< 450 U	< 390 U	70 J	< 390 U	< 580 U	< 400 U
Acetophenone	μg/kg	< 530 U	< 400 U	80 J	< 400 U	71 J	< 390 U	250 J	< 390 U	< 580 U	< 400 U
Anthracene	μg/kg	< 530 U	< 400 U	< 620 U	< 400 U	93 J	< 390 U	130 J	< 390 U	< 580 U	< 400 U
Benzaldehyde	μg/kg	< 530 U	< 400 U	< 620 U	< 400 U	< 450 U	< 390 U	< 620 U	< 390 U	< 580 U	< 400 U
Benzo(a)anthracene	μg/kg	< 530 U	< 400 U	91 J	< 400 U	130 J	< 390 U	280 J	< 390 U	< 580 U	< 400 U
Benzo(a)pyrene	μg/kg	< 530 U	< 400 U	< 620 U	< 400 U	< 450 U	< 390 U	230 J	< 390 U	< 580 U	< 400 U
Benzo(b)fluoranthene	μg/kg	< 530 U	< 400 U	< 620 U	< 400 U	330 J	< 390 U	560 J	< 390 U	< 580 U	< 400 U
Benzo(g,h,i)perylene	μg/kg	< 530 U	< 400 U	120 J	< 400 U	160 J	< 390 U	190 J	< 390 U	< 580 U	< 400 U
Benzo(k)fluoranthene	μg/kg	< 530 U	< 400 U	< 620 U	< 400 U	< 450 U	< 390 U	< 620 U	< 390 U	< 580 U	< 400 U
bis(2-Ethylhexyl)phthalate	μg/kg	< 530 U	< 400 U	< 620 U	< 400 U	< 450 U	< 390 U	< 620 U	< 390 U	< 580 U	< 400 U
Caprolactam	μg/kg	< 530 U	< 400 U	< 620 U	< 400 U	94 J	< 390 U	230 J	< 390 U	< 580 U	< 400 U
Carbazole	μg/kg	< 530 U	< 400 U	< 620 U	< 400 U	< 450 U	< 390 U	98 J	< 390 U	< 580 U	< 400 U
Dibenzo(a,h)anthracene	μg/kg	< 530 U	< 400 U	83 J	< 400 U	67 J	< 390 U	78 J	< 390 U	< 580 U	< 400 U
Dibenzofuran	μg/kg	< 530 U	< 400 U	160 J	< 400 U	310 J	< 390 U	550 J	< 390 U	< 580 U	< 400 U
Di-n-octyl phthalate	μg/kg	< 530 U	< 400 U	< 620 U	< 400 U	< 450 U	< 390 U	< 620 U	< 390 U	< 580 U	< 400 U
Fluoranthene	μg/kg	< 530 U	< 400 U	290 J	< 400 U	470	91 J	710	< 390 U	140 J	< 400 U
Fluorene	μg/kg	< 530 U	< 400 U	< 620 U	< 400 U	62 J	< 390 U	< 620 U	< 390 U	< 580 U	< 400 U
Indeno(1,2,3-cd)pyrene	μg/kg	< 530 U	< 400 U	140 J	< 400 U	210 J	< 390 U	200 J	< 390 U	< 580 U	< 400 U
Naphthalene	μg/kg	< 530 U	< 400 U	530 J	< 400 U	640	< 390 U	1400	< 390 U	69 J	< 400 U
N-Nitrosodiphenylamine	μg/kg	< 530 U	< 400 U	< 620 U	< 400 U	< 450 U	< 390 U	< 620 U	< 390 U	< 580 U	< 400 U
Phenanthrene	μg/kg	< 530 U	< 400 U	310 J	< 400 U	650	< 390 U	1100	< 390 U	< 580 U	< 400 U
Phenol	μg/kg	< 530 U	< 400 U	< 620 U	< 400 U	< 450 U	< 390 U	< 620 U	< 390 U	< 580 U	< 400 U
Pyrene	μg/kg	< 530 U	< 400 U	98 J	< 400 U	200 J	< 390 U	360 J	< 390 U	< 580 U	< 400 U
TPH - USEPA Method SW8015C											
Diesel Range Organics [C10-C28]	mg/kg	2.3 JB	< 5.9 U	6.7 J	3.1 J	5.5 J	4.6 J	4.6 J	5.2 J	5.4 J	3.3 J
Gasoline Range Organics (GRO)-C6-C10	mg/kg	0.52	< 0.59 U	0.67	0.8	0.54	0.2 J	5.6	< 0.21 U	0.66	< 0.24 U
ORO C24-C40	mg/kg	4.6 JB	4.7 JB	5.1 J	< 5.9 U	6.8 J	3 J	< 9.5 U	4.8 J	< 8.7 U	< 6.1 U

Table 4
Analytical Results - Soil
CSXT Brunswick Yard, Brunswick, Maryland

	anation ID	CD02 04	CD02-04	CD02.00	CD02.00	CD02.02	CD02.02	CD02.04	CD02.04	CD02.05	CD02.05
	Location ID	SB03-01	SB03-01	SB03-02	SB03-02	SB03-03	SB03-03	SB03-04	SB03-04	SB03-05	SB03-05
	ample Date	8/21/2013	8/21/2013	8/21/2013	8/21/2013	8/21/2013	8/21/2013	8/21/2013	8/21/2013	8/22/2013	8/22/2013
Sample Inter		1 - 1.5	5.5 - 6	0.5 - 1	3 - 3.5	1 - 1.5	3.5 - 4	0.5 - 1	4 - 4.5	0.5 - 1	4 - 4.5
Secondary Sample Interv	val (ft bgs)	0.5 - 1.5	5 - 6	0 - 1	3 - 4	0.5 - 1.5	3 - 4	0.5 - 1.5	4 - 5	0 - 1	3.5 - 4.5
Constituent <sup>2</sup>	Units										
VOCs - USEPA Method SW8260B											
1,2-Dichlorobenzene	μg/kg	< 5.5 U	< 4.7 U	< 5.7 U	< 4.7 U	< 6.9 U	< 4.2 U	< 9.1 U	< 4.8 U	< 8.8 U	< 4.5 U
2-Butanone	μg/kg	< 27 U	< 23 U	< 29 U	< 23 U	< 35 U	< 21 U	< 45 U	< 24 U	< 44 U	4.5 J
Acetone	μg/kg	23 J	23	22 J	7.6 J	29 J	12 J	54	17 J	16 J	22
Carbon Disulfide	μg/kg	< 5.5 U	< 4.7 U	< 5.7 U	< 4.7 U	< 6.9 U	< 4.2 U	< 9.1 U	< 4.8 U	< 8.8 U	1.1 J
CFC-11	μg/kg	< 5.5 U	< 4.7 U	< 5.7 U	1.3 J	< 6.9 U	2.4 J	4.7 J	< 4.8 U	9.6	< 4.5 U
Ethylbenzene	μg/kg	< 5.5 U	< 4.7 U	< 5.7 U	< 4.7 U	< 6.9 U	< 4.2 U	< 9.1 U	< 4.8 U	< 8.8 U	< 4.5 U
m-Dichlorobenzene	μg/kg	< 5.5 U	< 4.7 U	< 5.7 U	< 4.7 U	< 6.9 U	< 4.2 U	< 9.1 U	< 4.8 U	< 8.8 U	< 4.5 U
Methyl tert-butyl ether	μg/kg	< 5.5 U	< 4.7 U	< 5.7 U	< 4.7 U	< 6.9 U	< 4.2 U	< 9.1 U	< 4.8 U	< 8.8 U	< 4.5 U
Methylcyclohexane	μg/kg	< 5.5 U	< 4.7 U	< 5.7 U	< 4.7 U	< 6.9 U	< 4.2 U	< 9.1 U	< 4.8 U	< 8.8 U	< 4.5 U
Toluene	μg/kg	< 5.5 U	< 4.7 U	< 5.7 U	< 4.7 U	< 6.9 U	< 4.2 U	< 9.1 U	< 4.8 U	< 8.8 U	< 4.5 U
Xylenes, Total	μg/kg	< 11 U	< 9.4 U	< 11 U	< 9.3 U	< 14 U	< 8.4 U	< 18 U	< 9.5 U	< 18 U	< 9 U
SVOCs - USEPA Method SW8270D											
1,2-Benz-phenanthracene	μg/kg	83 J	< 410 U	70 J	< 430 U	41 J	< 400 U	150 J	< 400 U	< 410 U	< 400 U
2,6-Dinitrotoluene	μg/kg	< 440 U	< 410 U	< 480 U	< 430 U	< 480 U	< 400 U	< 600 U	< 400 U	< 410 U	< 400 U
2-Methyl naphthalene	μg/kg	970	< 410 U	270 J	70 J	960	< 400 U	1900	< 400 U	170 J	< 400 U
Acenaphthene	μg/kg	< 440 U	< 410 U	< 480 U	120 J	< 480 U	< 400 U	< 600 U	< 400 U	< 410 U	290 J
Acenaphthylene	μg/kg	< 440 U	< 410 U	< 480 U	< 430 U	< 480 U	< 400 U	< 600 U	< 400 U	< 410 U	< 400 U
Acetophenone	μg/kg	62 J	< 410 U	< 480 U	< 430 U	53 J	< 400 U	110 J	< 400 U	< 410 U	< 400 U
Anthracene	μg/kg	< 440 U	< 410 U	49 J	< 430 U	< 480 U	< 400 U	72 J	< 400 U	< 410 U	< 400 U
Benzaldehyde	μg/kg	< 440 U	< 410 U	< 480 U	< 430 U	< 480 U	< 400 U	190 J	< 400 U	< 410 U	< 400 U
Benzo(a)anthracene	μg/kg	43 J	< 410 U	50 J	< 430 U	< 480 U	< 400 U	65 J	< 400 U	< 410 U	< 400 U
Benzo(a)pyrene	μg/kg	< 440 U	< 410 U	< 480 U	< 430 U	< 480 U	< 400 U	< 600 U	< 400 U	< 410 U	< 400 U
Benzo(b)fluoranthene	μg/kg	< 440 U	< 410 U	< 480 U	< 430 U	< 480 U	< 400 U	160 J	< 400 U	< 410 U	< 400 U
Benzo(g,h,i)perylene	μg/kg	< 440 U	< 410 U	< 480 U	< 430 U	< 480 U	< 400 U	83 J	< 400 U	< 410 U	< 400 U
Benzo(k)fluoranthene	μg/kg	< 440 U	< 410 U	< 480 U	< 430 U	< 480 U	< 400 U	< 600 U	< 400 U	< 410 U	< 400 U
bis(2-Ethylhexyl)phthalate	μg/kg	< 440 U	< 410 U	< 480 U	< 430 U	< 480 U	< 400 U	< 600 U	< 400 U	< 410 U	< 400 U
Caprolactam	μg/kg	< 440 U	< 410 U	< 480 U	440	< 480 U	< 400 U	< 600 U	< 400 U	< 410 U	< 400 U
Carbazole	μg/kg	< 440 U	< 410 U	< 480 U	< 430 U	< 480 U	< 400 U	< 600 U	< 400 U	< 410 U	< 400 U
Dibenzo(a,h)anthracene	μg/kg	< 440 U	< 410 U	< 480 U	< 430 U	< 480 U	< 400 U	< 600 U	< 400 U	< 410 U	< 400 U
Dibenzofuran	μg/kg	160 J	< 410 U	67 J	< 430 U	100 J	< 400 U	250 J	< 400 U	< 410 U	< 400 U
Di-n-octyl phthalate	μg/kg	< 440 U	< 410 U	< 480 U	< 430 U	< 480 U	< 400 U	< 600 U	< 400 U	< 410 U	< 400 U
Fluoranthene	μg/kg	220 J	< 410 U	160 J	120 J	150 J	< 400 U	310 J	95 J	< 410 U	< 400 U
Fluorene	μg/kg	< 440 U	< 410 U	< 480 U	260 J	< 480 U	< 400 U	90 J	< 400 U	< 410 U	830
Indeno(1,2,3-cd)pyrene	μg/kg	< 440 U	< 410 U	< 480 U	< 430 U	< 480 U	< 400 U	77 J	< 400 U	< 410 U	< 400 U
Naphthalene	μg/kg	470	< 410 U	420 J	120 J	560	< 400 U	900	< 400 U	100 J	< 400 U
N-Nitrosodiphenylamine	μg/kg	< 440 U	< 410 U	< 480 U	< 430 U	< 480 U	< 400 U	< 600 U	< 400 U	< 410 U	< 400 U
Phenanthrene	μg/kg	350 J	< 410 U	150 J	< 430 U	190 J	< 400 U	570 J	< 400 U	99 J	< 400 U
Phenol	μg/kg	< 440 U	< 410 U	< 480 U	< 430 U	< 480 U	< 400 U	< 600 U	< 400 U	< 410 U	< 400 U
Pyrene	μg/kg	93 J	< 410 U	56 J	< 430 U	< 480 U	< 400 U	140 J	< 400 U	< 410 U	61 J
TPH - USEPA Method SW8015C											-
Diesel Range Organics [C10-C28]	mg/kg	27	11	2.6	7.2	60	5.5 J	8.5 J	4.8 J	17	47
Gasoline Range Organics (GRO)-C6-C10	mg/kg	< 0.28 U	< 0.24 U	1.1	0.38	0.27 J	1.1	9.3	2.1	0.31 J	52
ORO C24-C40	mg/kg	4.5 J	1.7 J	3.6 J	2.8 J	71	2.5 J	4.9 J	< 6.1 U	15 B	3.5 JB

Table 4
Analytical Results - Soil
CSXT Brunswick Yard, Brunswick, Maryland

	Location ID	SB03-06	SB03-06	SB03-07	SB03-07	SB03-08	SB03-08	SB03-09	SB03-09	SB03-10	SB03-10
	Sample Date	8/22/2013	8/22/2013	8/22/2013	8/22/2013	8/22/2013	8/22/2013	8/22/2013	8/22/2013	8/22/2013	8/22/2013
Sample Inte	-	0.5 - 1	3 - 3.5	1.5 - 2	4.5 - 5	1.5 - 2	3 - 3.5	1.5 - 2	3.5 - 4	0.5 - 1	5.5 - 6
Secondary Sample Inter	`							1.5 - 2			
	, ,	0 - 1	2.5 - 3.5	1.5 - 2.5	4.5 - 5.5	1 - 2	3 - 4	1 - 2	3.5 - 4.5	0.5 - 1.5	5.5 - 6.5
Constituent <sup>2</sup>	Units										
VOCs - USEPA Method SW8260B											
1,2-Dichlorobenzene	μg/kg	13	2.2 J	< 4.3 U	< 4.6 U	< 5.1 U	< 4.7 U	< 5.6 U	< 4.8 U	< 10 U	< 4.7 U
2-Butanone	μg/kg	< 62 U	< 21 U	< 22 U	6.1 J	< 25 U	< 23 U	< 28 U	< 24 U	< 50 U	4.0 J
Acetone	μg/kg	< 62 U	19 J	< 22 U	25	< 25 U	21 J	< 28 U	7.5 J	21 J	24
Carbon Disulfide	μg/kg	< 12 U	< 4.3 U	< 4.3 U	< 4.6 U	< 5.1 U	< 4.7 U	< 5.6 U	< 4.8 U	< 10 U	< 4.7 U
CFC-11	μg/kg	< 12 U	< 4.3 U	4.8	5.0	7.7	5.1	6.0	6.5	11	< 4.7 U
Ethylbenzene	μg/kg	2.0 J	< 4.3 U	< 4.3 U	< 4.6 U	< 5.1 U	< 4.7 U	< 5.6 U	< 4.8 U	< 10 U	< 4.7 U
m-Dichlorobenzene	μg/kg	3.7 J	< 4.3 U	< 4.3 U	< 4.6 U	< 5.1 U	< 4.7 U	< 5.6 U	< 4.8 U	< 10 U	< 4.7 U
Methyl tert-butyl ether	μg/kg	< 12 U	< 4.3 U	< 4.3 U	< 4.6 U	< 5.1 U	< 4.7 U	< 5.6 U	< 4.8 U	< 10 U	< 4.7 U
Methylcyclohexane	μg/kg	2.2 J	< 4.3 U	< 4.3 U	1.1 J	< 5.1 U	< 4.7 U	< 5.6 U	< 4.8 U	< 10 U	< 4.7 U
Toluene	μg/kg	2.3 J	< 4.3 U	< 4.3 U	< 4.6 U	< 5.1 U	< 4.7 U	< 5.6 U	< 4.8 U	< 10 U	< 4.7 U
Xylenes, Total	μg/kg	11 J	2.4 J	< 8.6 U	< 9.2 U	< 10 U	< 9.3 U	< 11 U	< 9.5 U	< 20 U	< 9.5 U
SVOCs - USEPA Method SW8270D											
1,2-Benz-phenanthracene	μg/kg	150 J	< 400 U	62 J	41 J	< 430 U	< 400 U	< 430 U	< 400 U	110 J	< 410 U
2,6-Dinitrotoluene	μg/kg	< 500 U	< 400 U	< 410 U	< 440 U	< 430 U	< 400 U	< 430 U	< 400 U	< 560 U	< 410 U
2-Methyl naphthalene	μg/kg	2800	89 J	690	800	220 J	< 400 U	< 430 U	< 400 U	320 J	< 410 U
Acenaphthene	μg/kg	< 500 U	120 J	< 410 U	< 440 U	< 430 U	93 J	< 430 U	< 400 U	< 560 U	< 410 U
Acenaphthylene	μg/kg	110 J	< 400 U	< 410 U	< 440 U	< 430 U	< 400 U	< 430 U	< 400 U	< 560 U	< 410 U
Acetophenone	μg/kg	93 J	< 400 U	35 J	< 440 U	< 430 U	< 400 U	< 430 U	< 400 U	< 560 U	< 410 U
Anthracene	μg/kg	240 J	< 400 U	76 J	77 J	< 430 U	< 400 U	< 430 U	< 400 U	43 J	< 410 U
Benzaldehyde	μg/kg	140 J	< 400 U	< 410 U	< 440 U	< 430 U	< 400 U	< 430 U	< 400 U	< 560 U	< 410 U
Benzo(a)anthracene	μg/kg	88 J	< 400 U	< 410 U	< 440 U	< 430 U	< 400 U	< 430 U	< 400 U	68 J	< 410 U
Benzo(a)pyrene	μg/kg	< 500 U	< 400 U	< 410 U	< 440 U	< 430 U	< 400 U	< 430 U	< 400 U	< 560 U	< 410 U
Benzo(b)fluoranthene	μg/kg	140 J	< 400 U	48 J	< 440 U	< 430 U	< 400 U	< 430 U	< 400 U	< 560 U	< 410 U
Benzo(g,h,i)perylene	μg/kg	51 J	< 400 U	< 410 U	< 440 U	< 430 U	< 400 U	< 430 U	< 400 U	< 560 U	< 410 U
Benzo(k)fluoranthene	μg/kg	< 500 U	< 400 U	< 410 U	< 440 U	< 430 U	< 400 U	< 430 U	< 400 U	< 560 U	< 410 U
bis(2-Ethylhexyl)phthalate	μg/kg	< 500 U	< 400 U	< 410 U	< 440 U	< 430 U	< 400 U	< 430 U	< 400 U	280 J	< 410 U
Caprolactam	μg/kg	740	< 400 U	< 410 U	< 440 U	< 430 U	< 400 U	< 430 U	< 400 U	< 560 U	< 410 U
Carbazole	μg/kg	< 500 U	< 400 U	< 410 U	40 J	< 430 U	< 400 U	< 430 U	< 400 U	< 560 U	< 410 U
Dibenzo(a,h)anthracene	μg/kg	< 500 U	< 400 U	< 410 U	< 440 U	< 430 U	< 400 U	< 430 U	< 400 U	< 560 U	< 410 U
Dibenzofuran	μg/kg	540	< 400 U	130 J	120 J	< 430 U	< 400 U	< 430 U	< 400 U	74 J	< 410 U
Di-n-octyl phthalate	μg/kg	140 J	< 400 U	< 410 U	< 440 U	< 430 U	< 400 U	< 430 U	< 400 U	< 560 U	< 410 U
Fluoranthene	μg/kg	200 J	< 400 U	96 J	60 J	< 430 U	< 400 U	< 430 U	< 400 U	130 J	< 410 U
Fluorene	μg/kg	190 J	200 J	170 J	140 J	< 430 U	200 J	< 430 U	< 400 U	< 560 U	< 410 U
Indeno(1,2,3-cd)pyrene	μg/kg	79 J	< 400 U	< 410 U	< 440 U	< 430 U	< 400 U	< 430 U	< 400 U	< 560 U	< 410 U
Naphthalene	μg/kg	1400	58 J	330 J	420 J	94 J	< 400 U	< 430 U	< 400 U	180 J	< 410 U
N-Nitrosodiphenylamine	μg/kg	< 500 U	< 400 U	< 410 U	< 440 U	< 430 U	< 400 U	< 430 U	< 400 U	< 560 U	< 410 U
Phenanthrene	μg/kg	1000	< 400 U	250 J	210 J	39 J	< 400 U	< 430 U	< 400 U	260 J	< 410 U
Phenol	μg/kg	< 500 U	< 400 U	< 410 U	< 440 U	< 430 U	< 400 U	< 430 U	< 400 U	< 560 U	< 410 U
Pyrene	μg/kg	300 J	45 J	65 J	58 J	< 430 U	< 400 U	< 430 U	< 400 U	110 J	< 410 U
TPH - USEPA Method SW8015C	, , ,										, , <u>, , , , , , , , , , , , , , , , , </u>
Diesel Range Organics [C10-C28]	mg/kg	230	47	9	120	32	57	4.7 J	6.6	18	4.2 J
Gasoline Range Organics (GRO)-C6-C10	mg/kg	1	0.88	17	0.45	2.3	0.18 J	< 0.26 U	< 0.24 U	< 0.44 U	< 0.23 U
ORO C24-C40	mg/kg	12 B	9 B	3.7 JB	18 B	37 B	79 B	4.1 JB	3.1 JB	38 B	3.4 JB

## Table 4 Analytical Results - Soil CSXT Brunswick Yard, Brunswick, Maryland

### Notes:

- 1. Sampling interval was expanded to a one-foot interval of split-spoon samples to allow collection of larger volume for SVOC and TPH-DRO analyses.
- 2. Constituents which were not detected at concentrations above reporting limits are not displayed. For a full list of analytes, refer to Appendix E.
- B Constituent was detected in laboratory method blank.
- J Value estimated.
- U Analyte was analyzed for but not detected. Value listed represents the reporting limit concentration.

VOCs - Volatile Organic Compounds

SVOCs - Semivolatile Organic Compounds

TPH - Total Petroleum Hydrocarbons

μg/kg - micrograms per kilogram

**BOLD** values indicate detections

## Table 5 Analytical Results - Groundwater CSXT Brunswick Yard, Brunswick, Maryland

	Location ID: Sample ID: Sample Date:	PZ01-04 PZ01-04 (082013) 8/20/2013	PZ01-09 PZ01-09 (082013) 8/20/2013	PZ02-04 PZ02-04 (082113) 8/21/2013	PZ02-08 PZ02-08 (082213) 8/22/2013	PZ03-04 PZ03-04 (082213) 8/22/2013	PZ03-08 PZ03-08 (082213) 8/22/2013
Constituents* VOCs	Units:						
Acetone	μg/l	< 25 U	< 25 U	< 25 U	< 25 U	16 J	< 25 U
Methyl tert-butyl ether	. •	0.87 J	3.0	< 1 U	< 1 U	< 1 U	< 1 U
SVOCs	μg/l	0.07 J	3.0	× 1 0	<u> </u>	×10	<u> </u>
2-Methyl naphthalene	μg/l	< 9.5 U	< 9.7 U	< 9.9 U	< 10 U	1.8 J	< 9.9 U
Acenaphthene	μg/l	2.1 J	< 9.7 U	< 9.9 U	< 10 U	2.4 J	4.8 J
Benzo(a)pyrene	μg/l	3.2 J	< 9.7 U	< 9.9 U	< 10 U	< 9.9 U	< 9.9 U
Benzo(g,h,i)perylene	μg/l	12	< 9.7 U	< 9.9 U	< 10 U	< 9.9 U	< 9.9 U
Benzo(k)fluoranthene	μg/l	2.0 J	< 9.7 U	< 9.9 U	< 10 U	< 9.9 U	< 9.9 U
Caprolactam	μg/l	< 9.5 U	< 9.7 U	< 9.9 U	6.1 J	< 9.9 U	< 9.9 U
Dibenzo(a,h)anthracene	μg/l	9.8	< 9.7 U	< 9.9 U	< 10 U	< 9.9 U	< 9.9 U
Fluorene	μg/l	3.7 J	< 9.7 U	< 9.9 U	< 10 U	3.9 J	6.6 J
Indeno(1,2,3-cd)pyrene	μg/l	1.8 J	< 9.7 U	< 9.9 U	< 10 U	< 9.9 U	< 9.9 U
Naphthalene	μg/l	< 9.5 U	< 9.7 U	< 9.9 U	< 10 U	1.2 J	< 9.9 U
Phenanthrene	μg/l	< 9.5 U	< 9.7 U	< 9.9 U	< 10 U	1.0 J	< 9.9 U
<u>TPH</u>			_				_
Diesel Range Organics [C10-C28]	mg/l	1.5	0.14	0.36 B	0.34 B	28 B	11
Diesel Range Organics [C10-C28] [SGC]	mg/l	1.3	0.13	0.32 B	0.31 B	27 B	8
Gasoline Range Organics (GRO)-C6-C10	mg/l	0.034 JB	0.018 JB	0.019 JB	0.013 JB	0.062 B	0.079 B

#### Notes:

\* Constituents which were not detected at concentrations above reporting limits are not displayed. For a full list of analytes, refer to Appendix E

TPH - Total Petroleum Hydrocarbons

< 1 U - Concentration is less than the reporting limit

VOCs - Volatile Organic Compounds

J - Concentration is estimated

SVOCs - Semivolatile Organic Compunds

B - Constituent was detected in laboratory method blank

μg/l - micrograms per liter

mg/l - miligrams per liter

SGC - silica gel cleanup

**Bold** values indicate detections.

## Table 6 NPS MW-18 Analytical Results Summary - Soil CSXT Brunswick Yard, Brunswick, Maryland

Constituent	Location ID: Sample Date: Depth Interval (ft bgs): Units:	6/24/2013
<u>VOCs (μg/kg)</u> CFC-11	μg/kg	6.3
TPH (mg/kg) Diesel Range Organics [C10-C28] Gasoline Range Organics (GRO)-C6-C10 Oil Range Organics (C20-C36)	mg/kg mg/kg mg/kg	12 0.034 J < 24 U

### Notes:

VOCs - Volatile Organic Compounds

TPH - Total Petroleum Hydrocarbons

μg/kg - micrograms per kilogram

mg/kg - milligrams per kilogram

ft bgs - feet below ground surface

<1U - Concentration is less than the reporting limit

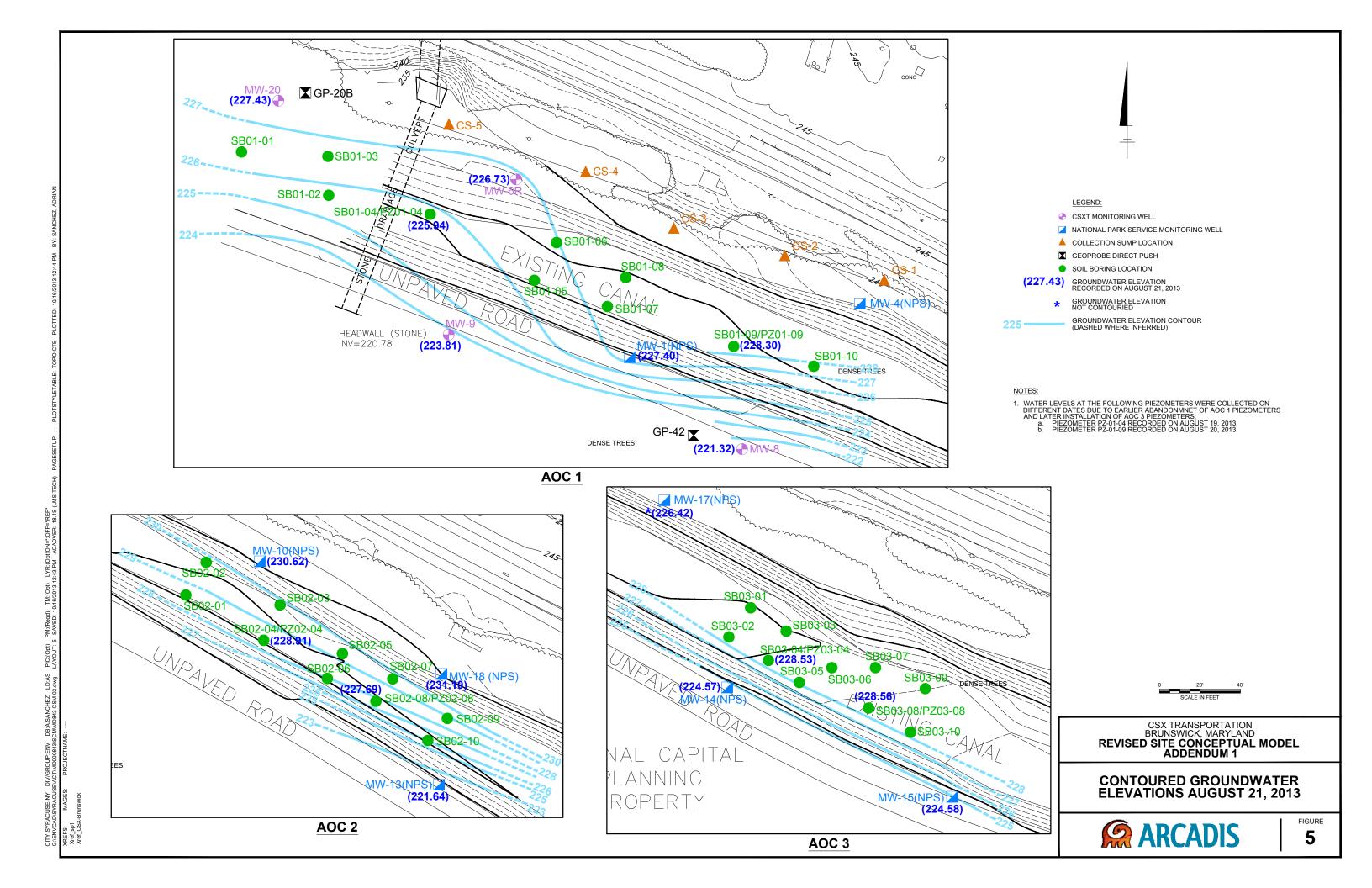
J - Concentration is estimated

Constituents which were not detected at concentrations above reporting limits are not displayed. For a full list of analytes, refer to Appendix E.

<sup>\*</sup> Sampling interval was expanded to a one-foot interval of split-spoon samples to allow collection of larger volumes for SVOC and TPH-DRO analysis.



**Figures** 





### Appendix A

Soil Boring and Well Construction Logs

### Sample Log

Boring	SB0 <sup>-</sup>	1-01	Project Name and No. CSXT Brunswick Yard/ MD00043.0011.00004								
Location	Brunswick, M	laryland		Date	8/19/2013	Start Time	1138	End Time	1149		
Total	Depth Drilled	10 feet	Hole Diameter	2 inches		Sampling	j interval	conti	nuous		
Leng	th and Diamet	er of Sampli	ng Device 4' / 2"		Тур	oe of Samplin	g Device	plasti	cliners		
Dr	illing Method	Direct	Push	Drilling	Fluid Used	-					
Drillin	ng Contractor	Ground	Zero Drille	er Corey	Gamwell	Helpers	Justin	McArdle and G	eorge Sorto		
	Prepared By L. Lamp Har			mer Weight	810 lb	Hamr	ner Drop	42 ins.			
Easting	1134997.5 Coordinate da	nta in MD SP N	Northing AD 83/91, NAVD88, ft	599429.2		Ground Su	rface Elev	ration (ft amsl)	229.7		
	ole Depth land surface)	Sample	. ,								
From	То	Recovery (feet)		Sample Des	scription				PID (ppm)*		
0	2	2.1	0.0 - 0.5: Loose bl	ack (2.5/1 or	n 7.5YR) soil	with some o	rganic ma	iterial, roots	0, 2.5, 3.7, 3.4		
			0.5 - 2.0: Loose bl	•	n 7.5YR) soil	, some small	(< 5mm) i	interbedded			
			Silt and clay layer	<u>s</u>					2.1, 4.4, 31.2,		
2	6	4.4	2.0 - 2.8: Same as	above (SAA	<b>a)</b>				19.7, 0.0, 12.7, 76, 27.2		
			2.8 - 6.0: Clay, broand yellowish red CLAY CANAL LIN	(5/8 on 4YR			-				
6	10.3	4.3	6.0 - 8.7: Clay. Da black (2.5/1 on 7.5		-	5Y). Hard. Me	dium plas	sticity. Some	4.7, 15.2, 12.2, 9.3, 11.2, 271, 309, 155		
			8.7 - 9.5: Dark oliv silt lenses. Low p			ay with some	black (2.	5/1 on 7.5YR)			
			9.5 - 9.8: Very coa Yellowish brown								
			9.8 - 10.3: Dark ol Soft. Low plastici	•		lay and fine o	grained sa	and and silt.			
CLAY CAN	IAL LINER fro	m 2.8 - 6.0· 3	.2 ft thick								
				AVCANAL	I INED) and (	0 0 - 10 0 /bal	ow CLAY	CANAL LINED	`		
JUIL JAM	LES COLLE	TIED FRUM	1.0 - 2.0 (above CL	AT CANAL	LINER) and	190) ט.טו - ט.פ	OW CLAY	CANAL LINER	1		

<sup>\*</sup> PID readings taken at 0.5 ft intervals

### Sample Log

Boring	SB01	1-02	_ Pro	ject Nam	e and No.	CSXT Brunsw	ick Yard/ MD00	043.0011.00	004	
Location	Brunswick, M	laryland			Date	8/19/2013	Start Time	1350	End Time	1407
Total	Depth Drilled	10 feet	Hole Dia	meter	2 inches		Sampling	g interval	conti	nuous
Leng	th and Diamet	er of Sampli	ing Device	4' / 2"		Ту	pe of Samplin	g Device_	plastic	liners
Dr	illing Method	Direct	Push		Drilling	Fluid Used	-			
Drillin	ng Contractor	Ground	d Zero	Driller	Corey	Gamwell	Helpers	Justin M	cArdle and G	eorge Sorto
	Prepared By L. Lar			Hamm	er Weight	810 lb	Hamı	mer Drop _	42 ins.	
Easting	1135040.7 Coordinate da	ita in MD SP N			599407.7		Ground Su	rface Eleva	tion (ft amsl)	230.1
	ole Depth land surface)	Sample								
From	То	Recovery (feet)			Sample Des	crintion				PID (ppm)*
FIOIII	10	(Ieel)			Sample Des	scription				0.4, 23.7
0	2	3.1		ine graine			I with some o			,
			1.3 - 2.0: B	rown clay	about 10		Its. Some inte ery hard. Brit			
2	6	3.7	2.0 - 4.8: S	AA						16.2, 17.8, 14.6, 12.5
			4.8 - 6.0: D	ark brow	n clay (3/3	on 10YR). H	ligh plasticity	v. Hard. Hon	nogenous.	
										8.2, 9.3, 0.4,
6	10.1	3.3	6.0 - 9.8: S	AA. MOIS	ST. WET (la	ast 1.5 ft).				0.4
			9.8 - 10.1:	SAA. SAT	TURATED.					
CLAY CAN	IAL LINER from	m 1.3 - 4.8; 3	3.5 ft thick							
SOIL SAMI	PLES COLLEC	TED FROM	1.0 - 2.0 (ab	ove CI A	Υ CΔΝΔΙ Ι	I INFR) and	9.0 - 10.0 (hal	ow CL AY C	ANAI IINFR	١
* DID	in the state of O	C ft intervals	2.0 (db	JVG OLA	. UANAL	Liiveiv) and	5.0 - 10.0 (Del	OW OLAI U	CHAL LINER	<i>!</i>

<sup>\*</sup> PID readings taken at 0.5 ft intervals

### Sample Log

Boring	SB01	I <b>-0</b> 3	Project Name and No. CSXT Brunswick Yard/ MD00043.0011.00004								
Location	Brunswick, M	aryland			Date_	8/19/2013	Start Time _	1335	End Time	1347	
Total	Depth Drilled	10 feet	Hole Dia	meter 2	inches		Sampling	j interval	conti	nuous	
Leng	th and Diamet	er of Sampli	ng Device _	4' / 2"		Туј	oe of Samplin	g Device	plastic	liners	
Dr	illing Method	Direct	Push		Drilling	Fluid Used	-				
Drillir	ng Contractor	Ground	l Zero	Driller_	Corey	Gamwell	Helpers_	Justin M	cArdle and G	eorge Sorto	
	Prepared By	L. La	тр	Hamme	r Weight	810 lb	Hamr	mer Drop _	42 ins.		
Easting	1135040.3 Coordinate da	ta in MD SP N	Northing 599427 Ground Surface Elevation (ft amsl) SP NAD 83/91, NAVD88, ft								
•	ole Depth										
(feet below	v land surface)	Sample Recovery									
From	То	(feet)		S	Sample Des	cription				PID (ppm)*	
										75, 61, 71	
0	2	2.1	0.0 - 0.7: L	oose black	ς (2.5/1 on	7.5YR) soil	with some o	rganic mate	rial. roots		
	_										
					_		and (2/1 on 1	0YR) with s	ome yellow		
			brown silty	ciay (5/6	on lutk).	•					
							Hard, brittle,				
			plasticity.				7.5YR) sandy	clay. Very	low		
			plasticity.	OLAT OAK	TAL LINE	<u> </u>				58, 60.9, 42,	
2	6	3.9	2.0 - 4.7: S							40	
2	6	3.9	2.0 - 4.7: 5	AA							
			4.7 - 6.0: C Homogeno			n (2/2 on 10	YR). Very con	npetant. Dr	y. Hard.		
										31, 17.1, 14,	
			6.0 - 9.5: C	lay. Very d	lark brow	n (2/2 on 10	YR). Very con	npetant. Ha	rd. Some	35.7	
6	9.9	3.9	dark reddi	sh gray (4/	1 on 2.5Y	R) and red (	(4/6 on 2.5YR)	silt lenses	. DAMP		
			9.5 - 9.6: A	ngular gra	vel zone.	SATURATE	D.				
			9.6 - 9.9: S	trong brov	vn clay (4	/4 on 7.5YR	). WET				
CLAY CAN	IAL LINER from	m 1.65 - 4.7;	3.05 ft thick	(							
SOIL SAM	PLES COLLEC	TED FROM	0.5 - 1.5 (ab	ove CLAY	CANAL I	_INER) and	5.0 - 6.0 (belo	w CLAY CA	NAL LINER)		

<sup>\*</sup> PID readings taken at 1.0 ft intervals

Boring	SB01	1-04	Project Name and No. CSXT Brunswick Yard/ MD00043.0011.00004									
Location	Brunswick, M	laryland			Date	8/19/2013	Start Time	1350	End Time	1407		
Total	Depth Drilled	10 feet	Hole Dia	ameter_	2 inches		Sampling	interval	conti	nuous		
Lengt	th and Diamet	er of Sampli	ng Device	4' / 2"		Ту	pe of Samplin	g Device	plasti	stic liners		
Dr	illing Method	Direct	Push		Drilling	Fluid Used	-					
Drillin	ng Contractor	Ground	I Zero	Driller	Corey	Gamwell	Helpers_	Justin	McArdle and G	George Sorto		
	Prepared By	L. La	тр	hp Hammer Weight 810 lb Hammer Drop 42 ins.								
Easting 1135091 Northing 599398.3 Ground Surface Elevation (ft amsl) Coordinate data in MD SP NAD 83/91, NAVD88, ft								229.5				
	ole Depth	Sample			Co	oordinate da	ata in MD SP N	NAD 83/91	, NAVD88, ft			
	land surface)	Recovery			Camala Da					PID (ppm)*		
From 0	То 4	(feet)	0.0 - 1.1: L	oose bla	Sample Des		I with some o	rganic ma	nterial	7.9, 41.2, 40.4, 108.6		
			10YR) silt	- 3.2: Yellowish brown (5/6 on 10YR) clay with brownish yellow (6/6 on YR) silt lenses ~ 1-3 mm. Little amounts of fine sands. Dry. Brittle. Low asticity. Hard. CLAY CANAL LINER								
				.2 - 4.0: Black (2/1 on 10YR) clay. Medium plasticity. Little amounts of silt								
4	8	3.4	4.0 - 8.0: B	•	•	clay. Homog	jenous. Mediu	ım hardne	ess. Very	23.2, 32.2, 41.1, 20.1		
8	10	1.5	8.0 - 9.1: S	AA. WE1	Γ.					50.2, 19.1		
Ţ.			9.1 - 9.5: V	ery dark	gray (2.5/1		coarse-graine ty. SATURAT		ngular. Some			
CLAY CAN	IAL LINER from	m 1.1-3.2; 2.	1 ft thick									
SOIL SAMI	PLES COLLEC	CTED FROM	0.0 - 1.0 (at	ove CLA	AY CANAL I	LINER) and	6.0 - 7.0 (belo	w CLAY (	CANAL LINER)			

<sup>\*</sup> PID readings taken at 1.0 ft intervals

Boring	Boring SB01-06 Project Name and No. CSXT Brunswick Yard/ MD00043.0011.00004											
Location	Brunswick, M	laryland		Date	8/19/2013	Start Time	1544	End Time	1559			
Total	Depth Drilled	10 feet	Hole Diar	neter 2 inches	-	Sampling	interval	conti	nuous			
Lengt	th and Diamet	er of Sampli	ng Device 4	'/2"	Ту	pe of Samplin	g Device	plasti	cliners			
Dr	illing Method	Direct	Push	Drilling	ı Fluid Used							
Drillin	ng Contractor	Ground	d Zero	Driller Corey	Gamwell	Helpers_	Justin M	IcArdle and G	George Sorto			
	Prepared By	L. La	mp	Hammer Weight 810 lb Hammer Drop 42 ins.								
Easting 1135153.6 Northing 599384.3 Ground Surface Elevation (ft amsl) Coordinate data in MD SP NAD 83/91, NAVD88, ft Sample Depth									229.9			
(feet below	land surface)	Sample Recovery										
From	То	(feet)		Sample De	scription				PID (ppm)*			
				-					0.0, 36.9, 15.5,			
0	4	2.9	0.0 - 0.3: Bla	ack (2.5/1 on 7.5 Y	R) soil and o	organics			23.4			
				- 2.3: Very fine grained, well sorted reddish brown sand (4/4 on 5YR). ne clay lenses. No plasticity.								
				3 - 4.0: Clay. Strong brown (4/6 on 7.5YR) with little silt. Very hard. Little asticity. CLAY CANAL LINER. STRONG ODOR.								
4	8	3.4	4.0 - 5.2: SA	A					0.0			
				ay. Very dark gray DOR. DAMP in las		YR) with some	silt. Very	plastic.				
									0.0			
8	10.1	2.1	8.0 - 10.1: S	AA. WET. STRON	G ODOR.							
CLAY CAN	IAL LINER fro	m 2.3 - 5.2; 2	2.9 ft thick									
SOIL SAMI	PLES COLLEG	CTED FROM	1.0 - 2.0 (abo	ove CLAY CANAL	LINER) and	6.5 - 7.5 (belo	w CLAY CA	NAL LINER)				
			:- (===		,							

<sup>\*</sup> PID readings taken at 1.0 ft intervals

Boring	SB01	1-05	_ Pro	Project Name and No. CSXT Brunswick Yard/ MD00043.0011.00004								
Location	Brunswick, M	aryland			Date	8/19/2013	Start Time	1604	End Time	1621		
Total	Depth Drilled	10 feet	Hole Di	ameter 2	inches		Sampling	g interval _	conti	nuous		
Lengt	th and Diamet	er of Sampli	ng Device	4' / 2"		Туј	pe of Samplin	ng Device	plastic	liners		
Dr	illing Method	Direct	Push		Drilling	Fluid Used	-					
Drillin	g Contractor	Ground	l Zero	Driller_	Corey	Gamwell	Helpers	Justin N	/IcArdle and G	eorge Sorto		
	Prepared By	L. La	тр	np Hammer Weight 810 lb Hammer Drop 42 ins.								
Easting		ta in MD SP N		Northing 599365.6 Ground Surface Elevation (ft amsl) 83/91, NAVD88, ft								
	ole Depth land surface)	Sample										
From	То	Recovery		•	Sample Dec	orintion				PID (ppm)*		
FIOIII	10	(feet)		<u> </u>	Sample Des	scription				0.0		
0	4	3.2	0.0 - 0.6: E	3lack (2.5/1	on 7.5 YI	R) soil. Orga	ınics.					
			0.6 - 0.8: <i>A</i>	6 - 0.8: Angular gravel (~20 - 30mm). Reddish gray (5/1 on 10R).								
			0.8 - 0.9: F	0.8 - 0.9: Red (5/8 on 10R) angular gravel.								
			brown (3/	3 on 7.5 YR	R) medium	n-grainied sa	own clay (5/6 and and silt. F Dry. Medium	Poorly sort	ed. Some red			
				Clay. Stron			-		. Hard. CLAY			
										0.0, 0.0, 0.0,		
4	8	3.4	4.0 - 5.2: \$	SAA. CLAY	CANAL L	INER				9.3		
				Clay. Very o		(3/1 on 7.5Y	R) with little	silt. Very p	lastic. DAMP.			
										18.7		
8	9.6	3	8.0 - 9.6: 5	SAA. WET								
CLAY CAN	AL LINER froi	m 2.5 - 5.2; 2	2.7 ft thick									
SOIL SAMI	PLES COLLEC	TED FROM	1.5 - 2.5 (a	bove CLAY	CANAL	LINER) and	8.0 - 9.0 (belo	w CLAY C	ANAL LINER)			

<sup>\*</sup> PID readings taken at 1.0 ft intervals

Boring SB01-07 Project Name and No. CSXT Brunswick Yard/ MD00043.0011.00004									
Location	Brunswick, M	laryland	Date <u>8/20/2013</u> Start Time <u>0814</u> End Tin	ne 0824					
Total	Depth Drilled	10 feet	Hole Diameter 2 inches Sampling interval con	ntinuous					
Leng	th and Diamet	er of Sampli	ng Device 4' / 2" Type of Sampling Device plas	stic liners					
Dr	illing Method	Direct	Push						
Drillir	ng Contractor	Ground	Zero Driller Corey Gamwell Helpers Justin McArdle and	I George Sorto					
Prepared By L. Lamp Hammer Weight 810 lb Hammer Drop 42 ins.									
Easting 1135178.8 Northing 599352.6 Ground Surface Elevation (ft amsl) Coordinate data in MD SP NAD 83/91, NAVD88, ft Sample Depth									
(feet below	v land surface)	Sample							
From	То	Recovery (feet)	Sample Description	PID (ppm)*					
		•	0.0 - 1.1: Black (2/1 on 10 YR) soil and organics. Some fine-medium grained	9.2, 37.9, 73, 29.7					
0	4	3.4	sand.						
			1.1 - 1.6: Clay and soil. Very dark brown (2/2 on 10 YR). High plasticity.						
			1.6 - 4.0: Yellowish brown (5/6 on 10 YR) clay. Very hard. Britle. Dry. Low plasticity. CLAY CANAL LINER.						
4	8	3.4	4.0 - 5.5: SAA	31.9, 30.7, 27.8, 32.4					
			5.5 - 7.5: Dark gray (4/1 on 10YR) clay. Medium plasticity. MOIST. SLIGHT ODOR.						
			7.5 - 8.0: Very dark gray (3/2 on 10 YR) clay. High plasticity. WET						
				36.1, 36.3					
8	10	2	8.0 - 8.5: SAA	4					
			8.5 - 9.9: SAA, but SATURATED. SLIGHT ODOR.						
CLAY CAN	IAL LINER fro	m 1.6 - 5.5; 3	.9 ft thick	1					
SOIL SAM	PLES COLLEC	CTED FROM	0.5 - 1.5 (above CLAY CANAL LINER) and 9.0 - 10.0 (below CLAY CANAL LINI	ER)					

<sup>\*</sup> PID readings taken at 1.0 ft intervals

Boring	SB0 <sup>-</sup>	1-08	Project Name and No. CSXT Brunswick Yard/ MD00043.0011.00004							
Location	Brunswick, N	laryland	Date 8/20/2013 S	Start Time 0828 End Time	0839					
Total	Depth Drilled	10 feet	Hole Diameter 2 inches	Sampling interval continu	ious					
Leng	th and Diamet	er of Sampli	Device 4' / 2" Type	of Sampling Device plastic I	iners					
Dr	illing Method	Direct	ush Drilling Fluid Used							
Drillin	ng Contractor	Ground	Zero Driller Corey Gamwell	Helpers Justin McArdle and Geo	orge Sorto					
	Prepared By	L. La	p Hammer Weight 810 lb	Hammer Drop 42 ins.						
Easting	1135187.9 Coordinate da	ita in MD SP N	Northing <u>599367</u> D 83/91, NAVD88, ft	Ground Surface Elevation (ft amsl)	229.8					
Samp	ole Depth									
(feet below	land surface)	Sample								
		Recovery		_						
From	То	(feet)	Sample Description	P	ID (ppm)*					
					19.2, 23.4, 31.7, 29.3					
0	4	4	.0 - 1.1: Black soil (2/1 on 10 YR) and orgar	nic material	31.7, 29.3					
			.1 - 1.6: Interbedded layers (~1-3 mm thick)	) of silt_fine sands_some clay						
			ayers are very dark gray (3/1 on 7.5 YR) an							
				-						
			.6 - 2.5: Very dark gray (3/1 on 7.5YR) clay. ands. Not plastic.	. Some organic material. Some						
			2.5 - 3.5: Strong brown (4/6 on 7.5YR) clay. I gray (3/1 on 7.5YR). Low plasticity. Hard. CL	=						
			5.5 - 4.0: Strong brown (4/6 on 7.5YR) clay. CLAY CANAL LINER	Very little silt. No plasticity. Hard.						
					53.1, 47.8,					
4	8	3.8	.0 - 5.5: SAA		21.1, 7.0					
-		0.0	0.0. 0/1/							
			i.5 - 8.0: Dark gray clay (4/1 on 7.5YR). Som	ne silt. High plasticity. Soft. DAMP.						
					16.3, 19.2					
8	10.2	2.2	3.0 - 9.2: SAA							
			2 40 2 CAA but WET							
			0.2 - 10.2: SAA, but WET	+						
CLAY CAN	IAL LINER fro	m 2.5 - 5.5; 3	ft thick							
SOIL SAM	PLES COLLEC	CTED FROM	5 - 2.5 (above CLAY CANAL LINER) and 9.0	0 - 10.0 (below CLAY CANAL LINER)						
+ 515		0.01.1	und 3/11/12 EntErry und 0/1							

<sup>\*</sup> PID readings taken at 1.0 ft intervals

Boring	Boring SB01-09 Project Name and No. CSXT Brunswick Yard/ MD00043.0011.00004											
Location	Brunswick, M	laryland	Date 8/20/2013 Start Time 0906 End Time	0921								
Total	Depth Drilled	10 feet	Hole Diameter 2 inches Sampling interval contin	nuous								
Leng	th and Diamet	er of Sampli	ng Device 4' / 2" Type of Sampling Device plastic	liners								
Dr	illing Method	Direct	Push Drilling Fluid Used -									
Drillir	ng Contractor	Ground	Zero Driller Corey Gamwell Helpers Justin McArdle and G	eorge Sorto								
	Prepared By	L. La	mp Hammer Weight 810 lb Hammer Drop 42 ins.									
Easting	1135241.4 Coordinate da	ıta in MD SP N	Northing 599332.9 Ground Surface Elevation (ft amsl) 229.5									
Samı	ole Depth											
(feet belov	land surface)	Sample										
F====	To	Recovery	Commis Description	PID (ppm)*								
From	То	(feet)	Sample Description	0.0, 0.0, 32.4,								
•			0 00 Planta lacas as "	11.7								
0	4	4	0 - 0.3: Black, loose soil.									
			0.3 - 0.9: Fine to medium grained sand. Very dark gray (3/1 on 7.5YR). Some silt. No plasticity. SATURATED.									
			0.9 - 2.3: Strong brown (4/6 on 7.5YR) clay. Brittle. Hard. Low plasticity. CLAY CANAL LINER									
			2.3 - 3.5: Clay. Gray (5/1 on 10YR) and strong brown (5/6 on 7.5YR). Hard. Medium plasticity.									
			3.5 - 3.8: Clay and silt. Pinkish gray (6/2 on 7.5YR). Some angular pebbles.									
			3.8 - 4.0: Well confined clay. Hard. High plasticity. Strong brown (4/6 on 7.5YR) and brown (4/4 on 7.5 YR)									
4	8	4	4.0 - 7.6: SAA	49.8, 15.5, 13.3, 0.0								
			7.6 - 7.8: Clay and silt. Some angular gravel. SATURATED.									
			7.8 - 8.0: Strong brown (4/6 on 7.5YR) clay. Hard/ compact. High plasticity. WET.									
				0.0, 0.0								
8	10.9	3.9	8.0 - 9.9: SAA									
			9.9 - 10.9: Medium-grained, well-rounded sand and silt. Some clay. Yellowsih brown (5/6 on 7.5YR). Not plastic. Soft. Dilitacy. SATURATED									
CLAY CAN	IAL LINER fro	m 0.9 - 2.3· 1	-4 ft thick									
SOIL SAM	PLES COLLEC	CTED FROM	0.0 - 1.0 (above CLAY CANAL LINER) and 4.0 5.0 (below CLAY CANAL LINER)									

<sup>\*</sup> PID readings taken at 1.0 ft intervals

Boring	pring SB01-10 Project Name and No. CSXT Brunswick Yard/ MD00043.0011.00004										
Location	Brunswick, M	laryland			Date	8/20/2013	Start Time	0955	End Time	1009	
Total	Depth Drilled	10 feet	Hole Diame	eter 2	inches		Sampling	j interval _	contir	nuous	
Lengt	th and Diamet	er of Sampli	ng Device 4' /	/ 2"		Туј	pe of Samplin	g Device_	plastic	liners	
Dr	illing Method	Direct	Push		Drilling	Fluid Used	-				
Drillin	ng Contractor	Ground	I Zero	Driller	Corey	Gamwell	Helpers	Justin N	McArdle and G	eorge Sorto	
	Prepared By	L. La	mp I	Hammei	Weight	810 lb	Hamn	ner Drop	42 ins.		
Easting		ita in MD SP N	North AD 83/91, NAVD	· · · —	99323		Ground Sur	rface Eleva	ation (ft amsl)	229.4	
	ole Depth v land surface)	Sample									
		Recovery									
From	То	(feet)	1	S	ample Des	cription			Ī	PID (ppm)*	
0	4	3.75	0.0 - 0.35: Bla	ıck soil.						0.0	
			0.35 - 0.85: Da			n (4/2 on 10	YR) sand and	silt with s	ome angular		
			and dark yello	.85 - 2.3: Clay. Hard. Britle. Dry. Non plastic. Interbedded gray (6/1 on 10YR) and dark yellowish brown (5/4 on 10YR) clay layers. CLAY CANAL LINER .3 - 4.0: Clay. Strong brown (4/6 on 7.5YR). Plastic. Medium stiffness.							
					•	•	I-rounded. So		pebbles and	0.0	
4	8	4.2	little clay. Loc			-			la atia		
8	10.5	3.9	8.0 - 8.2: SAA		orown (3/2	2 ON 7.51K).	Some silt. Ha	ira. very p	iastic.	0.0	
	10.5	3.9	0.0 - 0.2. SAA								
			8.2 - 8.8: Dark	k brown	clay and	silt. WET.					
			8.8 - 10.0 Dar No plasticity.		clay and	silt and so	me small, sub	-angular p	ebbles. Soft.		
			10.0 - 10.3: Ha	ard, pac	ked, clay	. Dark brow	n. High plasti	city WET.			
			10.3 - 10.5: Da	ark brov	vn clay aı	nd silt with s	some gravel.	SATURAT	ED.		
CLAY CAN	IAL LINER fro	m 0.85 - 2.3;	1.45 ft thick								
SOIL SAMI	PLES COLLFO	CTED FROM	0.0 - 1.0 (abov	e CLAY	CANALI	LINER) and	4.0 - 5.0 (belo	w CLAY C	ANAL LINER)		
	ings taken at 1		110 (db04			and	310 (5010		=		

Boring	SBO	2-01	Pr	oject Name	e and No.	CSXT Brunswi	ick Yard/ MD00	0043.0011.00	004			
Location	Brunswick, N	laryland			Date	8/20/2013	Start Time	1102	End Time	1112		
Total	Depth Drilled	10 feet	Hole D	ameter 2	inches		Sampling	g interval	conti	nuous		
Leng	th and Diamet	er of Sampli	ng Device	4' / 2"		Туј	pe of Samplir	ng Device	plastic	liners		
								· <u> </u>				
Dr	illing Method	Direct	Push		Drilling	Fluid Used	-					
Drillin	ng Contractor	Ground	l Zero	Driller	Corey	Gamwell	Helpers	Justin N	IcArdle and G	eorge Sorto		
	Prepared By	L. La	mp Hammer Weight 810 lb Hammer Drop 42 ins.						42 ins.			
Easting 1135539.2 Northing 599194.2 Ground Surface Elevation (ft amsl) Coordinate data in MD SP NAD 83/91, NAVD88, ft									229.5			
Samp	ole Depth											
(feet below	land surface)	Sample										
F====	т-	Recovery			Camula Das					PID (ppm)*		
From	То	(feet)		•	Sample Des	scription				0.0		
										0.0		
0	4	3.8	0 - 0.55: E	.55: Black soil. Some organic material. Saturated.								
				i5 - 1.1: Medium to coarse grained sand and silt. Very dark gray (3/1 on iy). SATURATED.								
				-	-	7.5YR) and c	lark gray (4/1	on 7.5YR).	Brittle. Low			
								4 0 :	mah Ahiala	0.0		
				-		•	R). Well comp interbedded					
4	8	4.3	_	AMP last 1		Compacted	interpeducu	every 1-1.1	it. Very			
8	9.8	3.6	8.0 - 9.8: 1		own (4/4 c		yellowish red	I (5/8 on 5Y	R) clay. Well	0.0		
CLAY CAN	IAL LINER fro	m 1.1 - 4.0; 3	3.1 ft thick									
SOII SAMI	PLES COLLEC	TED EDOM	0.0 - 1.0 /-	hove CLAY	/ CANAL I	INED) and	7 0 - 8 0 /bolo	W CL AV C	ANALLINED)	<u> </u>		
SOIL SAM	LES COLLE	PIED LKOW	v.v - 1.v (a	DOVE CLA	CANAL	LINER) and	1.0 - 0.0 (DelC	W CLAT C	ANAL LINER)			

Boring	SB02	2-02	Project N	CSXT Brunsw	XT Brunswick Yard/ MD00043.0011.00004				
Location	Brunswick, M	laryland		Date	8/20/2013	Start Time	1114	End Time	1129
Total	Depth Drilled	10 feet	Hole Diamete	r 2 inches		Sampling	g interval _	contin	uous
Lengt	th and Diamet	er of Sampli	ng Device 4' / 2"	<u> </u>	Туј	pe of Samplin	ng Device	plastic	liners
Dr	illing Method	Direct	Push	Drilling	Fluid Used	-			
Drillin	ng Contractor	Ground	I Zero Dri	ller Corey	Gamwell	Helpers	Justin I	McArdle and Ge	eorge Sorto
	Prepared By	L. La	mp Haı	mmer Weight	810 lb	Hamı	mer Drop	42 ins.	
Easting	1135549.3 Coordinate da	ıta in MD SP N	Northing AD 83/91, NAVD88,	g 599429.2 ft		Ground Su	rface Elev	ation (ft amsl)	230.0
Samp	ole Depth		,						
(feet below	land surface)	Sample							
		Recovery						_	
From	То	(feet)	T	Sample Des	scription			F	PID (ppm)*
									0.0
0	4	3.8	0.0 - 0.45: Black	soil. Some or	ganic mater	ial.			
			0.45 - 1.0: Well-r			on 7.5YR) sar	id and silt.	. Little	
			amounts of clay	SATURATEL	).				
			1.0 - 3.0: Clay. B	rown (4/2 on 7	7.5YR). Com	pacted. Dry.	Hard. No p	plasticity.	
			CLAY CANAL LI	•	,	,			
			3.0 - 4.0: SAA						
4	8	4.4	4.0 - 8.0: Silty cl WET.	ay. Strong bro	own (4/6 on 1	7.5YR). Very	hard. Very	plastic.	0.0
									0.0
8	10	3.6	8.0 - 10.0: SAA						
							,		
OL AV O411	IAL LINES (	4.0 .0.0°	0.0 feet (blak						
			; 2.0 feet thick						
SOIL SAMI	PLES COLLEC	CTED FROM	0.5 - 1.5 (above C	CLAY CANAL	LINER) and	4.5 - 5.5 (belo	w CLAY C	ANAL LINER)	

<sup>\*</sup> PID readings taken at 1.0 ft intervals

Boring	SB02	2-03	Proj	ect Name	and No.	CSXT Brunswick Yard/ MD00043.0011.00004				
Location	Brunswick, M	laryland			Date	8/20/2013	Start Time	1330	End Time	1342
Total	Depth Drilled	10 feet	Hole Diar	neter 2 i	inches		Sampling	interval_	contir	nuous
Lengt	th and Diamet	er of Sampli	ng Device 4	'/2"		Ту	pe of Sampling	g Device	plastic	liners
Dr	illing Method	Direct	Push		Drilling	Fluid Used	-			
Drillin	ng Contractor	Ground	I Zero	Driller_	Corey	Gamwell	Helpers_	Justin N	AcArdle and G	eorge Sorto
	Prepared By	L. La	mp	np Hammer Weight 810 lb Hammer Drop 42 ins.						
Easting	1135585.9 Coordinate da	ata in MD SP N	thing <u>59</u> D88, ft	9189.3		Ground Sur	face Eleva	ation (ft amsl)	230.6	
	land surface)	Sample								
	_	Recovery		•						DID (nnm)*
From	То	(feet)		Si	ample Des	cription				PID (ppm)* 0.0
0	2	2.6	0.0 - 0.75: B	lack soil a	and orgai	nic matter. S	SATURATED.			
			0.75 - 0.9: G	ray (5/1 o	n 7.5YR)	silty clay la	yer with some	sub-angu	ılar pebbles.	
							And gray silt lium stiffness.		yers 1-3mm	
										0.0
2	6	4	2.0 - 4.0: SA	A						
			4.0 - 6.0: Cla (~10%). Med				Little amount			
6	9.6	3.4	6.0 - 8.0: Cla	ay. Yellow	rish red (4	4/6 on 5YR).	Stiff. Silt lens	es gone. I	High	0.0
			8.0 - 9.6: Cla		rish red (4	4/6 on 5YR).	Stiff. Silt lens	es gone. I	High	
NO CLAY (	CANAL LINER	DISCEDMA	l RI E							
	CANAL LINER									
	PLES COLLECTION IN THE			gs and 5.0	- 6.0 ft b	gs				
i ib ieaui	ings taken at 1	.o it iiitei vals.	-							

Boring	oring SB02-04 Project Name and No. CSXT Brunswick Yard/ MD00043.0011.00004							004				
Location	Brunswick, M	laryland	-		Date	8/20/2013	Start Time	1349	End Time	1401		
Total	Depth Drilled	10 feet	Hole Dia	meter_	2 inches		Sampling	g interval _	conti	nuous		
Leng	th and Diamet	er of Sampli	ng Device _4	4' / 2"		Туј	oe of Samplin	g Device	plastic	liners		
Dr	illing Method	Direct	Push		Drilling	Fluid Used	-					
Drillin	ng Contractor	Ground	l Zero	Driller	Corey	Gamwell	Helpers_	Justin N	IcArdle and G	eorge Sorto		
	Prepared By	L. La	mp	Hamm	ner Weight	810 lb	Hamr	mer Drop _	42 ins.			
Easting	1135577.8 Coordinate da	ita in MD SP N			599171.8		Ground Su	rface Eleva	tion (ft amsl)	229.8		
Samp	ole Depth											
(feet below	/ land surface)	Sample										
		Recovery								DID ( )*		
From	То	(feet)	1		Sample Des	cription				PID (ppm)*		
										0.0, 0.0, 0.0, 3.4		
0	4	3	0.0 - 0.75: E	Black so	il. SATURA	TED.				J. <del>T</del>		
			0.75 - 0.95:	Clay an	d silt and s	ome sand.	Gray (5/1 on 7	.5YR). Not	plastic.			
			SATURATE	TURATED.								
			0.95 - 1.4: 0	Clay. Bro	own (5/3 on	7.5YR). Hig	h Plasticity. S	Stiff. MOIST				
				,	(		,					
							Well compac		Medium			
			plasticity.	very non	nogenous.	Trace amou	into or black c	ont ionoco.		0.0, 0.0, 0.0,		
_	_				_					27.2		
4	8	4.2	4.0 - 8.0: S/	AA. WEI						0.0		
8	9.8	2.6	8.0 - 9.8: S	AA. WET	7					0.0		
NO CLAY	CANAL LINER	DISCERNA	BLE		_	_	_	_				
SOIL SAM	PLES COLLEC	CTED FROM	0.5 - 1.5 ft b	gs and 7	7.0 - 8.0 ft b	gs						

<sup>\*</sup> PID readings taken at 1.0 ft intervals

Boring SB02-05 Project Name and No. CSXT Brunswick Yard/ MD00043.0011.00004	
Location Brunswick, Maryland Date 8/20/2013 Start Time 1424 End T	ime 1436
Total Depth Drilled 10 feet Hole Diameter 2 inches Sampling interval c	ontinuous
Length and Diameter of Sampling Device 4' / 2" Type of Sampling Device pl	astic liners
Drilling Method Direct Push Drilling Fluid Used -	
Drilling Contractor Ground Zero Driller Corey Gamwell Helpers Justin McArdle a	nd George Sorto
<u> </u>	<del>-</del>
Easting 1135616.8 Northing 599165.2 Ground Surface Elevation (ft ar	
Coordinate data in MD SP NAD 83/91, NAVD88, ft Sample Depth	
(feet below land surface) Sample	
Recovery	DID ( )*
From To (feet) Sample Description	PID (ppm)* 0.0
0 4 3.3 0.0 - 0.9: Black soil.	0.0
0.9 - 1.6: Silt with some sand and sub-angular pebbles. Gray (5/1 on 7.5YR)	<u>.</u>
Small yellowish red (5/8 on 5YR) clay lenses.	
1.6 - 4.0: Clay. Homogenous reddish brown (4/4 on 5YR). Well compacted.	
4 8 4.3 4.0 - 8.0: SAA.	0.0
8 10.2 2.6 8.0 - 10.2: SAA. WET.	0.0
NO CLAY CANAL LINER DISCERNABLE	<b>I</b>
SOIL SAMPLES COLLECTED FROM 0.5 - 1.5 ft bgs and 7.0 - 8.0 ft bgs	

<sup>\*</sup> PID readings taken at 1.0 ft intervals

Boring	Boring SB02-06 Project Name and No. CSXT Brunswick Yard/ MD00043.0011.00004											
Location	Brunswick, M	laryland	Date 8/20/2013 Start Time 1441 End Time	1455								
Total	Depth Drilled	10 feet	Hole Diameter 2 inches Sampling interval cont	inuous								
Leng	th and Diamet	er of Sampli	ng Device 4' / 2" Type of Sampling Device plasti	c liners								
Dr	illing Method	Direct	Push Drilling Fluid Used									
Drillir	ng Contractor	Ground	Zero Driller Corey Gamwell Helpers Justin McArdle and G	eorge Sorto								
	Prepared By	L. La	mp Hammer Weight 810 lb Hammer Drop 42 ins.									
	1135609.3 Coordinate da ble Depth r land surface)		Northing 599152.9 Ground Surface Elevation (ft amsl) AD 83/91, NAVD88, ft	230.0								
(reet belov	riand surface)	Sample Recovery										
From	То	(feet)	Sample Description	PID (ppm)*								
				0.0								
0	4	3.2	0.0 - 0.8: Black soil. WET.									
			0.8 - 1.1: Silty clay. Gray (5/1 on 7.5YR). SATURATED.									
			1.1 - 1.4: Clay and some silt. Brown (4/4 on 5YR). Stiff. Medium plasticity.									
			1.1 - 1.4. Glay and some sitt Brown (4/4 on 3114). Stiff, Medium plasticity.	•								
			1.4 - 4.0: Clay. Strong brown (4/6 on 7.5YR). Small black silt lenses.	0.0								
4	8	4	4.0 - 8.0: SAA.	0.0								
				0.0								
8	10.1	2.7	8.0 - 10.1: SAA, but WET.									
No 51		DIOCETE:	<u></u>	<u> </u>								
	CANAL LINER											
SOIL SAM	PLES COLLEC	CTED FROM	0.5 - 1.5 ft bgs and 6.5 - 7.5 ft bgs									

<sup>\*</sup> PID readings taken at 1.0 ft intervals

Boring	oring SB02-07 Project Name and No. CSXT Brunswick Yard/ MD00043.0011.00004								
Location	Brunswick, M	laryland		Date	8/21/2013	Start Time	0834	End Time	0848
Total	Depth Drilled	10 feet	Hole Diame	eter 2 inches		Sampling	j interval	contin	uous
Leng	th and Diamet	er of Sampli	ng Device 4' / 2" Type of Sampling Device plasti						liners
Dr	illing Method	Direct	Push	Drilling	Fluid Used	-			
Drillin	ng Contractor	Ground	Zero [	Zero Driller Corey Gamwell Helpers Justin McArdle and					
	Prepared By	L. La	mp ŀ	42 ins.					
Easting	1135641.7	ita in MD SP N	North AD 83/91, NAVD8	ing 599152.7		Ground Sur	rface Eleva	tion (ft amsl)	230.2
Samp	ole Depth	III IIID OI'N	00/01, NAVDO	,					
(feet below	land surface)	Sample							
F====	To	Recovery		Samula Daa	a sintia n				PID (nnm)*
From	То	(feet)		Sample Des	cription				PID (ppm)* 0.0
0	4	3.4	0.0 - 1.0: Blac	k soil and organi	ic material.				
			1.0 - 1.4: Silty SATURATED.	clay. Very dark (	gray (3/1 on	7.5YR). Soft.	Not plastic		
			SATURATED.						
				. Brown (4/4 on 7 (5/8 on 5YR) fine					
			1.7 - 4.0: Clay at 3.4 ft bgs.	. Very dark grayi	sh brown (3	3/2 on 10YR). I	Hard. Very	plastic. WET	
									0.0
4	8	3.8	4.0 - 5.5: SAA	•					
			5.5 - 5.7: Silty	clay. Brown (4/2	on 7.5YR).	Soft. No plast	ticity.		
			5.7 - 8.0: Clay	. Very dark grayi				cted. Very	
			plastic. Stiff.						0.0
8	10.4	2.4	8.0 - 10.4: SA	A. WET.					0.0
CLAV CAN	IAL LINED 6	m 1 1 1 7 1	2 # #b:-!-						
CLAY CAN	IAL LINER fro	m 1.4 - 1./; 0	.s it thick						
SOIL SAM	PLES COLLEC	CTED FROM	0.5 - 1.5 (above	CLAY CANAL L	INER) and	5.5 - 6.5 (belo	w CLAY CA	NAL LINER)	

<sup>\*</sup> PID readings taken at 1.0 ft intervals

Boring	SB02	SB02-08 Project Name and No. CSXT Brunswick Yard/ MD00043.0011.00004								
Location	Brunswick, M	laryland		Date	8/21/2013	Start Time	0849	End Time	0902	
Total	Depth Drilled	10 feet	Hole Diameter	2 inches		Sampling	g interval	conti	nuous	
Leng	th and Diamet	er of Sampli	ng Device 4' / 2"	g Device 4' / 2" Type of Sampling Device plast						
Dr	illing Method	Direct	Push	Drilling	Fluid Used	-				
Drillin	ng Contractor	Ground	Zero Drille	er Corey	Gamwell	Helpers	Justin	McArdle and G	eorge Sorto	
	Prepared By	L. La	mp Ham	mer Weight	810 lb	Hamı	mer Drop _	42 ins.		
Easting	1135633.4 Coordinate da	ıta in MD SP N	Northing_ AD 83/91, NAVD88, ft	599141.6		Ground Su	rface Elev	ation (ft amsl)	229.9	
Samp	ole Depth		,,							
(feet below	land surface)	Sample								
_		Recovery							DID ( )#	
From	То	(feet)	I	Sample Des	scription				PID (ppm)* 0.0, 4.2, 0.0,	
									0.0, 4.2, 0.0,	
0	4	3	0.0 - 0.9: Black so	il. Little orga	anic matter.				0.0	
			0.9 - 1.5: Silty san	d. Dark gray	(3/1 on 7.5)	YR). Soft. No	plasticity.	WET.		
			1.5 - 2.1: Clay. Bro	wn (4/4 on '	75VD) Britle	e Hard Dry	No plastic	ity Small gray		
			(5/1 on 7.5 YR) sil	-	-	-	-	ty. Siliali gray		
			2.1 - 3.0: Clay. Da	-		-	lo plasticit	y. More silt		
			lenses than the al	ove. CLAY	CANAL LINI	ER				
			3.0 - 4.0: Clay. Da	k brown (3/4	4 on 7.5YR).	Some silt. Hi	gh plastic	ity. Stiff.		
									6.7, 1.2, 0.0,	
4	8	4	4.0 - 6.0: SAA						12.1	
			6.0 - 8.0: Silty clay	. Dark brow	n (3/4 on 7.5	SYR). Soft. Me	edium plas	ticity. WET.		
									9.3, 3.1	
8	10	4	8.0 - 10.0: SAA							
CLAY CAN	IAL LINER fro	m 1.5 - 3.0; 1	.5 ft thick							
SOIL SAM	PLES COLLEC	CTED FROM	0.5 - 1.5 (above CL	AY CANAL	LINER) and	7.0 - 8.0 (belo	w CLAY C	ANAL LINER)		

<sup>\*</sup> PID readings taken at 1.0 ft intervals

Boring	SB0	2-09	Project Na	me and No.	CSXT Brunsw	ick Yard/ MD00	043.0011.00	)004	
Location	Brunswick, M	laryland		Date	8/21/2013	Start Time	0939	End Time	0945
Total	Depth Drilled	10 feet	Hole Diameter	2 inches		Sampling	g interval _	conti	nuous
Leng	th and Diamet	er of Sampli	ng Device 4' / 2" Type of Sampling Device				plastic	liners	
Dr	illing Method	Direct	Push	Drilling	Fluid Used				
Drillir	ng Contractor	Ground	d Zero Drille	er Corey	Gamwell	Helpers	Justin N	McArdle and G	eorge Sorto
	Prepared By	L. La	ımp Hamı	ner Weight	810 lb	- Hamr	ner Drop	42 ins.	
Easting	1135668.8 Coordinate da			599133.1		•	_	ation (ft amsl)	230.0
	ole Depth / land surface)	Sample							
From	То	Recovery (feet)		Sample Des	scription				PID (ppm)*
110111	10	(leet)		Jample Des	scription				0.0, 0.0
0	2	2.4	0.0 - 0.9: Black so	il.					
			0.9 - 1.3: Silty clay	. Dark gray	(4/1 on 7.5Y	R).			
			1.3 - 1.4: Gravel zo	one. Angula	r 1-1.5 inch	pieces.			
			1.4 - 1.75: Clay and Interbedded 2-3 m						
			1.75 - 2.0: Clay. Ve with interbedded ( High plasticity. St	ery compact gray (5/1 on	and homog	jenous. Stron	g brown (4	/6 on 7.5YR)	
2	6	3.7	2.0 - 6.0: SAA						0.7, 14.7, 14.6, 12.2
				\.\.					8.0, 0.4, 0.4, 0.0
6	10	4	6.0 - 10: SAA, but	WEI					
NO CLAY	CANAL LINER	DISCERNA	<del>:</del> BLE						
SOIL SAM	PLES COLLEC	CTED FROM	0.5 - 1.5 ft bgs and	4.5 - 5.5 ft b	oas			-	
		0.61.4			<u>-</u>				

<sup>\*</sup> PID readings taken at 1.0 ft intervals

Boring	SB0	2-10	Project Name and No. CSXT Brunswick Yard/ MD00043.0011.00004						
Location	Brunswick, N	laryland	Date <u>8/21/2013</u> Start Time <u>0955</u> End Time	1009					
Total	Depth Drilled	10 feet	Hole Diameter 2 inches Sampling interval continuous	nuous					
Leng	th and Diamet	er of Sampli	ng Device 4' / 2" Type of Sampling Device plastic	liners					
Dr	illing Method	Direct	Push Drilling Fluid Used -						
Drillin	ng Contractor	Ground	Zero Driller Corey Gamwell Helpers Justin McArdle and G	eorge Sorto					
	Prepared By	L. La	mp Hammer Weight 810 lb Hammer Drop 42 ins.						
Easting		nta in MD SP N	Northing 599122.2 Ground Surface Elevation (ft amsl) AD 83/91, NAVD88, ft	229.8					
	ole Depth ( land surface)	Sample							
(leet below	rianu suriace)	Recovery							
From	То	(feet)	Sample Description	PID (ppm)*					
			·	0.0, 0.0					
0	2	3.3	0.0 - 0.8: Black soil. WET.						
U	2	3.3	U.U - U.O. BIACK SUII. WET.						
0.8 - 1.4: Silty clay and sand. Soft. Dark gray (4/1 on 7.5YR). Soft. Not plastic.									
			1.4 - 2.0: Clay. Strong brown (4/6 on 7.5YR). Small (3-6mm) black silt lenses. Medium plasticity. Stiff.						
				0.0, 0.2, 8.2,					
2	6	3.9	2.0 - 4.1: SAA	6.1					
	•	0.0							
			4.1 - 6.0: Clay. Brown (4/3 on 7.5YR). Compact. Very plastic. Homogenous. WET						
				0.9, 0.0, 0.0, 0.0					
6	10	3.9	6.0 - 10.0: SAA						
NO CLAY	CANAL LINER	DISCERNA	BLE						
SOIL SAM	PLES COLLEC	JED FROM	0.5 - 1.5 ft bgs and 5.0 - 6.0 ft bgs						

<sup>\*</sup> PID readings taken at 1.0 ft intervals

Boring	SB03	3-01	Project Name and No. CSXT Brunswick Yard/ MD00043.0011.00004								
Location	Brunswick, M	aryland			Date	8/21/2013	Start Time	1219	End Time	1229	
Total	Depth Drilled	10 feet	Hole Di	ameter_	2 inches		Sampling	g interval	conti	nuous	
Long	th and Diamet	or of Sampli	na Dovico	<i>-</i>		Tva	pe of Sampling Device plasti			cliners	
Leng	in and Diamet	er or Sampir	ng Device	4 / 2		ıyı	Type of Gampling Sevice				
Dr	illing Method	Direct	Push Drilling			Fluid Used	-				
Drillir	g Contractor	Ground	l Zero	Zero Driller Corey Gamwell Helpers Justin McArdle and						eorge Sorto	
	Prepared By	L. La	np Hammer Weight 810 lb Hammer Drop 42 ins.								
Easting 1136014.7 Northing 598943.3  Coordinate data in MD SP NAD 83/91, NAVD88, ft  Sample Depth							Ground Su	rface Elev	ation (ft amsl)	229.7	
	land surface)	Sample									
From	То	Recovery (feet)			Sample De	scription				PID (ppm)*	
										0.0, 0.0	
0	2	2.2	0.0 - 0.4: I	Black soil	and organ	ic matter.					
			0.4 - 1.25:	.4 - 1.25: Dark reddish brown (4/2 on 5YR) silty clay. SATURATED.							
					•	on 5YR) cla	•	k silt lens	es. Hard. Low		
			1.9 - 2.0: ( SLIGHT C	•	wn (3/3 on	5YR). Homo	genous. Well	compacte	d. Plastic.		
										0.7, 12.2, 22.7, 18.9	
2	6	4	2.0 - 3.7: \$	SAA but S	SATURATE	D. ODOR				10.9	
			3.7 - 6.0: \$	SAA. ODO	DR.						
										9.7, 4.6, 12.3,	
6	10	3.8	6.0 - 10.0:	SAA						12.4	
CLAY CAN	IAL LINER from	m 1.25 - 1.9;	0.65 ft thic	k							
SOIL SAM	PLES COLLEC	TED FROM	0.5 - 1.5 (a	bove CLA	Y CANAL	LINER) and	5.0 - 6.0 (belo	w CLAY C	ANAL LINER)		

<sup>\*</sup> PID readings taken at 1.0 ft intervals

Boring	Boring SB03-02 Project Name and No. CSXT Brunswick Yard/ MD00043.0011.00004									
Location	Brunswick, M	aryland			Date_	8/21/2013	Start Time	1234	End Time	1245
Total	Depth Drilled	10 feet	Hole Dia	ameter 2 i	inches		Sampling	g interval	contir	nuous
Leng	th and Diamet	er of Sampli	ng Device _	g Device 4' / 2" Type of Sampling Device plastic						
Dr	illing Method	Direct	Push		Drilling	Fluid Used	-			
Drillin	ng Contractor	Ground	I Zero	Zero Driller Corey Gamwell Helpers Justin McArdle and C						
	Prepared By	L. La	mp	Hammer	Weight _	810 lb	Hamı	mer Drop	42 ins.	
Easting	1136003.9 Coordinate da	ta in MD SP N		orthing <u>59</u> VD88, ft	8928.8		Ground Su	rface Elevat	tion (ft amsl)	229.4
	ole Depth									
(feet below	land surface)	Sample Recovery								
From	То	(feet)		S	ample Des	cription				PID (ppm)*
		· · ·			-	<u> </u>				19.2, 49.2
0	2	1.8	0.0 - 0.3: B	lack soil. S	ATURAT	ED.				
			03-04-R	eddish hro	wn (4/3 o	n 5YR) silt :	and clay Med	lium stiffne	ss Plastic	
0.3 - 0.4: Reddish brown (4/3 on 5YR) silt and clay. Medium stiffness. Plastic. 0.4 - 0.6: Interbedded 3-5mm layers of gray (5/1 on 5YR) and reddish brown										
							orly compac	•		
			LINER.	., o.u., o.	, p.u.oo.	.,	, copuc		711 97	
			06-10-5	ilty clay Re	eddish hr	rown (4/4 or	17.5YR). Med	ium stiffnes	se Plastic	
			0.0 1.0.0	inty oldy. It	caaisii bi	OWII (444 OI	Trio Triy. Illica	idili Stillio		
			1.0 - 1.8: C	lay. Brown	(4/4 on 7	.5YR). Firm	. Medium pla	sticity.		
			1.8 - 2.0: S ODOR.	ilty clay. Bl	lack (2.5/ <sup>-</sup>	1 on 7.5YR).	Soft. Plastic	. SATURAT	ED. SLIGHT	
										56.2, 42.8,
2	6	4.3	2.0 - 3.0: S	AA						32.2, 11
			3.0 - 3.8: C	lay and silt	t. Brown (	(4/4 on 7.5Y	R). Stiff. Very	plastic.		
			3.8 - 6.0: C ODOR.	lay. Yellow	rish red (4	4/6 on 5YR).	Very hard. N	ledium plas	ticity.	
6	10	4.1	6.0 - 10.0:	SAA. WET.						36.2, 9.8, 0.9, 1.7
·	-									
CLAY CAN	IAL LINER froi	m 0.4 - 0.6; 0	).2 ft thick							
SOIL SAM	PLES COLLEC	TED FROM	0.0 - 1.0 (ab	ove CLAY	CANAL L	INER) and	3.0 - 4.0 (belo	w CLAY CA	NAL LINER)	
			- 1,			,		=-= -		

<sup>\*</sup> PID readings taken at 1.0 ft intervals

Boring	ng SB03-03 Project Name and No. CSXT Brunswick Yard/ MD00043.0011.00004									
Location	Brunswick, M	laryland	Date _	8/21/2013	Start Time	1302	End Time	1311		
Total	Depth Drilled	10 feet	Hole Diameter 2 inches		Sampling	interval_	conti	nuous		
Leng	th and Diamet	er of Sampli	Device 4' / 2"	Туј	pe of Sampling	g Device	plastic	liners		
Dr	illing Method	Direct	sh Drilling	Fluid Used	-					
Drillir	ng Contractor	Ground	ero Driller Corey	Gamwell	Helpers_	Justin N	AcArdle and G	eorge Sorto		
	Prepared By	L. La	Hammer Weight	42 ins.						
Easting	1136032.3 Coordinate da	ita in MD SP N	Northing 598931.7 83/91, NAVD88, ft		Ground Sur	face Eleva	ation (ft amsl)	229.9		
	ole Depth / land surface)	Sample								
(reet below	rianu suriace)	Recovery								
From	То	(feet)	Sample Des	cription				PID (ppm)*		
		0.7	O. O.CE. Block and					2.3, 32.9, 51.7, 62.8		
0	4	2.7	.0 - 0.65: Black soil.							
			.65 - 1.4: Silt and clay. Reddis	sh brown (4	/3 on 5YR). So	ft. Low pla	asticity.			
			· ·		,					
			.4 - 1.6: Interbedded 3-5mm l i/3 on 5YR) clay. Hard. Poorly							
			.6 - 2.7: Clay. Brown (4/3 on 7	7.5). Firm. P	lastic.					
			7 40 Clay Dark brown (2)	2 an 7 EVD)	l ittle eilt een		ODOD			
			7 - 4.0: Clay. Dark brown (3/	2 on 7.5 (R)	. Little slit con	centration	1. ODOR	18.2, 12.9,		
4	8	3.2	.0 - 8.0: SAA. ODOR. DAMP t	hrough last	2 ft.			10.1, 7.6		
8	10	1.7	.0 - 10.0: SAA. WET.					0.2		
CLAY CAN	IAL LINER PR	ESENT FRO	1.4 - 1.6; 2 ft thick							
SOIL SAM	PLES COLLEC	CTED FROM	5 - 1.5 (above CLAY CANAL L	_INER) and	4.0- 5.0 (below	CLAY CA	NAL LINER)			

<sup>\*</sup> PID readings taken at 1.0 ft intervals.

Boring	oring SB03-04 Project Name and No. CSXT Brunswick Yard/ MD00043.0011.00004									
Location	Brunswick, M	laryland			Date	8/21/2013	Start Time	1326	End Time	1339
Total	Depth Drilled	10 feet	Hole Dia	meter_	2 inches		Sampling	g interval	conti	nuous
Lengt	h and Diamet	er of Sampli	ng Device	ng Device 4' / 2" Type of Sampling Device plast						liners
Dr	illing Method	Direct	Push		Drilling	Fluid Used	-			
Drillin	g Contractor	Ground	I Zero	Driller	Corey	Gamwell	Helpers	Justin	McArdle and G	eorge Sorto
	Prepared By	L. La	mp	p Hammer Weight 810 lb Hammer Drop 42 ins.						
Easting 1136023.5 Northing 598917.2 Ground Surface Elevation (ft amsl) Coordinate data in MD SP NAD 83/91, NAVD88, ft									229.6	
	le Depth land surface)	Sample								
From	То	Recovery (feet)			Sample Des	crintion				PID (ppm)*
110111	10	(ICCI)			oumpie bes	сприоп				12.8, 18.2,
0	4	3.4	0.0 - 0.8: B	lack soil.						36.7, 58.2
				-		on 2.5YR) wi	ith red (4/8 or ompacted.	n 2.5YR) s	ilt and sand	
			1.0 - 1.2: S	ilt and cl	ay. Gray (5	/1 on 7.5YR)	). Soft. No pla	sticity. W	ET.	
			1.2 - 1.3: A	ngular g	ravel					
			1.3 - 1.8: C	lay. Red	(4/6 on 2.5	YR). With sr CLAY CANA	nall black silt	lenses. H	lard. Low	
			1.8 - 2.2: C Medium st	•	(4/6 on 2.5	YR). Homog	enous. Well o	compacte	d. Plastic.	
			2.2 - 3.4: C	lay. Dark	gray (4/1 o	on 5YR). Hai	rd. Low plasti	city.		
			3.4 - 4.0: C	lay. Dark	gray (4/1 o	on 5YR). Wit	h some silt. S	Soft. Low	plasticity.	72.9, 71.0, 69,
4	8	3.6	4.0 - 5.5: S	AA.						22.1
			5.5 - 8.0: C SLIGHT O		(4/6 on 2.5	YR). Well co	mpacted. Ha	rd. Mediu	m plasticity.	
8	10	1.8	8.0 - 10.0:	SAA						18.7, 6.8
			•							
CLAY CAN	AL LINER FRO	OM 1.3 - 1.8;	0.5 ft thick							
SOIL SAMI	PLES COLLEC	CTED FROM	0.5 - 1.5 (ab	ove CLA	Y CANAL I	INER) and	4.0 - 5.0 (belo	w CLAY	CANAL LINER)	

<sup>\*</sup> PID readings taken at 1.0 ft intervals

boring	360.	5-05	- FI	oject Nam	ie aliu No.	CSX1 Brunsw	ick Yard/ WIDOU	043.0011.	J0004				
Location	Brunswick, M	aryland			Date	8/22/2013	Start Time	0840	End Time	0852			
Total	Depth Drilled	10 feet	Hole Di	ameter	2 inches		Sampling	g interval	conti	nuous			
Lengt	th and Diamet	er of Sampli	ng Device	4' / 2"		Туј	pe of Samplin	g Device	plasti	c liners			
Dr	illing Method	Direct	Push		Drilling	Fluid Used							
Drillin	g Contractor	Ground	l Zero	Zero Driller Corey Gamwell Helpers Justin McArdle and G						George Sorto			
	Prepared By	L. La	mp	p Hammer Weight 810 lb Hammer Drop 42 ins.									
Easting	1136038.8 Coordinate da	ta in MD SP N		orthing	598906.3		Ground Su	rface Elev	ation (ft amsl)	230.3			
	le Depth land surface)	Sample											
(leet below	iana sunace)	Recovery											
From	То	(feet)			Sample Des	scription				PID (ppm)*			
0	4	2.6	0.0 - 0.15:	Looso bl	•	•				0.0, 3.4, 15.2,			
U	4	2.0								19.3			
				_			lay, silt and s	•					
			_		-			2.5YR) a	nd sand is red				
			(5/6 on 2.5	YK). Med	ium piasti	city. Medium	1 Stiff.			1			
			0.35 - 0.45	35 - 0.45: Angular gravel.									
										1			
			0.45 - 0.8:	Loose bla	ack soil an	nd organic m	atter; roots.						
			0.8 - 1.1: \$	Silty clay.	Dark brow	n (3/4 on 2.5	SYR). Medium	stiff. Lov	v plasticity.				
			1.1 - 2.0: ( CLAY CA	•		n (4/3 on 2.5)	YR). No plasti	city. Loos	se/ Dry. Hard.				
										1			
							R). Strong cen		/ compact.				
			2.6 - 3.0: 8	Silt and cl	ay. Brown	(5/3 on 7.5Y	R). SATURAT	ED. SLIG	HT ODOR.				
			3.0 - 4.0: E ODOR.	Brown (4/2	2 on 7.5YR	) clay. Black	silt lenses. F	irm. Med	ium plasticity.				
4	8	3.75	4.0 - 6.6: \$	SAA						21.7, 12.8, 11.3, 0.0			
			6.6 - 7.2: \$	Silt and so	me clay. E	3rown (5/3 o	n 7.5YR). Sof	t. SATUR	ATED. ODOR.				
			7.2 - 7.8: E	Brown (5/4	1 on 7.5YR	) clay. Firm.	Medium plas	ticity. WE	T. ODOR				
			7.8 - 8.0: (	Clay. Yello	owish red (	(4/6 on 5YR).	. Homogenou	s. Plastic	ODOR. WET.				
CL AV CAN	AL LINER FR	OM 1 1 20.	0 0 ft thick	,									
	PLES COLLEC		0.0 - 1.0 (a	bove CLA	Y CANAL	LINER) and	3.5 - 4.5 (belo	w CLAY	CANAL LINER)				

<sup>\*</sup> PID readings taken at 1.0 ft intervals

Boring SB03-06 Project Name and No. CSXT Brunswick Yard/ MD00043.0011.00004									
Location	Brunswick, M	laryland	Date <u>8/2122013</u> Start Time <u>0824</u> End Time	0836					
Total	Depth Drilled	10 feet	Hole Diameter 2 inches Sampling interval conti	nuous					
Leng	th and Diamet	er of Sampli	ng Device _4' / 2" Type of Sampling Device plastic	liners					
Dr	illing Method	Direct	Push Drilling Fluid Used -						
Drillir	ng Contractor	Ground	I Zero Driller Corey Gamwell Helpers Justin McArdle and G	eorge Sorto					
	Prepared By	L. La	mp Hammer Weight 810 lb Hammer Drop 42 ins.						
Easting Sam		ita in MD SP N	Northing 598913.6 Ground Surface Elevation (ft amsl) AD 83/91, NAVD88, ft	231.1					
(feet belov	v land surface)	Sample							
	-	Recovery	Out Deside	DID (nnm)*					
From	То	(feet)	Sample Description	PID (ppm)* 0.0					
		4.5	00 005 81 1 11	0.0					
0	2	1.5	0.0 - 0.25: Black soil.						
			0.25 - 0.75: Clay. Reddish brown (4/4 on 5YR). Poorly cemented. Non plastic. Hard. CLAY CANAL LINER.						
			0.75 - 1.4: Medium-grained sand. Loose. Black. Poorly sorted with some organic material.						
			1.4 - 2.0: Silt, fine grained sand and clay. Black (2.5/1 on 7.5YR). Soft. SATURATED.						
2	4	3.2	2.0 - 2.1: SAA	12.7, 15.6, 9.8, 1.2					
			2.1 - 2.2: Angular gravel.						
			2.2 - 2.6: Clay and silt. Dark brown (3/2 on 7.5YR). Little amoutns of black (2.5/1 on 7.5YR) silt lenses. High plasticity. ODOR.						
			2.6 - 4.6: Clay. Reddish brown (4/3 on 7.5YR). High plasticity. Medium stiffness. ODOR.						
			4.6 - 5.6: Silty clay and some angular pebbles and coarse grained sand. Black (2.5/1 on 7.5YR). Soft. No plasticity. ODOR.						
			5.6 - 6.0: Clay. Reddish brown (4/3 on 7.5YR). Homogenous. Well cememnted. Hard. Very plastic. WET. ODOR.						
				0.0					
6	10	2.4	6.0 - 10.0: SAA. WET. ODOR.						
CLAY CAN	IAL LINER FR	OM 0.25 - 0.7	75; 0.50 ft thick						
SOIL SAM	PLES COLLEC	TED FROM	0.0 - 1.0 (above CLAY CANAL LINER) and 2.5 - 3.5 (below CLAY CANAL LINER)						
	== 30===								

<sup>\*</sup> PID readings taken at 1.0 ft intervals

Boring	SB0	3-07	- Pr	oject Nam	ie and No.	CSXT Brunsw	ick Yard/ MD00	0043.0011.0	00004			
Location	Brunswick, M	laryland			Date	8/22/2013	Start Time	0909	End Time	0919		
Total	Depth Drilled	10 feet	Hole Di	ameter_	2 inches		Samplin	g interval	conti	nuous		
Lengt	th and Diamet	er of Sampli	ng Device	4' / 2"		Ту	pe of Samplir	ng Device	plastic	cliners		
Dr	illing Method	Direct	Push		Drilling	Fluid Used	-					
Drillin	ng Contractor	Ground	l Zero	Driller	Corey	Gamwell	Helpers	Justin	McArdle and G	eorge Sorto		
	Prepared By	L. La	mp	Hamm	er Weight	810 lb	Ham	mer Drop	42 ins.			
Easting 1136076.5 Northing 598913.6 Ground Surface Elevati Coordinate data in MD SP NAD 83/91, NAVD88, ft Sample Depth							ration (ft amsl)	232.3				
	land surface)	Sample										
		Recovery										
From	То	(feet)	ı		Sample De	scription				PID (ppm)*		
0	2	2.2				bles. Sandy (4/1 on 5YR)	matrix. Orga	ınic mater	ial. Black	12.9, 20.3		
			0.4 - 0.9: Clay and sand. Black (2.5/1 on 5YR). Low plasticity.									
				9 - 1.1: Loose soil/ sand with large sangular pebbles and organic material. ack (2.5/1 on 5YR)								
			1.1 - 1.7: (	.1 - 1.7: Clay. Yellowish red (4/6 on 5YR). Medium plasticity. Some small silt enses. Trace amounts of sub-rounded pebbles.								
			reddish b	rown (3/4	on 5YR an		) of clay and red (5/6 on 5 1 on 5YR).	-				
2	6	2.9	2.0 - 2.2: 5	SAA.			-			96.7, 136, 211, 197		
				-		5/6 on 5YR). on 5YR) sai	. Low plastici nd.	ty, poorly	cemented.			
			2.4 - 4.1: E plasticity.	•	/1 on 5YR)	silt and gra	y (5/1 on 5YR	) clay. So	t. No			
			4.1 - 4.5: ( Low plast	-	grayish b	rown (4/2 or	10YR). Som	e silt. Med	lium stiffness.			
			4.5 - 5.1: (	Clay. Dark	brown (3/	4 on 7.5YR).	No silt. ODO	R.				
			5.1 - 6.0: E plasticity.	•	/1 on 5YR)	silt and gra	y (5/1 on 5YR	) clay. So	t. No			
6	10	3.6	6.0 - 6.3: \$	SAA. ODO	R. WET.					82.1, 48.5, 47.2, 13.1		
			6.3 - 10.0:	Clay. Red	d (4/6 on 2.	5YR). Homo	genous. No s	silt. ODOR	. WET.	, 1011		
NO CLAY	CANAL LINER	DISCERNAL	BI F									
				h								
	PLES COLLEC		1.5 - 2.5 ft	bgs and 4	1.5 - 5.5 ft k	ogs						

<sup>\*</sup> PID readings taken at 1.0 ft intervals

Boring	SB03	3-08	Project Name and No. CSXT Brunswick Yard/ MD00043.0011.00004							
Location	Brunswick, M	laryland			Date	8/22/2013	Start Time	0921	End Time	0932
Total	Depth Drilled	10 feet	Hole Di	ameter 2	inches		Samplin	g interval	conti	nuous
Leng	th and Diamet	er of Sampli	ng Device	4' / 2"		Ту	pe of Samplir	ng Device	plastic	cliners
Dr	illing Method	Direct	Push		Drilling	Fluid Used	-			
Drillin	ng Contractor	Ground	l Zero	Driller_	Corey	Gamwell	Helpers	Justin	McArdle and G	eorge Sorto
	Prepared By	L. La	mp	Hamme	r Weight	810 lb	Ham	mer Drop	42 ins.	ı
Easting	1136073.1 Coordinate da	ta in MD SP N		orthing 59	98893.6		Ground Su	rface Elev	ation (ft amsl)	230.6
	ole Depth									
(feet below	land surface)	Sample Recovery								
From	То	(feet)		5	Sample Des	scription				PID (ppm)*
0	4	2.4	0.0 - 1.4: L on 5YR).	.oose blaci	sand. O	rganic mate	rial. Some da	ırk gray cl	ay lenses (4/1	5.1, 0.0, 19.7, 18.2
•	-	4.7	on onky.							
			1.4 - 1.85:	Clay. Redo	lish yello	w (6/8 on 5Y	'R). Medium p	olasticity.	Stiff.	
			1.85 - 2.15	: Angular o	gravel wit	hin a clay m	atrix. Light b	rown (6/3	on 7.5YR)	
			2.15 - 2.7: Clay. Red (4/6 on 2.5YR). Hard. Loose/ poorly compacted. Not plastic. CLAY CANAL LINER. ODOR.							
				-			n 2.5YR). 5-10 n 2.5YR) silt.		zones of silt	
4	8	3.4	4.0 - 5.2: S	SAA						12.3, 3.6, 0.0, 0.0
			5.2 - 5.7: C	Clay. Red (4	1/6 on 2.5	YR). Stiff. M	edium plastic	ity. ODOI	₹.	
				•		•	n 2.5YR). 5-10 n 2.5YR) silt.		zones of silt	
				Clay. Red (4 of silt. SLIG			emented. Stiff	. Very pla	stic. Trace	
										0.0
8	10	2.5	8.0 - 10.0:	SAA. WET	. SLIGHT	ODOR				
	IAI LINED from	m 2 15 - 2 7·	0 55 ft thic	k						-
CLAY CANAL LINER from 2.15 - 2.7; 0.55 ft thick										
SOIL SAMPLES COLLECTED FROM 1.0 - 2.0 (above CLAY CANAL LINER) and 3.0 - 4.0 (below CLAY CANAL LINER)										

<sup>\*</sup> PID readings taken at 1.0 ft intervals

Boring	SB0	3-09	_ Pro	oject Nar	ne and No.	CSXT Brunsw	ick Yard/ MD00	043.0011.0	0004	
Location	Brunswick, M	laryland			Date	8/22/2013	Start Time	1010	End Time	1022
Total	Depth Drilled	10 feet	Hole Di	ameter_	2 inches		Sampling	j interval	conti	nuous
Lengi	h and Diamet	er of Sampli	ng Device	4' / 2"		Ту	pe of Samplin	g Device	plasti	c liners
			•					_		
Dr	illing Method	Direct	Push		Drilling	Fluid Used	-			
Drillin	g Contractor	Ground	d Zero	Drille	r Corey	Gamwell	Helpers	Justin I	McArdle and G	George Sorto
	Prepared By	L. La	mp	Hamn	ner Weight	810 lb	Hamr	ner Drop	42 ins.	
Easting	1136101.2 Coordinate da	ita in MD SP N			598903.2		Ground Su	rface Eleva	ation (ft amsl)	231.1
	le Depth land surface)	Sample								
(icci belon	iuna suriase,	Recovery								
From	То	(feet)			Sample Des	scription				PID (ppm)*
										8.1, 6.7
0	2	2.2	0.0 - 0.9: E	Black soi	I. Some silt	. WET.				
				-	wn (4/1 on 7 n plasticity.		e red (4/6 on :	2.5YR) silt	layers ~1-	
			14-20-9	Silty clay	Gray (5/1 c	on 5VR). Sof	t. No plasticit	v WET		
							-	-		17.3, 17.1,
2	6	3.9	2.0 - 2.3: ( core).	Clay. Red	ldish brown	(4/3 on 2.5	YR). Some bla	ck silt len	s (<15% of	19.2, 16.1
			2.3 - 6.0: 0	Clay. Bro	wn (4/2 on 7	7.5YR). Soft.	. High plastici	ty. ODOR.		
	40	2.7	00.75.0	. A A . \A/E-	T 0000					17.2, 11.8, 14.3,6.7
6	10	3.7	6.0 - 7.5: 8	DAA. WE	I. ODOR.					
			7.5 - 8.1: 5	Silty clay.	. Some ang	ular gravel.	SATURATED.			
				o	(410	= 5\(D\) 0 (				
			8.1 - 10.0:	Clay. Br	own (4/2 on	7.5 YR). Sot	t. High plastic	ity. ODOR	K. WEI.	
NO CLAY	CANAL LINER	DISCERNA	BLE							1
				hao and	25 1544					
JOIL SAMI	PLES COLLEC	TED PROM	1.0 - 2.0 ft	ngs and	3.3 - 4.3 ft D	ys				

<sup>\*</sup> PID readings taken at 1.0 ft intervals

Boring	SB03	3-10	Project Name and No. CSXT Brunswick Yard/ MD00043.0011.00004							
Location	Brunswick, M	aryland		Date	8/22/2013	Start Time	1024	End Time	1035	
Total	Depth Drilled	10 feet	Hole Diameter	2 inches		Sampling	g interval	contin	uous	
Lenç	gth and Diamt	er of Sampli	ng Device 4' / 2"		Тур	e of Samplin	ng Device_	plastic	liners	
Dr	illing Method	Direct	Push	Drilling	Fluid Used	-				
Drillin	Drilling Contractor Ground Zero Driller Corey Gamwell Helpers Justin McArdle and G							eorge Sorto		
	Prepared By	L. La	mp Hamı	mer Weight	810 lb	Hamı	mer Drop _	42 ins.		
Easting	1136093.9 Coordinate da	ta in MD SP N	Northing 598881.7 Ground Surface Elevation (ft amsl) NAD 83/91, NAVD88, ft							
-	land surface)	Sample								
_	_	Recovery						,	DID ()*	
From	То	(feet)		Sample Des	scription				PID (ppm)* 2.3, 7.1	
0	2	2.65	0.0 - 0.2: Clay, silt	and sand. E	Brown (4/3 o	n 7.5YR). Med	dium plastic	city. MOIST.	,	
			,		`	· · ·	<del></del>			
			0.2 - Clay and sub	-rounded pe	ebbles (3-4 c	m). Very darl	k gray (3/1 d	on 7.5YR).		
			0.4 - 0.9: Medium/	_			_			
			and gravel. Light reddish brown (6/3 on 2.5YR) matrix, white (8/1 on 2.5YR) and reddish yellow (6/8 on 5Y) sand lenses and pebbles.							
			0.9 - 1.1: Loose bl	0.9 - 1.1: Loose black soil and some organic matter; roots						
				1.1 - 1.6: Lenticular clay layers that are reddish yellow (6/8 on 5YR) and brown (4/4 on 7.5YR). Hard. Low plasticity.						
			1.6 - 1.85: Angulai		<u> </u>					
			1.85 - 2.0: Silty da		(4/1 on 5YR	) . MOIST. SL	IGHT ODOI	R		
2	6	3.8	2.0 - 2.4: SAA	<u> </u>					23.2, 18.1,	
	-		2.4 - 2.7: Clay. Bro ODOR.	own (4/2 on 7	7.5YR). Well	cemented. S	oft. Very pla	astic. WET.	49.0, 56.2	
			2.7 - 3.0: Clay. Bro	wn (4/2 on 7	7.5YR). Hard	. Low plastic	ity.			
				-		-				
			3.0 - 3.4: Silty darl	k gray clay (	4/1 on 5YR)	. Very plstic.	MOIST. SL	IGHT ODOR		
			3.4 - 5.75: Clay. Bı	own (4/2 on	7.5YR). Ver	y plastic. Sor	ne silt.			
			5.75 - 6.0: Clay. Re	ed (4/6 on 2.	5YR). ODOR					
			6.4 - 7.5: Clay. Red plasticity. WET. O		(4/3 on 2.5)	'R). Well cem	ented. Stiff	. Medium		
			7.5 - 8.1: Silty clay	. Some ang	ular gravel.	SATURATED				
			8.1 - 10.0: Clay. Restiffness. WET. Ol	•	5YR). Well c	emented. Tra	ice silt. Plas	stic. Medium		
O CLAY	CANAL LINER	DISCERNAL	BLE							
IMAR IIOS	PLES COLLEC	TED FROM	0.5 - 1.5 ft bgs and	50-60ft b	nas					

<sup>\*</sup> PID readings taken at 1.0 ft intervals



#### Appendix B

**Groundwater Sampling Logs** 



Project CSXT Brunswick	•	Project No. MI	D000843.0010.00004		
Site Location Brunswick, MD			Date 8/2	0/13	
Well No. P201-	Replicate No.		Weather	dear	/
Sampling Personnel	✓ Sampling Time	: Begin	1540	End	1600
Purge Data Study Neight * Measuring Point (describe)	0,35 Loss ass	Field Parameters	and low	uun	
Sounded Well Depth (ft bmp)	10.05' 6000	Color	( 1 -1	1.	
Depth to Water (ft bmp)	3.94' broc	Odor		noderate	
Depth to Packer (ft bmp)	J. 11 1910C	Appearance			
Water Column in Well (ft)		- Sp	on Stusample		
Casing Diameter	) ((	pH (s.u.)	6.64	2V	3V
Gallons in Well		Conductivity	Ord 1		
Gallons Purged			0.577		
Prior to Sampling	23.0 gal	(µmhos/cm) 1)		1	
Pump Intake		(1		1	
Setting (ft bmp)		Temperature (°C)	2242		
Packer Pressure (psi)					
Pumping Rate (gpm)		DO (mg/L)	0.80		
Evacuation Method	baller Renstatha	ORP (mV)	-45.3		
Sampling Method	Daller Pensfallic	Turbidity (NTU)			
Purge Time Begin	End	Time			
Remarks:	dy (~3 gal = 41.05' 57BC	DTW (ft bmp) [3	30, Sample 1	W 154	lo.
Parameter  OCS + Oxygenates  ORO  DRO  DRO w/SG cleanup  PID Reading  N/A	Container 40 mL VOA 40 mL VOA 1 L Amber 1 L Amber	A 3 A 2 2	2	Preservative HCI HCI none	
Well Casing Volum Gal./Ft. $1^{1/4}$ " = 0.06 $2$ " = 0 $1^{1/2}$ " = 0.09 $2 \cdot \frac{1}{2}$ "	0.16 3" = 0.37	4" = 0.65 6" = 1.47			



Project CSXT Brunswick	6	Project No. MD000843.0010.00004				
Site Location Brunswick, MD			Date 8	120/13		
Well No. PZO(-C	Replicate No.		Weather	_clea	7 hot	
16.11			1610		1630	
Sampling Personnel KM	Sampling Time:	Begin	1540	End	16	
J.Co. P	,20° ags	Field Parameters  Color	med. br	vun		
Sounded Well Depth (ft bmp)	10.1016706	Odor	NOR	4		
Depth to Water (ft bmp)	1,401 6000	Appearance	moder	nte tubia	lity	
Depth to Packer (ft bmp)		bno	r Fesangle			
Water Column in Well (ft)		F		1V 2V	3V	
Casing Diameter	l ri	pH (s.u.)	6,71			
Gallons in Well		Conductivity				
Gallons Purged		(mS/cm) or	0.472			
Prior to Sampling	2/15 501	(µmhos/cm) 1)				
Pump Intake				-		
Setting (ft bmp)		Temperature (°C)	21.88			
Packer Pressure (psi)			11.0.0			
Pumping Rate (gpm)		DO (mg/L)	4.64			
Evacuation Method	bailer Panstatie	ORP (mV)	-54.5			
Sampling Method	bailer PUT	Turbidity (NTU)				
Purge Time Begin_	End	Time				
		DTW (ft bmp)	VA.			
Remarks: Purged	dy (xlis go	1) Q 1	1335, S	ample @	1610.	
		2.0100	0 (40	0 1	51.00.00	
Parameter  VOCs + Oxygenates  GRO  DRO  DRO w/SG cleanup  O C  PID Reading  N/A	Container 40 mL VO 40 mL VO 1 L Amber 1 L Amber	A	3 2 2 2 4- Z 2	Preservative HCI HCI none none		
Well Casing Volum  Gal./Ft. 1 <sup>1/4</sup> " = 0.06 2" = 0. 1"4" = 0.09 2-½" =	16 3" = 0.37	4" = 0.65 6" = 1.47				



Project CSXT Br	runswick	6		Project No. M	D000843.0010.	00004	•	
Site Location	Brunswick, MD				Date	8/71	13	
Well No.	PZ02-	04	Replicate No.		Weathe	er .	cleary	hot
Sampling Personnel	JR		Sampling Time:	Begin			End	0935
Purge Data	7.80' a	95.		Field Parameters				
Measuring Point (desc		TOC (PVC	.)	Color	LT	BRWN	1	
Sounded Well Depth (	(ft bmp)	10.101	LTOC	Odor		IUNE		
Depth to Water (ft bm)	p)	2.22	bTOC	Appearance	_ to	RBJD	/ /	
Depth to Packer (ft bm	np)			wn.ur	- to sa	mole		
Water Column in Well	(ft)	7.88		P	1	The state of the s	2V	3V
Casing Diameter		111	110	pH (s.u.)	6.58			
Gallons in Well		~0.4	7	Conductivity				
Gallons Purged				(mS/cm) or	0.757			
Prior to S	ampling	~ 2.0	GALS	(µmhos/cm) 1)		11.00		
Pump Intake	44	<u> </u>						
Setting (ft	t bmp)			Temperature (°C)	21-26		X	
Packer Pressure (psi)	M. A.L.		3/4		_17			1
Pumping Rate (gpm)				DQ (mg/L)	7.07			
Evacuation Method		bailer Pun	stallic	ORP (mV)	13.6			
Sampling Method		baller Per	?	Turbidity (NTU)	115			. \
Purge Time	Begir	0845 End	0850	Time	0950			\
1			1	DTW (ft bmp)				A
Remarks:								¥ .
						1. N.		- upstage
Parameter		1,000	Container	No.			Preservative	
OCs + Oxygenates GRO			40 mL VO		2		HCI HCI	
DRO		1 1/10	1 L Amber		2	2.1	none	
DRO w/SG cleanup		1 1/10	1 L Amber		1		none	
PID Reading	N/A		• 🐔		NA.	50		
w C	Well Casing Volu							
Sal./Ft. 1 <sup>1/4</sup> " = 0.06			0.37 = 0.50	4" = 0.65 6" = 1.47				

2 AMBERS 8270 (1 COMPLETE)



Project CSXT Brunswick			Project No. MD000843.0010.00004								
Site Location Brunswick, MD			ii	Date 8/21/13							
Well No. <b>PZ0</b> .	2-08	Replicate No.		Weather		PRTLY CLOUDY/83					
Sampling Personnel	RILL	Sampling Time:	Begin			End	1400				
Purge Data  STECKUP = 0.30 A	65	2	Field Parameters		*		Ž. x				
Measuring Point (describe)	TOC	(	Color	LT G	RWN.		,				
Sounded Well Depth (ft bmp)	10.10		Odor	541	GHT						
Depth to Water (ft bmp)	2.03		Appearance	TURB	ID						
Depth to Packer (ft bmp)											
Water Column in Well (ft)	8.07			1	1V	2V	3V				
Casing Diameter	1" II	)	oH (s.u.)	6.55							
Gallons in Well	0.48		Conductivity								
Gallons Purged			(mS/cm) or	0.682							
Prior to Sampling	VO.50	5 40.40 6	(µmhos/cm) 1)			VIO					
Pump Intake						VX					
Setting (ft bmp)			emperature (°C)	22.03		1					
Packer Pressure (psi)											
Pumping Rate (gpm)			00 (mg/L)	6.00							
Evacuation Method	baller PERT.	PUMP C	PRP (mV)	-13.0							
Sampling Method	bailer PERT.	Pump T	urbidity (NTU)	-13.0			1				
Purge Time	Begin 1156 End		ïme	1408							
			TW (ft bmp)			- 1					
Remarks: 8/21/13 WELL	WENT DRY	AFTER - 0	40 GAL Q	1150 0	0/2,	113 11	lan asD				
RECH	ARGE X2 (	~ 0.40 GAL	HOD DISCH	ARGED EA	ACH RA	COUKRY)	(VOAS +1 AM				
8/22/13 090	4 SAMPLED 1 AM	AMBER, 09	105 WELL D	RY Allan	IED REC	HARGE	COMPLE				
Parameter III5	SAMPLED 1 AM	BER / 11/6 W Container	ELL DRY AL	LONED 12	ELHARG	E Preservative					
VOCs + Oxygenates 1205	PZ02-08	40 mL VOA	3			HCI					
GRO /2	COMPLETE -DRU 1-827	40 mL VOA 1 L Amber	2			HCI					
DRO w/SG cleanup	S-VOA	1 L Amber				none					
PID Reading N/A											
Well Casing  Gal./Ft. 1 <sup>1/4</sup> " = 0.06  1 = 0.09	2" = 0.16 3" =		' = 0.65 ' = 1.47		/3 V	045 VOC 0A5 GRO	5				
Circle one unit type	372	3.55		(2)		ARED - D					



Project CSXT Brunswick	•		Project No. MD	000843.0010.00	0004		
Site Location Brunswick, MD				Date	8/22/	1/13	
Well No. <i>PZ03</i> -	08 Re	eplicate No.		Weather			V/80°F/Hum
Sampling Personnel TR	Sa	ampling Time:	Begin			End	/308
Purge Data  STICK UP = 0.30 AC	;5		Field Parameters				2
Measuring Point (describe)	TOC		Color	LTB	RWN		
Sounded Well Depth (ft bmp)	10-10		Odor			SLG HTLY	MOD.
Depth to Water (ft bmp)	2-34		Appearance		BIP		
Depth to Packer (ft bmp)			•••				3(2)
Water Column in Well (ft)	7.76			1	1V	2V	3V
Casing Diameter	l"		pH (s.u.)	647			
Gallons in Well	~ 0.47		Conductivity	6.47			
Gallons Purged		<del>*************</del> ***********************	(mS/cm) or	0.858		4	- 15 M
Prior to Sampling	V1.5+		(µmhos/cm) 1)	_			
Pump Intake	220202		(pinnosioni)				)
Setting (ft bmp)			T(%O)	20.47		X	
Packer Pressure (psi)			Temperature (°C)	20,17			
		7		0.55	7	1	
Pumping Rate (gpm)	7-2- 0	3	DO (mg/L)				
Evacuation Method	bailer PERIPU	. 07	ORP (mV)	-62.8			120
Sampling Method	bailer V		Turbidity (NTU)				
Purge Time Begin	/303 End /	305	Time	1308			
			DTW (ft bmp)				
Remarks:							
							^
Parameter		Container	No.		- Massa	Preservative	
VOCs + Oxygenates		40 mL VOA	3			HCI	
GRO DRO		40 mL VOA				HCI	
DRO w/SG cleanup		1 L Amber				none	
Sv & C			20 2			none	
PID Reading N/A	-	(i Amb	2 2	_		HEL	
Well Casing Volum  Gal./Ft. 1 <sup>1/4</sup> " = 0.06 2" = 0 1 "=" 0.09 2-½" :			4" = 0.65 6" = 1.47				
2 /2	- J/2 - 0.0		- 1.11	Water the Control of			



Project CSXT Bru	ınswick	6		Project No. N	MD000843.0010.0	00004		
Site Location	Brunswick, MD				Date	8/22/	1/3	
Well No.	PZ03-	04	Replicate No.	3	Weather		and the second	0008/82F/Hums
Sampling Personnel	JR		Sampling Time	Begin _			End	1230
Purge Data	= FLUSH (	2165		Field Parameters				
Measuring Point (descr		тос		Color	BRN	VN		
Sounded Well Depth (fi	t bmp)	9.40		Odor	Non	16		
Depth to Water (ft bmp	)	1.23		Appearance		TURBI	D	
Depth to Packer (ft bmp	0)							
Water Column in Well (	ft)	8.37			1	1V	2V	3V
Casing Diameter	1 35	10		pH (s.u.)	6.77	~		
Gallons in Well		w 0.50	AL	Conductivity				
Gallons Purged				(mS/cm) or	1-125			
Prior to Sa	ımpling	w 0.3	GAL	(µmhos/cm) 1)	_			
Pump Intake								
Setting (ft	bmp)			Temperature (°C)	23.40		X	
Packer Pressure (psi)								
Pumping Rate (gpm)				DO (mg/L)	0.70			
Evacuation Method		bailer PER	I. Pump	ORP (mV)	-52.1			
Sampling Method		bailer	U	Turbidity (NTU)				
Purge Time	Begin	0816 En	d 0818	Time	1235			
				DTW (ft bmp)				(2)
8/22	/13	C NOU	15710 W	0.364 0	2010	4		
Remarks:	WEU W	ENT DICT	AFIER .	1/4:	08180	(LLOWED	XE P	E RECHARGE
				LITER				
	DRY	1331 AUG	WED RACH	SAMPLED ~ HARGE 8/23	113 - SAM	ple Acci	HECT 1.5	L Hize Fee
Parameter VOCs + Oxygenates						0		SAMPLING
GRO			40 mL VO 40 mL VO		2		HCI	vey
DRO			1 L Ambei		-2 i ×		none	
DRO w/SG cleanup			1 L Ambei				none	ANDUOUS
5000			ILAM		ix		HCI	0.0045
PID Reading	N/A		35050305			A.Alam	11-1	00945
	Mall Carles 11 1			*KOV	Ly gor 1.	ANTINE		
Gal./Ft. 1 <sup>1/4</sup> " = 0.06	Well Casing Volun		- 0.27	411 - 0.25	•			
Gal./Ft. 1"4" = 0.06 1"4" = 0.09	2" = 0 2-½" :	100000	= 0.37 ½" = 0.50	4" = 0.65 6" = 1.47				
. 5.00	Z-72 ·	- 0.20 3-7	2 - 0.30	6" = 1.47				



#### Appendix C

Survey Report

#### Exhibit A-2 **Survey Report**

#### **SURVEY REPORT**

LOCATION:

CSX Brunswick Yard

DATE: 10 September 2013

SITE:

Brunswick, Maryland

SURVEYOR: C. Allen Paugh, Kci Technologies Inc. Laurel Md.

**SURVEY DATUMS:** 

Horizontal Coordinates: NAD 83/91, US Feet

Vertical Elevations: NAVD88, US Feet

**SOFTWARE:** None, #s are direct from NGS stations by gps

**SURVEY DATA:** 

Point #	Northing	Easting	Measuring Point Elevation	Grd EL / T/ Lid	Location ID	Notes
9353	599429.2	1134997.5		229.7	SB01-01	8-19-13
9355	599407.7	1135040.7		230.1	SB01-02	8-19-13
9354	599427.0	1135040.3		230.1	SB01-03	8-19-13
9356	599398.3	1135091.0		229.5	SB01-04	PZ01-04
9359	599365.6	1135142.6		229.8	SB01-05	8-19-13
9357	599384.3	1135153.6		229.9	SB01-06	8-19-13
9360	599352.6	1135178.8		229.6	SB01-07	
9361	599367.0	1135187.9		229.8	SB01-08	
9362	599332.9	1135241.4		229.5	SB01-09	

## Exhibit A-2 Survey Report

	SB01-10	229.4	1135281.1	599323.0	9363
	SB02-01	229.5	1135539.2	599194.2	9366
	SB02-02	230.0	1135549.3	599210.4	9367
	SB02-03	230.6	1135585.9	599189.3	9368
	SB02-04	229.8	1135577.8	599171.8	9370
	SB02-05	230.4	1135616.8	599165.2	9372
	SB02-06	230.0	1135609.3	599152.9	9371
	SB02-07	230.2	1135641.7	599152.7	9373
PZ	SB02-08	229.9	1135633.4	599141.6	9374
	SB02-09	230.0	1135668.8	599133.1	9375
	SB02-10	229.8	1135659.1	599122.2	9376
	SB03-01	229.7	1136014.7	598943.3	9390
	SB03-02	229.4	1136003.9	598928.8	9389
	SB03-03	229.9	1136032.3	598931.7	9386
	SB03-04	229.6	1136023.5	598917.2	9388
	SB03-05	230.3	1136038.8	598906.3	9387
	SB03-06	231.1	1136054.9	598913.6	9384
	SB03-07	232.3	1136076.5	598913.6	9382
	SB03-08	230.6	1136073.1	598893.6	9383
	SB03-09	231.1	1136101.2	598903.2	9381
	SB03-10	230.8	1136093.9	598881.7	9380

## Exhibit A-2 Survey Report

9395	599155.1	1135665.9	234.15	234.62	WELL NPS	MW18
9397	599269.2	1135472.5	240.88	237.3 / 240.94	WELL	MW16
9400	599095.1	1135801.5	242.65	240.1 / 243.02	WELL	MW12

## NOTE:

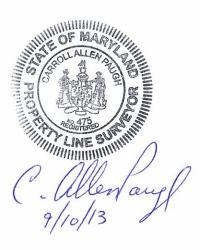
(1) The following NGS control points have been used for this survey:

JV3191 83/91 N 39-19-08 83/91 W 76-37-36 1988 Elev. 265.49

GAIT 83/91 N 534457.86 83/91 E 1249651.23 1988 Elev. 461.7

HAG2 83/91 N 687962.26 83/91 E 1110970.52 1988 Elev. N/A

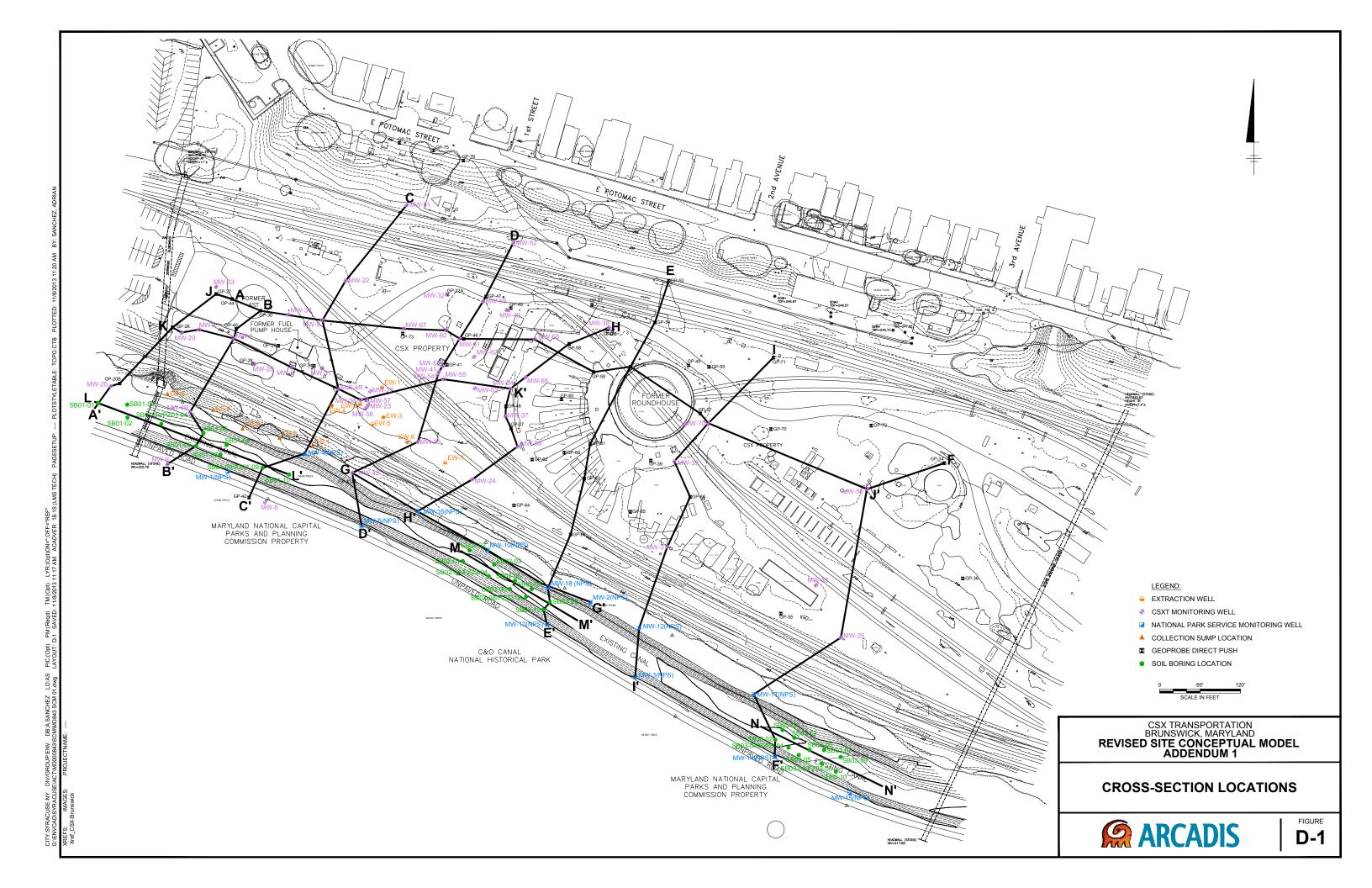
- (2) Well lids are approximately level with ground.
- (3) Measured point is top of well pipe under lid.
- (4) Elevations at soil boring points are ground elevations.

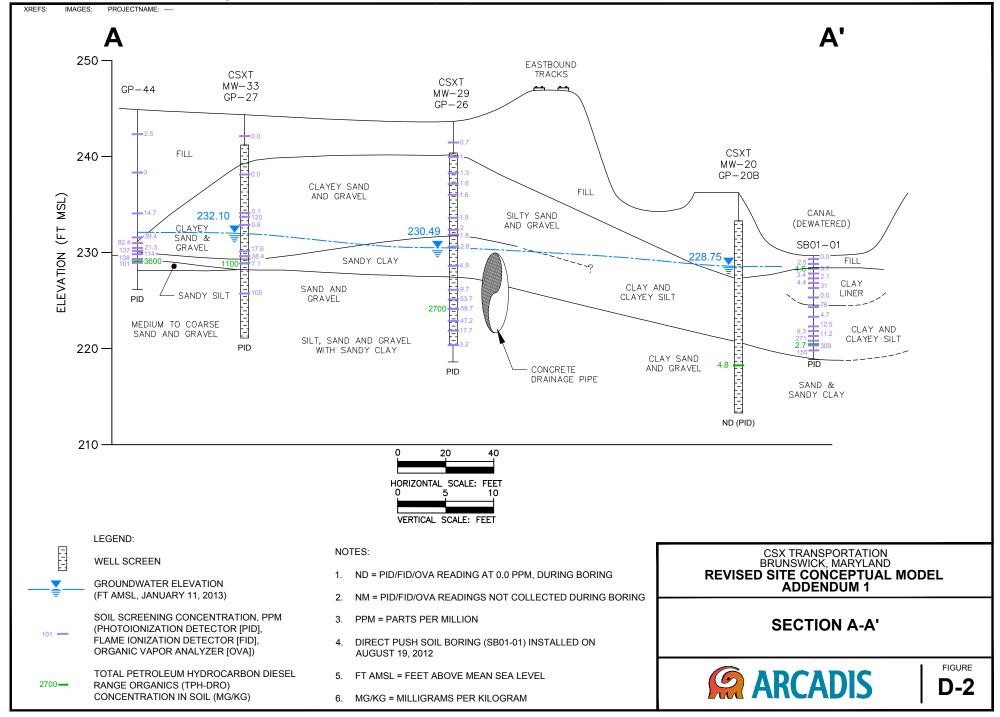


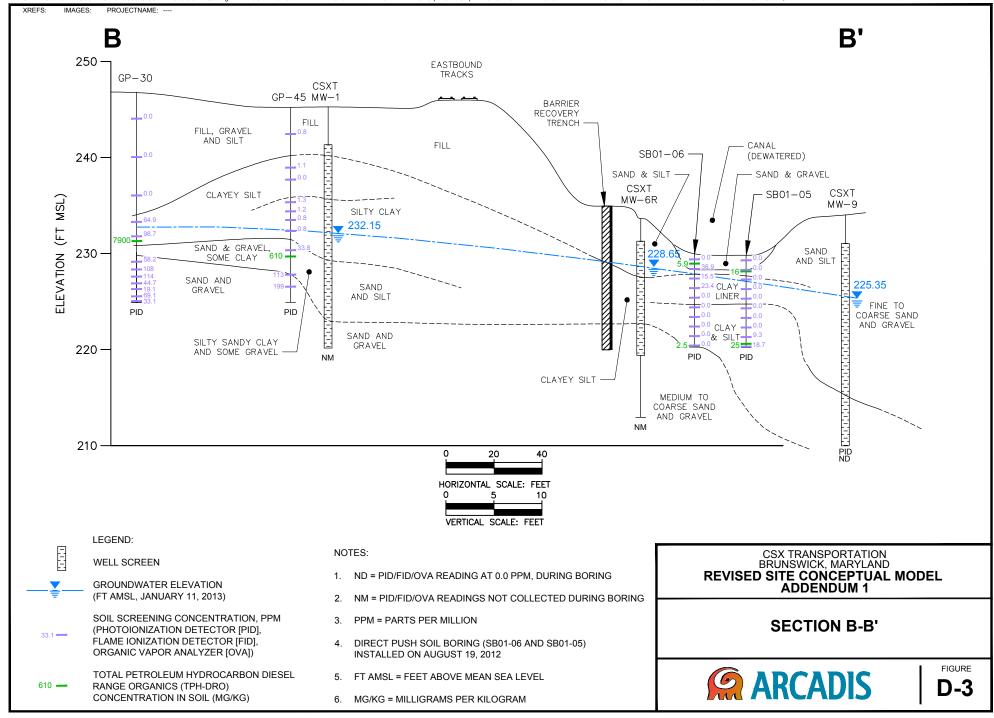


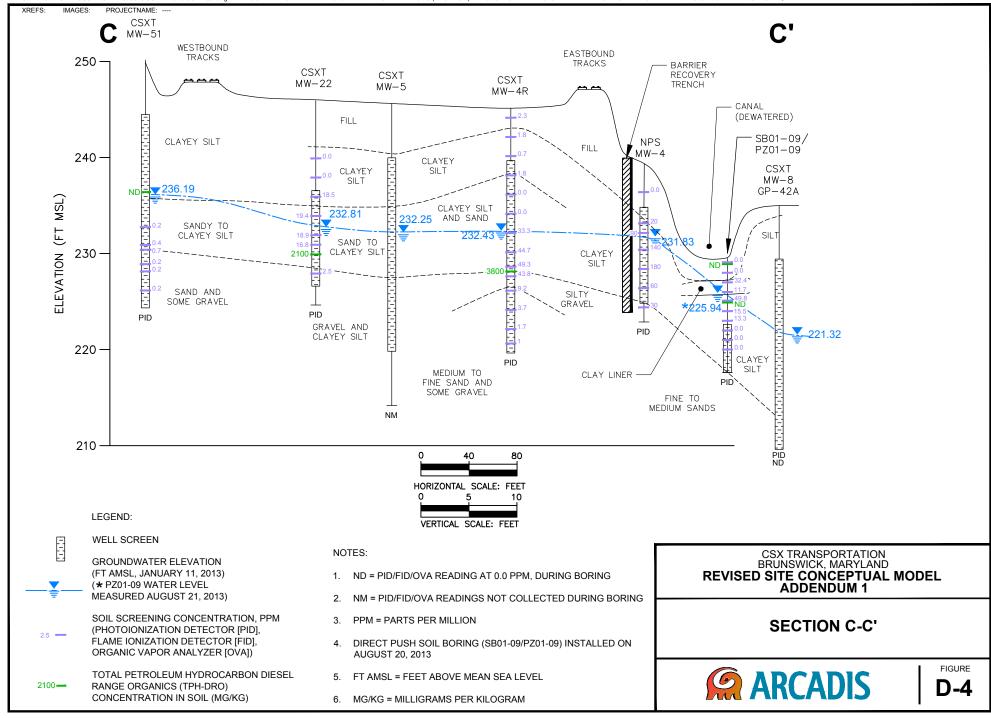
# Appendix D

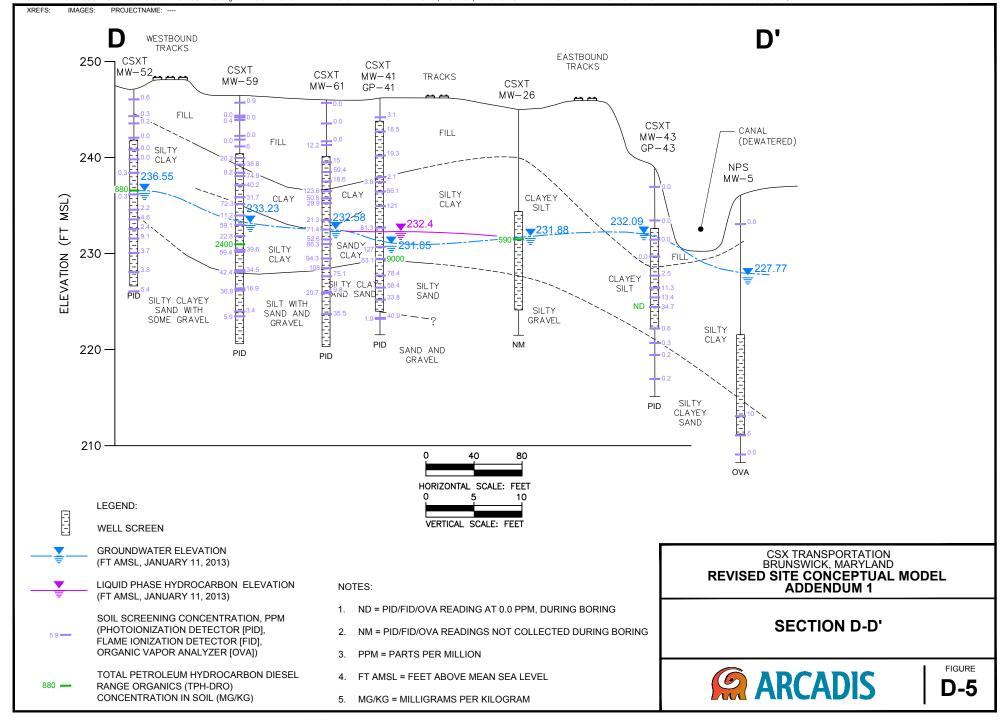
Geologic Cross Sections

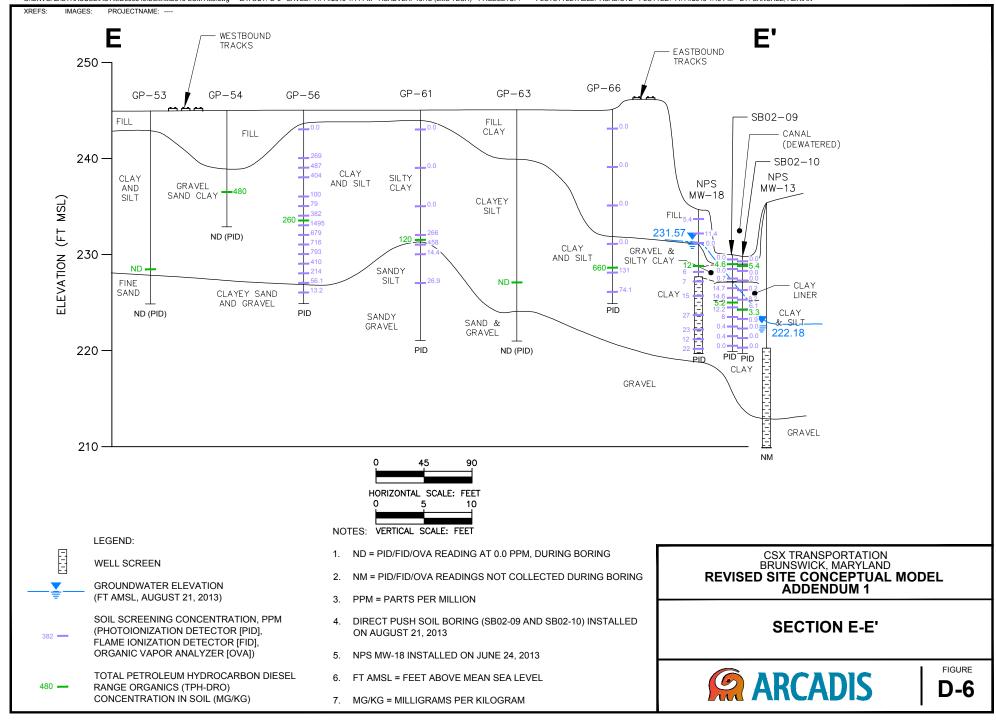


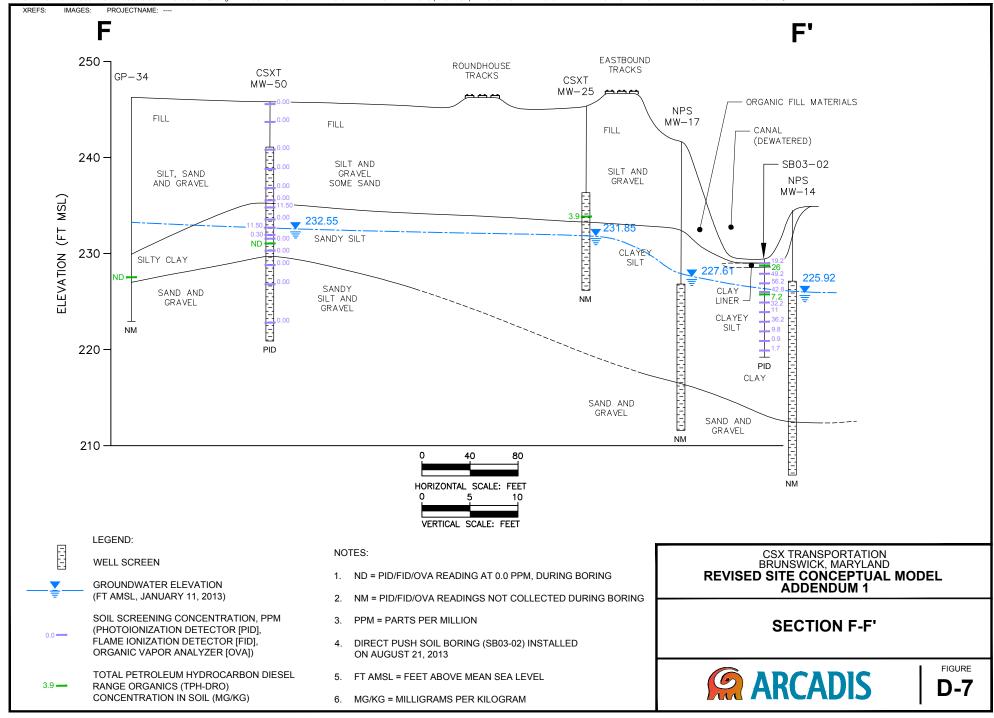


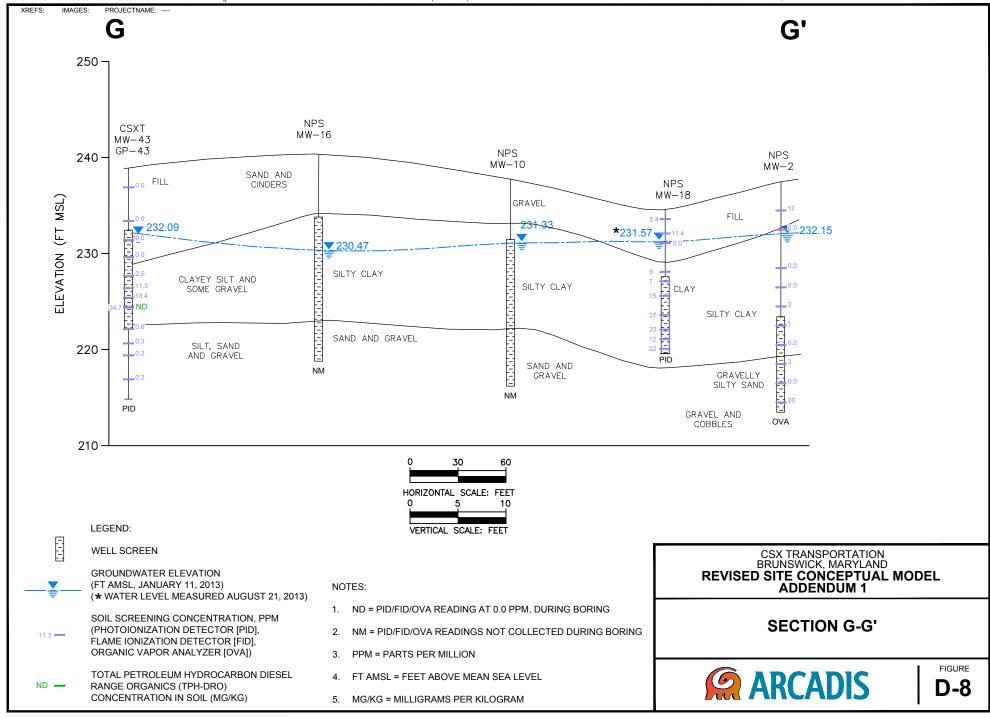


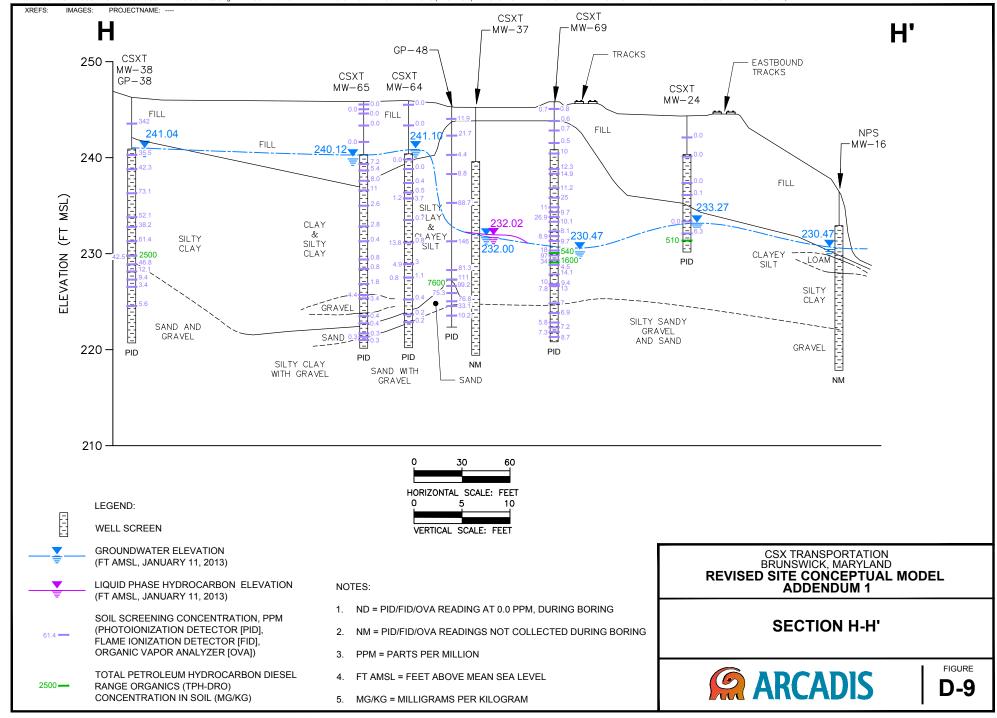


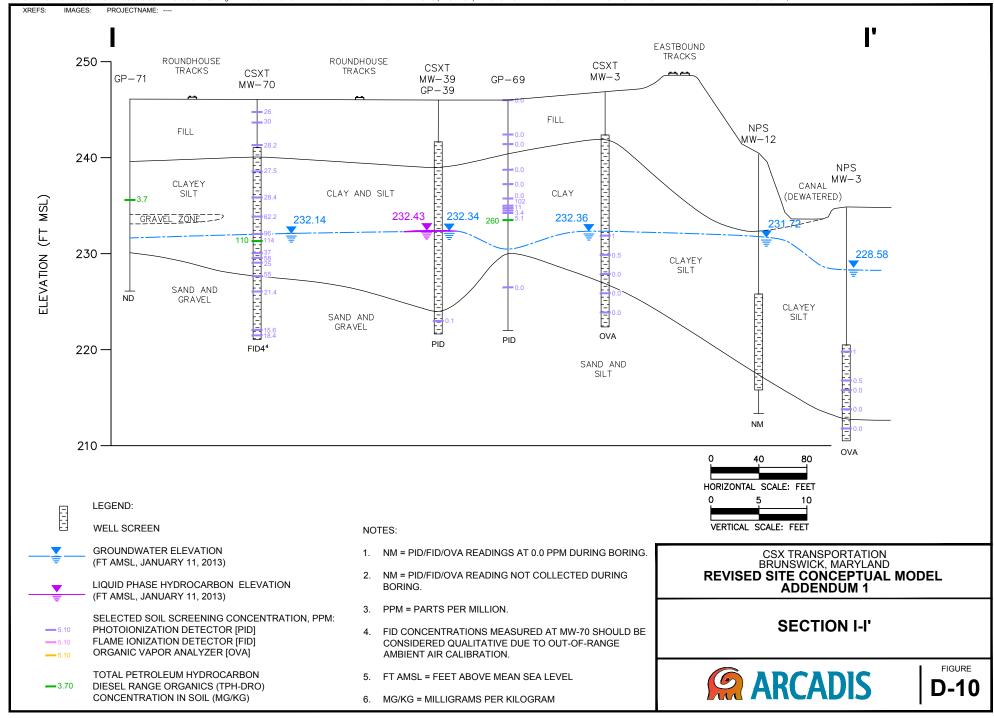


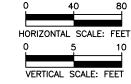


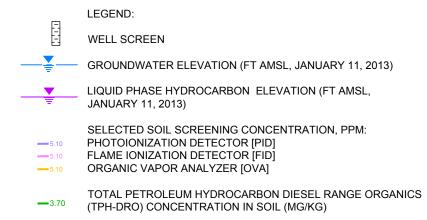












#### NOTES:

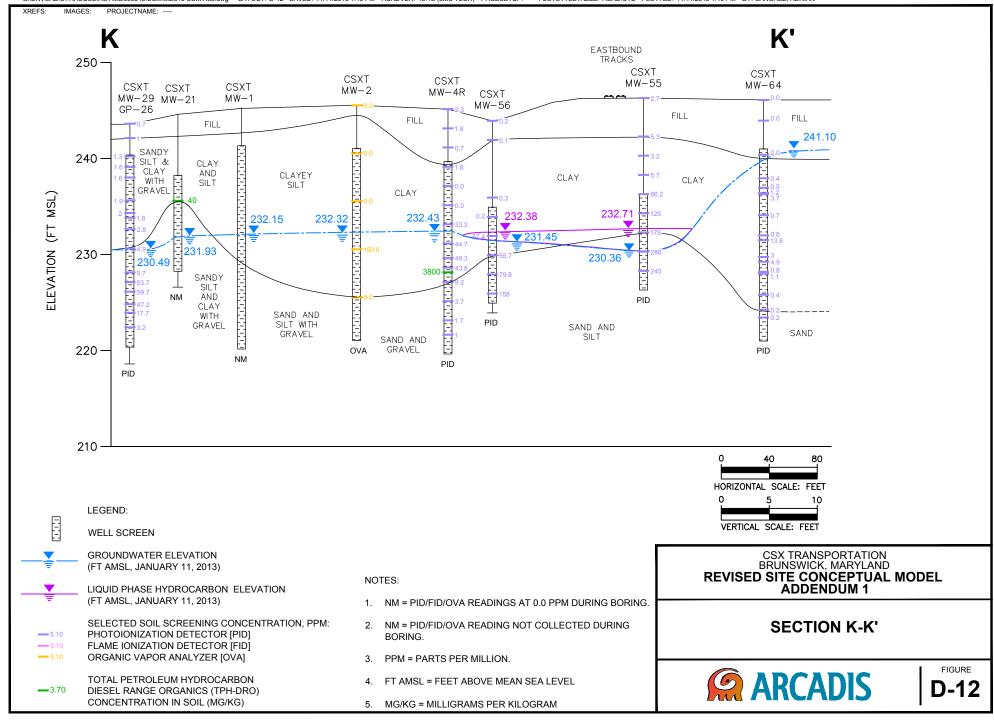
- 1. NM = PID/FID/OVA READINGS AT 0.0 PPM DURING BORING.
- 2. NM = PID/FID/OVA READING NOT COLLECTED DURING BORING.
- 3. PPM = PARTS PER MILLION.
- 4. FID CONCENTRATIONS MEASURED AT MW-68 SHOULD BE CONSIDERED QUALITATIVE DUE TO OUT-OF-RANGE AMBIENT AIR CALIBRATION.
- 5. FT AMSL = FEET ABOVE MEAN SEA LEVEL
- 6. MG/KG = MILLIGRAMS PER KILOGRAM

CSX TRANSPORTATION
BRUNSWICK, MARYLAND
REVISED SITE CONCEPTUAL MODEL
ADDENDUM 1

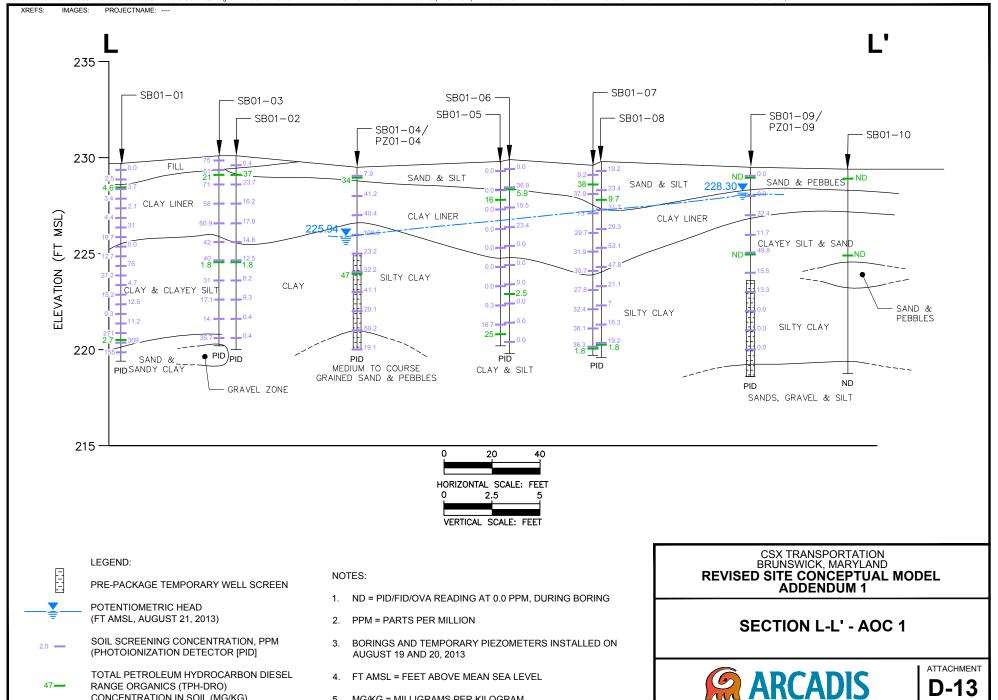
**SECTION J-J'** 



D-11

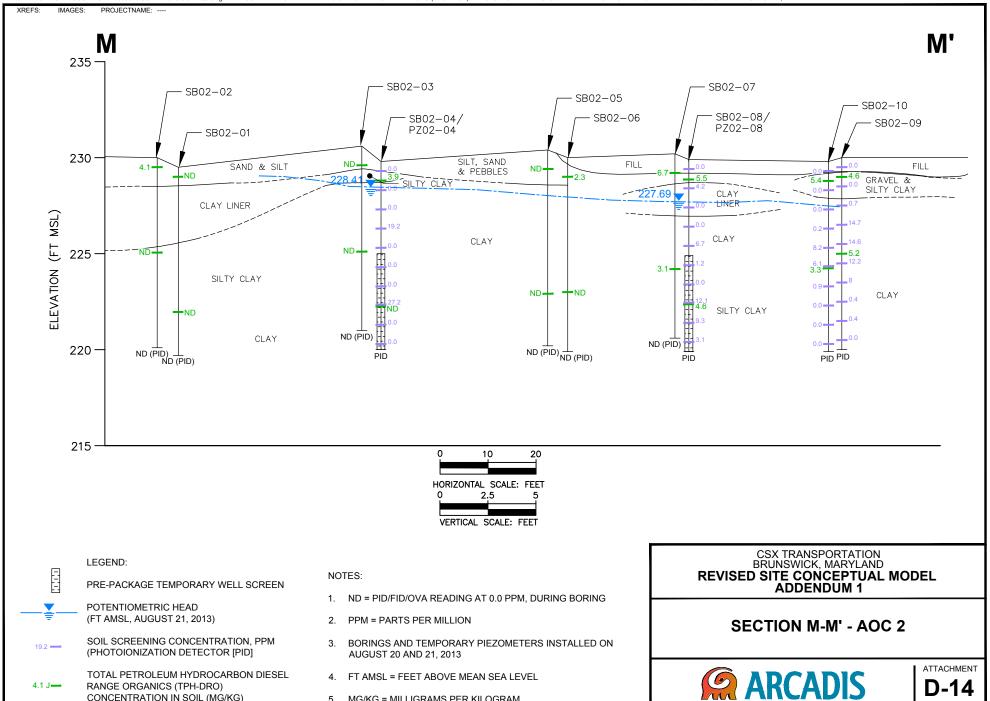


RANGE ORGANICS (TPH-DRO) CONCENTRATION IN SOIL (MG/KG)



5. MG/KG = MILLIGRAMS PER KILOGRAM

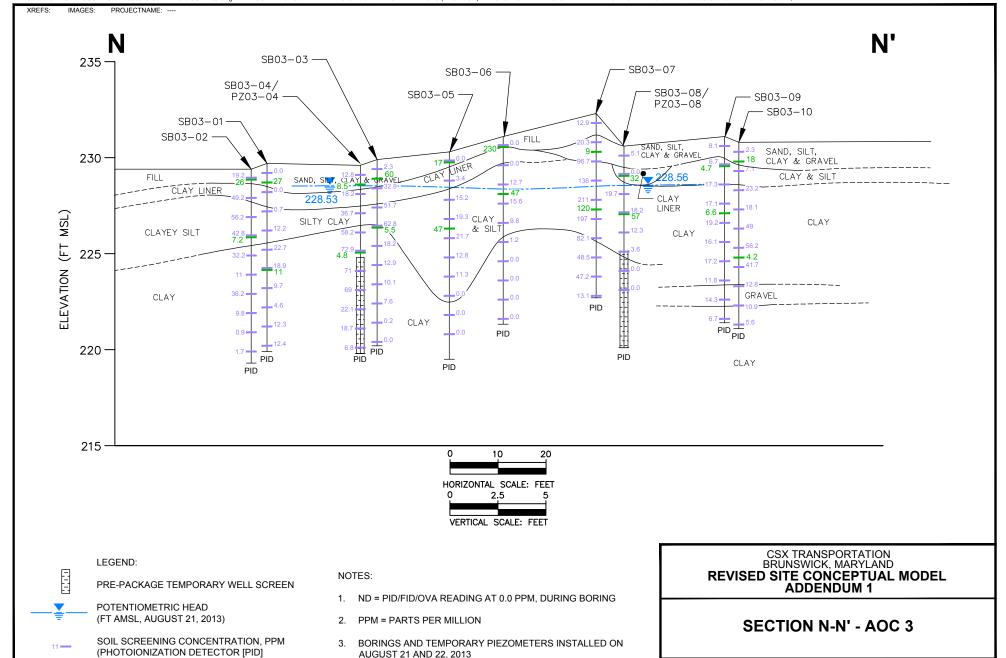
RANGE ORGANICS (TPH-DRO) CONCENTRATION IN SOIL (MG/KG)



5. MG/KG = MILLIGRAMS PER KILOGRAM

TOTAL PETROLEUM HYDROCARBON DIESEL

RANGE ORGANICS (TPH-DRO) CONCENTRATION IN SOIL (MG/KG)



4. FT AMSL = FEET ABOVE MEAN SEA LEVEL

5. MG/KG = MILLIGRAMS PER KILOGRAM

**ARCADIS** 

ATTACHMENT



# Appendix E

Laboratory Data Packages



THE LEADER IN ENVIRONMENTAL TESTING

# **ANALYTICAL REPORT**

TestAmerica Laboratories, Inc.

TestAmerica Savannah 5102 LaRoche Avenue Savannah, GA 31404 Tel: (912)354-7858

TestAmerica Job ID: 680-93423-1

Client Project/Site: CSX C&O Canal Brunswick, MD

For:

ARCADIS U.S., Inc. 1114 Benfield Blvd. Suite A Millersville, Maryland 21108

Attn: Ms. Megan Kellner

Sidal Hovey

Authorized for release by: 9/13/2013 12:03:43 PM

Lisa Harvey, Project Manager II lisa.harvey@testamericainc.com

·····LINKS ······

Review your project results through

Total Access

**Have a Question?** 



Visit us at: www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

#### **Case Narrative**

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93423-1

Job ID: 680-93423-1

Laboratory: TestAmerica Savannah

Narrative

# CASE NARRATIVE Client: ARCADIS U.S., Inc. Project: CSX C&O Canal Brunswick, MD

Report Number: 680-93423-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

#### RECEIPT

The samples were received on 8/21/2013 10:07 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.6° C.

The tare weights were covered by the client ID labels on 34 of 36 terra core vials. Tare weights are needed to be able to calculate initial soil volume collected in the field.

The footage on the COC for the VOCs and GRO is a shorter range than what was indicated for the SVOCs and DRO. For consitency in reporting moisture values, the specific soil boring was logged in for all tests based on the sample ID and date/time sampled, and were subsequently logged in so as to report at the largest of the depth range.

#### **VOLATILE ORGANIC COMPOUNDS (GC-MS)**

Samples SB01-01 (1.0-2.0) (680-93423-1), SB01-01 (9.0-10.0) (680-93423-2), SB01-03 (0.5-1.5) (680-93423-3), SB01-03 (5.0-6.0) (680-93423-4), SB01-02 (0.5-1.5) (680-93423-5), SB01-02 (5.0-6.0) (680-93423-6), SB01-04 (0.0-1.0) (680-93423-7), SB01-04 (5.0-6.0) (680-93423-8), SB01-06 (1.0-2.0) (680-93423-9), SB01-06 (6.5-7.5) (680-93423-10), SB01-05 (8.5-9.5) (680-93423-11) and SB01-05 (1.5-2.5) (680-93423-12) were analyzed for Volatile Organic Compounds (GC-MS) in accordance with EPA SW-846 Method 8260B.

Method(s) 8260B: The %RPD of the laboratory control sample (LCS) and laboratory control standard duplicate (LCSD) for analytical batch 190345 recovered outside control limits for the following analyte: Bromomethane.

#### **VOLATILE ORGANIC COMPOUNDS (GC-MS)**

Sample Trip Blank (680-93423-13) was analyzed for Volatile Organic Compounds (GC-MS) in accordance with EPA SW-846 Method 8260B.

### SEMIVOLATILE ORGANIC COMPOUNDS (SOLID)

Samples SB01-01 (1.0-2.0) (680-93423-1), SB01-01 (9.0-10.0) (680-93423-2), SB01-03 (0.5-1.5) (680-93423-3), SB01-03 (5.0-6.0) (680-93423-4), SB01-02 (0.5-1.5) (680-93423-5), SB01-02 (5.0-6.0) (680-93423-6), SB01-04 (0.0-1.0) (680-93423-7), SB01-04 (5.0-6.0) (680-93423-8), SB01-06 (1.0-2.0) (680-93423-9), SB01-06 (6.5-7.5) (680-93423-10), SB01-05 (8.5-9.5) (680-93423-11) and SB01-05 (1.5-2.5) (680-93423-12) were analyzed for Semivolatile Organic Compounds (Solid) in accordance with EPA SW-846 Method 8270D.

Method(s) 8270D: The initial calibration curve analyzed in batch 291781 was outside method criteria for the following analyte(s): benzoic acid. As indicated in the reference method, sample analysis may proceed; however, any detection or non-detection for the affected analyte(s) is considered an estimated concentration.

Method(s) 8270D: The following sample(s) contained one acid and/or one base surrogate outside acceptance limits: SB01-04 (0.0-1.0) (680-93423-7), SB01-05 (1.5-2.5) (680-93423-12). The laboratory's SOP allows one acid surrogate and/or one base surrogate to be

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TestAmerica Job ID: 680-93423-1

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

## Job ID: 680-93423-1 (Continued)

#### Laboratory: TestAmerica Savannah (Continued)

outside acceptance limits; therefore, re-extraction/re-analysis was not performed. These results have been reported and qualified.

Method(s) 8270D: The following analytes have been identified, in the reference method and/or via historical data, to be poor and/or erratic performers: Famphur, 1,4-Napthaquinone, Methane sulfonate, Benzaldehyde, 1-naphthylamine, 2-naphthylamine, p-Dimethylamino azobenzene, p-phenylenediamine, a,a-dimethylphenethylamine, Methapyriline, 2-picoline (2-methylpyridine), 3,3'-dimethylbenzidine, 3,3'-dichlorobenzidine, Benzaldehyde, Benzoic acid, Dinoseb, Hexachlorophene, Hexachlorocyclopentadiene, o,o,o-triethylphosphoro-thioate. These analytes may have a %D >60% if the average %D of all the analytes in the continuing calibration verification (CCV) is 30%. These analytes may have a %D>60% if the average %D of all the analytes in the initial calibration verification (ICV) is 30%.

Method(s) 8270D: The continuing calibration verification (CCV) analyzed in batch 291613 was outside the method criteria for the following analyte(s): 2,2'oxybis[1-chloropropane], 2-Methylphenol, 3&4 Methylphenol, Anthracene, Benzidine, 1,2 Dichlorbenzene, Benzyl alcohol, Butyl benzyl phthalate, Carbazole, Di-n-butyl phthalate, Fluoranthene, Hexachloroethane, N-Nitrosodimethylamine, N-Nitrosodi-n-propylamine, phenol, pyrene, pyridine and Terphenyl-d14. A CCV standard at or below the reporting limit (RL) was analyzed with the affected samples and found to be acceptable. As indicated in the reference method, sample analysis may proceed; however, any detection for the affected analyte(s) is considered estimated.

Method(s) 8270D: Surrogate recovery for the following sample(s) was outside control limits: SB01-01 (1.0-2.0) (680-93423-1). Re-extraction and/or re-analysis was performed with concurring results. The original analysis has been reported.

Method(s) 8270D: Surrogate recovery for the following sample(s) was outside control limits: SB01-03 (0.5-1.5) (680-93423-3). Re-extraction and/or re-analysis was performed with concurring results. The original analysis has been reported.

Method(s) 8270D: Surrogate recovery for the following sample(s) was outside control limits: SB01-05 (8.5-9.5) (680-93423-11). Re-extraction and/or re-analysis was performed with concurring results. The original analysis has been reported.

Method(s) 8270D: The initial calibration curve analyzed in batch 291440 was outside method criteria for the following analyte(s): Acetophenone and Butyl benzyl phthalate. As indicated in the reference method, sample analysis may proceed; however, any detection or non-detection for the affected analyte(s) is considered an estimated concentration.

Method(s) 8270D: The initial calibration verification (ICV) analyzed in batch 291440 was outside method criteria for the following analyte(s): 1,2,4,5 Tetrachlorobenzene and Di-n-butyl phthalate. As indicated in the reference method, sample analysis may proceed; however, any detection for the affected analyte(s) is considered estimated.

## **GASOLINE RANGE ORGANICS (GRO)**

Samples SB01-01 (1.0-2.0) (680-93423-1), SB01-01 (9.0-10.0) (680-93423-2), SB01-03 (0.5-1.5) (680-93423-3), SB01-03 (5.0-6.0) (680-93423-4), SB01-02 (0.5-1.5) (680-93423-5), SB01-02 (5.0-6.0) (680-93423-6), SB01-04 (0.0-1.0) (680-93423-7), SB01-04 (5.0-6.0) (680-93423-8), SB01-06 (1.0-2.0) (680-93423-9), SB01-06 (6.5-7.5) (680-93423-10), SB01-05 (8.5-9.5) (680-93423-11) and SB01-05 (1.5-2.5) (680-93423-12) were analyzed for gasoline range organics (GRO) in accordance with EPA SW-846 Method 8015B.

Due to the nature of this analysis which involves a total area sum over the entire retention time range, manual integrations are routinely performed for target analytes and surrogates to ensure consistent integration.

Method(s) 8015C: Internal standard (ISTD) response for the following sample were outside control limits: SB01-02 (0.5-1.5) (680-93423-5), SB01-02 (5.0-6.0) (680-93423-6), SB01-04 (0.0-1.0) (680-93423-7). The samples were re-analyzed with concurring results. The original set of data has been reported.

Method(s) 8015C: Internal standard (ISTD) response for the following samples were outside control limits: SB01-05 (8.5-9.5) (680-93423-11), SB01-06 (6.5-7.5) (680-93423-10). The samples were re-analyzed with concurring results. Only the re-analysis has been reported due to probable contamination in the initial analyses from a earlier sample in the analytical clock.

Method(s) 8015C: Surrogate recovery for the following sample was outside control limits: SB01-04 (0.0-1.0) (680-93423-7). Re-analysis was performed with concurring results. The original analysis has been reported.

Method(s) 8015C: Surrogate recovery for the following sample(s) was outside control limits: SB01-04 (5.0-6.0) (680-93423-8). Evidence of

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#### **Case Narrative**

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93423-1

#### Job ID: 680-93423-1 (Continued)

#### Laboratory: TestAmerica Savannah (Continued)

matrix interference is present t hroughout the project; therefore, re-analysis was not performed. Data have been reported.

#### **DIESEL RANGE ORGANICS (DRO)**

Samples SB01-01 (1.0-2.0) (680-93423-1), SB01-01 (9.0-10.0) (680-93423-2), SB01-03 (0.5-1.5) (680-93423-3), SB01-03 (5.0-6.0) (680-93423-4), SB01-02 (0.5-1.5) (680-93423-5), SB01-02 (5.0-6.0) (680-93423-6), SB01-04 (0.0-1.0) (680-93423-7), SB01-04 (5.0-6.0) (680-93423-8), SB01-06 (1.0-2.0) (680-93423-9), SB01-06 (6.5-7.5) (680-93423-10), SB01-05 (8.5-9.5) (680-93423-11) and SB01-05 (1.5-2.5) (680-93423-12) were analyzed for Diesel Range Organics (DRO) in accordance with EPA SW-846 Method 8015C.

Due to the nature of this analysis which involves a total area sum over the entire retention time range, manual integrations are routinely performed for target analytes and surrogates to ensure consistent integration.

Method(s) 8015C: The matrix spike (MS) recoveries for batch 102377 were outside control limits. The matrix spike / matrix spike duplicate (MS/MSD) precision for batch 102377 was outside control limits.

ORO C24-C40 was detected in method blank MB 490-102377/1-A at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged.

ORO C24-C40 was detected in method blank MB 490-103126/1-A at a level exceeding the reporting limit. If the associated sample reported a result above the MDL and/or RL, the result has been flagged.

Diesel Range Organics [C10-C28] was detected in method blank MB 490-103126/1-A at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged.

ORO C24-C40 was detected in method blank MB 490-103975/1-A at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. Refer to the QC report for details.

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# **Sample Summary**

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93423-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
680-93423-1	SB01-01 (1.0-2.0)	Solid	08/19/13 12:30	08/21/13 10:07
680-93423-2	SB01-01 (9.0-10.0)	Solid	08/19/13 12:35	08/21/13 10:07
680-93423-3	SB01-03 (0.5-1.5)	Solid	08/19/13 14:00	08/21/13 10:07
680-93423-4	SB01-03 (5.0-6.0)	Solid	08/19/13 14:10	08/21/13 10:07
680-93423-5	SB01-02 (0.5-1.5)	Solid	08/19/13 14:25	08/21/13 10:07
680-93423-6	SB01-02 (5.0-6.0)	Solid	08/19/13 14:30	08/21/13 10:07
680-93423-7	SB01-04 (0.0-1.0)	Solid	08/19/13 15:30	08/21/13 10:07
680-93423-8	SB01-04 (5.0-6.0)	Solid	08/19/13 15:35	08/21/13 10:07
680-93423-9	SB01-06 (1.0-2.0)	Solid	08/19/13 16:15	08/21/13 10:07
680-93423-10	SB01-06 (6.5-7.5)	Solid	08/19/13 16:20	08/21/13 10:07
680-93423-11	SB01-05 (8.5-9.5)	Solid	08/19/13 16:50	08/21/13 10:07
680-93423-12	SB01-05 (1.5-2.5)	Solid	08/19/13 16:45	08/21/13 10:07
680-93423-13	Trip Blank	Water	08/19/13 00:00	08/21/13 10:07

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## **Method Summary**

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93423-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL PEN
8270D	Semivolatile Organic Compounds (GC/MS)	SW846	TAL SAV
8015C	Nonhalogenated Organics using GC/FID -Modified (Gasoline Range Organics)	SW846	TAL SAV
8015C	Nonhalogenated Organics using GC/FID -Modified (Diesel Range Organics)	SW846	TAL NSH

#### Protocol References:

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

#### Laboratory References:

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

TAL PEN = TestAmerica Pensacola, 3355 McLemore Drive, Pensacola, FL 32514, TEL (850)474-1001

TAL SAV = TestAmerica Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

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## **Definitions/Glossary**

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

Surrogate is outside control limits

TestAmerica Job ID: 680-93423-1

## **Qualifiers**

## **GC/MS VOA**

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.
*	RPD of the LCS and LCSD exceeds the control limits

#### **GC/MS Semi VOA**

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.
X	Surrogate is outside control limits
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
GC VOA	
Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

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

## Χ **GC Semi VOA**

J

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
В	Compound was found in the blank and sample.
F	MS/MSD Recovery and/or RPD exceeds the control limits
U	Indicates the analyte was analyzed for but not detected.

## **Glossary**

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

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93423-1

Lab Sample ID: 680-93423-1

Percent Solids: 73.9

Client Sample ID: SB01-01 (1.0-2.0) Date Collected: 08/19/13 12:30 Matrix: Solid Date Received: 08/21/13 10:07

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	30	U –	30	8.6	ug/Kg	<del></del>	08/22/13 13:27	08/30/13 17:00	1
Benzene	5.9	U	5.9	0.58	ug/Kg	₩	08/22/13 13:27	08/30/13 17:00	1
Bromodichloromethane	5.9	U	5.9	0.99	ug/Kg	₩	08/22/13 13:27	08/30/13 17:00	1
Bromoform	5.9	U	5.9	0.74	ug/Kg		08/22/13 13:27	08/30/13 17:00	1
Bromomethane	5.9	U *	5.9	1.7	ug/Kg	₩	08/22/13 13:27	08/30/13 17:00	1
Carbon disulfide	5.9	U	5.9	1.4	ug/Kg	₩	08/22/13 13:27	08/30/13 17:00	1
Carbon tetrachloride	5.9	U	5.9	2.0	ug/Kg		08/22/13 13:27	08/30/13 17:00	1
Chlorobenzene	5.9	U	5.9	0.61	ug/Kg	₽	08/22/13 13:27	08/30/13 17:00	1
Chloroethane	5.9	U	5.9	2.2	ug/Kg	₽	08/22/13 13:27	08/30/13 17:00	1
Chloroform	5.9	U	5.9	0.70	ug/Kg	ф.	08/22/13 13:27	08/30/13 17:00	1
Chloromethane	5.9	U	5.9	1.2	ug/Kg	₩	08/22/13 13:27	08/30/13 17:00	1
cis-1,2-Dichloroethene	5.9	U	5.9	0.90	ug/Kg	₩	08/22/13 13:27	08/30/13 17:00	1
cis-1,3-Dichloropropene	5.9	U	5.9	1.4	ug/Kg		08/22/13 13:27	08/30/13 17:00	1
Cyclohexane	5.9	U	5.9	1.1	ug/Kg	₩	08/22/13 13:27	08/30/13 17:00	1
Dibromochloromethane	5.9	U	5.9	1.0	ug/Kg	₩	08/22/13 13:27	08/30/13 17:00	1
1,2-Dibromo-3-Chloropropane	5.9	U	5.9	3.9	ug/Kg		08/22/13 13:27	08/30/13 17:00	1
1,2-Dichlorobenzene	5.9		5.9	0.84	ug/Kg	₽	08/22/13 13:27	08/30/13 17:00	1
1,3-Dichlorobenzene	5.9		5.9	1.1	ug/Kg	₽	08/22/13 13:27	08/30/13 17:00	1
1,4-Dichlorobenzene	5.9		5.9	0.97	ug/Kg		08/22/13 13:27	08/30/13 17:00	1
Dichlorodifluoromethane	5.9		5.9	1.5	ug/Kg	₩	08/22/13 13:27	08/30/13 17:00	1
1,1-Dichloroethane	5.9		5.9	0.98	ug/Kg	₩	08/22/13 13:27	08/30/13 17:00	1
1,2-Dichloroethane	5.9		5.9	0.97			08/22/13 13:27	08/30/13 17:00	· · · · · · · · · · · 1
1,1-Dichloroethene	5.9		5.9	0.89	ug/Kg	₩	08/22/13 13:27	08/30/13 17:00	1
1,2-Dichloropropane	5.9		5.9	0.87	ug/Kg	₩	08/22/13 13:27	08/30/13 17:00	1
Diisopropyl ether	5.9		5.9	0.65	ug/Kg		08/22/13 13:27	08/30/13 17:00	· · · · · · · · · · · 1
Ethylbenzene	5.9		5.9		ug/Kg	₩	08/22/13 13:27	08/30/13 17:00	1
Ethylene Dibromide	5.9		5.9	0.72		₩	08/22/13 13:27	08/30/13 17:00	1
Ethyl tert-butyl ether	5.9		5.9				08/22/13 13:27	08/30/13 17:00	· · · · · · · · · · · · · · · · · · ·
2-Hexanone	3.9	U	30	5.9	ug/Kg ug/Kg		08/22/13 13:27	08/30/13 17:00	1
Isopropylbenzene	5.9		5.9	0.80	ug/Kg ug/Kg		08/22/13 13:27	08/30/13 17:00	1
	5.9		5.9	5.4			08/22/13 13:27	08/30/13 17:00	· · · · · · · · · · · · · · · · · · ·
Methyl acetate Methylcyclohexane	5.9		5.9	1.0	0 0		08/22/13 13:27	08/30/13 17:00	1
• •					ug/Kg				
Methylene Chloride	18		18		ug/Kg		08/22/13 13:27 08/22/13 13:27	08/30/13 17:00	
Methyl Ethyl Ketone	30 30		30	4.8	ug/Kg			08/30/13 17:00	1
methyl isobutyl ketone			30		ug/Kg	₩	08/22/13 13:27	08/30/13 17:00	1
Methyl tert-butyl ether	5.9		5.9		ug/Kg	<del>-</del>	08/22/13 13:27	08/30/13 17:00	1
Naphthalene	5.9		5.9		ug/Kg	**	08/22/13 13:27	08/30/13 17:00	1
Styrene	5.9		5.9		ug/Kg	₩ ₩	08/22/13 13:27	08/30/13 17:00	1
Tert-amyl methyl ether	5.9		5.9		ug/Kg	T	08/22/13 13:27	08/30/13 17:00	
tert-Butyl alcohol	5.9		5.9		ug/Kg		08/22/13 13:27	08/30/13 17:00	1
1,1,2,2-Tetrachloroethane	5.9		5.9		ug/Kg		08/22/13 13:27	08/30/13 17:00	1
Tetrachloroethene	5.9		5.9		ug/Kg	J	08/22/13 13:27	08/30/13 17:00	1
Toluene	5.9		5.9		ug/Kg		08/22/13 13:27	08/30/13 17:00	1
trans-1,2-Dichloroethene	5.9		5.9		ug/Kg	₩.	08/22/13 13:27	08/30/13 17:00	1
trans-1,3-Dichloropropene	5.9		5.9		ug/Kg		08/22/13 13:27	08/30/13 17:00	1
1,2,4-Trichlorobenzene	5.9		5.9		ug/Kg	₩	08/22/13 13:27	08/30/13 17:00	1
1,1,1-Trichloroethane	5.9		5.9		ug/Kg	₩	08/22/13 13:27	08/30/13 17:00	1
1,1,2-Trichloroethane	5.9	U	5.9	1.1	ug/Kg		08/22/13 13:27	08/30/13 17:00	1
Trichloroethene	5.9	U	5.9	0.57	ug/Kg	₽	08/22/13 13:27	08/30/13 17:00	1

TestAmerica Savannah

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9/13/2013

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

Lab Sample ID: 680-93423-1

TestAmerica Job ID: 680-93423-1

Matrix: Solid Percent Solids: 73.9

Client Sample ID: SB01-01 (1.0-2.0)

Date Collected: 08/19/13 12:30 Date Received: 08/21/13 10:07

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichlorofluoromethane	5.9	U	5.9	1.1	ug/Kg	₩	08/22/13 13:27	08/30/13 17:00	1
1,1,2-Trichloro-1,2,2-trifluoroethane	5.9	U	5.9	2.4	ug/Kg	₽	08/22/13 13:27	08/30/13 17:00	1
Vinyl chloride	5.9	U	5.9	1.1	ug/Kg	₽	08/22/13 13:27	08/30/13 17:00	1
Xylenes, Total	12	U	12	2.2	ug/Kg	₽	08/22/13 13:27	08/30/13 17:00	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	96		72 - 122				08/22/13 13:27	08/30/13 17:00	1
Dibromofluoromethane	104		79 - 123				08/22/13 13:27	08/30/13 17:00	1
Toluene-d8 (Surr)	96		80 <sub>-</sub> 120				08/22/13 13:27	08/30/13 17:00	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzaldehyde	440	U	440	78	ug/Kg	*	08/25/13 12:13	08/31/13 21:01	1
Phenol	53	J	440	46	ug/Kg	₩	08/25/13 12:13	08/31/13 21:01	1
Bis(2-chloroethyl)ether	440	U	440	60	ug/Kg	₩	08/25/13 12:13	08/31/13 21:01	1
2-Chlorophenol	440	U	440	54	ug/Kg	₩	08/25/13 12:13	08/31/13 21:01	1
2-Methylphenol	440	U	440	36	ug/Kg	₩	08/25/13 12:13	08/31/13 21:01	1
bis (2-chloroisopropyl) ether	440	U	440	40	ug/Kg	₩	08/25/13 12:13	08/31/13 21:01	1
Acetophenone	440	U	440	38	ug/Kg	₩	08/25/13 12:13	08/31/13 21:01	1
3 & 4 Methylphenol	440	U	440	58	ug/Kg	₩	08/25/13 12:13	08/31/13 21:01	1
N-Nitrosodi-n-propylamine	440	U	440	43	ug/Kg	₩	08/25/13 12:13	08/31/13 21:01	1
Hexachloroethane	440	U	440	38	ug/Kg	*	08/25/13 12:13	08/31/13 21:01	1
Nitrobenzene	440	U	440	35	ug/Kg	₽	08/25/13 12:13	08/31/13 21:01	1
Isophorone	440	U	440	44	ug/Kg	₩	08/25/13 12:13	08/31/13 21:01	1
2-Nitrophenol	440	U	440	55	ug/Kg	₽	08/25/13 12:13	08/31/13 21:01	1
2,4-Dimethylphenol	440	U	440	59	ug/Kg	₽	08/25/13 12:13	08/31/13 21:01	1
Bis(2-chloroethoxy)methane	440	U	440	52	ug/Kg	₽	08/25/13 12:13	08/31/13 21:01	1
2,4-Dichlorophenol	440	U	440	47	ug/Kg	\$	08/25/13 12:13	08/31/13 21:01	1
Naphthalene	100	J	440	40	ug/Kg	₽	08/25/13 12:13	08/31/13 21:01	1
4-Chloroaniline	890	U	890	70	ug/Kg	₩	08/25/13 12:13	08/31/13 21:01	1
Hexachlorobutadiene	440	U	440	48	ug/Kg	\$	08/25/13 12:13	08/31/13 21:01	1
Caprolactam	440	U	440	89	ug/Kg	₽	08/25/13 12:13	08/31/13 21:01	1
4-Chloro-3-methylphenol	440	U	440	47	ug/Kg	₩	08/25/13 12:13	08/31/13 21:01	1
2-Methylnaphthalene	140	J	440	51	ug/Kg	\$	08/25/13 12:13	08/31/13 21:01	1
Hexachlorocyclopentadiene	440	U	440	55	ug/Kg	₩	08/25/13 12:13	08/31/13 21:01	1
2,4,6-Trichlorophenol	440	U	440	39	ug/Kg	₽	08/25/13 12:13	08/31/13 21:01	1
2,4,5-Trichlorophenol	440	U	440	47	ug/Kg	\$	08/25/13 12:13	08/31/13 21:01	1
1,1'-Biphenyl	990	U	990	990	ug/Kg	₽	08/25/13 12:13	08/31/13 21:01	1
2-Chloronaphthalene	440	U	440	47	ug/Kg	₩	08/25/13 12:13	08/31/13 21:01	1
2-Nitroaniline	2300	U	2300	60	ug/Kg	₽	08/25/13 12:13	08/31/13 21:01	1
Dimethyl phthalate	440	U	440	46	ug/Kg	₽	08/25/13 12:13	08/31/13 21:01	1
2,6-Dinitrotoluene	440	U	440	56	ug/Kg	₽	08/25/13 12:13	08/31/13 21:01	1
Acenaphthylene	440	U	440	48	ug/Kg	\$	08/25/13 12:13	08/31/13 21:01	1
3-Nitroaniline	2300	U	2300	62	ug/Kg	₽	08/25/13 12:13	08/31/13 21:01	1
Acenaphthene	440	U	440	55	ug/Kg	₩	08/25/13 12:13	08/31/13 21:01	1
2,4-Dinitrophenol	2300	U	2300	1100	ug/Kg	₽	08/25/13 12:13	08/31/13 21:01	1
4-Nitrophenol	2300	U	2300	440	ug/Kg	₽	08/25/13 12:13	08/31/13 21:01	1
Dibenzofuran	440	U	440	44	ug/Kg	₩	08/25/13 12:13	08/31/13 21:01	1
2,4-Dinitrotoluene	440	U	440	66	ug/Kg		08/25/13 12:13	08/31/13 21:01	1
Diethyl phthalate	440	U	440		ug/Kg	₽	08/25/13 12:13	08/31/13 21:01	1

TestAmerica Savannah

Project/Site: CSX C&O Canal Brunswick, MD

Surrogate

o-Terphenyl (Surr)

Client Sample ID: SB01-01 (1.0-2.0) Lab Sample ID: 680-93423-1 Date Collected: 08/19/13 12:30 Matrix: Solid

Date Received: 08/21/13 10:07 Percent Solids: 73.9

Method: 8270D - Semivolatile Or Analyte	•	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
Fluorene	440	U	440	48	ug/Kg	— <del>-</del>	08/25/13 12:13	08/31/13 21:01	
4-Chlorophenyl phenyl ether	440		440	59	ug/Kg		08/25/13 12:13	08/31/13 21:01	
4-Nitroaniline	2300		2300	66	ug/Kg	₩	08/25/13 12:13	08/31/13 21:01	
4,6-Dinitro-2-methylphenol	2300		2300	230	ug/Kg	₩	08/25/13 12:13	08/31/13 21:01	
N-Nitrosodiphenylamine	440		440	44	ug/Kg		08/25/13 12:13	08/31/13 21:01	
4-Bromophenyl phenyl ether	440	U	440	48	ug/Kg	₽	08/25/13 12:13	08/31/13 21:01	
Hexachlorobenzene	440	U	440		ug/Kg	₩	08/25/13 12:13	08/31/13 21:01	
Atrazine	440		440	31	ug/Kg		08/25/13 12:13	08/31/13 21:01	
Pentachlorophenol	2300	U	2300	440	ug/Kg	₩	08/25/13 12:13	08/31/13 21:01	
Phenanthrene	81	J	440	36	ug/Kg	₽	08/25/13 12:13	08/31/13 21:01	
Anthracene	440		440	34	ug/Kg		08/25/13 12:13	08/31/13 21:01	
Carbazole	440	U	440	40	ug/Kg	*	08/25/13 12:13	08/31/13 21:01	
Di-n-butyl phthalate	440	U	440	40	ug/Kg		08/25/13 12:13	08/31/13 21:01	
Fluoranthene	440		440		ug/Kg ug/Kg		08/25/13 12:13	08/31/13 21:01	
Pyrene	440	U	440	36	ug/Kg ug/Kg		08/25/13 12:13	08/31/13 21:01	
Butyl benzyl phthalate	440		440	35			08/25/13 12:13	08/31/13 21:01	
3,3'-Dichlorobenzidine	890		890	38			08/25/13 12:13	08/31/13 21:01	
Benzo[a]anthracene	440		440		ug/Kg ug/Kg	₩	08/25/13 12:13	08/31/13 21:01	
• •			440	36			08/25/13 12:13	08/31/13 21:01	
Chrysene	<b>38</b> 440	J U	440	28	ug/Kg				
Bis(2-ethylhexyl) phthalate				39	ug/Kg	₩	08/25/13 12:13	08/31/13 21:01	
Di-n-octyl phthalate	440	U	440	39	ug/Kg	₩	08/25/13 12:13	08/31/13 21:01	
Benzo[b]fluoranthene	440		440	51	ug/Kg		08/25/13 12:13	08/31/13 21:01	
Benzo[k]fluoranthene	440		440	87	ug/Kg		08/25/13 12:13	08/31/13 21:01	
Benzo[a]pyrene	440	U	440	70	ug/Kg	<b>\$</b>	08/25/13 12:13	08/31/13 21:01	
Indeno[1,2,3-cd]pyrene	440		440	38	ug/Kg	<u></u> .	08/25/13 12:13	08/31/13 21:01	
Dibenz(a,h)anthracene	440		440		ug/Kg	*	08/25/13 12:13	08/31/13 21:01	
Benzo[g,h,i]perylene	440	U	440	30	ug/Kg	₩	08/25/13 12:13	08/31/13 21:01	
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fa
Nitrobenzene-d5 (Surr)	53		46 - 130				08/25/13 12:13	08/31/13 21:01	
2-Fluorobiphenyl	55	X	58 - 130				08/25/13 12:13	08/31/13 21:01	
Terphenyl-d14 (Surr)	50	X	60 - 130				08/25/13 12:13	08/31/13 21:01	
Phenol-d5 (Surr)	55		49 - 130				08/25/13 12:13	08/31/13 21:01	
2-Fluorophenol (Surr)	54		40 - 130				08/25/13 12:13	08/31/13 21:01	
2,4,6-Tribromophenol (Surr)	59		58 <sub>-</sub> 130				08/25/13 12:13	08/31/13 21:01	
Method: 8015C - Nonhalogenate	d Organics usi	ng GC/FID	-Modified (Gaso	line Ran	ge Organ	ics)			
Analyte		Qualifier	RL	MDL		D	Prepared	Analyzed	Dil Fa
Gasoline Range Organics (GRO) C6-C10	330	Ū	330	25	ug/Kg	<u> </u>	08/21/13 16:21	08/22/13 16:38	
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fa
a,a,a-Trifluorotoluene	94		70 - 131				08/21/13 16:21	08/22/13 16:38	
Method: 8015C - Nonhalogenate	•	•	•	_	_	•	<b>D</b> anas d	A1 .	D.: -
Analyte	Result 4600	Qualifier	RL 6700		Unit ug/Kg	— <del>D</del>	Prepared	Analyzed	Dil Fa
Diesel Range Organics [C10-C28]		J					08/30/13 13:38	09/01/13 17:32	

TestAmerica Savannah

Analyzed

09/01/13 17:32

Prepared

08/30/13 13:38

Limits

50 - 150

%Recovery Qualifier

75

Dil Fac

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

ojecticie. Con cuo cuna Branomon, mb

Client Sample ID: SB01-01 (9.0-10.0)

Date Collected: 08/19/13 12:35

Lab Sample ID: 680-93423-2

Matrix: Solid

Date Collected: 08/19/13 12:35
Date Received: 08/21/13 10:07
Matrix: Solid
Percent Solids: 82.2

Acutom	Method: 8260B - Volatile Organi Analyte	•	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil F
Beazene	<u> </u>									
Bromodelhane	Benzene					• •	₩			
Bernedform							₽			
Brommethane										
Carbon disulfide 4.1 U 4.1 0.97 gg/Kg 0 082213 3227 080013 17.24 Chibrorbehrane 4.1 U 4.1 1.4 ug/Kg 0 082213 3227 080013 17.24 Chibrorbehrane 4.1 U 4.1 0.42 ug/Kg 1 082213 1327 080013 17.24 Chibrorbehrane 4.1 U 4.1 0.48 ug/Kg 2 082213 1327 080013 17.24 Chibrordehrane 4.1 U 4.1 0.81 ug/Kg 2 082213 1327 080013 17.24 Chibrordehrane 4.1 U 4.1 0.81 ug/Kg 2 082213 1327 080013 17.24 Chibrordehrane 4.1 U 4.1 0.81 ug/Kg 3 082213 1327 080013 17.24 Chibrordehrane 4.1 U 4.1 0.97 ug/Kg 1 082213 1327 080013 17.24 Chibrordehrane 4.1 U 4.1 0.97 ug/Kg 2 082213 1327 080013 17.24 Chibrordehrane 4.1 U 4.1 0.76 ug/Kg 3 082213 1327 080013 17.24 Chibrordehrane 4.1 U 4.1 0.76 ug/Kg 2 082213 1327 080013 17.24 Chibrordehrane 4.1 U 4.1 0.76 ug/Kg 3 082213 1327 080013 17.24 Chibrordehrane 4.1 U 4.1 0.77 ug/Kg 0 082213 1327 080013 17.24 Chibrordehrane 4.1 U 4.1 0.87 ug/Kg 0 082213 1327 080013 17.24 Chibrordehrane 4.1 U 4.1 0.87 ug/Kg 0 082213 1327 080013 17.24 Chibrordehrane 4.1 U 4.1 0.87 ug/Kg 0 082213 1327 080013 17.24 Chibrordehrane 4.1 U 4.1 0.87 ug/Kg 0 082213 1327 080013 17.24 Chibrordehrane 4.1 U 4.1 0.87 ug/Kg 0 082213 1327 080013 17.24 Chibrordehrane 4.1 U 4.1 0.87 ug/Kg 0 082213 1327 080013 17.24 Chibrordehrane 4.1 U 4.1 0.87 ug/Kg 0 082213 1327 080013 17.24 Chibrordehrane 4.1 U 4.1 0.87 ug/Kg 0 082213 1327 080013 17.24 Chibrordehrane 4.1 U 4.1 0.87 ug/Kg 0 082213 1327 080013 17.24 Chibrordehrane 4.1 U 4.1 0.80 ug/Kg 0 082213 1327 080013 17.24 Chibrordehrane 4.1 U 4.1 0.80 ug/Kg 0 082213 1327 080013 17.24 Chibrordehrane 4.1 U 4.1 0.80 ug/Kg 0 082213 1327 080013 17.24 Chibrordehrane 4.1 U 4.1 0.80 ug/Kg 0 082213 1327 080013 17.24 Chibrordehrane 4.1 U 4.1 0.80 ug/Kg 0 082213 1327 080013 17.24 Chibrordehrane 4.1 U 4.1 0.80 ug/Kg 0 082213 1327 080013 17.24 Chibrordehrane 4.1 U 4.1 0.80 ug/Kg 0 082213 1327 080013 17.24 Chibrordehrane 4.1 U 4.1 0.80 ug/Kg 0 082213 1327 080013 17.24 Chibrordehrane 4.1 U 4.1 0.80 ug/Kg 0 082213 1327 080013 17.24 Chibrordehrane 4.1 U 4.1 0.80 ug/Kg 0 082213 1327 080013 17.24 Chibrordehrane 4.1 U 4.1 0.80							₽			
Carbon tetrachloride 4.1 U 4.1 1.4 ug/Kg 0 0822/13/1327 08/30/13/1724   Chiloroberzene 4.1 U 4.1 0.42 ug/Kg 0 0822/13/1327 08/30/13/1724   Chiloroberane 4.1 U 4.1 0.48 ug/Kg 0 0822/13/1327 08/30/13/1724   Chiloroform 4.1 U 4.1 0.68 ug/Kg 0 0822/13/1327 08/30/13/1724   Chiloroform 4.1 U 4.1 0.62 ug/Kg 0 0822/13/1327 08/30/13/1724   Chiloroforpene 4.1 U 4.1 0.62 ug/Kg 0 0822/13/1327 08/30/13/1724   Chiloroforpene 4.1 U 4.1 0.62 ug/Kg 0 0822/13/1327 08/30/13/1724   Chiloroforpene 4.1 U 4.1 0.76 ug/Kg 0 0822/13/1327 08/30/13/1724   Chiloroforpopane 4.1 U 4.1 0.76 ug/Kg 0 0822/13/1327 08/30/13/1724   Chiloroforpopane 4.1 U 4.1 0.76 ug/Kg 0 0822/13/1327 08/30/13/1724   Chiloroforpopane 4.1 U 4.1 0.76 ug/Kg 0 0822/13/1327 08/30/13/1724   Chiloroforpopane 4.1 U 4.1 0.76 ug/Kg 0 0822/13/1327 08/30/13/1724   Chiloroforpopane 4.1 U 4.1 0.76 ug/Kg 0 0822/13/1327 08/30/13/1724   Chiloroforpopane 4.1 U 4.1 0.77 ug/Kg 0 0822/13/1327 08/30/13/1724   Chiloroforpopane 4.1 U 4.1 0.77 ug/Kg 0 0822/13/1327 08/30/13/1724   Chiloroforpopane 4.1 U 4.1 0.77 ug/Kg 0 0822/13/1327 08/30/13/1724   Chiloroforpopane 4.1 U 4.1 0.77 ug/Kg 0 0822/13/1327 08/30/13/1724   Chiloroforpopane 4.1 U 4.1 0.77 ug/Kg 0 0822/13/1327 08/30/13/1724   Chiloroforpopane 4.1 U 4.1 0.77 ug/Kg 0 0822/13/1327 08/30/13/1724   Chiloroforpopane 4.1 U 4.1 0.77 ug/Kg 0 0822/13/1327 08/30/13/1724   Chiloroforpopane 4.1 U 4.1 0.77 ug/Kg 0 0822/13/1327 08/30/13/1724   Chiloroforpopane 4.1 U 4.1 0.77 ug/Kg 0 0822/13/1327 08/30/13/1724   Chiloroforpopane 4.1 U 4.1 0.77 ug/Kg 0 0822/13/1327 08/30/13/1724   Chiloroforpopane 4.1 U 4.1 0.77 ug/Kg 0 0822/13/1327 08/30/13/1724   Chiloroforpopane 4.1 U 4.1 0.77 ug/Kg 0 0822/13/1327 08/30/13/1724   Chiloroforpopane 4.1 U 4.1 0.77 ug/Kg 0 0822/13/1327 08/30/13/1724   Chiloroforpopane 4.1 U 4.1 0.77 ug/Kg 0 0822/13/1327 08/30/13/1724   Chiloroforpopane 4.1 U 4.1 0.77 ug/Kg 0 0822/13/1327 08/30/13/1724   Chiloroforpopane 4.1 U 4.1 0.77 ug/Kg 0 0822/13/1327 08/30/13/1724   Chiloroforpopane 4.1 U 4.1 0.77 ug/Kg 0 0822/13/1327 08/30/13/1										
Chlorobenzene 4.1 U 4.1 0.42 ug/Kg 0 0822/13/1327 08/30/13/724 Chlorobenzene 4.1 U 4.1 0.49 ug/Kg 0 0822/13/1327 08/30/13/724 Chlorobrane 4.1 U 4.1 0.49 ug/Kg 0 0822/13/1327 08/30/13/724 Chlorobrane 4.1 U 4.1 0.81 ug/Kg 0 0822/13/1327 08/30/13/724 Chlorobrane 4.1 U 4.1 0.82 ug/Kg 0 0822/13/1327 08/30/13/724 Chlorobrane 4.1 U 4.1 0.82 ug/Kg 0 0822/13/1327 08/30/13/724 Chlorobrane 4.1 U 4.1 0.82 ug/Kg 0 0822/13/1327 08/30/13/724 Chlorobrane 4.1 U 4.1 0.75 ug/Kg 0 0822/13/1327 08/30/13/724 Chlorobrane 4.1 U 4.1 0.79 ug/Kg 0 0822/13/1327 08/30/13/724 Chlorobrane 4.1 U 4.1 0.79 ug/Kg 0 0822/13/1327 08/30/13/724 Chlorobrane 4.1 U 4.1 0.79 ug/Kg 0 0822/13/1327 08/30/13/724 Chlorobrane 4.1 U 4.1 0.58 ug/Kg 0 0822/13/1327 08/30/13/724 Chlorobrane 4.1 U 4.1 0.58 ug/Kg 0 0822/13/1327 08/30/13/724 Chlorobrane 4.1 U 4.1 0.57 ug/Kg 0 0822/13/1327 08/30/13/724 Chlorobrane 4.1 U 4.1 0.67 ug/Kg 0 0822/13/1327 08/30/13/724 Chlorobrane 4.1 U 4.1 0.67 ug/Kg 0 0822/13/1327 08/30/13/724 Chlorobrane 4.1 U 4.1 0.67 ug/Kg 0 0822/13/1327 08/30/13/724 Chlorobrane 4.1 U 4.1 0.67 ug/Kg 0 0822/13/1327 08/30/13/724 Chlorobrane 4.1 U 4.1 0.67 ug/Kg 0 0822/13/1327 08/30/13/724 Chlorobrane 4.1 U 4.1 0.67 ug/Kg 0 0822/13/1327 08/30/13/724 Chlorobrane 4.1 U 4.1 0.67 ug/Kg 0 0822/13/1327 08/30/13/724 Chlorobrane 4.1 U 4.1 0.67 ug/Kg 0 0822/13/1327 08/30/13/724 Chlorobrane 4.1 U 4.1 0.67 ug/Kg 0 0822/13/1327 08/30/13/724 Chlorobrane 4.1 U 4.1 0.69 ug/Kg 0 0822/13/1327 08/30/13/724 Chlorobrane 4.1 U 4.1 0.45 ug/Kg 0 0822/13/1327 08/30/13/724 Chlorobrane 4.1 U 4.1 0.45 ug/Kg 0 0822/13/1327 08/30/13/724 Chlorobrane 4.1 U 4.1 0.45 ug/Kg 0 0822/13/1327 08/30/13/724 Chlorobrane 4.1 U 4.1 0.45 ug/Kg 0 0822/13/1327 08/30/13/724 Chlorobrane 4.1 U 4.1 0.45 ug/Kg 0 0822/13/1327 08/30/13/724 Chlorobrane 4.1 U 4.1 0.45 ug/Kg 0 0822/13/1327 08/30/13/724 Chlorobrane 4.1 U 4.1 0.45 ug/Kg 0 0822/13/1327 08/30/13/724 Chlorobrane 4.1 U 4.1 0.81 ug/Kg 0 0822/13/1327 08/30/13/724 Chlorobrane 4.1 U 4.1 0.81 ug/Kg 0 0822/13/1327 08/30/13/724 Chlorobrane 4.1 U 4.1 0.81 ug										
Chloroethane 4.1 U 4.1 1.5 ug/Kg 0 08/22/13 13.27 08/30/13 17:24 Chloroform 4.1 U 4.1 0.48 ug/Kg 0 08/22/13 13.27 08/30/13 17:24 Chloroform 4.1 U 4.1 0.48 ug/Kg 0 08/22/13 13.27 08/30/13 17:24 chloroethane 4.1 U 4.1 0.62 ug/Kg 3 08/22/13 13.27 08/30/13 17:24 chloroethane 4.1 U 4.1 0.62 ug/Kg 3 08/22/13 13.27 08/30/13 17:24 chloroethane 4.1 U 4.1 0.62 ug/Kg 3 08/22/13 13.27 08/30/13 17:24 chloroethane 4.1 U 4.1 0.76 ug/Kg 0 08/22/13 13.27 08/30/13 17:24 chloroethane 4.1 U 4.1 0.76 ug/Kg 3 08/22/13 13.27 08/30/13 17:24 chloroethane 4.1 U 4.1 0.76 ug/Kg 3 08/22/13 13.27 08/30/13 17:24 chloroethane 4.1 U 4.1 0.76 ug/Kg 3 08/22/13 13.27 08/30/13 17:24 chloroethane 4.1 U 4.1 0.76 ug/Kg 3 08/22/13 13.27 08/30/13 17:24 chloroethane 4.1 U 4.1 0.76 ug/Kg 3 08/22/13 13.27 08/30/13 17:24 chloroethane 4.1 U 4.1 0.76 ug/Kg 3 08/22/13 13.27 08/30/13 17:24 chloroethane 4.1 U 4.1 0.77 ug/Kg 3 08/22/13 13.27 08/30/13 17:24 chloroethane 4.1 U 4.1 0.77 ug/Kg 3 08/22/13 13.27 08/30/13 17:24 chloroethane 4.1 U 4.1 0.77 ug/Kg 3 08/22/13 13.27 08/30/13 17:24 chloroethane 4.1 U 4.1 0.77 ug/Kg 3 08/22/13 13.27 08/30/13 17:24 chloroethane 4.1 U 4.1 0.77 ug/Kg 3 08/22/13 13.27 08/30/13 17:24 chloroethane 4.1 U 4.1 0.77 ug/Kg 3 08/22/13 13.27 08/30/13 17:24 chloroethane 4.1 U 4.1 0.77 ug/Kg 3 08/22/13 13.27 08/30/13 17:24 chloroethane 4.1 U 4.1 0.77 ug/Kg 3 08/22/13 13.27 08/30/13 17:24 chloroethane 4.1 U 4.1 0.67 ug/Kg 3 08/22/13 13.27 08/30/13 17:24 chloroethane 4.1 U 4.1 0.60 ug/Kg 3 08/22/13 13.27 08/30/13 17:24 chloroethane 4.1 U 4.1 0.60 ug/Kg 3 08/22/13 13.27 08/30/13 17:24 chloroethane 4.1 U 4.1 0.60 ug/Kg 3 08/22/13 13.27 08/30/13 17:24 chloroethane 4.1 U 4.1 0.60 ug/Kg 3 08/22/13 13.27 08/30/13 17:24 chloroethane 4.1 U 4.1 0.60 ug/Kg 3 08/22/13 13.27 08/30/13 17:24 chloroethane 4.1 U 4.1 0.60 ug/Kg 3 08/22/13 13.27 08/30/13 17:24 chloroethane 4.1 U 4.1 0.60 ug/Kg 3 08/22/13 13.27 08/30/13 17:24 chloroethane 4.1 U 4.1 0.60 ug/Kg 3 08/22/13 13.27 08/30/13 17:24 chloroethane 4.1 U 4.1 0.60 ug/Kg 3 08/22/13 13.27 08/30/13 17:24 chlor							₽			
Chlorofrom										
Chloromethane										
Liss-1,2-Dichloroerthene										
1-1-										
Cyclohexane         4.1         U         4.1         0.76         ug/Kg         0         08/22/13 13:27         08/30/13 17:24           Dibromochloromethane         4.1         U         4.1         0.71         ug/Kg         0         08/22/13 13:27         08/30/13 17:24           1.2-Dibrion-2-Chloropropane         4.1         U         4.1         0.77         ug/Kg         0         08/22/13 13:27         08/30/13 17:24           1.3-Dichlorobenzene         4.1         U         4.1         0.77         ug/Kg         0         08/22/13 13:27         08/30/13 17:24           1.3-Dichlorobenzene         4.1         U         4.1         0.77         ug/Kg         0         08/22/13 13:27         08/30/13 17:24           1.3-Dichlorobenzene         4.1         U         4.1         0.67         ug/Kg         0         08/22/13 13:27         08/30/13 17:24           1.1-Dichlorobenzene         4.1         U         4.1         0.67         ug/Kg         0         08/22/13 13:27         08/30/13 17:24           1.1-Dichlorobenzene         4.1         U         4.1         0.67         ug/Kg         0         08/22/13 13:27         08/30/13 17:24           1.1-Dichlorobenzene         4.1         U <td></td>										
12-Dichioromethane						0 0				
1.2-Dibromo-3-Chloropropane 4.1 U 4.1 2.7 ug/Kg 6 08/22/13 13.27 08/30/13 17:24 1.2-Dichlorobenzene 4.1 U 4.1 0.58 ug/Kg 6 08/22/13 13.27 08/30/13 17:24 1.3-Dichlorobenzene 4.1 U 4.1 0.67 ug/Kg 6 08/22/13 13.27 08/30/13 17:24 1.4-Dichlorobenzene 4.1 U 4.1 0.67 ug/Kg 6 08/22/13 13.27 08/30/13 17:24 1.4-Dichlorobenzene 4.1 U 4.1 0.67 ug/Kg 6 08/22/13 13.27 08/30/13 17:24 1.1-Dichloroethane 4.1 U 4.1 0.67 ug/Kg 7 08/22/13 13.27 08/30/13 17:24 1.2-Dichloroethane 4.1 U 4.1 0.67 ug/Kg 7 08/22/13 13.27 08/30/13 17:24 1.2-Dichloroethane 4.1 U 4.1 0.67 ug/Kg 7 08/22/13 13.27 08/30/13 17:24 1.1-Dichloroethane 4.1 U 4.1 0.67 ug/Kg 7 08/22/13 13.27 08/30/13 17:24 1.1-Dichloroptopane 4.1 U 4.1 0.60 ug/Kg 7 08/22/13 13.27 08/30/13 17:24 1.1-Dichloroptopane 4.1 U 4.1 0.60 ug/Kg 7 08/22/13 13.27 08/30/13 17:24 1.1-Dichloroptopane 4.1 U 4.1 0.60 ug/Kg 7 08/22/13 13.27 08/30/13 17:24 1.1-Dichloroptopane 4.1 U 4.1 0.69 ug/Kg 7 08/22/13 13.27 08/30/13 17:24 1.1-Dichloroptopane 4.1 U 4.1 0.69 ug/Kg 7 08/22/13 13.27 08/30/13 17:24 1.1-Dichloroptopane 4.1 U 4.1 0.69 ug/Kg 7 08/22/13 13.27 08/30/13 17:24 1.1-Dichloroptopane 4.1 U 4.1 0.69 ug/Kg 7 08/22/13 13.27 08/30/13 17:24 1.1-Dichloroptopane 4.1 U 4.1 0.69 ug/Kg 7 08/22/13 13.27 08/30/13 17:24 1.1-Dichloroptopane 4.1 U 4.1 0.59 ug/Kg 7 08/22/13 13.27 08/30/13 17:24 1.1-Dichloroptopane 4.1 U 4.1 0.59 ug/Kg 7 08/22/13 13.27 08/30/13 17:24 1.1-Dichloroptopane 4.1 U 4.1 0.59 ug/Kg 7 08/22/13 13.27 08/30/13 17:24 1.1-Dichloroptopane 4.1 U 4.1 0.59 ug/Kg 7 08/22/13 13.27 08/30/13 17:24 1.1-Dichloroptopane 4.1 U 4.1 0.59 ug/Kg 7 08/22/13 13.27 08/30/13 17:24 1.1-Dichloroptopane 4.1 U 4.1 0.59 ug/Kg 7 08/22/13 13.27 08/30/13 17:24 1.1-Dichloroptopane 4.1 U 4.1 0.81 ug/Kg 7 08/22/13 13.27 08/30/13 17:24 1.1-Dichloroptopane 4.1 U 4.1 0.81 ug/Kg 7 08/22/13 13.27 08/30/13 17:24 1.1-Dichloroptopane 4.1 U 4.1 0.81 ug/Kg 7 08/22/13 13.27 08/30/13 17:24 1.1-Dichloroptopane 4.1 U 4.1 0.81 ug/Kg 7 08/22/13 13.27 08/30/13 17:24 1.1-Dichloroptopane 4.1 U 4.1 0.81 ug/Kg 7 08/22/13 13.27 08/30/13 17:24	•									
1,2-Dichlorobenzene										
1.3-Dichlorobenzene 4.1 U 4.1 0.77 ug/Kg 0822/13 13:27 08/30/13 17:24 1.4-Dichlorobenzene 4.1 U 4.1 0.67 ug/Kg 0822/13 13:27 08/30/13 17:24 0	·									
1.4-Dichlorobenzene       4.1       U       4.1       0.67       ug/kg       0 8/22/13 13:27       08/30/13 17:24         Dichlorodifluoromethane       4.1       U       4.1       1.1       ug/kg       0 8/22/13 13:27       08/30/13 17:24         1.1-Dichloroethane       4.1       U       4.1       0.67       ug/kg       0 8/22/13 13:27       08/30/13 17:24         1.2-Dichloroethane       4.1       U       4.1       0.61       ug/kg       0 8/22/13 13:27       08/30/13 17:24         1.1-Dichloroptropane       4.1       U       4.1       0.61       ug/kg       0 8/22/13 13:27       08/30/13 17:24         1.2-Dichloroptropane       4.1       U       4.1       0.60       ug/kg       0 8/22/13 13:27       08/30/13 17:24         1.2-Dichloroptropane       4.1       U       4.1       0.45       ug/kg       0 8/22/13 13:27       08/30/13 17:24         Elhybenzene       4.1       U       4.1       0.4       0.49       ug/kg       0 8/22/13 13:27       08/30/13 17:24         Elhybenzene       4.1       U       4.1       0.39       ug/kg       0 8/22/13 13:27       08/30/13 17:24         Elhydenzene       4.1       U       4.1       0.45       ug/kg </td <td>,</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	,									
1.1   Dichlorodifiluoromethane	<u></u>									
1,1-Dichloroethane	,									
1,2-Dichloroethane										
1,1-Dichloroethene	,									
1,2-Dichloropropane	,									
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Sepropylbenzene										
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Methylene Chloride  12 U  12 8.1 ug/Kg  08/22/13 13:27  08/30/13 17:24  Methyl Ethyl Ketone  20 U  20 3.2 ug/Kg  08/22/13 13:27  08/30/13 17:24  Methyl tert-butyl ether  4.1 U  4.1 0.81 ug/Kg  08/22/13 13:27  08/30/13 17:24  Naphthalene  4.1 U  4.1 0.81 ug/Kg  08/22/13 13:27  08/30/13 17:24  Naphthalene  4.1 U  4.1 0.62 ug/Kg  08/22/13 13:27  08/30/13 17:24  Naphthalene  4.1 U  4.1 0.62 ug/Kg  08/22/13 13:27  08/30/13 17:24  Naphthalene  4.1 U  4.1 0.62 ug/Kg  08/22/13 13:27  08/30/13 17:24  Naphthalene  4.1 U  4.1 0.36 ug/Kg  08/22/13 13:27  08/30/13 17:24  Naphthalene  4.1 U  4.1 0.58 ug/Kg  08/22/13 13:27  08/30/13 17:24  Naphthalene  4.1 U  4.1 0.58 ug/Kg  08/22/13 13:27  08/30/13 17:24  Naphthalene  4.1 U  4.1 0.58 ug/Kg  08/22/13 13:27  08/30/13 17:24  Naphthalene  4.1 U  4.1 0.59 ug/Kg  08/22/13 13:27  08/30/13 17:24  Naphthalene  4.1 U  4.1 0.59 ug/Kg  08/22/13 13:27  08/30/13 17:24  Naphthalene  4.1 U  4.1 0.59 ug/Kg  08/22/13 13:27  08/30/13 17:24  Naphthalene  4.1 U  4.1 0.59 ug/Kg  08/22/13 13:27  08/30/13 17:24  Naphthalene  4.1 U  4.1 0.59 ug/Kg  08/22/13 13:27  08/30/13 17:24  Naphthalene  4.1 U  4.1 0.59 ug/Kg  08/22/13 13:27  08/30/13 17:24  Naphthalene  4.1 U  4.1 0.59 ug/Kg  08/22/13 13:27  08/30/13 17:24  Naphthalene  4.1 U  4.1 0.59 ug/Kg  08/22/13 13:27  08/30/13 17:24  Naphthalene  4.1 U  4.1 0.59 ug/Kg  08/22/13 13:27  08/30/13 17:24  Naphthalene  4.1 U  4.1 0.59 ug/Kg  08/22/13 13:27  08/30/13 17:24  Naphthalene  4.1 U  4.1 0.59 ug/Kg  08/22/13 13:27  08/30/13 17:24  Naphthalene  4.1 U  4.1 0.59 ug/Kg  08/22/13 13:27  08/30/13 17:24  Naphthalene  4.1 U  4.1 0.59 ug/Kg  08/22/13 13:27  08/30/13 17:24  Naphthalene  Naphthalene  4.1 U  4.1 0.59 ug/Kg  08/22/13 13:27  08/30/13 17:24  Naphthalene		4.1	U	4.1	3.7					
Methyl Ethyl Ketone 20 U 20 3.3 ug/Kg © 08/22/13 13:27 08/30/13 17:24 methyl isobutyl ketone 20 U 20 3.2 ug/Kg © 08/22/13 13:27 08/30/13 17:24 Methyl tert-butyl ether 4.1 U 4.1 0.81 ug/Kg © 08/22/13 13:27 08/30/13 17:24 Naphthalene 4.1 U 4.1 0.81 ug/Kg © 08/22/13 13:27 08/30/13 17:24 Styrene 4.1 U 4.1 0.62 ug/Kg © 08/22/13 13:27 08/30/13 17:24 Tert-amyl methyl ether 4.1 U 4.1 0.36 ug/Kg © 08/22/13 13:27 08/30/13 17:24 eth-Butyl alcohol 4.1 U 4.1 0.36 ug/Kg © 08/22/13 13:27 08/30/13 17:24 eth-Butyl alcohol 4.1 U 4.1 0.58 ug/Kg © 08/22/13 13:27 08/30/13 17:24 Tetrachloroethane 4.1 U 4.1 0.58 ug/Kg © 08/22/13 13:27 08/30/13 17:24 Tetrachloroethene 4.1 U 4.1 0.68 ug/Kg © 08/22/13 13:27 08/30/13 17:24 Toluene 4.1 U 4.1 0.57 ug/Kg © 08/22/13 13:27 08/30/13 17:24 trans-1,2-Dichloroethene 4.1 U 4.1 0.57 ug/Kg © 08/22/13 13:27 08/30/13 17:24 trans-1,3-Dichloropropene 4.1 U 4.1 0.59 ug/Kg © 08/22/13 13:27 08/30/13 17:24 trans-1,3-Dichloropropene 4.1 U 4.1 0.59 ug/Kg © 08/22/13 13:27 08/30/13 17:24 trans-1,3-Dichloropropene 4.1 U 4.1 0.59 ug/Kg © 08/22/13 13:27 08/30/13 17:24 trans-1,3-Dichloropropene 4.1 U 4.1 0.59 ug/Kg © 08/22/13 13:27 08/30/13 17:24 trans-1,3-Dichloropropene 4.1 U 4.1 0.59 ug/Kg © 08/22/13 13:27 08/30/13 17:24 trans-1,3-Dichloropropene 4.1 U 4.1 0.59 ug/Kg © 08/22/13 13:27 08/30/13 17:24 trans-1,3-Dichloropropene 4.1 U 4.1 0.59 ug/Kg © 08/22/13 13:27 08/30/13 17:24 trans-1,3-Dichloropropene 4.1 U 4.1 0.59 ug/Kg © 08/22/13 13:27 08/30/13 17:24 trans-1,3-Dichloropropene 4.1 U 4.1 0.59 ug/Kg © 08/22/13 13:27 08/30/13 17:24 trans-1,3-Dichloropropene 4.1 U 4.1 0.59 ug/Kg © 08/22/13 13:27 08/30/13 17:24 trans-1,3-Dichloropropene 4.1 U 4.1 0.59 ug/Kg © 08/22/13 13:27 08/30/13 17:24 trans-1,3-Dichloropropene 4.1 U 4.1 0.59 ug/Kg © 08/22/13 13:27 08/30/13 17:24 trans-1,3-Dichloropropene 4.1 U 4.1 0.59 ug/Kg © 08/22/13 13:27 08/30/13 17:24 trans-1,3-Dichloropropene 4.1 U 4.1 0.59 ug/Kg © 08/22/13 13:27 08/30/13 17:24 trans-1,3-Dichloropropene 4.1 U 4.1 0.59 ug/Kg © 08/22/13 13:27 08/30/13 17:24 trans-1,3-Dichlo	Methylcyclohexane	4.1	U	4.1	0.71	ug/Kg	₽	08/22/13 13:27	08/30/13 17:24	
methyl isobutyl ketone 20 U 20 3.2 ug/kg 08/22/13 13:27 08/30/13 17:24   Methyl tert-butyl ether 4.1 U 4.1 0.81 ug/kg 08/22/13 13:27 08/30/13 17:24   Naphthalene 4.1 U 4.1 0.81 ug/kg 08/22/13 13:27 08/30/13 17:24   Styrene 4.1 U 4.1 0.62 ug/kg 08/22/13 13:27 08/30/13 17:24   Tert-amyl methyl ether 4.1 U 4.1 0.36 ug/kg 08/22/13 13:27 08/30/13 17:24   Tert-amyl methyl ether 4.1 U 4.1 0.36 ug/kg 08/22/13 13:27 08/30/13 17:24   Tert-Butyl alcohol 4.1 U 4.1 0.36 ug/kg 08/22/13 13:27 08/30/13 17:24   Tert-achloroethane 4.1 U 4.1 0.58 ug/kg 08/22/13 13:27 08/30/13 17:24   Tertachloroethene 4.1 U 4.1 0.68 ug/kg 08/22/13 13:27 08/30/13 17:24   Toluene 4.1 U 4.1 0.57 ug/kg 08/22/13 13:27 08/30/13 17:24   Trans-1,2-Dichloroethene 4.1 U 4.1 0.62 ug/kg 08/22/13 13:27 08/30/13 17:24   Trans-1,3-Dichloropropene 4.1 U 4.1 0.59 ug/kg 08/22/13 13:27 08/30/13 17:24   Trans-1,3-Dichloropropene 4.1 U 4.1 0.59 ug/kg 08/22/13 13:27 08/30/13 17:24   Trans-1,1-Trichloroethane 4.1 U 4.1 0.89 ug/kg 08/22/13 13:27 08/30/13 17:24   Trans-1,1-Trichloroethane 4.1 U 4.1 0.89 ug/kg 08/22/13 13:27 08/30/13 17:24   Trans-1,1-Trichloroethane 4.1 U 4.1 0.89 ug/kg 08/22/13 13:27 08/30/13 17:24   Trans-1,1-Trichloroethane 4.1 U 4.1 0.89 ug/kg 08/22/13 13:27 08/30/13 17:24   Trans-1,1-Trichloroethane 4.1 U 4.1 0.89 ug/kg 08/22/13 13:27 08/30/13 17:24   Trans-1,1-Trichloroethane 4.1 U 4.1 0.89 ug/kg 08/22/13 13:27 08/30/13 17:24   Trans-1,1-Trichloroethane 4.1 U 4.1 0.89 ug/kg 08/22/13 13:27 08/30/13 17:24   Trans-1,2-Trichloroethane 4.1 U 4.1 0.89 ug/kg 08/22/13 13:27 08/30/13 17:24   Trans-1,2-Trichloroethane 4.1 U 4.1 0.89 ug/kg 08/22/13 13:27 08/30/13 17:24   Trans-1,2-Trichloroethane 4.1 U 4.1 0.89 ug/kg 08/22/13 13:27 08/30/13 17:24   Trans-1,2-Trichloroethane 4.1 U 4.1 0.75 ug/kg 08/22/13 13:27 08/30/13 17:24   Trans-1,2-Trichloroethane 4.1 U 4.1 0.75 ug/kg 08/22/13 13:27 08/30/13 17:24   Trans-1,2-Trichloroethane 4.1 U 4.1 0.75 ug/kg 08/22/13 13:27 08/30/13 17:24   Trans-1,3-Trichloroethane 4.1 U 4.1 0.75 ug/kg 08/22/13 13:27 08/30/13 17:24	Methylene Chloride	12	U	12	8.1	ug/Kg		08/22/13 13:27	08/30/13 17:24	
Methyl tert-butyl ether 4.1 U 4.1 0.81 ug/Kg 08/22/13 13:27 08/30/13 17:24 Naphthalene 4.1 U 4.1 0.81 ug/Kg 08/22/13 13:27 08/30/13 17:24 Styrene 4.1 U 4.1 0.62 ug/Kg 08/22/13 13:27 08/30/13 17:24 Tert-amyl methyl ether 4.1 U 4.1 0.36 ug/Kg 08/22/13 13:27 08/30/13 17:24 Tert-Butyl alcohol 4.1 U 4.1 0.58 ug/Kg 08/22/13 13:27 08/30/13 17:24 Tetrachloroethane 4.1 U 4.1 0.58 ug/Kg 08/22/13 13:27 08/30/13 17:24 Tetrachloroethene 4.1 U 4.1 0.68 ug/Kg 08/22/13 13:27 08/30/13 17:24 Toluene 4.1 U 4.1 0.57 ug/Kg 08/22/13 13:27 08/30/13 17:24 Trans-1,2-Dichloroethene 4.1 U 4.1 0.62 ug/Kg 08/22/13 13:27 08/30/13 17:24 Trans-1,2-Dichloroethene 4.1 U 4.1 0.57 ug/Kg 08/22/13 13:27 08/30/13 17:24 Trans-1,3-Dichloropropene 4.1 U 4.1 0.59 ug/Kg 08/22/13 13:27 08/30/13 17:24 Trans-1,3-Dichloropropene 4.1 U 4.1 0.59 ug/Kg 08/22/13 13:27 08/30/13 17:24 Trans-1,3-Dichlorobenzene 4.1 U 4.1 0.59 ug/Kg 08/22/13 13:27 08/30/13 17:24 Trans-1,3-Dichloropropene 4.1 U 4.1 0.59 ug/Kg 08/22/13 13:27 08/30/13 17:24 Trans-1,3-Dichlorobenzene 4.1 U 4.1 0.59 ug/Kg 08/22/13 13:27 08/30/13 17:24 Trans-1,3-Dichlorobenzene 4.1 U 4.1 0.59 ug/Kg 08/22/13 13:27 08/30/13 17:24 Trans-1,3-Dichloropropene 4.1 U 4.1 0.59 ug/Kg 08/22/13 13:27 08/30/13 17:24 Trans-1,3-Dichlorobenzene 4.1 U 4.1 0.59 ug/Kg 08/22/13 13:27 08/30/13 17:24 Trans-1,3-Dichloropropene 4.1 U 4.1 0.59 ug/Kg 08/22/13 13:27 08/30/13 17:24 Trans-1,3-Dichloropropene 4.1 U 4.1 0.59 ug/Kg 08/22/13 13:27 08/30/13 17:24 Trans-1,3-Dichloropropene 4.1 U 4.1 0.59 ug/Kg 08/22/13 13:27 08/30/13 17:24 Trans-1,3-Dichloropropene 4.1 U 4.1 0.59 ug/Kg 08/22/13 13:27 08/30/13 17:24	Methyl Ethyl Ketone	20	U	20	3.3	ug/Kg	₽	08/22/13 13:27	08/30/13 17:24	
Naphthalene 4.1 U 4.1 0.81 ug/Kg © 08/22/13 13:27 08/30/13 17:24   Styrene 4.1 U 4.1 0.62 ug/Kg © 08/22/13 13:27 08/30/13 17:24   Tert-amyl methyl ether 4.1 U 4.1 0.36 ug/Kg © 08/22/13 13:27 08/30/13 17:24   tert-Butyl alcohol 4.1 U 4.1 0.58 ug/Kg © 08/22/13 13:27 08/30/13 17:24   Tetrachloroethane 4.1 U 4.1 0.58 ug/Kg © 08/22/13 13:27 08/30/13 17:24   Tetrachloroethene 4.1 U 4.1 0.68 ug/Kg © 08/22/13 13:27 08/30/13 17:24   Toluene 4.1 U 4.1 0.68 ug/Kg © 08/22/13 13:27 08/30/13 17:24   Toluene 4.1 U 4.1 0.57 ug/Kg © 08/22/13 13:27 08/30/13 17:24   Ternas-1,2-Dichloroethene 4.1 U 4.1 0.62 ug/Kg © 08/22/13 13:27 08/30/13 17:24   Ternas-1,3-Dichloropropene 4.1 U 4.1 0.62 ug/Kg © 08/22/13 13:27 08/30/13 17:24   Ternas-1,3-Dichloropropene 4.1 U 4.1 0.59 ug/Kg © 08/22/13 13:27 08/30/13 17:24   Ternas-1,3-Dichloropropene 4.1 U 4.1 0.59 ug/Kg © 08/22/13 13:27 08/30/13 17:24   Ternas-1,3-Dichloroethane 4.1 U 4.1 0.59 ug/Kg © 08/22/13 13:27 08/30/13 17:24   Ternas-1,3-Dichloroethane 4.1 U 4.1 0.59 ug/Kg © 08/22/13 13:27 08/30/13 17:24   Ternas-1,3-Dichloroethane 4.1 U 4.1 0.59 ug/Kg © 08/22/13 13:27 08/30/13 17:24   Ternas-1,3-Dichloroethane 4.1 U 4.1 0.59 ug/Kg © 08/22/13 13:27 08/30/13 17:24   Ternas-1,3-Dichloroethane 4.1 U 4.1 0.59 ug/Kg © 08/22/13 13:27 08/30/13 17:24   Ternas-1,3-Dichloroethane 4.1 U 4.1 0.59 ug/Kg © 08/22/13 13:27 08/30/13 17:24   Ternas-1,3-Dichloroethane 4.1 U 4.1 0.59 ug/Kg © 08/22/13 13:27 08/30/13 17:24   Ternas-1,3-Dichloroethane 4.1 U 4.1 0.59 ug/Kg © 08/22/13 13:27 08/30/13 17:24   Ternas-1,3-Dichloroethane 4.1 U 4.1 0.59 ug/Kg © 08/22/13 13:27 08/30/13 17:24   Ternas-1,3-Dichloroethane 4.1 U 4.1 0.59 ug/Kg © 08/22/13 13:27 08/30/13 17:24   Ternas-1,3-Dichloroethane 4.1 U 4.1 0.59 ug/Kg © 08/22/13 13:27 08/30/13 17:24   Ternas-1,3-Dichloroethane 4.1 U 4.1 0.59 ug/Kg © 08/22/13 13:27 08/30/13 17:24   Ternas-1,3-Dichloroethane 4.1 U 4.1 0.59 ug/Kg © 08/22/13 13:27 08/30/13 17:24   Ternas-1,3-Dichloroethane 4.1 U 4.1 0.59 ug/Kg © 08/22/13 13:27 08/30/13 17:24   Ternas-1,3-Dichloroethane 4.1 U	methyl isobutyl ketone						₩		08/30/13 17:24	
Styrene 4.1 U 4.1 0.62 ug/Kg 08/22/13 13:27 08/30/13 17:24  Fert-amyl methyl ether 4.1 U 4.1 0.36 ug/Kg 08/22/13 13:27 08/30/13 17:24  ert-Butyl alcohol 4.1 U 4.1 2.8 ug/Kg 08/22/13 13:27 08/30/13 17:24  I,1,2,2-Tetrachloroethane 4.1 U 4.1 0.58 ug/Kg 08/22/13 13:27 08/30/13 17:24  Fetrachloroethene 4.1 U 4.1 0.68 ug/Kg 08/22/13 13:27 08/30/13 17:24  Foluene 4.1 U 4.1 0.57 ug/Kg 08/22/13 13:27 08/30/13 17:24  Frans-1,2-Dichloroethene 4.1 U 4.1 0.62 ug/Kg 08/22/13 13:27 08/30/13 17:24  Frans-1,3-Dichloropropene 4.1 U 4.1 0.75 ug/Kg 08/22/13 13:27 08/30/13 17:24  Frans-1,3-Dichloropropene 4.1 U 4.1 0.59 ug/Kg 08/22/13 13:27 08/30/13 17:24  Frans-1,3-Dichloropropene 4.1 U 4.1 0.59 ug/Kg 08/22/13 13:27 08/30/13 17:24  Frans-1,3-Dichloropropene 4.1 U 4.1 0.59 ug/Kg 08/22/13 13:27 08/30/13 17:24  Frans-1,3-Dichloropropene 4.1 U 4.1 0.59 ug/Kg 08/22/13 13:27 08/30/13 17:24  Frans-1,3-Dichloropropene 4.1 U 4.1 0.59 ug/Kg 08/22/13 13:27 08/30/13 17:24  Frans-1,3-Dichloropropene 4.1 U 4.1 0.59 ug/Kg 08/22/13 13:27 08/30/13 17:24  Frans-1,3-Dichloropropene 4.1 U 4.1 0.59 ug/Kg 08/22/13 13:27 08/30/13 17:24  Frans-1,3-Dichloropropene 4.1 U 4.1 0.59 ug/Kg 08/22/13 13:27 08/30/13 17:24  Frans-1,3-Dichloropropene 4.1 U 4.1 0.59 ug/Kg 08/22/13 13:27 08/30/13 17:24  Frans-1,3-Dichloropropene 4.1 U 4.1 0.59 ug/Kg 08/22/13 13:27 08/30/13 17:24	Methyl tert-butyl ether	4.1	U	4.1	0.81	ug/Kg	₽	08/22/13 13:27	08/30/13 17:24	
Fert-amyl methyl ether 4.1 U 4.1 0.36 ug/Kg 08/22/13 13:27 08/30/13 17:24 ert-Butyl alcohol 4.1 U 4.1 0.58 ug/Kg 08/22/13 13:27 08/30/13 17:24 1,1,2,2-Tetrachloroethane 4.1 U 4.1 0.58 ug/Kg 08/22/13 13:27 08/30/13 17:24 Fetrachloroethene 4.1 U 4.1 0.68 ug/Kg 08/22/13 13:27 08/30/13 17:24 Foluene 4.1 U 4.1 0.57 ug/Kg 08/22/13 13:27 08/30/13 17:24 Frans-1,2-Dichloroethene 4.1 U 4.1 0.62 ug/Kg 08/22/13 13:27 08/30/13 17:24 Frans-1,3-Dichloropropene 4.1 U 4.1 0.75 ug/Kg 08/22/13 13:27 08/30/13 17:24 Frans-1,3-Dichloropropene 4.1 U 4.1 0.59 ug/Kg 08/22/13 13:27 08/30/13 17:24 Frans-1,3-Dichloropropene 4.1 U 4.1 0.59 ug/Kg 08/22/13 13:27 08/30/13 17:24 Frans-1,3-Dichloropropene 4.1 U 4.1 0.59 ug/Kg 08/22/13 13:27 08/30/13 17:24 Frans-1,3-Dichloropropene 4.1 U 4.1 0.59 ug/Kg 08/22/13 13:27 08/30/13 17:24 Frans-1,3-Dichloropropene 4.1 U 4.1 0.59 ug/Kg 08/22/13 13:27 08/30/13 17:24 Frans-1,3-Dichloropropene 4.1 U 4.1 0.59 ug/Kg 08/22/13 13:27 08/30/13 17:24 Frans-1,3-Dichloropropene 4.1 U 4.1 0.59 ug/Kg 08/22/13 13:27 08/30/13 17:24 Frans-1,3-Dichloropropene 4.1 U 4.1 0.59 ug/Kg 08/22/13 13:27 08/30/13 17:24 Frans-1,3-Dichloropropene 4.1 U 4.1 0.59 ug/Kg 08/22/13 13:27 08/30/13 17:24 Frans-1,3-Dichloropropene 4.1 U 4.1 0.59 ug/Kg 08/22/13 13:27 08/30/13 17:24 Frans-1,3-Dichloropropene 4.1 U 4.1 0.59 ug/Kg 08/22/13 13:27 08/30/13 17:24 Frans-1,3-Dichloropropene 4.1 U 4.1 0.59 ug/Kg 08/22/13 13:27 08/30/13 17:24	Naphthalene	4.1	U	4.1	0.81	ug/Kg	₽	08/22/13 13:27	08/30/13 17:24	
ert-Butyl alcohol 4.1 U 4.1 2.8 ug/Kg 08/22/13 13:27 08/30/13 17:24  1,1,2,2-Tetrachloroethane 4.1 U 4.1 0.58 ug/Kg 08/22/13 13:27 08/30/13 17:24  Tetrachloroethene 4.1 U 4.1 0.68 ug/Kg 08/22/13 13:27 08/30/13 17:24  Toluene 4.1 U 4.1 0.57 ug/Kg 08/22/13 13:27 08/30/13 17:24  Trans-1,2-Dichloroethene 4.1 U 4.1 0.62 ug/Kg 08/22/13 13:27 08/30/13 17:24  Trans-1,3-Dichloropropene 4.1 U 4.1 0.75 ug/Kg 08/22/13 13:27 08/30/13 17:24  Trans-1,3-Dichloropropene 4.1 U 4.1 0.59 ug/Kg 08/22/13 13:27 08/30/13 17:24  Trans-1,3-Dichloropropene 4.1 U 4.1 0.59 ug/Kg 08/22/13 13:27 08/30/13 17:24  Trans-1,3-Dichloropropene 4.1 U 4.1 0.59 ug/Kg 08/22/13 13:27 08/30/13 17:24  Trans-1,3-Dichloropropene 4.1 U 4.1 0.59 ug/Kg 08/22/13 13:27 08/30/13 17:24  Trans-1,3-Dichloropropene 4.1 U 4.1 0.59 ug/Kg 08/22/13 13:27 08/30/13 17:24  Trans-1,3-Dichloropropene 4.1 U 4.1 0.59 ug/Kg 08/22/13 13:27 08/30/13 17:24  Trans-1,3-Dichloropropene 4.1 U 4.1 0.59 ug/Kg 08/22/13 13:27 08/30/13 17:24	Styrene	4.1	U	4.1	0.62	ug/Kg	₽	08/22/13 13:27	08/30/13 17:24	
1,1,2,2-Tetrachloroethane       4.1       U       4.1       0.58       ug/Kg       © 08/22/13 13:27       08/30/13 17:24         Fetrachloroethene       4.1       U       4.1       0.68       ug/Kg       © 08/22/13 13:27       08/30/13 17:24         Foluene       4.1       U       4.1       0.57       ug/Kg       © 08/22/13 13:27       08/30/13 17:24         Frans-1,2-Dichloroethene       4.1       U       4.1       0.62       ug/Kg       © 08/22/13 13:27       08/30/13 17:24         Frans-1,3-Dichloropropene       4.1       U       4.1       0.75       ug/Kg       © 08/22/13 13:27       08/30/13 17:24         Frans-1,3-Dichlorobenzene       4.1       U       4.1       0.59       ug/Kg       © 08/22/13 13:27       08/30/13 17:24         Frans-1,3-Dichloroethane       4.1       U       4.1       0.59       ug/Kg       © 08/22/13 13:27       08/30/13 17:24         Frans-1,3-Dichloroethane       4.1       U       4.1       0.59       ug/Kg       © 08/22/13 13:27       08/30/13 17:24         Frans-1,3-Dichloroethane       4.1       U       4.1       0.59       ug/Kg       © 08/22/13 13:27       08/30/13 17:24         Frans-1,3-Dichloroethane       4.1       U       4.1 <td>Tert-amyl methyl ether</td> <td>4.1</td> <td>U</td> <td>4.1</td> <td>0.36</td> <td>ug/Kg</td> <td>₽</td> <td>08/22/13 13:27</td> <td>08/30/13 17:24</td> <td></td>	Tert-amyl methyl ether	4.1	U	4.1	0.36	ug/Kg	₽	08/22/13 13:27	08/30/13 17:24	
Fetrachloroethene       4.1       U       4.1       0.68       ug/Kg       © 08/22/13 13:27       08/30/13 17:24         Foluene       4.1       U       4.1       0.57       ug/Kg       © 08/22/13 13:27       08/30/13 17:24         rans-1,2-Dichloroethene       4.1       U       4.1       0.62       ug/Kg       © 08/22/13 13:27       08/30/13 17:24         rans-1,3-Dichloropropene       4.1       U       4.1       0.75       ug/Kg       © 08/22/13 13:27       08/30/13 17:24         1,2,4-Trichlorobenzene       4.1       U       4.1       0.59       ug/Kg       © 08/22/13 13:27       08/30/13 17:24         1,1,1-Trichloroethane       4.1       U       4.1       0.89       ug/Kg       © 08/22/13 13:27       08/30/13 17:24         1,1,2-Trichloroethane       4.1       U       4.1       0.75       ug/Kg       © 08/22/13 13:27       08/30/13 17:24	ert-Butyl alcohol	4.1	U	4.1	2.8	ug/Kg	₽	08/22/13 13:27	08/30/13 17:24	
Foluene       4.1 U       4.1 D       <	1,1,2,2-Tetrachloroethane	4.1	U	4.1	0.58	ug/Kg	₩	08/22/13 13:27	08/30/13 17:24	
rans-1,2-Dichloroethene 4.1 U 4.1 0.62 ug/Kg 08/22/13 13:27 08/30/13 17:24 rans-1,3-Dichloropropene 4.1 U 4.1 0.75 ug/Kg 08/22/13 13:27 08/30/13 17:24 1,2,4-Trichlorobenzene 4.1 U 4.1 0.59 ug/Kg 08/22/13 13:27 08/30/13 17:24 1,1,1-Trichloroethane 4.1 U 4.1 0.89 ug/Kg 08/22/13 13:27 08/30/13 17:24 1,1,2-Trichloroethane 4.1 U 4.1 0.75 ug/Kg 08/22/13 13:27 08/30/13 17:24 1,1,2-Trichloroethane 4.1 U 4.1 0.75 ug/Kg 08/22/13 13:27 08/30/13 17:24	Tetrachloroethene	4.1	U	4.1	0.68	ug/Kg	₩	08/22/13 13:27	08/30/13 17:24	
rans-1,3-Dichloropropene 4.1 U 4.1 0.75 ug/Kg 08/22/13 13:27 08/30/13 17:24 1,2,4-Trichlorobenzene 4.1 U 4.1 0.59 ug/Kg 08/22/13 13:27 08/30/13 17:24 1,1,1-Trichloroethane 4.1 U 4.1 0.89 ug/Kg 08/22/13 13:27 08/30/13 17:24 1,1,2-Trichloroethane 4.1 U 4.1 0.75 ug/Kg 08/22/13 13:27 08/30/13 17:24 1,1,2-Trichloroethane 4.1 U 4.1 0.75 ug/Kg 08/22/13 13:27 08/30/13 17:24	Toluene	4.1	U	4.1	0.57	ug/Kg	₽	08/22/13 13:27	08/30/13 17:24	
1,2,4-Trichlorobenzene     4.1 U     4.1 0.59 ug/Kg     © 08/22/13 13:27 08/30/13 17:24       1,1,1-Trichloroethane     4.1 U     4.1 0.89 ug/Kg     © 08/22/13 13:27 08/30/13 17:24       1,1,2-Trichloroethane     4.1 U     4.1 0.75 ug/Kg     © 08/22/13 13:27 08/30/13 17:24	rans-1,2-Dichloroethene	4.1	U	4.1	0.62	ug/Kg	₽	08/22/13 13:27	08/30/13 17:24	
1,1,1-Trichloroethane     4.1 U     4.1 U     4.1 U     0.89 ug/Kg     © 08/22/13 13:27 08/30/13 17:24       1,1,2-Trichloroethane     4.1 U     4.1 U     0.75 ug/Kg     © 08/22/13 13:27 08/30/13 17:24	rans-1,3-Dichloropropene	4.1	U	4.1	0.75	ug/Kg	₽	08/22/13 13:27	08/30/13 17:24	
1,1,2-Trichloroethane 4.1 U 4.1 0.75 ug/Kg © 08/22/13 13:27 08/30/13 17:24	1,2,4-Trichlorobenzene	4.1	U	4.1	0.59	ug/Kg		08/22/13 13:27	08/30/13 17:24	
	1,1,1-Trichloroethane	4.1	U	4.1	0.89	ug/Kg	₽	08/22/13 13:27	08/30/13 17:24	
	1,1,2-Trichloroethane	4.1	U	4.1	0.75	ug/Kg	₽	08/22/13 13:27	08/30/13 17:24	
	Trichloroethene	4.1	U	4.1			φ.	08/22/13 13:27	08/30/13 17:24	

TestAmerica Savannah

TestAmerica Job ID: 680-93423-1

3

4

6

8

10

11

Client: ARCADIS U.S., Inc.

Date Received: 08/21/13 10:07

Project/Site: CSX C&O Canal Brunswick, MD

Lab Sample ID: 680-93423-2

TestAmerica Job ID: 680-93423-1

Client Sample ID: SB01-01 (9.0-10.0) Date Collected: 08/19/13 12:35 Matrix: Solid

Percent Solids: 82.2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichlorofluoromethane	4.1	U	4.1	0.77	ug/Kg	₩	08/22/13 13:27	08/30/13 17:24	1
1,1,2-Trichloro-1,2,2-trifluoroethane	4.1	U	4.1	1.6	ug/Kg	₽	08/22/13 13:27	08/30/13 17:24	1
Vinyl chloride	4.1	U	4.1	0.75	ug/Kg	\$	08/22/13 13:27	08/30/13 17:24	1
Xylenes, Total	8.1	U	8.1	1.5	ug/Kg	₩	08/22/13 13:27	08/30/13 17:24	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	96		72 - 122				08/22/13 13:27	08/30/13 17:24	1
Dibromofluoromethane	105		79 - 123				08/22/13 13:27	08/30/13 17:24	1
Toluene-d8 (Surr)	96		80 - 120				08/22/13 13:27	08/30/13 17:24	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzaldehyde	400	U	400	70	ug/Kg	<del></del>	08/25/13 12:13	08/31/13 21:26	1
Phenol	400	U	400	41	ug/Kg	₩	08/25/13 12:13	08/31/13 21:26	1
Bis(2-chloroethyl)ether	400	U	400	54	ug/Kg	₩	08/25/13 12:13	08/31/13 21:26	1
2-Chlorophenol	400	U	400	48	ug/Kg	*	08/25/13 12:13	08/31/13 21:26	1
2-Methylphenol	400	U	400	33	ug/Kg	₩	08/25/13 12:13	08/31/13 21:26	1
bis (2-chloroisopropyl) ether	400	U	400	36	ug/Kg	₽	08/25/13 12:13	08/31/13 21:26	1
Acetophenone	400	U	400	34	ug/Kg	\$	08/25/13 12:13	08/31/13 21:26	1
3 & 4 Methylphenol	400	U	400	52	ug/Kg	₽	08/25/13 12:13	08/31/13 21:26	1
N-Nitrosodi-n-propylamine	400	U	400	39	ug/Kg	₽	08/25/13 12:13	08/31/13 21:26	1
Hexachloroethane	400	U	400	34	ug/Kg	<b>\$</b>	08/25/13 12:13	08/31/13 21:26	1
Nitrobenzene	400	U	400	31	ug/Kg	₩	08/25/13 12:13	08/31/13 21:26	1
Isophorone	400	U	400	40	ug/Kg	₩	08/25/13 12:13	08/31/13 21:26	1
2-Nitrophenol	400	U	400	50	ug/Kg		08/25/13 12:13	08/31/13 21:26	1
2,4-Dimethylphenol	400	U	400	53	ug/Kg	₩	08/25/13 12:13	08/31/13 21:26	1
Bis(2-chloroethoxy)methane	400	U	400	47	ug/Kg	₩	08/25/13 12:13	08/31/13 21:26	1
2,4-Dichlorophenol	400	U	400	42	ug/Kg		08/25/13 12:13	08/31/13 21:26	1
Naphthalene	400	U	400	36	ug/Kg	₽	08/25/13 12:13	08/31/13 21:26	1
4-Chloroaniline	800	U	800	63	ug/Kg	₽	08/25/13 12:13	08/31/13 21:26	1
Hexachlorobutadiene	400	U	400	44	ug/Kg		08/25/13 12:13	08/31/13 21:26	1
Caprolactam	400	U	400	80	ug/Kg	₩	08/25/13 12:13	08/31/13 21:26	1
4-Chloro-3-methylphenol	400	U	400	42	ug/Kg	₽	08/25/13 12:13	08/31/13 21:26	1
2-Methylnaphthalene	400	U	400	46	ug/Kg	φ.	08/25/13 12:13	08/31/13 21:26	1
Hexachlorocyclopentadiene	400	U	400	50	ug/Kg	₽	08/25/13 12:13	08/31/13 21:26	1
2,4,6-Trichlorophenol	400	U	400	35	ug/Kg	₽	08/25/13 12:13	08/31/13 21:26	1
2,4,5-Trichlorophenol	400	U	400	42	ug/Kg	φ.	08/25/13 12:13	08/31/13 21:26	1
1,1'-Biphenyl	900	U	900	900	ug/Kg	₽	08/25/13 12:13	08/31/13 21:26	1
2-Chloronaphthalene	400	U	400	42	ug/Kg	₽	08/25/13 12:13	08/31/13 21:26	1
2-Nitroaniline	2100	U	2100	54	ug/Kg	ф.	08/25/13 12:13	08/31/13 21:26	1
Dimethyl phthalate	400	U	400	41	ug/Kg	₽	08/25/13 12:13	08/31/13 21:26	1
2,6-Dinitrotoluene	400	U	400	51	ug/Kg	₽	08/25/13 12:13	08/31/13 21:26	1
Acenaphthylene	400	U	400	44	ug/Kg	ф.	08/25/13 12:13	08/31/13 21:26	1
3-Nitroaniline	2100	U	2100	56	ug/Kg	₽	08/25/13 12:13	08/31/13 21:26	1
Acenaphthene	400	U	400	50	ug/Kg	₩	08/25/13 12:13	08/31/13 21:26	1
2,4-Dinitrophenol	2100	U	2100	1000	ug/Kg		08/25/13 12:13	08/31/13 21:26	1
4-Nitrophenol	2100	U	2100	400	ug/Kg	₩	08/25/13 12:13	08/31/13 21:26	1
Dibenzofuran	400	U	400	40	ug/Kg	₩	08/25/13 12:13	08/31/13 21:26	1
2,4-Dinitrotoluene	400		400	59	ug/Kg		08/25/13 12:13	08/31/13 21:26	1
Diethyl phthalate	400		400		ug/Kg	₽	08/25/13 12:13	08/31/13 21:26	1

TestAmerica Savannah

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB01-01 (9.0-10.0)

Date Collected: 08/19/13 12:35 Date Received: 08/21/13 10:07

Diesel Range Organics [C10-C28]

ORO C24-C40

o-Terphenyl (Surr)

Surrogate

Lab Sample ID: 680-93423-2

Matrix: Solid Percent Solids: 82.2

Analyte	Result	nds (GC/M Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
Fluorene	400	U	400	44	ug/Kg	<del></del>	08/25/13 12:13	08/31/13 21:26	
4-Chlorophenyl phenyl ether	400	U	400	53	ug/Kg		08/25/13 12:13	08/31/13 21:26	
4-Nitroaniline	2100	U	2100	59	ug/Kg	₽	08/25/13 12:13	08/31/13 21:26	
4,6-Dinitro-2-methylphenol	2100	U	2100	210	ug/Kg	₩	08/25/13 12:13	08/31/13 21:26	
N-Nitrosodiphenylamine	400	U	400	40	ug/Kg		08/25/13 12:13	08/31/13 21:26	
4-Bromophenyl phenyl ether	400	U	400	44	ug/Kg	₩	08/25/13 12:13	08/31/13 21:26	
Hexachlorobenzene	400	U	400	47	ug/Kg	₩	08/25/13 12:13	08/31/13 21:26	
Atrazine	400	U	400	28	ug/Kg		08/25/13 12:13	08/31/13 21:26	
Pentachlorophenol	2100	U	2100	400	ug/Kg	₽	08/25/13 12:13	08/31/13 21:26	
Phenanthrene	400	U	400	33	ug/Kg	₽	08/25/13 12:13	08/31/13 21:26	
Anthracene	400	U	400	30	ug/Kg	ф.	08/25/13 12:13	08/31/13 21:26	
Carbazole	400	U	400	36	ug/Kg	₽	08/25/13 12:13	08/31/13 21:26	
Di-n-butyl phthalate	400	U	400	36	ug/Kg	₩	08/25/13 12:13	08/31/13 21:26	
Fluoranthene	400	U	400	39	ug/Kg	φ.	08/25/13 12:13	08/31/13 21:26	
Pyrene	400	U	400	33	ug/Kg	₩	08/25/13 12:13	08/31/13 21:26	
Butyl benzyl phthalate	400	U	400	31	ug/Kg	₩	08/25/13 12:13	08/31/13 21:26	
3,3'-Dichlorobenzidine	800	U	800	34	ug/Kg		08/25/13 12:13	08/31/13 21:26	
Benzo[a]anthracene	400	U	400	33	ug/Kg	₩	08/25/13 12:13	08/31/13 21:26	
Chrysene	400	U	400	25	ug/Kg	₩	08/25/13 12:13	08/31/13 21:26	
Bis(2-ethylhexyl) phthalate	400	U	400	35	ug/Kg		08/25/13 12:13	08/31/13 21:26	
Di-n-octyl phthalate	400	U	400	35	ug/Kg	₩	08/25/13 12:13	08/31/13 21:26	
Benzo[b]fluoranthene	400	U	400	46	ug/Kg	₩	08/25/13 12:13	08/31/13 21:26	
Benzo[k]fluoranthene	400	U	400	79	ug/Kg	₩.	08/25/13 12:13	08/31/13 21:26	
Benzo[a]pyrene	400	U	400	63	ug/Kg	₩	08/25/13 12:13	08/31/13 21:26	
Indeno[1,2,3-cd]pyrene	400	U	400	34	ug/Kg	₩	08/25/13 12:13	08/31/13 21:26	
Dibenz(a,h)anthracene	400	U	400	47	ug/Kg	₩.	08/25/13 12:13	08/31/13 21:26	
Benzo[g,h,i]perylene	400	U	400	27	ug/Kg	₩	08/25/13 12:13	08/31/13 21:26	
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fa
Nitrobenzene-d5 (Surr)	65		46 - 130				08/25/13 12:13	08/31/13 21:26	
2-Fluorobiphenyl	71		58 - 130				08/25/13 12:13	08/31/13 21:26	
Terphenyl-d14 (Surr)	76		60 - 130				08/25/13 12:13	08/31/13 21:26	
Phenol-d5 (Surr)	67		49 - 130				08/25/13 12:13	08/31/13 21:26	
2-Fluorophenol (Surr)	82		40 - 130				08/25/13 12:13	08/31/13 21:26	
2,4,6-Tribromophenol (Surr)	81		58 - 130				08/25/13 12:13	08/31/13 21:26	
Method: 8015C - Nonhalogenate	ed Organics usi	ng GC/FID	-Modified (Gasol	ine Ran	ge Organi	ics)			
Analyte		Qualifier	RL	MDL	Unit	Ď	Prepared	Analyzed	Dil Fa
Gasoline Range Organics (GRO) -C6-C10	320	U	320	24	ug/Kg	<del>-</del> <del>-</del>	08/21/13 16:21	08/22/13 16:58	
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fa
a,a,a-Trifluorotoluene	104		70 - 131				08/21/13 16:21	08/22/13 16:58	

TestAmerica Savannah

Analyzed

09/01/13 17:48

09/01/13 17:48

Analyzed

09/01/13 17:48

RL

6100

6100

Limits

50 - 150

MDL Unit

1700 ug/Kg

1700 ug/Kg

D

₩

Prepared

08/30/13 13:38

08/30/13 13:38

Prepared

08/30/13 13:38

Method: 8015C - Nonhalogenated Organics using GC/FID -Modified (Diesel Range Organics) Result Qualifier

3400 JB

%Recovery Qualifier

76

2700

Dil Fac

Dil Fac

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93423-1

Client Sample ID: SB01-03 (0.5-1.5)

Lab Sample ID: 680-93423-3 Date Collected: 08/19/13 14:00 Matrix: Solid Date Received: 08/21/13 10:07 Percent Solids: 83.3

Method: 8260B - Volatile Organic Compounds (GC/MS) RL MDL D Dil Fac Result Qualifier Unit Prepared Analyzed 28 Ū 28 08/22/13 13:27 Acetone 8.2 ug/Kg 08/30/13 17:47 Benzene 56 U 56 08/22/13 13:27 08/30/13 17:47 0.55 ug/Kg ä Bromodichloromethane 5.6 U 5.6 0.95 ug/Kg 08/22/13 13:27 08/30/13 17:47 φ 5.6 U 5.6 0.71 08/22/13 13:27 08/30/13 17:47 Bromoform ug/Kg Bromomethane 5.6 U 5.6 ug/Kg 08/22/13 13:27 08/30/13 17:47 \$ 08/22/13 13:27 Carbon disulfide 56 U 56 14 ug/Kg 08/30/13 17:47 φ Carbon tetrachloride 5.6 U 5.6 1.9 ug/Kg 08/22/13 13:27 08/30/13 17:47 5.6 U 5.6 ug/Kg 08/22/13 13:27 Chlorobenzene 0.59 08/30/13 17:47 ä Chloroethane 5.6 U 5.6 2.1 ug/Kg 08/22/13 13:27 08/30/13 17:47 ġ Chloroform 5.6 U 5.6 0.66 ug/Kg 08/22/13 13:27 08/30/13 17:47 ġ Chloromethane 5.6 U 5.6 1.1 ug/Kg 08/22/13 13:27 08/30/13 17:47 ď 08/22/13 13:27 cis-1,2-Dichloroethene 5.6 U 5.6 0.86 ug/Kg 08/30/13 17:47 ġ cis-1.3-Dichloropropene 56 U 56 1.4 ug/Kg 08/22/13 13:27 08/30/13 17:47 Cyclohexane 5.6 U 5.6 1.1 ug/Kg 08/22/13 13:27 08/30/13 17:47 ġ 56 U 0.98 08/22/13 13:27 08/30/13 17:47 Dibromochloromethane 56 ug/Kg à 1,2-Dibromo-3-Chloropropane 5.6 U 5.6 08/22/13 13:27 08/30/13 17:47 3.7 ug/Kg 08/22/13 13:27 1.2-Dichlorobenzene 5.6 U 5.6 0.80 ug/Kg 08/30/13 17:47 1,3-Dichlorobenzene 5.6 U 08/22/13 13:27 08/30/13 17:47 5.6 1.1 ug/Kg 5.6 U ψ 08/22/13 13:27 08/30/13 17:47 1.4-Dichlorobenzene 5.6 0.92 ug/Kg ₩ Dichlorodifluoromethane 5.6 U 5.6 1.5 ug/Kg 08/22/13 13:27 08/30/13 17:47 ₽ 1,1-Dichloroethane 5.6 U 5.6 0.93 ua/Ka 08/22/13 13:27 08/30/13 17:47 ψ 56 U 1.2-Dichloroethane 5.6 0.92 ug/Kg 08/22/13 13:27 08/30/13 17:47 ₩ 1,1-Dichloroethene 5.6 U 5.6 08/22/13 13:27 08/30/13 17:47 0.84 ua/Ka ġ 1,2-Dichloropropane 5.6 U 5.6 0.83 ug/Kg 08/22/13 13:27 08/30/13 17:47 Diisopropyl ether 5.6 U 5.6 0.62 ug/Kg 08/22/13 13:27 08/30/13 17:47 0.69 56 U 5.6 08/22/13 13:27 08/30/13 17:47 Ethylbenzene ug/Kg Ethylene Dibromide 08/22/13 13:27 5.6 5.6 0.54 ug/Kg 08/30/13 17:47 ₽ Ethyl tert-butyl ether 5.6 U 0.63 08/22/13 13:27 08/30/13 17:47 5.6 ug/Kg ₩ 28 U 28 08/22/13 13:27 08/30/13 17:47 2-Hexanone ug/Kg 5.6 U 08/22/13 13:27 Isopropylbenzene 5.6 0.77 08/30/13 17:47 ug/Kg Methyl acetate 5.6 U 5.6 ug/Kg 08/22/13 13:27 08/30/13 17:47 ₽ Methylcyclohexane 5.6 U 5.6 0.98 ug/Kg 08/22/13 13:27 08/30/13 17:47 ₩ Methylene Chloride 17 U 17 ug/Kg 08/22/13 13:27 08/30/13 17:47 ₽ Methyl Ethyl Ketone 28 U 28 4.6 08/22/13 13:27 08/30/13 17:47 ug/Kg ₽ methyl isobutyl ketone 28 U 28 4.5 ug/Kg 08/22/13 13:27 08/30/13 17:47 Methyl tert-butyl ether 5.6 U 5.6 08/22/13 13:27 08/30/13 17:47 1.1 ua/Ka φ Naphthalene 08/22/13 13:27 5.6 U 5.6 1.1 ug/Kg 08/30/13 17:47 Styrene 5.6 U 5.6 0.86 ug/Kg 08/22/13 13:27 08/30/13 17:47 Tert-amyl methyl ether 5.6 U 5.6 0.50 ug/Kg 08/22/13 13:27 08/30/13 17:47 à 08/22/13 13:27 tert-Butyl alcohol 5.6 5.6 3.8 ug/Kg 08/30/13 17:47 1,1,2,2-Tetrachloroethane ug/Kg 5.6 U 5.6 0.81 08/22/13 13:27 08/30/13 17:47 ₩ ug/Kg Tetrachloroethene 5.6 U 5.6 0.95 08/22/13 13:27 08/30/13 17:47 5.6 U 08/22/13 13:27 Toluene 5.6 0.79 08/30/13 17:47 ug/Kg trans-1,2-Dichloroethene 5.6 U 5.6 0.86 08/22/13 13:27 08/30/13 17:47 ug/Kg trans-1,3-Dichloropropene 5.6 U 5.6 1.0 ug/Kg 08/22/13 13:27 08/30/13 17:47 φ 1,2,4-Trichlorobenzene 5.6 U 5.6 0.82 ug/Kg 08/22/13 13:27 08/30/13 17:47 1,1,1-Trichloroethane 5.6 U 5.6 08/22/13 13:27 08/30/13 17:47 1.2 ug/Kg ŭ 1,1,2-Trichloroethane 5.6 U 5.6 1.0 ug/Kg 08/22/13 13:27 08/30/13 17:47 Trichloroethene 5.6 U 5.6 0.54 ug/Kg 08/22/13 13:27 08/30/13 17:47

TestAmerica Savannah

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93423-1

Lab Sample ID: 680-93423-3

Matrix: Solid Percent Solids: 83.3

Client Sample ID: SB01-03 (0.5-1.5)

Date Collected: 08/19/13 14:00 Date Received: 08/21/13 10:07

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichlorofluoromethane	5.6	U	5.6	1.1	ug/Kg	₩	08/22/13 13:27	08/30/13 17:47	1
1,1,2-Trichloro-1,2,2-trifluoroethane	5.6	U	5.6	2.3	ug/Kg	₽	08/22/13 13:27	08/30/13 17:47	1
Vinyl chloride	5.6	U	5.6	1.0	ug/Kg	₽	08/22/13 13:27	08/30/13 17:47	1
Xylenes, Total	11	U	11	2.1	ug/Kg	₽	08/22/13 13:27	08/30/13 17:47	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	98		72 - 122				08/22/13 13:27	08/30/13 17:47	1
Dibromofluoromethane	103		79 - 123				08/22/13 13:27	08/30/13 17:47	1
Toluene-d8 (Surr)	95		80 <sub>-</sub> 120				08/22/13 13:27	08/30/13 17:47	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzaldehyde	390	U	390	69	ug/Kg	<u> </u>	08/25/13 12:13	08/31/13 21:52	1
Phenol	390	U	390	41	ug/Kg	₩	08/25/13 12:13	08/31/13 21:52	1
Bis(2-chloroethyl)ether	390	U	390	54	ug/Kg	₽	08/25/13 12:13	08/31/13 21:52	1
2-Chlorophenol	390	U	390	48	ug/Kg	₽	08/25/13 12:13	08/31/13 21:52	1
2-Methylphenol	390	U	390	32	ug/Kg	₩	08/25/13 12:13	08/31/13 21:52	1
bis (2-chloroisopropyl) ether	390	U	390	36	ug/Kg	₩	08/25/13 12:13	08/31/13 21:52	1
Acetophenone	390	U	390	33	ug/Kg	₽	08/25/13 12:13	08/31/13 21:52	1
3 & 4 Methylphenol	390	U	390	51	ug/Kg	₩	08/25/13 12:13	08/31/13 21:52	1
N-Nitrosodi-n-propylamine	390	U	390	38	ug/Kg	₩	08/25/13 12:13	08/31/13 21:52	1
Hexachloroethane	390	U	390	33	ug/Kg	*	08/25/13 12:13	08/31/13 21:52	1
Nitrobenzene	390	U	390	31	ug/Kg	₽	08/25/13 12:13	08/31/13 21:52	1
Isophorone	390	U	390	39	ug/Kg	₽	08/25/13 12:13	08/31/13 21:52	1
2-Nitrophenol	390	U	390	49	ug/Kg	₽	08/25/13 12:13	08/31/13 21:52	1
2,4-Dimethylphenol	390	U	390	52	ug/Kg	₽	08/25/13 12:13	08/31/13 21:52	1
Bis(2-chloroethoxy)methane	390	U	390	46	ug/Kg	₽	08/25/13 12:13	08/31/13 21:52	1
2,4-Dichlorophenol	390	U	390	42	ug/Kg	₽	08/25/13 12:13	08/31/13 21:52	1
Naphthalene	170	J	390	36	ug/Kg	₽	08/25/13 12:13	08/31/13 21:52	1
4-Chloroaniline	790	U	790	62	ug/Kg	₽	08/25/13 12:13	08/31/13 21:52	1
Hexachlorobutadiene	390	U	390	43	ug/Kg	₽	08/25/13 12:13	08/31/13 21:52	1
Caprolactam	390	U	390	79	ug/Kg	₩	08/25/13 12:13	08/31/13 21:52	1
4-Chloro-3-methylphenol	390	U	390	42	ug/Kg	₽	08/25/13 12:13	08/31/13 21:52	1
2-Methylnaphthalene	86	J	390	45	ug/Kg	₽	08/25/13 12:13	08/31/13 21:52	1
Hexachlorocyclopentadiene	390	U	390	49	ug/Kg	₽	08/25/13 12:13	08/31/13 21:52	1
2,4,6-Trichlorophenol	390	U	390	35	ug/Kg	₩	08/25/13 12:13	08/31/13 21:52	1
2,4,5-Trichlorophenol	390	U	390	42	ug/Kg	*	08/25/13 12:13	08/31/13 21:52	1
1,1'-Biphenyl	880	U	880	880	ug/Kg	₩	08/25/13 12:13	08/31/13 21:52	1
2-Chloronaphthalene	390	U	390	42	ug/Kg	₩	08/25/13 12:13	08/31/13 21:52	1
2-Nitroaniline	2000	U	2000	54	ug/Kg	₽	08/25/13 12:13	08/31/13 21:52	1
Dimethyl phthalate	390	U	390	41	ug/Kg	₩	08/25/13 12:13	08/31/13 21:52	1
2,6-Dinitrotoluene	390	U	390	50	ug/Kg	₩	08/25/13 12:13	08/31/13 21:52	1
Acenaphthylene	390	U	390	43	ug/Kg	₽	08/25/13 12:13	08/31/13 21:52	1
3-Nitroaniline	2000	U	2000	55	ug/Kg	₩	08/25/13 12:13	08/31/13 21:52	1
Acenaphthene	390	U	390	49	ug/Kg	₽	08/25/13 12:13	08/31/13 21:52	1
2,4-Dinitrophenol	2000	U	2000	990	ug/Kg		08/25/13 12:13	08/31/13 21:52	1
4-Nitrophenol	2000	U	2000	390	ug/Kg	₽	08/25/13 12:13	08/31/13 21:52	1
Dibenzofuran	46	J	390	39	ug/Kg	₽	08/25/13 12:13	08/31/13 21:52	1
2,4-Dinitrotoluene	390	U	390	58	ug/Kg	₽	08/25/13 12:13	08/31/13 21:52	1
Diethyl phthalate	390	U	390		ug/Kg	₽	08/25/13 12:13	08/31/13 21:52	1

TestAmerica Savannah

6

Diesel Range Organics [C10-C28]

ORO C24-C40

o-Terphenyl (Surr)

Surrogate

TestAmerica Job ID: 680-93423-1

Client Sample ID: SB01-03 (0.5-1.5)

Lab Sample ID: 680-93423-3 Date Collected: 08/19/13 14:00 **Matrix: Solid** Date Received: 08/21/13 10:07 Percent Solids: 83.3

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued) Result Qualifier MDL Unit D Dil Fac Analyte Prepared Analyzed 390 Ū 390 08/25/13 12:13 08/31/13 21:52 Fluorene 43 ug/Kg φ 390 U 390 4-Chlorophenyl phenyl ether 08/25/13 12:13 08/31/13 21:52 52 ug/Kg ä 4-Nitroaniline 2000 U 2000 58 ug/Kg 08/25/13 12:13 08/31/13 21:52 # 4,6-Dinitro-2-methylphenol 2000 U 2000 08/25/13 12:13 08/31/13 21:52 200 ug/Kg N-Nitrosodiphenylamine 390 U 390 39 ug/Kg 08/25/13 12:13 08/31/13 21:52 390 U 390 \$ 08/25/13 12:13 08/31/13 21:52 4-Bromophenyl phenyl ether 43 ug/Kg ₽ Hexachlorobenzene 390 U 390 46 ug/Kg 08/25/13 12:13 08/31/13 21:52 390 U 390 ug/Kg 08/25/13 12:13 08/31/13 21:52 Atrazine 27 ä 2000 U 08/25/13 12:13 Pentachlorophenol 2000 390 ug/Kg 08/31/13 21:52 **Phenanthrene** 75 390 32 ug/Kg 08/25/13 12:13 08/31/13 21:52 08/25/13 12:13 Anthracene 390 U 390 30 ug/Kg 08/31/13 21:52 ä 08/25/13 12:13 Carbazole 390 U 390 36 ug/Kg 08/31/13 21:52 ₩ Di-n-butyl phthalate 390 U 390 36 ug/Kg 08/25/13 12:13 08/31/13 21:52 390 38 ug/Kg 08/25/13 12:13 08/31/13 21:52 **Fluoranthene** 66 390 08/25/13 12:13 08/31/13 21:52 32 ug/Kg **Pyrene** 35 л ä Butyl benzyl phthalate 390 U 390 08/25/13 12:13 08/31/13 21:52 ug/Kg φ 790 790 08/25/13 12:13 08/31/13 21:52 3.3'-Dichlorobenzidine U 33 ug/Kg Benzo[a]anthracene 390 390 08/25/13 12:13 08/31/13 21:52 U ug/Kg 390 08/25/13 12:13 08/31/13 21:52 25 ug/Kg Chrysene 34 φ Bis(2-ethylhexyl) phthalate 65 J 390 35 ug/Kg 08/25/13 12:13 08/31/13 21:52 ₽ Di-n-octyl phthalate 390 U 390 35 ua/Ka 08/25/13 12:13 08/31/13 21:52 ₩ 390 U 390 08/25/13 12:13 Benzo[b]fluoranthene 45 ug/Kg 08/31/13 21:52 ġ Benzo[k]fluoranthene 390 390 77 ug/Kg 08/25/13 12:13 08/31/13 21:52 ġ Benzo[a]pyrene 390 U 390 62 ug/Kg 08/25/13 12:13 08/31/13 21:52 ġ Indeno[1,2,3-cd]pyrene 54 390 ug/Kg 08/25/13 12:13 08/31/13 21:52 390 390 U 08/25/13 12:13 08/31/13 21:52 Dibenz(a,h)anthracene 46 ug/Kg 390 08/25/13 12:13 08/31/13 21:52 Benzo[g,h,i]perylene 86 26 ug/Kg Surrogate %Recovery Qualifier Limits Prepared Analyzed Dil Fac Nitrobenzene-d5 (Surr) 51 46 - 130 08/25/13 12:13 08/31/13 21:52 2-Fluorobiphenyl 56 Х 58 - 130 08/25/13 12:13 08/31/13 21:52 Terphenyl-d14 (Surr) 47 60 - 130 08/25/13 12:13 08/31/13 21:52 53 49 - 130 08/25/13 12:13 08/31/13 21:52 Phenol-d5 (Surr) 52 2-Fluorophenol (Surr) 40 - 130 08/25/13 12:13 08/31/13 21:52 63 58 - 130 08/25/13 12:13 08/31/13 21:52 2,4,6-Tribromophenol (Surr) Method: 8015C - Nonhalogenated Organics using GC/FID -Modified (Gasoline Range Organics) Analyte Result Qualifier MDL Unit D Prepared Analyzed Dil Fac RL 330 08/21/13 16:21 260 25 ug/Kg 08/22/13 17:20 J **Gasoline Range Organics (GRO)** -C6-C10 %Recovery Qualifier Surrogate Limits Prepared Analyzed Dil Fac a,a,a-Trifluorotoluene 116 70 - 131 08/21/13 16:21 08/22/13 17:20

TestAmerica Savannah

Analyzed

09/01/13 18:03

09/01/13 18:03

Analyzed

09/01/13 18:03

RL

5900

5900

Limits

50 - 150

MDL Unit

1700

1700

ug/Kg

ug/Kg

D

Prepared

08/30/13 13:38

08/30/13 13:38

Prepared

08/30/13 13:38

Method: 8015C - Nonhalogenated Organics using GC/FID -Modified (Diesel Range Organics) Result Qualifier

Qualifier

21000

43000

75

%Recovery

Dil Fac

Dil Fac

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

I I O I ID 000 00 (00 )

TestAmerica Job ID: 680-93423-1

Lab Sample ID: 680-93423-4 Matrix: Solid

Percent Solids: 83.2

## Client Sample ID: SB01-03 (5.0-6.0)

Date Collected: 08/19/13 14:10 Date Received: 08/21/13 10:07

Method: 8260B - Volatile Organi Analyte	-	Qualifier	RL	MDI	Unit	D	Prepared	Analyzed	Dil Fa
Acetone			23	6.9	ug/Kg	— <del>-</del>	08/22/13 13:27	08/30/13 18:13	
Benzene	4.7		4.7	0.46	ug/Kg	₩	08/22/13 13:27	08/30/13 18:13	
Bromodichloromethane	4.7		4.7	0.79	ug/Kg	⇔	08/22/13 13:27	08/30/13 18:13	
Bromoform	4.7		4.7	0.59	ug/Kg		08/22/13 13:27	08/30/13 18:13	
Bromomethane		U *	4.7	1.3	ug/Kg	*	08/22/13 13:27	08/30/13 18:13	
Carbon disulfide	4.7		4.7	1.1	ug/Kg	*	08/22/13 13:27	08/30/13 18:13	
Carbon tetrachloride	4.7		4.7		ug/Kg	· · · · · · · · · · · · · · · · · · ·	08/22/13 13:27	08/30/13 18:13	
Chlorobenzene	4.7		4.7	0.49	ug/Kg	₽	08/22/13 13:27	08/30/13 18:13	
Chloroethane	4.7		4.7	1.8	ug/Kg ug/Kg	₽	08/22/13 13:27	08/30/13 18:13	
Chloroform	4.7		4.7	0.55	ug/Kg		08/22/13 13:27	08/30/13 18:13	
Chloromethane	4.7		4.7	0.94	ug/Kg ug/Kg		08/22/13 13:27	08/30/13 18:13	
cis-1,2-Dichloroethene	4.7		4.7	0.94	ug/Kg ug/Kg		08/22/13 13:27	08/30/13 18:13	
cis-1,3-Dichloropropene	4.7		4.7	1.1			08/22/13 13:27	08/30/13 18:13	
	4.7		4.7		ug/Kg				
Cyclohexane Dibromochloromethane	4.7		4.7	0.88	ug/Kg	~ \$	08/22/13 13:27 08/22/13 13:27	08/30/13 18:13 08/30/13 18:13	
				0.82	ug/Kg	<del></del> .	08/22/13 13:27		
1,2-Dibromo-3-Chloropropane 1.2-Dichlorobenzene	4.7		4.7	3.1	ug/Kg	~ \$		08/30/13 18:13	
,	4.7		4.7	0.67	ug/Kg	~ \$	08/22/13 13:27	08/30/13 18:13	
1,3-Dichlorobenzene	4.7		4.7	0.89	ug/Kg	· · · · · · · · · · · · · · · · · · ·	08/22/13 13:27	08/30/13 18:13	
1,4-Dichlorobenzene	4.7		4.7	0.77	ug/Kg		08/22/13 13:27	08/30/13 18:13	
Dichlorodifluoromethane	4.7		4.7		ug/Kg	*	08/22/13 13:27	08/30/13 18:13	
1,1-Dichloroethane	4.7		4.7	0.78	ug/Kg	<u>.</u>	08/22/13 13:27	08/30/13 18:13	
1,2-Dichloroethane	4.7		4.7	0.77	ug/Kg	₽	08/22/13 13:27	08/30/13 18:13	
1,1-Dichloroethene	4.7		4.7	0.70	ug/Kg	₽	08/22/13 13:27	08/30/13 18:13	
1,2-Dichloropropane	4.7		4.7	0.70	ug/Kg	<u>.</u>	08/22/13 13:27	08/30/13 18:13	
Diisopropyl ether	4.7		4.7		ug/Kg	₽	08/22/13 13:27	08/30/13 18:13	
Ethylbenzene	4.7		4.7	0.57	ug/Kg	<b>.</b>	08/22/13 13:27	08/30/13 18:13	
Ethylene Dibromide	4.7	U	4.7	0.45	ug/Kg		08/22/13 13:27	08/30/13 18:13	
Ethyl tert-butyl ether	4.7		4.7	0.53	ug/Kg	₽	08/22/13 13:27	08/30/13 18:13	
2-Hexanone	23		23	4.7	ug/Kg	₩	08/22/13 13:27	08/30/13 18:13	
sopropylbenzene	4.7	U	4.7	0.64			08/22/13 13:27	08/30/13 18:13	
Methyl acetate	4.7	U	4.7	4.3	ug/Kg	₩	08/22/13 13:27	08/30/13 18:13	
Methylcyclohexane	4.7	U	4.7	0.82	ug/Kg	₩	08/22/13 13:27	08/30/13 18:13	
Methylene Chloride	14	U	14	9.4	ug/Kg	≎	08/22/13 13:27	08/30/13 18:13	
Methyl Ethyl Ketone	23	U	23	3.9	ug/Kg	₽	08/22/13 13:27	08/30/13 18:13	
methyl isobutyl ketone	23	U	23	3.8	ug/Kg	₽	08/22/13 13:27	08/30/13 18:13	
Methyl tert-butyl ether	4.7	U	4.7	0.94	ug/Kg	₩	08/22/13 13:27	08/30/13 18:13	
Naphthalene	4.7	U	4.7	0.94	ug/Kg	₩	08/22/13 13:27	08/30/13 18:13	
Styrene	4.7	U	4.7	0.71	ug/Kg	₩	08/22/13 13:27	08/30/13 18:13	
Tert-amyl methyl ether	4.7	U	4.7	0.41	ug/Kg	₩	08/22/13 13:27	08/30/13 18:13	
ert-Butyl alcohol	4.7	U	4.7	3.2	ug/Kg	₽	08/22/13 13:27	08/30/13 18:13	
1,1,2,2-Tetrachloroethane	4.7	U	4.7	0.68	ug/Kg	₽	08/22/13 13:27	08/30/13 18:13	
Tetrachloroethene	4.7	U	4.7	0.79	ug/Kg	₽	08/22/13 13:27	08/30/13 18:13	
Toluene	4.7	U	4.7	0.66	ug/Kg		08/22/13 13:27	08/30/13 18:13	
trans-1,2-Dichloroethene	4.7	U	4.7	0.71	ug/Kg	₽	08/22/13 13:27	08/30/13 18:13	
rans-1,3-Dichloropropene	4.7	U	4.7	0.86	ug/Kg	₽	08/22/13 13:27	08/30/13 18:13	
1,2,4-Trichlorobenzene	4.7		4.7	0.69	ug/Kg		08/22/13 13:27	08/30/13 18:13	
1,1,1-Trichloroethane	4.7		4.7		ug/Kg	₽	08/22/13 13:27	08/30/13 18:13	
1,1,2-Trichloroethane	4.7		4.7		ug/Kg	₽	08/22/13 13:27	08/30/13 18:13	
Trichloroethene	4.7		4.7		ug/Kg		08/22/13 13:27	08/30/13 18:13	

TestAmerica Savannah

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11

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93423-1

Lab Sample ID: 680-93423-4

Matrix: Solid Percent Solids: 83.2

Client Sample ID: SB01-03 (5.0-6.0)

Date Collected: 08/19/13 14:10 Date Received: 08/21/13 10:07

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichlorofluoromethane	4.7	U	4.7	0.89	ug/Kg	₩	08/22/13 13:27	08/30/13 18:13	1
1,1,2-Trichloro-1,2,2-trifluoroethane	4.7	U	4.7	1.9	ug/Kg	₽	08/22/13 13:27	08/30/13 18:13	1
Vinyl chloride	4.7	U	4.7	0.86	ug/Kg	₽	08/22/13 13:27	08/30/13 18:13	1
Xylenes, Total	9.4	U	9.4	1.8	ug/Kg	₽	08/22/13 13:27	08/30/13 18:13	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	96		72 - 122				08/22/13 13:27	08/30/13 18:13	1
Dibromofluoromethane	101		79 - 123				08/22/13 13:27	08/30/13 18:13	1
Toluene-d8 (Surr)	95		80 - 120				08/22/13 13:27	08/30/13 18:13	1

-	90		00 - 120				00/22/13 13.27	00/30/13 10.13	,
Method: 8270D - Semivolatile C									
Analyte		Qualifier	RL	MDL		D	Prepared	Analyzed	Dil Fac
Benzaldehyde	400		400	70	ug/Kg	<del>*</del>	08/25/13 12:13	08/31/13 22:17	1
Phenol	400		400	41	ug/Kg	₩	08/25/13 12:13	08/31/13 22:17	1
Bis(2-chloroethyl)ether	400	U	400	54	ug/Kg	₩	08/25/13 12:13	08/31/13 22:17	1
2-Chlorophenol	400	U	400	48	ug/Kg	₽	08/25/13 12:13	08/31/13 22:17	1
2-Methylphenol	400	U	400	32	ug/Kg	₽	08/25/13 12:13	08/31/13 22:17	1
bis (2-chloroisopropyl) ether	400	U	400	36	ug/Kg	₩	08/25/13 12:13	08/31/13 22:17	1
Acetophenone	400	U	400	34	ug/Kg	₽	08/25/13 12:13	08/31/13 22:17	1
3 & 4 Methylphenol	400	U	400	52	ug/Kg	₩	08/25/13 12:13	08/31/13 22:17	1
N-Nitrosodi-n-propylamine	400	U	400	38	ug/Kg	₩	08/25/13 12:13	08/31/13 22:17	1
Hexachloroethane	400	U	400	34	ug/Kg	₽	08/25/13 12:13	08/31/13 22:17	1
Nitrobenzene	400	U	400	31	ug/Kg	₽	08/25/13 12:13	08/31/13 22:17	1
Isophorone	400	U	400	40	ug/Kg	₽	08/25/13 12:13	08/31/13 22:17	1
2-Nitrophenol	400	U	400	49	ug/Kg	\$	08/25/13 12:13	08/31/13 22:17	1
2,4-Dimethylphenol	400	U	400	53	ug/Kg	₩	08/25/13 12:13	08/31/13 22:17	1
Bis(2-chloroethoxy)methane	400	U	400	47	ug/Kg	₩	08/25/13 12:13	08/31/13 22:17	1
2,4-Dichlorophenol	400	U	400	42	ug/Kg		08/25/13 12:13	08/31/13 22:17	1
Naphthalene	400	U	400	36	ug/Kg	₽	08/25/13 12:13	08/31/13 22:17	1
4-Chloroaniline	790	U	790	62	ug/Kg	₽	08/25/13 12:13	08/31/13 22:17	1
Hexachlorobutadiene	400	U	400	43	ug/Kg		08/25/13 12:13	08/31/13 22:17	1
Caprolactam	400	U	400	79	ug/Kg	₽	08/25/13 12:13	08/31/13 22:17	1
4-Chloro-3-methylphenol	400	U	400	42	ug/Kg	₽	08/25/13 12:13	08/31/13 22:17	1
2-Methylnaphthalene	400	U	400	46	ug/Kg	φ.	08/25/13 12:13	08/31/13 22:17	1
Hexachlorocyclopentadiene	400	U	400	49	ug/Kg	₩	08/25/13 12:13	08/31/13 22:17	1
2,4,6-Trichlorophenol	400	U	400	35	ug/Kg	₩	08/25/13 12:13	08/31/13 22:17	1
2,4,5-Trichlorophenol	400	U	400	42	ug/Kg	φ.	08/25/13 12:13	08/31/13 22:17	1
1,1'-Biphenyl	890	U	890	890	ug/Kg	₩	08/25/13 12:13	08/31/13 22:17	1
2-Chloronaphthalene	400	U	400	42	ug/Kg	₩	08/25/13 12:13	08/31/13 22:17	1
2-Nitroaniline	2000		2000				08/25/13 12:13	08/31/13 22:17	1
Dimethyl phthalate	400	U	400	41	ug/Kg	₩	08/25/13 12:13	08/31/13 22:17	1
2,6-Dinitrotoluene	400	U	400	50	ug/Kg	₩	08/25/13 12:13	08/31/13 22:17	1
Acenaphthylene	400		400		ug/Kg		08/25/13 12:13	08/31/13 22:17	1
3-Nitroaniline	2000		2000	55	ug/Kg	₽	08/25/13 12:13	08/31/13 22:17	1
Acenaphthene	400		400	49	ug/Kg	₩	08/25/13 12:13	08/31/13 22:17	1
2,4-Dinitrophenol	2000		2000	990	ug/Kg		08/25/13 12:13	08/31/13 22:17	1
4-Nitrophenol	2000		2000	400	ug/Kg	₽	08/25/13 12:13	08/31/13 22:17	1
Dibenzofuran	400		400	40	ug/Kg	₩	08/25/13 12:13	08/31/13 22:17	1
2,4-Dinitrotoluene	400		400	59	ug/Kg	· · · · · · · · · · · · · · · · · · ·	08/25/13 12:13	08/31/13 22:17	
	400		400				08/25/13 12:13	08/31/13 22:17	1
Diethyl phthalate	400	U	400	44	ug/Kg	**	00/25/13 12:13	00/31/13 22:17	1

TestAmerica Savannah

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB01-03 (5.0-6.0)

Date Collected: 08/19/13 14:10 Date Received: 08/21/13 10:07

Diesel Range Organics [C10-C28]

ORO C24-C40

o-Terphenyl (Surr)

Surrogate

Lab Sample ID: 680-93423-4

Matrix: Solid

Percent Solids: 83.2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
Fluorene	400	U	400	43	ug/Kg	\$	08/25/13 12:13	08/31/13 22:17	•
4-Chlorophenyl phenyl ether	400	U	400	53	ug/Kg	₽	08/25/13 12:13	08/31/13 22:17	
4-Nitroaniline	2000	U	2000	59	ug/Kg	₩	08/25/13 12:13	08/31/13 22:17	
4,6-Dinitro-2-methylphenol	2000	U	2000	200	ug/Kg	₽	08/25/13 12:13	08/31/13 22:17	
N-Nitrosodiphenylamine	400	U	400	40	ug/Kg	₽	08/25/13 12:13	08/31/13 22:17	
4-Bromophenyl phenyl ether	400	U	400	43	ug/Kg	₽	08/25/13 12:13	08/31/13 22:17	
Hexachlorobenzene	400	U	400	47	ug/Kg	₽	08/25/13 12:13	08/31/13 22:17	
Atrazine	400	U	400	28	ug/Kg	₽	08/25/13 12:13	08/31/13 22:17	
Pentachlorophenol	2000	U	2000	400	ug/Kg	₽	08/25/13 12:13	08/31/13 22:17	
Phenanthrene	400	U	400	32	ug/Kg	₽	08/25/13 12:13	08/31/13 22:17	
Anthracene	400	U	400	30	ug/Kg	₽	08/25/13 12:13	08/31/13 22:17	
Carbazole	400	U	400	36	ug/Kg	₽	08/25/13 12:13	08/31/13 22:17	
Di-n-butyl phthalate	400	U	400	36	ug/Kg	₩	08/25/13 12:13	08/31/13 22:17	
Fluoranthene	400	U	400	38	ug/Kg		08/25/13 12:13	08/31/13 22:17	
Pyrene	400	U	400	32	ug/Kg	₽	08/25/13 12:13	08/31/13 22:17	
Butyl benzyl phthalate	400	U	400	31	ug/Kg	₽	08/25/13 12:13	08/31/13 22:17	
3,3'-Dichlorobenzidine	790	U	790	34	ug/Kg		08/25/13 12:13	08/31/13 22:17	
Benzo[a]anthracene	400	U	400	32	ug/Kg	₽	08/25/13 12:13	08/31/13 22:17	
Chrysene	400	U	400	25	ug/Kg	₽	08/25/13 12:13	08/31/13 22:17	
Bis(2-ethylhexyl) phthalate	400	U	400	35	ug/Kg	₽	08/25/13 12:13	08/31/13 22:17	
Di-n-octyl phthalate	400	U	400	35	ug/Kg	₽	08/25/13 12:13	08/31/13 22:17	
Benzo[b]fluoranthene	400	U	400	46	ug/Kg	₽	08/25/13 12:13	08/31/13 22:17	
Benzo[k]fluoranthene	400	U	400	78	ug/Kg	\$	08/25/13 12:13	08/31/13 22:17	
Benzo[a]pyrene	400	U	400	62	ug/Kg	₽	08/25/13 12:13	08/31/13 22:17	
Indeno[1,2,3-cd]pyrene	400	U	400	34	ug/Kg	₽	08/25/13 12:13	08/31/13 22:17	
Dibenz(a,h)anthracene	400	U	400	47	ug/Kg		08/25/13 12:13	08/31/13 22:17	
Benzo[g,h,i]perylene	400	U	400	26	ug/Kg	₽	08/25/13 12:13	08/31/13 22:17	
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fa
Nitrobenzene-d5 (Surr)	74		46 - 130				08/25/13 12:13	08/31/13 22:17	
2-Fluorobiphenyl	77		58 - 130				08/25/13 12:13	08/31/13 22:17	
Terphenyl-d14 (Surr)	71		60 - 130				08/25/13 12:13	08/31/13 22:17	
Phenol-d5 (Surr)	71		49 - 130				08/25/13 12:13	08/31/13 22:17	
2-Fluorophenol (Surr)	86		40 - 130				08/25/13 12:13	08/31/13 22:17	
2,4,6-Tribromophenol (Surr)	86		58 - 130				08/25/13 12:13	08/31/13 22:17	
Method: 8015C - Nonhalogenat Analyte	_	ng GC/FID Qualifier	-Modified (Gaso RL	line Ran MDL		ics) D	Prepared	Analyzed	Dil Fa
Gasoline Range Organics (GRO)	240	U	240	19	ug/Kg	<del>\</del>	08/21/13 16:21	08/22/13 17:42	
-C6-C10									
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fa
a,a,a-Trifluorotoluene	98		70 - 131				08/21/13 16:21	08/22/13 17:42	

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Analyzed

08/29/13 01:39

08/29/13 01:39

Analyzed

08/29/13 01:39

RL

5800

5800

Limits

50 - 150

MDL Unit

1600 ug/Kg

1600 ug/Kg

D

Prepared

08/28/13 08:03

08/28/13 08:03

Prepared

08/28/13 08:03

Result Qualifier

1800 JB

2400 JB

%Recovery Qualifier

61

Dil Fac

Dil Fac

Client: ARCADIS U.S., Inc.

Date Received: 08/21/13 10:07

Trichloroethene

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93423-1

Client Sample ID: SB01-02 (0.5-1.5)

Date Collected: 08/19/13 14:25

Lab Sample ID: 680-93423-5

Matrix: Solid

Percent Solids: 86.7

Method: 8260B - Volatile Organi <sup>Analyte</sup>	-	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
Acetone		U	20	5.8	ug/Kg	<u></u>	08/22/13 13:27	08/30/13 18:37	
Benzene	3.9	U	3.9	0.39	ug/Kg	₽	08/22/13 13:27	08/30/13 18:37	
Bromodichloromethane	3.9	U	3.9	0.66	ug/Kg	₽	08/22/13 13:27	08/30/13 18:37	
Bromoform	3.9		3.9	0.50	ug/Kg		08/22/13 13:27	08/30/13 18:37	
Bromomethane	3.9	U *	3.9	1.1	ug/Kg	₽	08/22/13 13:27	08/30/13 18:37	
Carbon disulfide	3.9	U	3.9			₽	08/22/13 13:27	08/30/13 18:37	
Carbon tetrachloride	3.9		3.9				08/22/13 13:27	08/30/13 18:37	
Chlorobenzene	3.9		3.9	0.41	ug/Kg	₽	08/22/13 13:27	08/30/13 18:37	
Chloroethane	3.9		3.9		ug/Kg	₽	08/22/13 13:27	08/30/13 18:37	
Chloroform	3.9		3.9	0.47			08/22/13 13:27	08/30/13 18:37	
Chloromethane	3.9		3.9	0.79	ug/Kg	₽	08/22/13 13:27	08/30/13 18:37	
cis-1,2-Dichloroethene	3.9		3.9	0.60	ug/Kg ug/Kg	₩	08/22/13 13:27	08/30/13 18:37	
	3.9		3.9			· · · · · · · · · · · · · · · · · · ·	08/22/13 13:27	08/30/13 18:37	
cis-1,3-Dichloropropene						₩			
Cyclohexane	3.9		3.9	0.74	0 0		08/22/13 13:27	08/30/13 18:37	
Dibromochloromethane	3.9		3.9	0.69	ug/Kg	 	08/22/13 13:27	08/30/13 18:37	
1,2-Dibromo-3-Chloropropane	3.9		3.9		0 0		08/22/13 13:27	08/30/13 18:37	
1,2-Dichlorobenzene	3.9		3.9	0.56	ug/Kg		08/22/13 13:27	08/30/13 18:37	
1,3-Dichlorobenzene	3.9		3.9			<u>.</u>	08/22/13 13:27	08/30/13 18:37	
1,4-Dichlorobenzene	3.9		3.9	0.65	ug/Kg	*	08/22/13 13:27	08/30/13 18:37	
Dichlorodifluoromethane	3.9	U	3.9	1.0	ug/Kg	₽	08/22/13 13:27	08/30/13 18:37	
1,1-Dichloroethane	3.9	U	3.9				08/22/13 13:27	08/30/13 18:37	
1,2-Dichloroethane	3.9	U	3.9	0.65	0 0	₩	08/22/13 13:27	08/30/13 18:37	
1,1-Dichloroethene	3.9	U	3.9	0.59	ug/Kg	₽	08/22/13 13:27	08/30/13 18:37	
1,2-Dichloropropane	3.9	U	3.9	0.58	ug/Kg	₽	08/22/13 13:27	08/30/13 18:37	
Diisopropyl ether	3.9	U	3.9	0.43	ug/Kg	₽	08/22/13 13:27	08/30/13 18:37	
Ethylbenzene	3.9	U	3.9	0.48	ug/Kg	₩	08/22/13 13:27	08/30/13 18:37	
Ethylene Dibromide	3.9	U	3.9	0.38	ug/Kg	≎	08/22/13 13:27	08/30/13 18:37	
Ethyl tert-butyl ether	3.9	U	3.9	0.44	ug/Kg	₽	08/22/13 13:27	08/30/13 18:37	
2-Hexanone	20	U	20	3.9	ug/Kg	₽	08/22/13 13:27	08/30/13 18:37	
Isopropylbenzene	3.9	U	3.9	0.54	ug/Kg	₩	08/22/13 13:27	08/30/13 18:37	
Methyl acetate	3.9	U	3.9	3.6	ug/Kg		08/22/13 13:27	08/30/13 18:37	
Methylcyclohexane	3.9	U	3.9	0.69	ug/Kg	₽	08/22/13 13:27	08/30/13 18:37	
Methylene Chloride	12	U	12	7.9	ug/Kg	₽	08/22/13 13:27	08/30/13 18:37	
Methyl Ethyl Ketone	20		20		ug/Kg		08/22/13 13:27	08/30/13 18:37	
methyl isobutyl ketone	20	U	20		ug/Kg	₽	08/22/13 13:27	08/30/13 18:37	
Methyl tert-butyl ether	3.9		3.9		ug/Kg	₽	08/22/13 13:27	08/30/13 18:37	
Naphthalene	3.9		3.9		ug/Kg		08/22/13 13:27	08/30/13 18:37	
Styrene	3.9		3.9		ug/Kg	₽	08/22/13 13:27	08/30/13 18:37	
Tert-amyl methyl ether	3.9		3.9		ug/Kg	₽	08/22/13 13:27	08/30/13 18:37	
tert-Butyl alcohol	3.9		3.9		ug/Kg		08/22/13 13:27	08/30/13 18:37	
,	3.9		3.9		ug/Kg ug/Kg	<b>#</b>			
1,1,2,2-Tetrachloroethane	3.9					₩	08/22/13 13:27	08/30/13 18:37	
Tetrachloroethene			3.9		ug/Kg		08/22/13 13:27	08/30/13 18:37	
Toluene	3.9		3.9		ug/Kg	‡ n	08/22/13 13:27	08/30/13 18:37	
rans-1,2-Dichloroethene	3.9		3.9		ug/Kg	<b>*</b>	08/22/13 13:27	08/30/13 18:37	
trans-1,3-Dichloropropene	3.9		3.9		ug/Kg	· · · · · ·	08/22/13 13:27	08/30/13 18:37	
1,2,4-Trichlorobenzene	3.9		3.9		ug/Kg	<b>.</b>	08/22/13 13:27	08/30/13 18:37	
1,1,1-Trichloroethane	3.9	U	3.9	0.87	ug/Kg	₩	08/22/13 13:27	08/30/13 18:37	
1,1,2-Trichloroethane	3.9	U	3.9	0.73	ug/Kg	₽	08/22/13 13:27	08/30/13 18:37	

TestAmerica Savannah

08/30/13 18:37

08/22/13 13:27

0.38 ug/Kg

4

6

8

10

11

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

Lab Sample ID: 680-93423-5

TestAmerica Job ID: 680-93423-1

Matrix: Solid Percent Solids: 86.7

Client Sample ID: SB01-02 (0.5-1.5)

Date Collected: 08/19/13 14:25 Date Received: 08/21/13 10:07

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichlorofluoromethane	3.9	U	3.9	0.75	ug/Kg	₩	08/22/13 13:27	08/30/13 18:37	1
1,1,2-Trichloro-1,2,2-trifluoroethane	3.9	U	3.9	1.6	ug/Kg	₽	08/22/13 13:27	08/30/13 18:37	1
Vinyl chloride	3.9	U	3.9	0.73	ug/Kg	₽	08/22/13 13:27	08/30/13 18:37	1
Xylenes, Total	7.9	U	7.9	1.5	ug/Kg	₽	08/22/13 13:27	08/30/13 18:37	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	98		72 - 122				08/22/13 13:27	08/30/13 18:37	1
Dibromofluoromethane	101		79 - 123				08/22/13 13:27	08/30/13 18:37	1
Toluene-d8 (Surr)	95		80 - 120				08/22/13 13:27	08/30/13 18:37	1

- Toldene-do (dull)	00		00 = 720				00,22,10,10,2,	00,00,1010.01	•
Method: 8270D - Semivolatile O									
Analyte		Qualifier	RL	MDL		D	Prepared	Analyzed	Dil Fac
Benzaldehyde	380	U	380	67	ug/Kg	<u></u>	08/25/13 12:13	08/31/13 22:43	1
Phenol	380		380	39	ug/Kg	₩	08/25/13 12:13	08/31/13 22:43	1
Bis(2-chloroethyl)ether	380	U	380		ug/Kg	<b>#</b>	08/25/13 12:13	08/31/13 22:43	1
2-Chlorophenol	380	U	380	46	ug/Kg	₩	08/25/13 12:13	08/31/13 22:43	1
2-Methylphenol	380	U	380	31	ug/Kg	₩	08/25/13 12:13	08/31/13 22:43	1
bis (2-chloroisopropyl) ether	380	U	380	35	ug/Kg	₩	08/25/13 12:13	08/31/13 22:43	1
Acetophenone	380	U	380	32	ug/Kg	₩	08/25/13 12:13	08/31/13 22:43	1
3 & 4 Methylphenol	380	U	380	50	ug/Kg	₩	08/25/13 12:13	08/31/13 22:43	1
N-Nitrosodi-n-propylamine	380	U	380	37	ug/Kg	₩	08/25/13 12:13	08/31/13 22:43	1
Hexachloroethane	380	U	380	32	ug/Kg	₽	08/25/13 12:13	08/31/13 22:43	1
Nitrobenzene	380	U	380	30	ug/Kg	₩	08/25/13 12:13	08/31/13 22:43	1
Isophorone	380	U	380	38	ug/Kg	₩	08/25/13 12:13	08/31/13 22:43	1
2-Nitrophenol	380	U	380	47	ug/Kg	₽	08/25/13 12:13	08/31/13 22:43	1
2,4-Dimethylphenol	380	U	380	51	ug/Kg	₩	08/25/13 12:13	08/31/13 22:43	1
Bis(2-chloroethoxy)methane	380	U	380	45	ug/Kg	₩	08/25/13 12:13	08/31/13 22:43	1
2,4-Dichlorophenol	380	U	380	40	ug/Kg		08/25/13 12:13	08/31/13 22:43	1
Naphthalene	72	J	380	35	ug/Kg	₩	08/25/13 12:13	08/31/13 22:43	1
4-Chloroaniline	760	U	760	60	ug/Kg	₩	08/25/13 12:13	08/31/13 22:43	1
Hexachlorobutadiene	380	U	380	41	ug/Kg		08/25/13 12:13	08/31/13 22:43	1
Caprolactam	380	U	380	76	ug/Kg	₩	08/25/13 12:13	08/31/13 22:43	1
4-Chloro-3-methylphenol	380	U	380	40	ug/Kg	₩	08/25/13 12:13	08/31/13 22:43	1
2-Methylnaphthalene	93		380	44	ug/Kg		08/25/13 12:13	08/31/13 22:43	1
Hexachlorocyclopentadiene	380	U	380	47	ug/Kg	₩	08/25/13 12:13	08/31/13 22:43	1
2,4,6-Trichlorophenol	380	U	380	33	ug/Kg	₩	08/25/13 12:13	08/31/13 22:43	1
2,4,5-Trichlorophenol	380	U	380	40	ug/Kg		08/25/13 12:13	08/31/13 22:43	1
1,1'-Biphenyl	850	U	850	850	ug/Kg	₩	08/25/13 12:13	08/31/13 22:43	1
2-Chloronaphthalene	380	U	380	40	ug/Kg	₩	08/25/13 12:13	08/31/13 22:43	1
2-Nitroaniline	2000	U	2000	52	ug/Kg		08/25/13 12:13	08/31/13 22:43	1
Dimethyl phthalate	380	U	380	39	ug/Kg	₩	08/25/13 12:13	08/31/13 22:43	1
2,6-Dinitrotoluene	380	U	380	48	ug/Kg	₩	08/25/13 12:13	08/31/13 22:43	1
Acenaphthylene	380	U	380	41	ug/Kg		08/25/13 12:13	08/31/13 22:43	1
3-Nitroaniline	2000	U	2000	53	ug/Kg	₩	08/25/13 12:13	08/31/13 22:43	1
Acenaphthene	380	U	380	47	ug/Kg	₩	08/25/13 12:13	08/31/13 22:43	1
2,4-Dinitrophenol	2000		2000	960	ug/Kg		08/25/13 12:13	08/31/13 22:43	1
4-Nitrophenol	2000	U	2000	380	ug/Kg	₩	08/25/13 12:13	08/31/13 22:43	1
Dibenzofuran	380		380	38	ug/Kg	₽	08/25/13 12:13	08/31/13 22:43	1
2,4-Dinitrotoluene	380		380		ug/Kg		08/25/13 12:13	08/31/13 22:43	
Diethyl phthalate	380		380		ug/Kg	₩	08/25/13 12:13	08/31/13 22:43	1

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB01-02 (0.5-1.5)

Date Collected: 08/19/13 14:25 Date Received: 08/21/13 10:07 Lab Sample ID: 680-93423-5

Matrix: Solid

Percent Solids: 86.7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluorene	380	U	380	41	ug/Kg	<del>*</del>	08/25/13 12:13	08/31/13 22:43	1
4-Chlorophenyl phenyl ether	380	U	380	51	ug/Kg	\$	08/25/13 12:13	08/31/13 22:43	1
4-Nitroaniline	2000	U	2000	56	ug/Kg	₩	08/25/13 12:13	08/31/13 22:43	1
4,6-Dinitro-2-methylphenol	2000	U	2000	200	ug/Kg	₩	08/25/13 12:13	08/31/13 22:43	1
N-Nitrosodiphenylamine	380	U	380	38	ug/Kg		08/25/13 12:13	08/31/13 22:43	1
4-Bromophenyl phenyl ether	380	U	380	41	ug/Kg	₩	08/25/13 12:13	08/31/13 22:43	1
Hexachlorobenzene	380	U	380	45	ug/Kg	₩	08/25/13 12:13	08/31/13 22:43	1
Atrazine	380	U	380	26	ug/Kg		08/25/13 12:13	08/31/13 22:43	1
Pentachlorophenol	2000	U	2000	380	ug/Kg	₽	08/25/13 12:13	08/31/13 22:43	1
Phenanthrene	64	J	380	31	ug/Kg	₩	08/25/13 12:13	08/31/13 22:43	1
Anthracene	380	U	380	29	ug/Kg		08/25/13 12:13	08/31/13 22:43	1
Carbazole	380	U	380	35		₩	08/25/13 12:13	08/31/13 22:43	1
Di-n-butyl phthalate	380	U	380	35		₽	08/25/13 12:13	08/31/13 22:43	1
Fluoranthene	58		380		ug/Kg	<sub>.</sub>	08/25/13 12:13	08/31/13 22:43	1
Pyrene	42	J	380	31	ug/Kg	₽	08/25/13 12:13	08/31/13 22:43	. 1
Butyl benzyl phthalate	380		380		ug/Kg	₽	08/25/13 12:13	08/31/13 22:43	. 1
3,3'-Dichlorobenzidine	760		760		ug/Kg		08/25/13 12:13	08/31/13 22:43	1
Benzo[a]anthracene	47	J	380	31		₩	08/25/13 12:13	08/31/13 22:43	
	78		380		ug/Kg ug/Kg	₽	08/25/13 12:13	08/31/13 22:43	1
Chrysene Bis(2-ethylhexyl) phthalate	380		380		ug/Kg		08/25/13 12:13	08/31/13 22:43	' 1
Di-n-octyl phthalate	380		380		ug/Kg		08/25/13 12:13	08/31/13 22:43	1
,			380		ug/Kg ug/Kg		08/25/13 12:13	08/31/13 22:43	1
Benzo[b]fluoranthene	130						08/25/13 12:13	08/31/13 22:43	
Benzo[k]fluoranthene	380		380		ug/Kg	₩			1
Benzo[a]pyrene	79		380		ug/Kg		08/25/13 12:13	08/31/13 22:43	1
Indeno[1,2,3-cd]pyrene	74		380		ug/Kg	<sub></sub>	08/25/13 12:13	08/31/13 22:43	
Dibenz(a,h)anthracene	380		380		ug/Kg	*	08/25/13 12:13	08/31/13 22:43	1
Benzo[g,h,i]perylene	94	J	380	25	ug/Kg	₽	08/25/13 12:13	08/31/13 22:43	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	68		46 - 130				08/25/13 12:13	08/31/13 22:43	
2-Fluorobiphenyl	74		58 - 130				08/25/13 12:13	08/31/13 22:43	1
Terphenyl-d14 (Surr)	63		60 - 130				08/25/13 12:13	08/31/13 22:43	1
Phenol-d5 (Surr)	66		49 - 130				08/25/13 12:13	08/31/13 22:43	1
2-Fluorophenol (Surr)	61		40 - 130				08/25/13 12:13	08/31/13 22:43	1
2,4,6-Tribromophenol (Surr)	69		58 <sub>-</sub> 130				08/25/13 12:13	08/31/13 22:43	1
2,4,0-Tribiomophenoi (Sun)	09		30 - 130				00/23/13 12.13	00/31/13 22.43	,
Method: 8015C - Nonhalogenate	d Organice usi	na GC/FID	Modified (Gase	dino Pan	ao Oraan	ice)			
Analyte		Qualifier	RL	MDL		D D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)	380		430		ug/Kg	<del>_</del>	08/21/13 16:21	08/22/13 18:02	1
-C6-C10	000	•	.00		~g/. 1g		00/21/10 10:21	00/22/10 10:02	
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene	106		70 - 131				08/21/13 16:21	08/22/13 18:02	1
Method: 8015C - Nonhalogenate		_	The second secon		_	-			
Analyte		Qualifier	RL	MDL		D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	37000		5600		ug/Kg	<b>\$</b>	08/30/13 13:38	09/01/13 18:19	1
ORO C24-C40	50000	В	5600	1600	ug/Kg	₽	08/30/13 13:38	09/01/13 18:19	1
Surrogate	%Recovery	O.,	Limits				Prepared	Analyzed	Dil Fac

Client: ARCADIS U.S., Inc.

Date Received: 08/21/13 10:07

1,1,1-Trichloroethane

1,1,2-Trichloroethane

Trichloroethene

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93423-1

Client Sample ID: SB01-02 (5.0-6.0)

Date Collected: 08/19/13 14:30

Lab Sample ID: 680-93423-6

Matrix: Solid

Percent Solids: 75.5

Method: 8260B - Volatile Organic Compounds (GC/MS) RL MDL D Dil Fac Result Qualifier Unit Prepared Analyzed Acetone Ū 57 08/22/13 13:27 57 17 ug/Kg 08/30/13 19:03 11 U Benzene 11 ug/Kg 08/22/13 13:27 08/30/13 19:03 1.1 ä Bromodichloromethane 11 U 11 ug/Kg 08/22/13 13:27 08/30/13 19:03 φ 11 U 11 08/22/13 13:27 08/30/13 19:03 Bromoform 1.4 ug/Kg Bromomethane 11 U 11 ug/Kg 08/22/13 13:27 08/30/13 19:03 \$ 08/22/13 13:27 Carbon disulfide 11 11 28 ug/Kg 08/30/13 19:03 φ Carbon tetrachloride U 11 3.9 ug/Kg 08/22/13 13:27 08/30/13 19:03 11 11 08/22/13 13:27 08/30/13 19:03 Chlorobenzene 11 U ug/Kg 1.2 ä Chloroethane 11 U 11 4.4 ug/Kg 08/22/13 13:27 08/30/13 19:03 φ Chloroform 11 11 ug/Kg 08/22/13 13:27 08/30/13 19:03 ġ Chloromethane 11 U 11 2.3 ug/Kg 08/22/13 13:27 08/30/13 19:03 ď 08/22/13 13:27 cis-1,2-Dichloroethene 11 U 11 1.7 ug/Kg 08/30/13 19:03 ġ 11 U cis-1,3-Dichloropropene 11 2.8 ug/Kg 08/22/13 13:27 08/30/13 19:03 Cyclohexane 11 11 2.2 ug/Kg 08/22/13 13:27 08/30/13 19:03 ġ Dibromochloromethane 2.0 08/22/13 13:27 08/30/13 19:03 U 11 ug/Kg 11 à 1,2-Dibromo-3-Chloropropane 11 08/22/13 13:27 08/30/13 19:03 U 7.6 ug/Kg 08/22/13 13:27 1.2-Dichlorobenzene 11 U 11 1.6 ug/Kg 08/30/13 19:03 1,3-Dichlorobenzene 11 08/22/13 13:27 08/30/13 19:03 11 U ug/Kg 11 ψ 08/22/13 13:27 08/30/13 19:03 1.4-Dichlorobenzene 11 U 1.9 ug/Kg ₩ Dichlorodifluoromethane 11 U 11 3.0 ug/Kg 08/22/13 13:27 08/30/13 19:03 11 U ₽ 1,1-Dichloroethane 11 1.9 ua/Ka 08/22/13 13:27 08/30/13 19:03 ψ 11 1.2-Dichloroethane 11 U 1.9 ug/Kg 08/22/13 13:27 08/30/13 19:03 ₩ 1,1-Dichloroethene 11 08/22/13 13:27 08/30/13 19:03 11 1.7 ug/Kg ġ 1,2-Dichloropropane 11 U 11 1.7 ug/Kg 08/22/13 13:27 08/30/13 19:03 Diisopropyl ether 11 U 11 08/22/13 13:27 08/30/13 19:03 1.3 ug/Kg 11 U Ethylbenzene 11 08/22/13 13:27 ug/Kg 08/30/13 19:03 Ethylene Dibromide 11 08/22/13 13:27 11 1.1 ug/Kg 08/30/13 19:03 ₽ Ethyl tert-butyl ether U 11 08/22/13 13:27 08/30/13 19:03 11 1.3 ug/Kg ₩ 57 57 08/22/13 13:27 08/30/13 19:03 2-Hexanone U ug/Kg 08/22/13 13:27 Isopropylbenzene 11 U 11 08/30/13 19:03 1.6 ug/Kg Methyl acetate 11 U 11 ug/Kg 08/22/13 13:27 08/30/13 19:03 ₽ Methylcyclohexane U 11 2.0 ug/Kg 08/22/13 13:27 08/30/13 19:03 11 ₩ Methylene Chloride 34 U 34 23 ug/Kg 08/22/13 13:27 08/30/13 19:03 ₽ Methyl Ethyl Ketone 57 U 57 9.4 08/22/13 13:27 08/30/13 19:03 ug/Kg ₽ methyl isobutyl ketone 57 U 57 9.2 ug/Kg 08/22/13 13:27 08/30/13 19:03 ₩ Methyl tert-butyl ether 11 11 2.3 ug/Kg 08/22/13 13:27 08/30/13 19:03 φ Naphthalene 11 2.3 08/22/13 13:27 11 U ug/Kg 08/30/13 19:03 Styrene 11 U 11 1.7 ug/Kg 08/22/13 13:27 08/30/13 19:03 Tert-amyl methyl ether 11 U 11 1.0 08/22/13 13:27 08/30/13 19:03 ug/Kg 11 à 08/22/13 13:27 tert-Butyl alcohol 7.8 ug/Kg 08/30/13 19:03 1,1,2,2-Tetrachloroethane 11 U 11 1.7 ug/Kg 08/22/13 13:27 08/30/13 19:03 ₩ Tetrachloroethene 11 U 11 ug/Kg 08/22/13 13:27 08/30/13 19:03 08/22/13 13:27 Toluene 11 U 11 08/30/13 19:03 1.6 ug/Kg trans-1,2-Dichloroethene 11 U 11 08/22/13 13:27 08/30/13 19:03 ug/Kg trans-1,3-Dichloropropene 11 U 11 2.1 ug/Kg 08/22/13 13:27 08/30/13 19:03 φ 1,2,4-Trichlorobenzene 11 U 11 1.7 ug/Kg 08/22/13 13:27 08/30/13 19:03

TestAmerica Savannah

08/30/13 19:03

08/30/13 19:03

08/30/13 19:03

11

11

11

2.5 ug/Kg

2.1 ug/Kg

ug/Kg

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ŭ

08/22/13 13:27

08/22/13 13:27

08/22/13 13:27

11 U

11 U

2

4

6

8

46

11

Client: ARCADIS U.S., Inc.

Date Collected: 08/19/13 14:30 Date Received: 08/21/13 10:07

Project/Site: CSX C&O Canal Brunswick, MD Client Sample ID: SB01-02 (5.0-6.0)

TestAmerica Job ID: 680-93423-1

Lab Sample ID: 680-93423-6

Matrix: Solid

IVIALITIA.	Juliu
Percent Solids:	75.5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichlorofluoromethane	11	U	11	2.2	ug/Kg	₩	08/22/13 13:27	08/30/13 19:03	1
1,1,2-Trichloro-1,2,2-trifluoroethane	11	U	11	4.6	ug/Kg	₽	08/22/13 13:27	08/30/13 19:03	1
Vinyl chloride	11	U	11	2.1	ug/Kg	₽	08/22/13 13:27	08/30/13 19:03	1
Xylenes, Total	23	U	23	4.4	ug/Kg	₩	08/22/13 13:27	08/30/13 19:03	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	97		72 - 122				08/22/13 13:27	08/30/13 19:03	1
Dibromofluoromethane	102		79 - 123				08/22/13 13:27	08/30/13 19:03	1
Toluene-d8 (Surr)	96		80 - 120				08/22/13 13:27	08/30/13 19:03	1

Toluene-as (Surr)	90		80 - 120				08/22/13 13:27	08/30/13 19:03	,
Method: 8270D - Semivolatile Or	•	•	•			_			5.1.5
Analyte		Qualifier U	RL	MDL		— <del>D</del>	Prepared	Analyzed	Dil Fac
Benzaldehyde	430	-	430	76	ug/Kg		08/25/13 12:13	08/31/13 23:09	1
Phenol	430		430	44	ug/Kg	₩	08/25/13 12:13	08/31/13 23:09	1
Bis(2-chloroethyl)ether	430		430	59	ug/Kg		08/25/13 12:13	08/31/13 23:09	
2-Chlorophenol	430		430		ug/Kg	₩	08/25/13 12:13	08/31/13 23:09	1
2-Methylphenol	430		430	35	ug/Kg		08/25/13 12:13	08/31/13 23:09	1
bis (2-chloroisopropyl) ether	430		430	39	ug/Kg	<u></u>	08/25/13 12:13	08/31/13 23:09	1
Acetophenone	430		430		ug/Kg	₩	08/25/13 12:13	08/31/13 23:09	1
3 & 4 Methylphenol	430		430		ug/Kg	₩	08/25/13 12:13	08/31/13 23:09	1
N-Nitrosodi-n-propylamine	430	U	430	42	ug/Kg	₩	08/25/13 12:13	08/31/13 23:09	1
Hexachloroethane	430	U	430	37	ug/Kg	₩	08/25/13 12:13	08/31/13 23:09	1
Nitrobenzene	430	U	430	34	ug/Kg	₩	08/25/13 12:13	08/31/13 23:09	1
Isophorone	430	U	430	43	ug/Kg	₩	08/25/13 12:13	08/31/13 23:09	1
2-Nitrophenol	430	U	430	54	ug/Kg	₩	08/25/13 12:13	08/31/13 23:09	1
2,4-Dimethylphenol	430	U	430	57	ug/Kg	₩	08/25/13 12:13	08/31/13 23:09	1
Bis(2-chloroethoxy)methane	430	U	430	51	ug/Kg	₩	08/25/13 12:13	08/31/13 23:09	1
2,4-Dichlorophenol	430	U	430	46	ug/Kg	₽	08/25/13 12:13	08/31/13 23:09	1
Naphthalene	430	U	430	39	ug/Kg	₩	08/25/13 12:13	08/31/13 23:09	1
4-Chloroaniline	860	U	860	68	ug/Kg	₩	08/25/13 12:13	08/31/13 23:09	1
Hexachlorobutadiene	430	U	430	47	ug/Kg	₩	08/25/13 12:13	08/31/13 23:09	1
Caprolactam	430	U	430	86	ug/Kg	₩	08/25/13 12:13	08/31/13 23:09	1
4-Chloro-3-methylphenol	430	U	430	46	ug/Kg	₩	08/25/13 12:13	08/31/13 23:09	1
2-Methylnaphthalene	430	U	430	50	ug/Kg	Φ.	08/25/13 12:13	08/31/13 23:09	1
Hexachlorocyclopentadiene	430	U	430	54	ug/Kg	₩	08/25/13 12:13	08/31/13 23:09	1
2,4,6-Trichlorophenol	430	U	430	38	ug/Kg	₩	08/25/13 12:13	08/31/13 23:09	1
2,4,5-Trichlorophenol	430	U	430	46	ug/Kg		08/25/13 12:13	08/31/13 23:09	1
1,1'-Biphenyl	970	U	970	970	ug/Kg	₩	08/25/13 12:13	08/31/13 23:09	1
2-Chloronaphthalene	430	U	430	46	ug/Kg	₩	08/25/13 12:13	08/31/13 23:09	1
2-Nitroaniline	2200	U	2200	59	ug/Kg		08/25/13 12:13	08/31/13 23:09	1
Dimethyl phthalate	430	U	430	44	ug/Kg	₩	08/25/13 12:13	08/31/13 23:09	1
2,6-Dinitrotoluene	430	U	430	55	ug/Kg	₩	08/25/13 12:13	08/31/13 23:09	1
Acenaphthylene	430	U	430	47	ug/Kg		08/25/13 12:13	08/31/13 23:09	1
3-Nitroaniline	2200	U	2200	60	ug/Kg	₩	08/25/13 12:13	08/31/13 23:09	1
Acenaphthene	430	U	430	54	ug/Kg	₩	08/25/13 12:13	08/31/13 23:09	1
2,4-Dinitrophenol	2200		2200	1100	ug/Kg		08/25/13 12:13	08/31/13 23:09	1
4-Nitrophenol	2200		2200	430	ug/Kg	₩	08/25/13 12:13	08/31/13 23:09	1
Dibenzofuran	430		430		ug/Kg	₽	08/25/13 12:13	08/31/13 23:09	1
2,4-Dinitrotoluene			430		ug/Kg		08/25/13 12:13	08/31/13 23:09	· · · · · · · · · · · · · · · · · · ·
Diethyl phthalate	430		430		ug/Kg	₩	08/25/13 12:13	08/31/13 23:09	1

TestAmerica Savannah

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB01-02 (5.0-6.0)

Date Collected: 08/19/13 14:30

Date Received: 08/21/13 10:07

Diesel Range Organics [C10-C28]

ORO C24-C40

o-Terphenyl (Surr)

Surrogate

Lab Sample ID: 680-93423-6

Matrix: Solid

matrix. C	ona
Percent Solids:	75.5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluorene	430	U	430	47	ug/Kg	\$	08/25/13 12:13	08/31/13 23:09	1
4-Chlorophenyl phenyl ether	430	U	430	57	ug/Kg	₽	08/25/13 12:13	08/31/13 23:09	1
4-Nitroaniline	2200	U	2200	64	ug/Kg	₽	08/25/13 12:13	08/31/13 23:09	1
4,6-Dinitro-2-methylphenol	2200	U	2200	220	ug/Kg	₽	08/25/13 12:13	08/31/13 23:09	1
N-Nitrosodiphenylamine	430	U	430	43	ug/Kg		08/25/13 12:13	08/31/13 23:09	1
4-Bromophenyl phenyl ether	430	U	430	47	ug/Kg	₽	08/25/13 12:13	08/31/13 23:09	1
Hexachlorobenzene	430	U	430	51	ug/Kg	₽	08/25/13 12:13	08/31/13 23:09	1
Atrazine	430	U	430	30	ug/Kg	\$	08/25/13 12:13	08/31/13 23:09	1
Pentachlorophenol	2200	U	2200	430	ug/Kg	₽	08/25/13 12:13	08/31/13 23:09	1
Phenanthrene	430	U	430	35	ug/Kg	₽	08/25/13 12:13	08/31/13 23:09	1
Anthracene	430	U	430	33	ug/Kg		08/25/13 12:13	08/31/13 23:09	1
Carbazole	430	U	430	39	ug/Kg	₽	08/25/13 12:13	08/31/13 23:09	1
Di-n-butyl phthalate	430	U	430	39	ug/Kg	₽	08/25/13 12:13	08/31/13 23:09	1
Fluoranthene	430		430	42	ug/Kg		08/25/13 12:13	08/31/13 23:09	1
Pyrene	430	U	430	35	ug/Kg	₽	08/25/13 12:13	08/31/13 23:09	1
Butyl benzyl phthalate	430	U	430	34	ug/Kg	₽	08/25/13 12:13	08/31/13 23:09	1
3,3'-Dichlorobenzidine	860	U	860		ug/Kg		08/25/13 12:13	08/31/13 23:09	1
Benzo[a]anthracene	430	U	430	35		₽	08/25/13 12:13	08/31/13 23:09	1
Chrysene	430	U	430	27		₽	08/25/13 12:13	08/31/13 23:09	1
Bis(2-ethylhexyl) phthalate	430		430	38			08/25/13 12:13	08/31/13 23:09	1
Di-n-octyl phthalate	430	U	430	38		₽	08/25/13 12:13	08/31/13 23:09	1
Benzo[b]fluoranthene	430	U	430	50		₽	08/25/13 12:13	08/31/13 23:09	1
Benzo[k]fluoranthene	430		430		ug/Kg		08/25/13 12:13	08/31/13 23:09	1
Benzo[a]pyrene	430	U	430	68		₽	08/25/13 12:13	08/31/13 23:09	1
Indeno[1,2,3-cd]pyrene	430	U	430	37	ug/Kg	₽	08/25/13 12:13	08/31/13 23:09	1
Dibenz(a,h)anthracene	430		430	51	ug/Kg		08/25/13 12:13	08/31/13 23:09	
Benzo[g,h,i]perylene	430		430		ug/Kg	₽	08/25/13 12:13	08/31/13 23:09	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	66	-	46 - 130				08/25/13 12:13	08/31/13 23:09	1
2-Fluorobiphenyl	71		58 - 130				08/25/13 12:13	08/31/13 23:09	1
Terphenyl-d14 (Surr)	66		60 - 130				08/25/13 12:13	08/31/13 23:09	1
Phenol-d5 (Surr)	60		49 - 130				08/25/13 12:13	08/31/13 23:09	
2-Fluorophenol (Surr)	68		40 - 130				08/25/13 12:13	08/31/13 23:09	1
2,4,6-Tribromophenol (Surr)	67		58 - 130				08/25/13 12:13	08/31/13 23:09	1
Method: 8015C - Nonhalogenate Analyte	_	ng GC/FID Qualifier	-Modified (Gasol		ige Organ Unit	ics)	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO) -C6-C10	290		280	21	ug/Kg	<del></del>	08/21/13 16:21	08/22/13 18:22	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene	111		70 - 131				08/21/13 16:21	08/22/13 18:22	1
Method: 8015C - Nonhalogenate	•	•	•	_	_	•			
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac

TestAmerica Savannah

08/29/13 02:10

08/29/13 02:10

Analyzed

08/29/13 02:10

08/28/13 08:03

08/28/13 08:03

Prepared

08/28/13 08:03

6400

6400

Limits

50 - 150

1800 ug/Kg

1800 ug/Kg

1800 JB

2000 JB

%Recovery Qualifier

61

Dil Fac

Client: ARCADIS U.S., Inc.

Date Received: 08/21/13 10:07

Toluene

trans-1,2-Dichloroethene

trans-1,3-Dichloropropene

1,2,4-Trichlorobenzene

1,1,1-Trichloroethane

1,1,2-Trichloroethane

Trichloroethene

Project/Site: CSX C&O Canal Brunswick, MD

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TestAmerica Job ID: 680-93423-1

Client Sample ID: SB01-04 (0.0-1.0)

Lab Sample ID: 680-93423-7

Date Collected: 08/19/13 15:30

Matrix: Solid

Percent Solids: 81.1

Method: 8260B - Volatile Organic Compounds (GC/MS) RL MDL D Dil Fac Result Qualifier Unit Prepared Analyzed 41 Ū 41 08/22/13 13:27 Acetone 12 ug/Kg 08/30/13 19:29 Benzene 81 U 8 1 08/22/13 13:27 08/30/13 19:29 0.80 ug/Kg ä Bromodichloromethane 8.1 U 8.1 1.4 ug/Kg 08/22/13 13:27 08/30/13 19:29 φ 8.1 U 8.1 08/22/13 13:27 08/30/13 19:29 Bromoform 1.0 ug/Kg Bromomethane 8.1 U 8.1 2.3 ug/Kg 08/22/13 13:27 08/30/13 19:29 \$ 08/22/13 13:27 Carbon disulfide 8 1 8 1 20 ug/Kg 08/30/13 19:29 φ Carbon tetrachloride U 8.1 2.8 ug/Kg 08/22/13 13:27 08/30/13 19:29 8.1 8.1 U 08/22/13 13:27 Chlorobenzene 8.1 0.85 ug/Kg 08/30/13 19:29 ä Chloroethane 8.1 U 8.1 3.1 ug/Kg 08/22/13 13:27 08/30/13 19:29 ġ Chloroform 8.1 8.1 0.96 ug/Kg 08/22/13 13:27 08/30/13 19:29 ġ Chloromethane 8.1 U 8.1 1.6 ug/Kg 08/22/13 13:27 08/30/13 19:29 ä 08/22/13 13:27 cis-1,2-Dichloroethene 8.1 U 8.1 1.2 ug/Kg 08/30/13 19:29 ġ 08/22/13 13:27 cis-1.3-Dichloropropene 81 U 8 1 2.0 ug/Kg 08/30/13 19:29 Cyclohexane 8.1 8.1 1.5 ug/Kg 08/22/13 13:27 08/30/13 19:29 ġ Dibromochloromethane 08/22/13 13:27 08/30/13 19:29 U 8 1 1.4 ug/Kg 8 1 à 1,2-Dibromo-3-Chloropropane 08/22/13 13:27 08/30/13 19:29 U 8.1 ug/Kg 08/22/13 13:27 1.2-Dichlorobenzene 8.1 U 8.1 1.2 ug/Kg 08/30/13 19:29 1,3-Dichlorobenzene 8.1 08/22/13 13:27 08/30/13 19:29 8.1 U ug/Kg Ü ψ 08/22/13 13:27 08/30/13 19:29 1.4-Dichlorobenzene 8.1 8.1 1.3 ug/Kg ₩ Dichlorodifluoromethane 8.1 U 8.1 2.1 ug/Kg 08/22/13 13:27 08/30/13 19:29 8.1 U ₽ 1,1-Dichloroethane 8.1 1.3 ua/Ka 08/22/13 13:27 08/30/13 19:29 ψ 1.2-Dichloroethane 81 U 8.1 1.3 ug/Kg 08/22/13 13:27 08/30/13 19:29 ₩ 1,1-Dichloroethene 8.1 08/22/13 13:27 08/30/13 19:29 8.1 1.2 ua/Ka ġ 1,2-Dichloropropane 8.1 U 8.1 1.2 ug/Kg 08/22/13 13:27 08/30/13 19:29 Diisopropyl ether 8.1 U 8.1 0.89 ug/Kg 08/22/13 13:27 08/30/13 19:29 Ethylbenzene 81 U 0.99 08/22/13 13:27 08/30/13 19:29 8.1 ug/Kg Ethylene Dibromide 08/22/13 13:27 8.1 8.1 0.78 ug/Kg 08/30/13 19:29 ₽ Ethyl tert-butyl ether U 8.1 0.91 08/22/13 13:27 08/30/13 19:29 8 1 ug/Kg ₩ 41 08/22/13 13:27 08/30/13 19:29 2-Hexanone 41 U ug/Kg 08/22/13 13:27 Isopropylbenzene 8.1 U 8.1 08/30/13 19:29 1.1 ug/Kg Methyl acetate 8.1 U 8.1 ug/Kg 08/22/13 13:27 08/30/13 19:29 ₽ Methylcyclohexane 8.1 U 8.1 ug/Ka 08/22/13 13:27 08/30/13 19:29 1.4 ug/Kg ₩ Methylene Chloride 24 U 24 08/22/13 13:27 08/30/13 19:29 ₽ Methyl Ethyl Ketone 41 U 41 08/22/13 13:27 08/30/13 19:29 6.7 ug/Kg ₽ methyl isobutyl ketone 41 U 41 6.5 ug/Kg 08/22/13 13:27 08/30/13 19:29 ₩ Methyl tert-butyl ether 8 1 8.1 ug/Kg 08/22/13 13:27 08/30/13 19:29 1.6 φ Naphthalene 08/22/13 13:27 8.1 U 8.1 1.6 ug/Kg 08/30/13 19:29 Styrene 8.1 U 8.1 1.2 ug/Kg 08/22/13 13:27 08/30/13 19:29 Tert-amyl methyl ether 81 U 8.1 0.72 ug/Kg 08/22/13 13:27 08/30/13 19:29 à 08/22/13 13:27 tert-Butyl alcohol 8.1 5.5 ug/Kg 08/30/13 19:29 1,1,2,2-Tetrachloroethane ug/Kg 8.1 U 8.1 1.2 08/22/13 13:27 08/30/13 19:29 ₩ 8.1 U Tetrachloroethene 8.1 ug/Kg 08/22/13 13:27 08/30/13 19:29

TestAmerica Savannah

08/30/13 19:29

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1.5 ug/Kg

1.2 ug/Kg

1.8 ug/Kg

1.5 ug/Kg

0.78 ug/Kg

ug/Kg

8 1 U

8.1 U

8.1 U

8.1 U

8.1 U

8.1 U

8 1

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11

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93423-1

Lab Sample ID: 680-93423-7

Matrix: Solid Percent Solids: 81.1

Client Sample ID: SB01-04 (0.0-1.0)

Date Collected: 08/19/13 15:30 Date Received: 08/21/13 10:07

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichlorofluoromethane	8.1	U	8.1	1.5	ug/Kg	₩	08/22/13 13:27	08/30/13 19:29	1
1,1,2-Trichloro-1,2,2-trifluoroethane	8.1	U	8.1	3.3	ug/Kg	₩	08/22/13 13:27	08/30/13 19:29	1
Vinyl chloride	8.1	U	8.1	1.5	ug/Kg	₽	08/22/13 13:27	08/30/13 19:29	1
Xylenes, Total	16	U	16	3.1	ug/Kg	₽	08/22/13 13:27	08/30/13 19:29	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	99		72 - 122				08/22/13 13:27	08/30/13 19:29	1
Dibromofluoromethane	101		79 - 123				08/22/13 13:27	08/30/13 19:29	1
Toluene-d8 (Surr)	97		80 - 120				08/22/13 13:27	08/30/13 19:29	1

			80 - 120				08/22/13 13:27	08/30/13 19:29	1
Method: 8270D - Semivolatile Org	•		•						
Analyte		Qualifier	RL	MDL		D	Prepared	Analyzed	Dil Fac
Benzaldehyde	87	-	410	71	0 0	<u>*</u>	08/25/13 12:13	08/31/13 23:34	1
Phenol	410		410	42	0 0	<b>‡</b>	08/25/13 12:13	08/31/13 23:34	1
Bis(2-chloroethyl)ether	410		410		ug/Kg		08/25/13 12:13	08/31/13 23:34	1
2-Chlorophenol	410	U	410	49	ug/Kg	₩.	08/25/13 12:13	08/31/13 23:34	1
2-Methylphenol	410		410	33	ug/Kg	<b>‡</b>	08/25/13 12:13	08/31/13 23:34	1
bis (2-chloroisopropyl) ether	410	U	410	37			08/25/13 12:13	08/31/13 23:34	1
Acetophenone	410	U	410	35	ug/Kg	₩	08/25/13 12:13	08/31/13 23:34	1
3 & 4 Methylphenol	410	U	410	53	ug/Kg	₩	08/25/13 12:13	08/31/13 23:34	1
N-Nitrosodi-n-propylamine	410	U	410	39	ug/Kg	₩	08/25/13 12:13	08/31/13 23:34	1
Hexachloroethane	410	U	410	35	ug/Kg	₽	08/25/13 12:13	08/31/13 23:34	1
Nitrobenzene	410	U	410	32	ug/Kg	₩	08/25/13 12:13	08/31/13 23:34	1
Isophorone	410	U	410	41	ug/Kg	₩	08/25/13 12:13	08/31/13 23:34	1
2-Nitrophenol	410	U	410	51	ug/Kg	₽	08/25/13 12:13	08/31/13 23:34	1
2,4-Dimethylphenol	410	U	410	54	ug/Kg	₩	08/25/13 12:13	08/31/13 23:34	1
Bis(2-chloroethoxy)methane	410	U	410	48	ug/Kg	₽	08/25/13 12:13	08/31/13 23:34	1
2,4-Dichlorophenol	410	U	410	43	ug/Kg	₽	08/25/13 12:13	08/31/13 23:34	1
Naphthalene	130	J	410	37	ug/Kg	₩	08/25/13 12:13	08/31/13 23:34	1
4-Chloroaniline	810	U	810	64	ug/Kg	₩	08/25/13 12:13	08/31/13 23:34	1
Hexachlorobutadiene	410	U	410	44	ug/Kg		08/25/13 12:13	08/31/13 23:34	1
Caprolactam	410	U	410	81	ug/Kg	₩	08/25/13 12:13	08/31/13 23:34	1
4-Chloro-3-methylphenol	410	U	410	43	ug/Kg	₩	08/25/13 12:13	08/31/13 23:34	1
2-Methylnaphthalene	180	J	410	47	ug/Kg		08/25/13 12:13	08/31/13 23:34	1
Hexachlorocyclopentadiene	410	U	410	51	ug/Kg	₩	08/25/13 12:13	08/31/13 23:34	1
2,4,6-Trichlorophenol	410	U	410	36	ug/Kg	₩	08/25/13 12:13	08/31/13 23:34	1
2,4,5-Trichlorophenol	410	U	410	43	ug/Kg	φ	08/25/13 12:13	08/31/13 23:34	1
1,1'-Biphenyl	910	U	910	910	ug/Kg	₽	08/25/13 12:13	08/31/13 23:34	1
2-Chloronaphthalene	410	U	410	43	ug/Kg	₽	08/25/13 12:13	08/31/13 23:34	1
2-Nitroaniline	2100	U	2100	55	ug/Kg		08/25/13 12:13	08/31/13 23:34	1
Dimethyl phthalate	410	U	410	42	ug/Kg	₽	08/25/13 12:13	08/31/13 23:34	1
2,6-Dinitrotoluene	410	U	410	52	ug/Kg	₩	08/25/13 12:13	08/31/13 23:34	1
Acenaphthylene	410	U	410	44	ug/Kg		08/25/13 12:13	08/31/13 23:34	1
3-Nitroaniline	2100	U	2100		ug/Kg	₽	08/25/13 12:13	08/31/13 23:34	1
Acenaphthene	410	U	410	51	ug/Kg	₽	08/25/13 12:13	08/31/13 23:34	1
2,4-Dinitrophenol	2100		2100	1000	ug/Kg		08/25/13 12:13	08/31/13 23:34	1
4-Nitrophenol	2100		2100	410	ug/Kg	₽	08/25/13 12:13	08/31/13 23:34	1
Dibenzofuran	57	J	410		ug/Kg	₽	08/25/13 12:13	08/31/13 23:34	1
2,4-Dinitrotoluene	410		410				08/25/13 12:13	08/31/13 23:34	
Diethyl phthalate	410		410		ug/Kg	<b>#</b>	08/25/13 12:13	08/31/13 23:34	1

TestAmerica Savannah

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TestAmerica Job ID: 680-93423-1 Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB01-04 (0.0-1.0)

Lab Sample ID: 680-93423-7 Date Collected: 08/19/13 15:30 Matrix: Solid Date Received: 08/21/13 10:07 Percent Solids: 81.1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
Fluorene	410	U	410	44	ug/Kg	<u> </u>	08/25/13 12:13	08/31/13 23:34	
4-Chlorophenyl phenyl ether	410	U	410	54	ug/Kg	₩.	08/25/13 12:13	08/31/13 23:34	
4-Nitroaniline	2100	U	2100	60	ug/Kg	₩	08/25/13 12:13	08/31/13 23:34	
4,6-Dinitro-2-methylphenol	2100	U	2100	210	ug/Kg	₽	08/25/13 12:13	08/31/13 23:34	
N-Nitrosodiphenylamine	410	U	410	41	ug/Kg		08/25/13 12:13	08/31/13 23:34	
4-Bromophenyl phenyl ether	410	U	410	44	ug/Kg	₩	08/25/13 12:13	08/31/13 23:34	
Hexachlorobenzene	410	U	410	48		₩	08/25/13 12:13	08/31/13 23:34	
Atrazine	410	U	410	28		₩	08/25/13 12:13	08/31/13 23:34	
Pentachlorophenol	2100	U	2100	410	ug/Kg	₽	08/25/13 12:13	08/31/13 23:34	
Phenanthrene	150	J	410	33		₽	08/25/13 12:13	08/31/13 23:34	
Anthracene	410		410	31			08/25/13 12:13	08/31/13 23:34	
Carbazole	410		410	37		₽	08/25/13 12:13	08/31/13 23:34	
Di-n-butyl phthalate	410		410			₩	08/25/13 12:13	08/31/13 23:34	
Fluoranthene	110		410		ug/Kg		08/25/13 12:13	08/31/13 23:34	
Pyrene	76	J	410		ug/Kg	₩	08/25/13 12:13	08/31/13 23:34	
Butyl benzyl phthalate	410		410		ug/Kg ug/Kg		08/25/13 12:13	08/31/13 23:34	
3.3'-Dichlorobenzidine	810		810		ug/Kg ug/Kg		08/25/13 12:13	08/31/13 23:34	
.,.	55	J	410		ug/Kg ug/Kg	₽	08/25/13 12:13	08/31/13 23:34	
Benzo[a]anthracene			410				08/25/13 12:13	08/31/13 23:34	
Chrysene	96	J		26					
Bis(2-ethylhexyl) phthalate	410		410		ug/Kg	₩	08/25/13 12:13	08/31/13 23:34	
Di-n-octyl phthalate	410		410	36	ug/Kg	₩	08/25/13 12:13	08/31/13 23:34	
Benzo[b]fluoranthene	89	. <b>.</b>	410		ug/Kg		08/25/13 12:13	08/31/13 23:34	
Benzo[k]fluoranthene	410		410	80	0 0	*	08/25/13 12:13	08/31/13 23:34	
Benzo[a]pyrene	410		410	64	0 0	₩.	08/25/13 12:13	08/31/13 23:34	
Indeno[1,2,3-cd]pyrene	410		410		ug/Kg	· · · · · · · · · · · · · · · · · · ·	08/25/13 12:13	08/31/13 23:34	
Dibenz(a,h)anthracene	410		410		ug/Kg	₩.	08/25/13 12:13	08/31/13 23:34	
Benzo[g,h,i]perylene	34	J	410	27	ug/Kg	₽	08/25/13 12:13	08/31/13 23:34	
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fa
Nitrobenzene-d5 (Surr)	67		46 - 130				08/25/13 12:13	08/31/13 23:34	
2-Fluorobiphenyl	71		58 - 130				08/25/13 12:13	08/31/13 23:34	
Terphenyl-d14 (Surr)	74		60 - 130				08/25/13 12:13	08/31/13 23:34	
Phenol-d5 (Surr)	57		49 - 130				08/25/13 12:13	08/31/13 23:34	
2-Fluorophenol (Surr)	64		40 - 130				08/25/13 12:13	08/31/13 23:34	
2,4,6-Tribromophenol (Surr)	56	X	58 <sub>-</sub> 130				08/25/13 12:13	08/31/13 23:34	
Method: 8015C - Nonhalogenated	l Organica uci	na GC/FID	Modified (Case	line Ban	ao Oraan	ios)			
Analyte		Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fa
Gasoline Range Organics (GRO)	1400		430	33	ug/Kg	<del>\</del>	08/21/13 16:21	08/22/13 18:42	
-C6-C10									
Surrogate	%Recovery		Limits				Prepared 00/04/10 10 01	Analyzed	Dil Fa
a,a,a-Trifluorotoluene	295	X	70 - 131				08/21/13 16:21	08/22/13 18:42	
Method: 8015C - Nonhalogenated							_		
Analyte		Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fa
Diesel Range Organics [C10-C28]	34000		6100		ug/Kg	<u>∓</u>	08/24/13 11:08	08/27/13 00:49	
ORO C24-C40	59000	В	6100	1700	ug/Kg	₩	08/24/13 11:08	08/27/13 00:49	
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fa
	•						•	•	

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93423-1

Client Sample ID: SB01-04 (5.0-6.0)

Date Collected: 08/19/13 15:35 Date Received: 08/21/13 10:07

Lab Sample ID: 680-93423-8

Matrix: Solid

Percent Solids: 75.7

Methods 0000B Valetile Opposi	. 0	(OO/MC)						Percent Son	
Method: 8260B - Volatile Organi Analyte	•	(GC/MS) Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
Acetone	2700	U	2700	790	ug/Kg	<del></del>	08/22/13 13:27	08/30/13 21:38	
Benzene	540	U	540	53	ug/Kg	₩	08/22/13 13:27	08/30/13 21:38	5
Bromodichloromethane	540	U	540	90	ug/Kg	₩	08/22/13 13:27	08/30/13 21:38	5
Bromoform	540	U	540	68	ug/Kg		08/22/13 13:27	08/30/13 21:38	5
Bromomethane	540	U *	540	150	ug/Kg	₩	08/22/13 13:27	08/30/13 21:38	5
Carbon disulfide	540	U	540	130	ug/Kg	₩	08/22/13 13:27	08/30/13 21:38	5
Carbon tetrachloride	540	U	540	180	ug/Kg		08/22/13 13:27	08/30/13 21:38	
Chlorobenzene	540	U	540	56	ug/Kg	₩	08/22/13 13:27	08/30/13 21:38	5
Chloroethane	540	U	540		ug/Kg	₩	08/22/13 13:27	08/30/13 21:38	5
Chloroform	540	U	540		ug/Kg		08/22/13 13:27	08/30/13 21:38	
Chloromethane	540	U	540		ug/Kg	₩	08/22/13 13:27	08/30/13 21:38	5
cis-1,2-Dichloroethene	540	U	540		ug/Kg	₽	08/22/13 13:27	08/30/13 21:38	5
cis-1,3-Dichloropropene	540		540	130	ug/Kg		08/22/13 13:27	08/30/13 21:38	
Cyclohexane	540		540	100	ug/Kg	₩	08/22/13 13:27	08/30/13 21:38	5
Dibromochloromethane	540		540	94	ug/Kg	₩	08/22/13 13:27	08/30/13 21:38	5
1,2-Dibromo-3-Chloropropane	540		540	360	ug/Kg		08/22/13 13:27	08/30/13 21:38	
1.2-Dichlorobenzene	540		540		ug/Kg	₩	08/22/13 13:27	08/30/13 21:38	5
1.3-Dichlorobenzene	540		540	100	ug/Kg ug/Kg	₽	08/22/13 13:27	08/30/13 21:38	5
1,4-Dichlorobenzene	540		540	88	ug/Kg		08/22/13 13:27	08/30/13 21:38	
Dichlorodifluoromethane	540		540	140	ug/Kg ug/Kg		08/22/13 13:27	08/30/13 21:38	5
I,1-Dichloroethane	540		540	89	ug/Kg ug/Kg	₽	08/22/13 13:27	08/30/13 21:38	5
1,2-Dichloroethane	540		540				08/22/13 13:27	08/30/13 21:38	
	540				ug/Kg	₩			
1,1-Dichloroethene	540		540	81	ug/Kg	₩	08/22/13 13:27	08/30/13 21:38	5
I,2-Dichloropropane			540	80	ug/Kg		08/22/13 13:27	08/30/13 21:38	5
Diisopropyl ether	540		540		ug/Kg	₩	08/22/13 13:27	08/30/13 21:38	5
Ethylbenzene	540		540	66	ug/Kg	₩	08/22/13 13:27	08/30/13 21:38	5
Ethylene Dibromide	540		540	52	ug/Kg		08/22/13 13:27	08/30/13 21:38	
Ethyl tert-butyl ether	540		540	60	ug/Kg	₩	08/22/13 13:27	08/30/13 21:38	5
2-Hexanone	2700		2700	540	ug/Kg		08/22/13 13:27	08/30/13 21:38	5
sopropylbenzene	540		540		ug/Kg		08/22/13 13:27	08/30/13 21:38	
Methyl acetate	540		540	500	ug/Kg	*	08/22/13 13:27	08/30/13 21:38	5
Methylcyclohexane	540		540	94	ug/Kg	.☆	08/22/13 13:27	08/30/13 21:38	5
Methylene Chloride	1600		1600	1100	ug/Kg	<u></u>	08/22/13 13:27	08/30/13 21:38	5
Methyl Ethyl Ketone	2700		2700	440	ug/Kg	<b>#</b>	08/22/13 13:27	08/30/13 21:38	5
methyl isobutyl ketone	2700		2700		ug/Kg	₩.	08/22/13 13:27	08/30/13 21:38	5
Methyl tert-butyl ether	540	U	540		ug/Kg		08/22/13 13:27	08/30/13 21:38	5
Naphthalene	540		540		ug/Kg	₩.	08/22/13 13:27	08/30/13 21:38	5
Styrene	540	U	540	82	ug/Kg	₩	08/22/13 13:27	08/30/13 21:38	5
Tert-amyl methyl ether	540	U	540	47	ug/Kg		08/22/13 13:27	08/30/13 21:38	5
ert-Butyl alcohol	540	U	540	370	ug/Kg	₩	08/22/13 13:27	08/30/13 21:38	5
1,1,2,2-Tetrachloroethane	540	U	540	78	ug/Kg	₩	08/22/13 13:27	08/30/13 21:38	5
Γetrachloroethene	540	U	540	90	ug/Kg	₩	08/22/13 13:27	08/30/13 21:38	5
Γoluene	540	U	540	75	ug/Kg	₩	08/22/13 13:27	08/30/13 21:38	5
rans-1,2-Dichloroethene	540	U	540	82	ug/Kg	₩	08/22/13 13:27	08/30/13 21:38	5
rans-1,3-Dichloropropene	540	U	540	99	ug/Kg	₩	08/22/13 13:27	08/30/13 21:38	5
,2,4-Trichlorobenzene	540	U	540	79	ug/Kg	\$	08/22/13 13:27	08/30/13 21:38	5
I,1,1-Trichloroethane	540	U	540	120	ug/Kg	₽	08/22/13 13:27	08/30/13 21:38	5
1,1,2-Trichloroethane	540	U	540	99	ug/Kg	₩	08/22/13 13:27	08/30/13 21:38	5
Trichloroethene	540		540		ug/Kg		08/22/13 13:27	08/30/13 21:38	5

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93423-1

Lab Sample ID: 680-93423-8

Matrix: Solid Percent Solids: 75.7

Client Sample ID: SB01-04 (5.0-6.0)

Date Collected: 08/19/13 15:35 Date Received: 08/21/13 10:07

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichlorofluoromethane	540	U	540	100	ug/Kg	₩	08/22/13 13:27	08/30/13 21:38	50
1,1,2-Trichloro-1,2,2-trifluoroethane	540	U	540	220	ug/Kg	₽	08/22/13 13:27	08/30/13 21:38	50
Vinyl chloride	540	U	540	99	ug/Kg	₩	08/22/13 13:27	08/30/13 21:38	50
Xylenes, Total	1100	U	1100	200	ug/Kg	\$	08/22/13 13:27	08/30/13 21:38	50
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	98		72 - 122				08/22/13 13:27	08/30/13 21:38	50
Dibromofluoromethane	94		79 - 123				08/22/13 13:27	08/30/13 21:38	50
Toluene-d8 (Surr)	95		80 - 120				08/22/13 13:27	08/30/13 21:38	50

Toluene-as (Surr) -	95		80 - 120				08/22/13 13:27	08/30/13 21:38	50
Method: 8270D - Semivolatile C Analyte	•	nds (GC/M	S)	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzaldehyde	430	U	430	76	ug/Kg	— <del>ÿ</del>	08/25/13 12:13	08/31/13 23:59	1
Phenol	430	-	430	44	ug/Kg	*	08/25/13 12:13	08/31/13 23:59	1
Bis(2-chloroethyl)ether	430		430	59	ug/Kg	*	08/25/13 12:13	08/31/13 23:59	1
2-Chlorophenol	430		430		ug/Kg		08/25/13 12:13	08/31/13 23:59	
2-Methylphenol	430		430	35	ug/Kg	*	08/25/13 12:13	08/31/13 23:59	1
bis (2-chloroisopropyl) ether	430		430	39	ug/Kg	<b>#</b>	08/25/13 12:13	08/31/13 23:59	1
Acetophenone	430		430		ug/Kg	· · · · · · · · · · · · · · · · · · ·	08/25/13 12:13	08/31/13 23:59	
3 & 4 Methylphenol	430		430		ug/Kg	*	08/25/13 12:13	08/31/13 23:59	1
N-Nitrosodi-n-propylamine	430		430		ug/Kg	*	08/25/13 12:13	08/31/13 23:59	1
Hexachloroethane	430		430	36	ug/Kg	· · · · · · · ·	08/25/13 12:13	08/31/13 23:59	
Nitrobenzene	430		430	34	ug/Kg	₩	08/25/13 12:13	08/31/13 23:59	1
Isophorone	430		430	43	ug/Kg	₩	08/25/13 12:13	08/31/13 23:59	1
2-Nitrophenol	430		430	53	ug/Kg		08/25/13 12:13	08/31/13 23:59	
2,4-Dimethylphenol	430		430	57		₩	08/25/13 12:13	08/31/13 23:59	1
Bis(2-chloroethoxy)methane	430		430	51	ug/Kg ug/Kg	₩	08/25/13 12:13	08/31/13 23:59	1
2,4-Dichlorophenol	430		430		ug/Kg		08/25/13 12:13	08/31/13 23:59	
Naphthalene	430		430	39	ug/Kg ug/Kg	₩	08/25/13 12:13	08/31/13 23:59	1
4-Chloroaniline	860		860	68	ug/Kg ug/Kg	₽	08/25/13 12:13	08/31/13 23:59	1
Hexachlorobutadiene	430		430	47			08/25/13 12:13	08/31/13 23:59	
Caprolactam	430		430	86	ug/Kg	**	08/25/13 12:13	08/31/13 23:59	1
4-Chloro-3-methylphenol	430		430		ug/Kg ug/Kg	₽	08/25/13 12:13	08/31/13 23:59	1
2-Methylnaphthalene	82		430	49	ug/Kg		08/25/13 12:13	08/31/13 23:59	· · · · · · · · · · · · · · · · · · ·
Hexachlorocyclopentadiene	430		430	53	ug/Kg ug/Kg	₽	08/25/13 12:13	08/31/13 23:59	1
2,4,6-Trichlorophenol	430		430	38	ug/Kg	₩	08/25/13 12:13	08/31/13 23:59	1
2,4,5-Trichlorophenol	430		430		ug/Kg	· · · · · · · ·	08/25/13 12:13	08/31/13 23:59	
1,1'-Biphenyl	960		960	960	ug/Kg	*	08/25/13 12:13	08/31/13 23:59	1
2-Chloronaphthalene	430		430	46	ug/Kg ug/Kg	₩	08/25/13 12:13	08/31/13 23:59	1
2-Nitroaniline	2200		2200	59	ug/Kg		08/25/13 12:13	08/31/13 23:59	
Dimethyl phthalate	430		430	44	ug/Kg ug/Kg	₩	08/25/13 12:13	08/31/13 23:59	1
2,6-Dinitrotoluene	430		430		ug/Kg ug/Kg	₩	08/25/13 12:13	08/31/13 23:59	1
Acenaphthylene	430		430		ug/Kg		08/25/13 12:13	08/31/13 23:59	· · · · · · · · · · · · · · · · · · ·
3-Nitroaniline	2200		2200	60	ug/Kg ug/Kg	₩	08/25/13 12:13	08/31/13 23:59	1
Acenaphthene	150		430	53	ug/Kg ug/Kg	₽	08/25/13 12:13	08/31/13 23:59	1
2,4-Dinitrophenol	2200		2200	1100	ug/Kg	· · · · · · · ·	08/25/13 12:13	08/31/13 23:59	
4-Nitrophenol	2200		2200	430	ug/Kg ug/Kg	₩	08/25/13 12:13	08/31/13 23:59	1
Dibenzofuran	45		430		ug/Kg ug/Kg		08/25/13 12:13	08/31/13 23:59	1
2,4-Dinitrotoluene	430		430		ug/Kg ug/Kg		08/25/13 12:13	08/31/13 23:59	
	430		430				08/25/13 12:13	08/31/13 23:59	1
Diethyl phthalate	430	U	430	48	ug/Kg	**	00/20/13 12:13	00/31/13 23:59	1

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB01-04 (5.0-6.0)

Date Collected: 08/19/13 15:35 Date Received: 08/21/13 10:07

Surrogate

o-Terphenyl (Surr)

TestAmerica Job ID: 680-93423-1

Lab Sample ID: 680-93423-8

Matrix: Solid

Percent Solids: 75.7

Analyte		Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fa
Fluorene	510		430	47	ug/Kg		08/25/13 12:13	08/31/13 23:59	
4-Chlorophenyl phenyl ether	430	U	430	57	ug/Kg	*	08/25/13 12:13	08/31/13 23:59	
4-Nitroaniline	2200	U	2200	64	ug/Kg	**	08/25/13 12:13	08/31/13 23:59	
4,6-Dinitro-2-methylphenol	2200	U	2200	220	ug/Kg		08/25/13 12:13	08/31/13 23:59	
N-Nitrosodiphenylamine	500		430	43	ug/Kg	₩	08/25/13 12:13	08/31/13 23:59	
4-Bromophenyl phenyl ether	430	U	430	47	ug/Kg	₩	08/25/13 12:13	08/31/13 23:59	
Hexachlorobenzene	430	U	430	51	ug/Kg		08/25/13 12:13	08/31/13 23:59	
Atrazine	430	U	430	30	ug/Kg	₩	08/25/13 12:13	08/31/13 23:59	
Pentachlorophenol	2200	U	2200	430	ug/Kg	₩	08/25/13 12:13	08/31/13 23:59	
Phenanthrene	79	J	430	35	ug/Kg	₽	08/25/13 12:13	08/31/13 23:59	
Anthracene	110	J	430	33	ug/Kg	₽	08/25/13 12:13	08/31/13 23:59	
Carbazole	430	U	430	39	ug/Kg	₽	08/25/13 12:13	08/31/13 23:59	
Di-n-butyl phthalate	430	U	430	39	ug/Kg	₩	08/25/13 12:13	08/31/13 23:59	
Fluoranthene	430	U	430	42	ug/Kg	₽	08/25/13 12:13	08/31/13 23:59	
Pyrene	430	U	430	35	ug/Kg	₩	08/25/13 12:13	08/31/13 23:59	
Butyl benzyl phthalate	430	U	430	34	ug/Kg	₩	08/25/13 12:13	08/31/13 23:59	
3,3'-Dichlorobenzidine	860	U	860	36	ug/Kg	₽	08/25/13 12:13	08/31/13 23:59	
Benzo[a]anthracene	430	U	430	35	ug/Kg	₩	08/25/13 12:13	08/31/13 23:59	
Chrysene	430	U	430	27	ug/Kg	₽	08/25/13 12:13	08/31/13 23:59	
Bis(2-ethylhexyl) phthalate	50	J	430	38	ug/Kg	₩	08/25/13 12:13	08/31/13 23:59	
Di-n-octyl phthalate	430	U	430	38	ug/Kg	₩	08/25/13 12:13	08/31/13 23:59	
Benzo[b]fluoranthene	430	U	430	49	ug/Kg	₩	08/25/13 12:13	08/31/13 23:59	
Benzo[k]fluoranthene	430	U	430	85	ug/Kg		08/25/13 12:13	08/31/13 23:59	
Benzo[a]pyrene	430	U	430	68	ug/Kg	₩	08/25/13 12:13	08/31/13 23:59	
ndeno[1,2,3-cd]pyrene	430	U	430	36	ug/Kg	₽	08/25/13 12:13	08/31/13 23:59	
Dibenz(a,h)anthracene	430	U	430	51	ug/Kg		08/25/13 12:13	08/31/13 23:59	
Benzo[g,h,i]perylene	430	U	430	29	ug/Kg	₩	08/25/13 12:13	08/31/13 23:59	
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fa
Nitrobenzene-d5 (Surr)	52		46 - 130				08/25/13 12:13	08/31/13 23:59	-
2-Fluorobiphenyl	66		58 - 130				08/25/13 12:13	08/31/13 23:59	
Terphenyl-d14 (Surr)	65		60 - 130				08/25/13 12:13	08/31/13 23:59	
Phenol-d5 (Surr)	67		49 - 130				08/25/13 12:13	08/31/13 23:59	
2-Fluorophenol (Surr)	79		40 - 130				08/25/13 12:13	08/31/13 23:59	
2,4,6-Tribromophenol (Surr)	98		58 - 130				08/25/13 12:13	08/31/13 23:59	
Method: 8015C - Nonhalogenated	d Organice usi	na GC/FID	-Modified (Gaso	line Ran	ne Organ	ice)			
Analyte	_	Qualifier	RL		Unit	D D	Prepared	Analyzed	Dil Fa
Gasoline Range Organics (GRO) -C6-C10	40000		11000		ug/Kg	<u> </u>	08/21/13 16:21	08/27/13 18:11	
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fa
a,a,a-Trifluorotoluene		X	70 - 131				08/21/13 16:21	08/27/13 18:11	
Method: 8015C - Nonhalogenated	d Organics usi	ng GC/FID	-Modified (Diese	el Range	Organics	;)			
					Unit	D	Prepared	Analyzed	Dil Fa
Analyte	Result	Qualifier	RL	MIDE	Oilit		riepaieu	Allalyzeu	DII Fa
	Result 47000	Quaimer	6400		ug/Kg	— <del>ÿ</del>	08/24/13 11:08	08/27/13 01:04	— ППГа

TestAmerica Savannah

Analyzed

08/27/13 01:04

Prepared

08/24/13 11:08

Limits

50 - 150

%Recovery Qualifier

84

Dil Fac

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93423-1

Lab Sample ID: 680-93423-9

Matrix: Solid Percent Solids: 84.0

Client Sample ID: SB01-06 (1.0-2.0)

Date Collected: 08/19/13 16:15 Date Received: 08/21/13 10:07

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil F
Acetone		U –	26	7.5	ug/Kg	<del>_</del>	08/22/13 13:27	08/30/13 19:55	
Benzene	5.2		5.2	0.51	ug/Kg	₽	08/22/13 13:27	08/30/13 19:55	
Bromodichloromethane	5.2		5.2	0.87	ug/Kg	₽	08/22/13 13:27	08/30/13 19:55	
Bromoform	5.2		5.2		ug/Kg	<del>.</del> .	08/22/13 13:27	08/30/13 19:55	
Bromomethane		U *	5.2		ug/Kg	₩	08/22/13 13:27	08/30/13 19:55	
Carbon disulfide	5.2		5.2		ug/Kg	₽	08/22/13 13:27	08/30/13 19:55	
Carbon tetrachloride	5.2		5.2		ug/Kg		08/22/13 13:27	08/30/13 19:55	
Chlorobenzene	5.2		5.2		ug/Kg	₽	08/22/13 13:27	08/30/13 19:55	
Chloroethane	5.2		5.2		ug/Kg	₽	08/22/13 13:27	08/30/13 19:55	
Chloroform	5.2		5.2		ug/Kg		08/22/13 13:27	08/30/13 19:55	
Chloromethane	5.2		5.2	1.0		₽	08/22/13 13:27	08/30/13 19:55	
sis-1,2-Dichloroethene	5.2		5.2		0 0	₽	08/22/13 13:27	08/30/13 19:55	
is-1,3-Dichloropropene	5.2		5.2		ug/Kg		08/22/13 13:27	08/30/13 19:55	
Cyclohexane	5.2		5.2	0.97		₽	08/22/13 13:27	08/30/13 19:55	
Dibromochloromethane	5.2		5.2		ug/Kg ug/Kg	₩	08/22/13 13:27	08/30/13 19:55	
,2-Dibromo-3-Chloropropane	5.2		5.2		ug/Kg ug/Kg		08/22/13 13:27	08/30/13 19:55	
,2-Dichlorobenzene	5.2		5.2		ug/Kg ug/Kg	₽	08/22/13 13:27	08/30/13 19:55	
,3-Dichlorobenzene	5.2		5.2		ug/Kg ug/Kg	₩	08/22/13 13:27	08/30/13 19:55	
,4-Dichlorobenzene	5.2		5.2		ug/Kg ug/Kg	· · · · · · · · · · · · · · · · · · ·	08/22/13 13:27	08/30/13 19:55	
ichlorodifluoromethane	5.2		5.2		ug/Kg ug/Kg		08/22/13 13:27	08/30/13 19:55	
	5.2		5.2			~ ☆	08/22/13 13:27		
1-Dichloroethane	5.2		5.2		ug/Kg ug/Kg		08/22/13 13:27	08/30/13 19:55 08/30/13 19:55	
2-Dichloroethane			5.2			₩			
1-Dichloroethene	5.2			0.77	0 0	~ ☆	08/22/13 13:27	08/30/13 19:55	
2-Dichloropropane	5.2		5.2		ug/Kg		08/22/13 13:27	08/30/13 19:55	
iisopropyl ether	5.2		5.2		ug/Kg	₩	08/22/13 13:27	08/30/13 19:55	
thylbenzene	5.2		5.2		ug/Kg	₩	08/22/13 13:27	08/30/13 19:55	
thylene Dibromide	5.2		5.2		ug/Kg		08/22/13 13:27	08/30/13 19:55	
thyl tert-butyl ether	5.2		5.2		ug/Kg	₩	08/22/13 13:27	08/30/13 19:55	
-Hexanone	26	U	26		ug/Kg		08/22/13 13:27	08/30/13 19:55	
sopropylbenzene	5.2		5.2		ug/Kg	 \$	08/22/13 13:27	08/30/13 19:55	
lethyl acetate	5.2		5.2		ug/Kg		08/22/13 13:27	08/30/13 19:55	
lethylcyclohexane	5.2		5.2		ug/Kg	<b>\$</b>	08/22/13 13:27	08/30/13 19:55	
lethylene Chloride	15		15		ug/Kg	<u></u> .	08/22/13 13:27	08/30/13 19:55	
lethyl Ethyl Ketone	26		26		ug/Kg		08/22/13 13:27	08/30/13 19:55	
nethyl isobutyl ketone	26		26		ug/Kg		08/22/13 13:27	08/30/13 19:55	
lethyl tert-butyl ether	5.2		5.2		ug/Kg		08/22/13 13:27	08/30/13 19:55	
aphthalene	5.2		5.2		ug/Kg		08/22/13 13:27	08/30/13 19:55	
tyrene	5.2		5.2		ug/Kg		08/22/13 13:27	08/30/13 19:55	
ert-amyl methyl ether	5.2		5.2		ug/Kg		08/22/13 13:27	08/30/13 19:55	
ert-Butyl alcohol	5.2		5.2		ug/Kg	<b>‡</b>	08/22/13 13:27	08/30/13 19:55	
1,2,2-Tetrachloroethane	5.2		5.2		ug/Kg	<b>‡</b>	08/22/13 13:27	08/30/13 19:55	
etrachloroethene	5.2		5.2		ug/Kg		08/22/13 13:27	08/30/13 19:55	
oluene	5.2		5.2		ug/Kg	<b>‡</b>	08/22/13 13:27	08/30/13 19:55	
ans-1,2-Dichloroethene	5.2		5.2		ug/Kg	<b>#</b>	08/22/13 13:27	08/30/13 19:55	
ans-1,3-Dichloropropene	5.2	U	5.2		ug/Kg		08/22/13 13:27	08/30/13 19:55	
,2,4-Trichlorobenzene	5.2	U	5.2	0.75	ug/Kg	₩	08/22/13 13:27	08/30/13 19:55	
,1,1-Trichloroethane	5.2	U	5.2	1.1	ug/Kg	₽	08/22/13 13:27	08/30/13 19:55	
,1,2-Trichloroethane	5.2	U	5.2	0.95	ug/Kg	₩	08/22/13 13:27	08/30/13 19:55	

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93423-1

Lab Sample ID: 680-93423-9

Matrix: Solid Percent Solids: 84.0

Client Sample ID: SB01-06 (1.0-2.0)

Date Collected: 08/19/13 16:15 Date Received: 08/21/13 10:07

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichlorofluoromethane	5.2	U	5.2	0.98	ug/Kg	₩	08/22/13 13:27	08/30/13 19:55	1
1,1,2-Trichloro-1,2,2-trifluoroethane	5.2	U	5.2	2.1	ug/Kg	₽	08/22/13 13:27	08/30/13 19:55	1
Vinyl chloride	5.2	U	5.2	0.95	ug/Kg	₽	08/22/13 13:27	08/30/13 19:55	1
Xylenes, Total	10	U	10	2.0	ug/Kg	₽	08/22/13 13:27	08/30/13 19:55	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	95		72 - 122				08/22/13 13:27	08/30/13 19:55	1
Dibromofluoromethane	102		79 - 123				08/22/13 13:27	08/30/13 19:55	1
Toluene-d8 (Surr)	95		80 - 120				08/22/13 13:27	08/30/13 19:55	1

Toldene-do (Sull)									,
Method: 8270D - Semivolatile O	•	•	•						
Analyte		Qualifier	RL	MDL		D	Prepared	Analyzed	Dil Fac
Benzaldehyde	390	U	390	69	ug/Kg	<del>*</del>	08/25/13 12:13	09/01/13 00:25	1
Phenol	390		390	40	ug/Kg	₩	08/25/13 12:13	09/01/13 00:25	1
Bis(2-chloroethyl)ether	390	U	390	54	ug/Kg		08/25/13 12:13	09/01/13 00:25	1
2-Chlorophenol	390	U	390	48	ug/Kg	₩	08/25/13 12:13	09/01/13 00:25	1
2-Methylphenol	390	U	390	32	ug/Kg	₩	08/25/13 12:13	09/01/13 00:25	1
bis (2-chloroisopropyl) ether	390	U	390	36	ug/Kg	₽	08/25/13 12:13	09/01/13 00:25	1
Acetophenone	390	U	390	33	ug/Kg	₽	08/25/13 12:13	09/01/13 00:25	1
3 & 4 Methylphenol	390	U	390	51	ug/Kg	₩	08/25/13 12:13	09/01/13 00:25	1
N-Nitrosodi-n-propylamine	390	U	390	38	ug/Kg	₩	08/25/13 12:13	09/01/13 00:25	1
Hexachloroethane	390	U	390	33	ug/Kg	*	08/25/13 12:13	09/01/13 00:25	1
Nitrobenzene	390	U	390	31	ug/Kg	₩	08/25/13 12:13	09/01/13 00:25	1
Isophorone	390	U	390	39	ug/Kg	₽	08/25/13 12:13	09/01/13 00:25	1
2-Nitrophenol	390	U	390	49	ug/Kg	₽	08/25/13 12:13	09/01/13 00:25	1
2,4-Dimethylphenol	390	U	390	52	ug/Kg	₽	08/25/13 12:13	09/01/13 00:25	1
Bis(2-chloroethoxy)methane	390	U	390	46	ug/Kg	₩	08/25/13 12:13	09/01/13 00:25	1
2,4-Dichlorophenol	390	U	390	42	ug/Kg		08/25/13 12:13	09/01/13 00:25	1
Naphthalene	390	U	390	36	ug/Kg	₩	08/25/13 12:13	09/01/13 00:25	1
4-Chloroaniline	790	U	790	62	ug/Kg	₽	08/25/13 12:13	09/01/13 00:25	1
Hexachlorobutadiene	390	U	390	43	ug/Kg		08/25/13 12:13	09/01/13 00:25	1
Caprolactam	390	U	390	79	ug/Kg	₩	08/25/13 12:13	09/01/13 00:25	1
4-Chloro-3-methylphenol	390	U	390	42	ug/Kg	₽	08/25/13 12:13	09/01/13 00:25	1
2-Methylnaphthalene	55	J	390	45	ug/Kg		08/25/13 12:13	09/01/13 00:25	1
Hexachlorocyclopentadiene	390	U	390	49	ug/Kg	₽	08/25/13 12:13	09/01/13 00:25	1
2,4,6-Trichlorophenol	390	U	390	35	ug/Kg	₩	08/25/13 12:13	09/01/13 00:25	1
2,4,5-Trichlorophenol	390	U	390	42	ug/Kg		08/25/13 12:13	09/01/13 00:25	1
1,1'-Biphenyl	880	U	880	880	ug/Kg	₽	08/25/13 12:13	09/01/13 00:25	1
2-Chloronaphthalene	390	U	390	42	ug/Kg	₽	08/25/13 12:13	09/01/13 00:25	1
2-Nitroaniline	2000	U	2000	54	ug/Kg		08/25/13 12:13	09/01/13 00:25	1
Dimethyl phthalate	390	U	390	40	ug/Kg	₽	08/25/13 12:13	09/01/13 00:25	1
2,6-Dinitrotoluene	390	U	390	50	ug/Kg	₽	08/25/13 12:13	09/01/13 00:25	1
Acenaphthylene	390	U	390	43	ug/Kg		08/25/13 12:13	09/01/13 00:25	1
3-Nitroaniline	2000	U	2000	55	ug/Kg	₽	08/25/13 12:13	09/01/13 00:25	1
Acenaphthene	390	U	390	49	ug/Kg	₩	08/25/13 12:13	09/01/13 00:25	1
2,4-Dinitrophenol	2000	U	2000	990	ug/Kg		08/25/13 12:13	09/01/13 00:25	1
4-Nitrophenol	2000	U	2000	390	ug/Kg	₩	08/25/13 12:13	09/01/13 00:25	1
Dibenzofuran	390		390	39	ug/Kg	₽	08/25/13 12:13	09/01/13 00:25	1
2,4-Dinitrotoluene	390		390		ug/Kg		08/25/13 12:13	09/01/13 00:25	
Diethyl phthalate	390		390		ug/Kg	₽	08/25/13 12:13	09/01/13 00:25	1

TestAmerica Savannah

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Client: ARCADIS U.S., Inc.

Surrogate

o-Terphenyl (Surr)

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB01-06 (1.0-2.0)

Date Collected: 08/19/13 16:15 Date Received: 08/21/13 10:07 Lab Sample ID: 680-93423-9

Matrix: Solid

Percent Solids: 84.0

Analyte		Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Fluorene	390	U	390	43	ug/Kg		08/25/13 12:13	09/01/13 00:25	1
4-Chlorophenyl phenyl ether	390	U	390	52	ug/Kg	₩	08/25/13 12:13	09/01/13 00:25	1
4-Nitroaniline	2000	U	2000	58	ug/Kg	₩	08/25/13 12:13	09/01/13 00:25	1
4,6-Dinitro-2-methylphenol	2000	U	2000	200	ug/Kg		08/25/13 12:13	09/01/13 00:25	1
N-Nitrosodiphenylamine	390	U	390	39	ug/Kg	≎	08/25/13 12:13	09/01/13 00:25	1
4-Bromophenyl phenyl ether	390	U	390	43	ug/Kg	₩	08/25/13 12:13	09/01/13 00:25	1
Hexachlorobenzene	390	U	390	46	ug/Kg	₩	08/25/13 12:13	09/01/13 00:25	1
Atrazine	390	U	390	27	ug/Kg	₽	08/25/13 12:13	09/01/13 00:25	1
Pentachlorophenol	2000	U	2000	390	ug/Kg	≎	08/25/13 12:13	09/01/13 00:25	1
Phenanthrene	71	J	390	32	ug/Kg	₩	08/25/13 12:13	09/01/13 00:25	1
Anthracene	390	U	390	30	ug/Kg	₽	08/25/13 12:13	09/01/13 00:25	1
Carbazole	390	U	390	36	ug/Kg	₩	08/25/13 12:13	09/01/13 00:25	1
Di-n-butyl phthalate	390	U	390	36	ug/Kg	₩	08/25/13 12:13	09/01/13 00:25	1
Fluoranthene	76	J	390	38	ug/Kg	₽	08/25/13 12:13	09/01/13 00:25	1
Pyrene	44	J	390	32	ug/Kg	₩	08/25/13 12:13	09/01/13 00:25	1
Butyl benzyl phthalate	390	U	390	31	ug/Kg	₩	08/25/13 12:13	09/01/13 00:25	1
3,3'-Dichlorobenzidine	790	U	790	33	ug/Kg	≎	08/25/13 12:13	09/01/13 00:25	1
Benzo[a]anthracene	34	J	390	32	ug/Kg	₽	08/25/13 12:13	09/01/13 00:25	1
Chrysene	57	J	390	25	ug/Kg	≎	08/25/13 12:13	09/01/13 00:25	1
Bis(2-ethylhexyl) phthalate	390	U	390	35	ug/Kg	₽	08/25/13 12:13	09/01/13 00:25	1
Di-n-octyl phthalate	390	U	390	35	ug/Kg	₽	08/25/13 12:13	09/01/13 00:25	1
Benzo[b]fluoranthene	54	J	390	45	ug/Kg	₽	08/25/13 12:13	09/01/13 00:25	1
Benzo[k]fluoranthene	390	U	390	77	ug/Kg	₽	08/25/13 12:13	09/01/13 00:25	1
Benzo[a]pyrene	390	U	390	62	ug/Kg	₽	08/25/13 12:13	09/01/13 00:25	1
Indeno[1,2,3-cd]pyrene	390	U	390	33	ug/Kg	₩	08/25/13 12:13	09/01/13 00:25	1
Dibenz(a,h)anthracene	390	U	390	46	ug/Kg	₩.	08/25/13 12:13	09/01/13 00:25	1
Benzo[g,h,i]perylene	390	U	390	26	ug/Kg	₩	08/25/13 12:13	09/01/13 00:25	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	69		46 - 130				08/25/13 12:13	09/01/13 00:25	1
2-Fluorobiphenyl	68		58 - 130				08/25/13 12:13	09/01/13 00:25	1
Terphenyl-d14 (Surr)	66		60 - 130				08/25/13 12:13	09/01/13 00:25	1
Phenol-d5 (Surr)	66		49 - 130				08/25/13 12:13	09/01/13 00:25	1
2-Fluorophenol (Surr)	74		40 - 130				08/25/13 12:13	09/01/13 00:25	1
2,4,6-Tribromophenol (Surr)	84		58 - 130				08/25/13 12:13	09/01/13 00:25	1
- Method: 8015C - Nonhalogenate	d Organics usi	ng GC/FID	-Modified (Gaso	oline Ran	ge Organi	ics)			
Analyte	_	Qualifier	RL		Unit	Ď	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO) -C6-C10	290	U	290	22	ug/Kg	<del>*</del>	08/21/13 16:21	08/23/13 15:07	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene	91		70 - 131				08/21/13 16:21	08/23/13 15:07	1
- Method: 8015C - Nonhalogenate	d Organics usi	ng GC/FID	-Modified (Diese	el Range	Organics	)			
Analyte		Qualifier	RL	_	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	5900		5900	1700	ug/Kg	<del> </del>	08/30/13 13:38	09/01/13 16:45	1
ORO C24-C40	7300	В	5900	1700	ug/Kg	₩	08/30/13 13:38	09/01/13 16:45	1

TestAmerica Savannah

Analyzed

Prepared

Limits

50 - 150

%Recovery Qualifier

75

Dil Fac

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

iont Sample ID: SR01 06 (6 5 7 5)

Client Sample ID: SB01-06 (6.5-7.5)

Date Collected: 08/19/13 16:20

Lab Sample ID: 680-93423-10

Matrix: Solid

Date Received: 08/21/13 10:07 Percent Solids: 67.9

Method: 8260B - Volatile Organio Analyte	•	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
Acetone	65		26	7.7	ug/Kg	<del></del>	08/22/13 13:27	08/30/13 20:21	
Benzene	5.3	U	5.3		ug/Kg	₩	08/22/13 13:27	08/30/13 20:21	
Bromodichloromethane	5.3		5.3		ug/Kg	₽	08/22/13 13:27	08/30/13 20:21	
Bromoform	5.3		5.3				08/22/13 13:27	08/30/13 20:21	
Bromomethane		U *	5.3	1.5		₩	08/22/13 13:27	08/30/13 20:21	
Carbon disulfide	5.3		5.3	1.3	0 0	₩	08/22/13 13:27	08/30/13 20:21	
Carbon tetrachloride	5.3		5.3	1.8	ug/Kg		08/22/13 13:27	08/30/13 20:21	
Chlorobenzene	5.3		5.3			*	08/22/13 13:27	08/30/13 20:21	
Chloroethane	5.3		5.3	2.0	ug/Kg ug/Kg	*	08/22/13 13:27	08/30/13 20:21	
Chloroform	5.3		5.3		ug/Kg	· · · · · · · · · · · · · · · · · · ·	08/22/13 13:27	08/30/13 20:21	
Chloromethane	5.3		5.3	1.1	ug/Kg ug/Kg		08/22/13 13:27	08/30/13 20:21	
cis-1,2-Dichloroethene	5.3		5.3				08/22/13 13:27	08/30/13 20:21	
cis-1,3-Dichloropropene	5.3		5.3		ug/Kg	₩	08/22/13 13:27	08/30/13 20:21	
Cyclohexane	5.3		5.3	0.99	ug/Kg	₩	08/22/13 13:27	08/30/13 20:21	
Dibromochloromethane	5.3		5.3	0.91	ug/Kg	<del></del>	08/22/13 13:27	08/30/13 20:21	
1,2-Dibromo-3-Chloropropane	5.3		5.3		ug/Kg		08/22/13 13:27	08/30/13 20:21	
1,2-Dichlorobenzene	5.3		5.3		ug/Kg	<b>*</b>	08/22/13 13:27	08/30/13 20:21	
1,3-Dichlorobenzene	5.3		5.3	1.0	ug/Kg	<u></u>	08/22/13 13:27	08/30/13 20:21	
1,4-Dichlorobenzene	5.3		5.3		0 0	₩	08/22/13 13:27	08/30/13 20:21	
Dichlorodifluoromethane	5.3		5.3	1.4		*	08/22/13 13:27	08/30/13 20:21	
1,1-Dichloroethane	5.3		5.3	0.87	ug/Kg		08/22/13 13:27	08/30/13 20:21	
1,2-Dichloroethane	5.3		5.3	0.86	ug/Kg	**	08/22/13 13:27	08/30/13 20:21	
1,1-Dichloroethene	5.3		5.3	0.79	ug/Kg	₩	08/22/13 13:27	08/30/13 20:21	
1,2-Dichloropropane	5.3	U	5.3	0.78	ug/Kg		08/22/13 13:27	08/30/13 20:21	
Diisopropyl ether	5.3	U	5.3	0.58	ug/Kg	₩	08/22/13 13:27	08/30/13 20:21	
Ethylbenzene	5.3	U	5.3	0.64	ug/Kg	₩	08/22/13 13:27	08/30/13 20:21	
Ethylene Dibromide	5.3	U	5.3	0.50	ug/Kg	₽	08/22/13 13:27	08/30/13 20:21	
Ethyl tert-butyl ether	5.3	U	5.3	0.59	ug/Kg	₽	08/22/13 13:27	08/30/13 20:21	
2-Hexanone	26	U	26	5.3	ug/Kg	₩	08/22/13 13:27	08/30/13 20:21	
sopropylbenzene	5.3	U	5.3	0.71	ug/Kg	₩	08/22/13 13:27	08/30/13 20:21	
Methyl acetate	5.3	U	5.3	4.8	ug/Kg	₽	08/22/13 13:27	08/30/13 20:21	
Methylcyclohexane	5.3	U	5.3	0.91	ug/Kg	₽	08/22/13 13:27	08/30/13 20:21	
Methylene Chloride	16	U	16	11	ug/Kg	₩	08/22/13 13:27	08/30/13 20:21	
Methyl Ethyl Ketone	26	U	26	4.3	ug/Kg	₽	08/22/13 13:27	08/30/13 20:21	
methyl isobutyl ketone	26	U	26	4.2	ug/Kg	₩	08/22/13 13:27	08/30/13 20:21	
Methyl tert-butyl ether	5.3	U	5.3	1.1	ug/Kg	₽	08/22/13 13:27	08/30/13 20:21	
Naphthalene	5.3	U	5.3	1.1	ug/Kg		08/22/13 13:27	08/30/13 20:21	
Styrene	5.3	U	5.3	0.80	ug/Kg	₩	08/22/13 13:27	08/30/13 20:21	
Fert-amyl methyl ether	5.3	U	5.3		ug/Kg	₩	08/22/13 13:27	08/30/13 20:21	
tert-Butyl alcohol	5.3		5.3		ug/Kg	<del>-</del>	08/22/13 13:27	08/30/13 20:21	
1,1,2,2-Tetrachloroethane	5.3		5.3		ug/Kg	₽	08/22/13 13:27	08/30/13 20:21	
Tetrachloroethene	5.3		5.3		ug/Kg	₽	08/22/13 13:27	08/30/13 20:21	
Foluene	5.3		5.3		ug/Kg		08/22/13 13:27	08/30/13 20:21	
rans-1,2-Dichloroethene	5.3		5.3		ug/Kg	₽	08/22/13 13:27	08/30/13 20:21	
rans-1,3-Dichloropropene	5.3		5.3		ug/Kg ug/Kg	₽	08/22/13 13:27	08/30/13 20:21	
1,2,4-Trichlorobenzene	5.3								
			5.3 5.3		ug/Kg	₩	08/22/13 13:27	08/30/13 20:21	
1,1,1-Trichloroethane	5.3		5.3		ug/Kg		08/22/13 13:27	08/30/13 20:21	
1,1,2-Trichloroethane Trichloroethene	5.3 5.3		5.3 5.3		ug/Kg ug/Kg	 \$	08/22/13 13:27 08/22/13 13:27	08/30/13 20:21 08/30/13 20:21	

TestAmerica Savannah

3

TestAmerica Job ID: 680-93423-1

4

7

0

10

1/2

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

ont Sample ID: SP01 06 /6 5 7 5)

Client Sample ID: SB01-06 (6.5-7.5)

Date Collected: 08/19/13 16:20

Lab Sample ID: 680-93423-10

Matrix: Solid

Date Received: 08/21/13 10:07 Percent Solids: 67.9

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichlorofluoromethane	5.3	U	5.3	1.0	ug/Kg	₩	08/22/13 13:27	08/30/13 20:21	1
1,1,2-Trichloro-1,2,2-trifluoroethane	5.3	U	5.3	2.1	ug/Kg	₽	08/22/13 13:27	08/30/13 20:21	1
Vinyl chloride	5.3	U	5.3	0.97	ug/Kg	₽	08/22/13 13:27	08/30/13 20:21	1
Xylenes, Total	11	U	11	2.0	ug/Kg	₽	08/22/13 13:27	08/30/13 20:21	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	95		72 - 122				08/22/13 13:27	08/30/13 20:21	1
Dibromofluoromethane	100		79 - 123				08/22/13 13:27	08/30/13 20:21	1
Toluene-d8 (Surr)	96		80 - 120				08/22/13 13:27	08/30/13 20:21	1

Toluene-as (Surr)	90		80 - 120				08/22/13 13:27	08/30/13 20:21	•
Method: 8270D - Semivolatile Or	•	•	•						
Analyte		Qualifier	RL	MDL		D	Prepared	Analyzed	Dil Fac
Benzaldehyde	480	U	480	85	ug/Kg	<u> </u>	08/25/13 12:13	09/01/13 00:50	1
Phenol	480		480	50	ug/Kg	*	08/25/13 12:13	09/01/13 00:50	1
Bis(2-chloroethyl)ether	480		480	66	ug/Kg		08/25/13 12:13	09/01/13 00:50	1
2-Chlorophenol	480	U	480	59	ug/Kg	₩	08/25/13 12:13	09/01/13 00:50	1
2-Methylphenol	480	U	480	40	ug/Kg	₩	08/25/13 12:13	09/01/13 00:50	1
bis (2-chloroisopropyl) ether	480	U	480	44	ug/Kg		08/25/13 12:13	09/01/13 00:50	1
Acetophenone	480	U	480	41	ug/Kg	₩	08/25/13 12:13	09/01/13 00:50	1
3 & 4 Methylphenol	480	U	480	63	ug/Kg	₩	08/25/13 12:13	09/01/13 00:50	1
N-Nitrosodi-n-propylamine	480	U	480	47	ug/Kg	₩	08/25/13 12:13	09/01/13 00:50	1
Hexachloroethane	480	U	480	41	ug/Kg	₩	08/25/13 12:13	09/01/13 00:50	1
Nitrobenzene	480	U	480	38	ug/Kg	₩	08/25/13 12:13	09/01/13 00:50	1
Isophorone	480	U	480	48	ug/Kg	₩	08/25/13 12:13	09/01/13 00:50	1
2-Nitrophenol	480	U	480	60	ug/Kg	₩	08/25/13 12:13	09/01/13 00:50	1
2,4-Dimethylphenol	480	U	480	65	ug/Kg	₩	08/25/13 12:13	09/01/13 00:50	1
Bis(2-chloroethoxy)methane	480	U	480	57	ug/Kg	₩	08/25/13 12:13	09/01/13 00:50	1
2,4-Dichlorophenol	480	U	480	51	ug/Kg		08/25/13 12:13	09/01/13 00:50	1
Naphthalene	480	U	480	44	ug/Kg	₩	08/25/13 12:13	09/01/13 00:50	1
4-Chloroaniline	970	U	970	76	ug/Kg	₩	08/25/13 12:13	09/01/13 00:50	1
Hexachlorobutadiene	480	U	480	53	ug/Kg		08/25/13 12:13	09/01/13 00:50	1
Caprolactam	480	U	480	97	ug/Kg	₩	08/25/13 12:13	09/01/13 00:50	1
4-Chloro-3-methylphenol	480	U	480	51	ug/Kg	₩	08/25/13 12:13	09/01/13 00:50	1
2-Methylnaphthalene	480	U	480	56	ug/Kg	ф.	08/25/13 12:13	09/01/13 00:50	1
Hexachlorocyclopentadiene	480	U	480	60	ug/Kg	₩	08/25/13 12:13	09/01/13 00:50	1
2,4,6-Trichlorophenol	480	U	480	43	ug/Kg	₩	08/25/13 12:13	09/01/13 00:50	1
2,4,5-Trichlorophenol	480	U	480	51	ug/Kg		08/25/13 12:13	09/01/13 00:50	1
1,1'-Biphenyl	1100	U	1100	1100	ug/Kg	₩	08/25/13 12:13	09/01/13 00:50	1
2-Chloronaphthalene	480	U	480	51	ug/Kg	₩	08/25/13 12:13	09/01/13 00:50	1
2-Nitroaniline	2500	U	2500	66	ug/Kg		08/25/13 12:13	09/01/13 00:50	1
Dimethyl phthalate	480	U	480	50	ug/Kg	₩	08/25/13 12:13	09/01/13 00:50	1
2,6-Dinitrotoluene	480	U	480	62	ug/Kg	₩	08/25/13 12:13	09/01/13 00:50	1
Acenaphthylene	480	U	480	53	ug/Kg		08/25/13 12:13	09/01/13 00:50	1
3-Nitroaniline	2500	U	2500	68	ug/Kg	₽	08/25/13 12:13	09/01/13 00:50	1
Acenaphthene	480	U	480	60	ug/Kg	₽	08/25/13 12:13	09/01/13 00:50	1
2,4-Dinitrophenol	2500	U	2500	1200	ug/Kg	<sub>.</sub>	08/25/13 12:13	09/01/13 00:50	1
4-Nitrophenol	2500		2500	480	ug/Kg	₽	08/25/13 12:13	09/01/13 00:50	1
Dibenzofuran	480		480	48	ug/Kg	₩	08/25/13 12:13	09/01/13 00:50	1
2,4-Dinitrotoluene			480		ug/Kg	<sub></sub>	08/25/13 12:13	09/01/13 00:50	
Diethyl phthalate		U	480		ug/Kg ug/Kg	*	08/25/13 12:13	09/01/13 00:50	1

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TestAmerica Job ID: 680-93423-1

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11

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB01-06 (6.5-7.5)

Date Collected: 08/19/13 16:20 Date Received: 08/21/13 10:07

Diesel Range Organics [C10-C28]

ORO C24-C40

o-Terphenyl (Surr)

Surrogate

Lab Sample ID: 680-93423-10

Matrix: Solid

Percent Solids: 67.9

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluorene	480	U	480	53	ug/Kg	<del></del>	08/25/13 12:13	09/01/13 00:50	
4-Chlorophenyl phenyl ether	480	U	480	65	ug/Kg	\$	08/25/13 12:13	09/01/13 00:50	•
4-Nitroaniline	2500	U	2500	72	ug/Kg	₩	08/25/13 12:13	09/01/13 00:50	1
4,6-Dinitro-2-methylphenol	2500	U	2500	250	ug/Kg	₽	08/25/13 12:13	09/01/13 00:50	1
N-Nitrosodiphenylamine	480	U	480	48	ug/Kg	₩	08/25/13 12:13	09/01/13 00:50	1
4-Bromophenyl phenyl ether	480	U	480	53	ug/Kg	₽	08/25/13 12:13	09/01/13 00:50	1
Hexachlorobenzene	480	U	480	57	ug/Kg	₽	08/25/13 12:13	09/01/13 00:50	1
Atrazine	480	U	480	34	ug/Kg	₩	08/25/13 12:13	09/01/13 00:50	1
Pentachlorophenol	2500	U	2500	480	ug/Kg	₩	08/25/13 12:13	09/01/13 00:50	1
Phenanthrene	480	U	480	40	ug/Kg	₩	08/25/13 12:13	09/01/13 00:50	1
Anthracene	480	U	480	37	ug/Kg		08/25/13 12:13	09/01/13 00:50	1
Carbazole	480	U	480	44	ug/Kg	₩	08/25/13 12:13	09/01/13 00:50	1
Di-n-butyl phthalate	480	U	480	44	ug/Kg	₩	08/25/13 12:13	09/01/13 00:50	1
Fluoranthene	480	U	480	47	ug/Kg		08/25/13 12:13	09/01/13 00:50	1
Pyrene	480	U	480	40	ug/Kg	₩	08/25/13 12:13	09/01/13 00:50	1
Butyl benzyl phthalate	480	U	480	38	ug/Kg	₩	08/25/13 12:13	09/01/13 00:50	1
3,3'-Dichlorobenzidine	970	U	970	41	ug/Kg		08/25/13 12:13	09/01/13 00:50	1
Benzo[a]anthracene	480	U	480	40	ug/Kg	₩	08/25/13 12:13	09/01/13 00:50	1
Chrysene	480	U	480	31	ug/Kg	₩	08/25/13 12:13	09/01/13 00:50	1
Bis(2-ethylhexyl) phthalate	43	J	480	43	ug/Kg		08/25/13 12:13	09/01/13 00:50	1
Di-n-octyl phthalate	480	U	480	43	ug/Kg	₩	08/25/13 12:13	09/01/13 00:50	1
Benzo[b]fluoranthene	480	U	480	56	ug/Kg	₩	08/25/13 12:13	09/01/13 00:50	1
Benzo[k]fluoranthene	480	U	480	95	ug/Kg	₩	08/25/13 12:13	09/01/13 00:50	1
Benzo[a]pyrene	480	U	480	76	ug/Kg	₽	08/25/13 12:13	09/01/13 00:50	1
Indeno[1,2,3-cd]pyrene	480	U	480	41	ug/Kg	₩	08/25/13 12:13	09/01/13 00:50	1
Dibenz(a,h)anthracene	480	U	480	57	ug/Kg	₽	08/25/13 12:13	09/01/13 00:50	1
Benzo[g,h,i]perylene	480	U	480	32	ug/Kg	₩	08/25/13 12:13	09/01/13 00:50	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	55		46 - 130				08/25/13 12:13	09/01/13 00:50	1
2-Fluorobiphenyl	69		58 - 130				08/25/13 12:13	09/01/13 00:50	1
Terphenyl-d14 (Surr)	68		60 - 130				08/25/13 12:13	09/01/13 00:50	1
Phenol-d5 (Surr)	67		49 - 130				08/25/13 12:13	09/01/13 00:50	1
2-Fluorophenol (Surr)	77		40 - 130				08/25/13 12:13	09/01/13 00:50	1
2,4,6-Tribromophenol (Surr)	93		58 - 130				08/25/13 12:13	09/01/13 00:50	1
Method: 8015C - Nonhalogenate									
Analyte		Qualifier	RL	MDL		D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO) -C6-C10	290	J	320	24	ug/Kg	*	08/21/13 16:21	08/23/13 15:27	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene	96		70 - 131				08/21/13 16:21	08/23/13 15:27	

TestAmerica Savannah

Analyzed

08/27/13 01:36

08/27/13 01:36

Analyzed

08/27/13 01:36

RL

7200

7200

Limits

50 - 150

MDL Unit

2000 ug/Kg

2000 ug/Kg

D

Prepared

08/24/13 11:08

08/24/13 11:08

Prepared

08/24/13 11:08

Method: 8015C - Nonhalogenated Organics using GC/FID -Modified (Diesel Range Organics) Result Qualifier

6400 JB

%Recovery Qualifier

77

2500

Dil Fac

Dil Fac

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

Lab Sample ID: 680-93423-11

TestAmerica Job ID: 680-93423-1

Matrix: Solid Percent Solids: 75.1

Client Sample ID: SB01-05 (8.5-9.5)

Date Collected: 08/19/13 16:50 Date Received: 08/21/13 10:07

Analyte		Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fa
Acetone	150		28	8.1	ug/Kg	\$	08/22/13 13:27	08/30/13 20:46	
Benzene	5.5		5.5	0.54	ug/Kg	₩	08/22/13 13:27	08/30/13 20:46	
Bromodichloromethane	5.5		5.5	0.93	ug/Kg		08/22/13 13:27	08/30/13 20:46	
Bromoform	5.5		5.5	0.70	ug/Kg	*	08/22/13 13:27	08/30/13 20:46	
Bromomethane	5.5		5.5	1.6	ug/Kg	₽.	08/22/13 13:27	08/30/13 20:46	
Carbon disulfide	5.5		5.5	1.3	ug/Kg		08/22/13 13:27	08/30/13 20:46	
Carbon tetrachloride	5.5	U	5.5	1.9	ug/Kg	₽	08/22/13 13:27	08/30/13 20:46	
Chlorobenzene	5.5	U	5.5	0.58	ug/Kg	₩	08/22/13 13:27	08/30/13 20:46	
Chloroethane	5.5	U	5.5	2.1	ug/Kg		08/22/13 13:27	08/30/13 20:46	
Chloroform	5.5	U	5.5	0.65	ug/Kg	₽	08/22/13 13:27	08/30/13 20:46	
Chloromethane	5.5	U	5.5	1.1	0 0	₽	08/22/13 13:27	08/30/13 20:46	
cis-1,2-Dichloroethene	5.5	U	5.5	0.84	ug/Kg	₽	08/22/13 13:27	08/30/13 20:46	
cis-1,3-Dichloropropene	5.5	U	5.5	1.3	ug/Kg	₽	08/22/13 13:27	08/30/13 20:46	
Cyclohexane	5.5	U	5.5	1.0	ug/Kg	₽	08/22/13 13:27	08/30/13 20:46	
Dibromochloromethane	5.5	U	5.5	0.96	ug/Kg	₽	08/22/13 13:27	08/30/13 20:46	
1,2-Dibromo-3-Chloropropane	5.5	U	5.5	3.7	ug/Kg	₽	08/22/13 13:27	08/30/13 20:46	
1,2-Dichlorobenzene	5.5	U	5.5	0.79	ug/Kg	₽	08/22/13 13:27	08/30/13 20:46	
1,3-Dichlorobenzene	5.5	U	5.5	1.1	ug/Kg	₽	08/22/13 13:27	08/30/13 20:46	
1,4-Dichlorobenzene	5.5	U	5.5	0.91	ug/Kg		08/22/13 13:27	08/30/13 20:46	
Dichlorodifluoromethane	5.5	U	5.5	1.4	ug/Kg	₽	08/22/13 13:27	08/30/13 20:46	
1,1-Dichloroethane	5.5	U	5.5	0.92	ug/Kg	₽	08/22/13 13:27	08/30/13 20:46	
1,2-Dichloroethane	5.5	U	5.5		ug/Kg		08/22/13 13:27	08/30/13 20:46	
1,1-Dichloroethene	5.5	U	5.5		ug/Kg	₽	08/22/13 13:27	08/30/13 20:46	
1,2-Dichloropropane	5.5		5.5		ug/Kg	₽	08/22/13 13:27	08/30/13 20:46	
Diisopropyl ether	5.5		5.5		ug/Kg	ф.	08/22/13 13:27	08/30/13 20:46	
Ethylbenzene	5.5		5.5	0.68	ug/Kg	₽	08/22/13 13:27	08/30/13 20:46	
Ethylene Dibromide	5.5		5.5	0.53	ug/Kg	₽	08/22/13 13:27	08/30/13 20:46	
Ethyl tert-butyl ether	5.5		5.5	0.62			08/22/13 13:27	08/30/13 20:46	
2-Hexanone	28		28	5.5	ug/Kg	₽	08/22/13 13:27	08/30/13 20:46	
Isopropylbenzene	5.5		5.5	0.75	ug/Kg	₽	08/22/13 13:27	08/30/13 20:46	
Methyl acetate	5.5		5.5	5.1	ug/Kg		08/22/13 13:27	08/30/13 20:46	
Methylcyclohexane	5.5		5.5	0.96	ug/Kg	₽	08/22/13 13:27	08/30/13 20:46	
Methylene Chloride	17		17	11		₽	08/22/13 13:27	08/30/13 20:46	
Methyl Ethyl Ketone	32		28		ug/Kg	· · · · · · · · · · · · · · · · · · ·	08/22/13 13:27	08/30/13 20:46	
methyl isobutyl ketone	28	ш	28		ug/Kg		08/22/13 13:27	08/30/13 20:46	
Methyl tert-butyl ether	5.5		5.5		ug/Kg ug/Kg	₩	08/22/13 13:27	08/30/13 20:46	
	5.5				ug/Kg ug/Kg		08/22/13 13:27	08/30/13 20:46	
Naphthalene			5.5			т Ф			
Styrene Test amul methyl other	5.5		5.5		ug/Kg	~ Ф	08/22/13 13:27	08/30/13 20:46	
Tert-amyl methyl ether	5.5		5.5		ug/Kg		08/22/13 13:27	08/30/13 20:46	
tert-Butyl alcohol	5.5		5.5		ug/Kg	<b>‡</b>	08/22/13 13:27	08/30/13 20:46	
1,1,2,2-Tetrachloroethane	5.5		5.5		ug/Kg	<b>#</b>	08/22/13 13:27	08/30/13 20:46	
Tetrachloroethene	5.5		5.5		ug/Kg		08/22/13 13:27	08/30/13 20:46	
Toluene	5.5		5.5		ug/Kg	<b>\$</b>	08/22/13 13:27	08/30/13 20:46	
trans-1,2-Dichloroethene	5.5		5.5		ug/Kg		08/22/13 13:27	08/30/13 20:46	
trans-1,3-Dichloropropene	5.5		5.5		ug/Kg	J	08/22/13 13:27	08/30/13 20:46	
1,2,4-Trichlorobenzene	5.5		5.5		ug/Kg	₩	08/22/13 13:27	08/30/13 20:46	
1,1,1-Trichloroethane	5.5		5.5		ug/Kg	*	08/22/13 13:27	08/30/13 20:46	
1,1,2-Trichloroethane	5.5	U	5.5	1.0	ug/Kg	₽	08/22/13 13:27	08/30/13 20:46	

TestAmerica Savannah

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11

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

Lab Sample ID: 680-93423-11

TestAmerica Job ID: 680-93423-1

Matrix: Solid

Percent Solids: 75.1

Client Sample ID: SB01-05 (8.5-9.5)

Date Collected: 08/19/13 16:50 Date Received: 08/21/13 10:07

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichlorofluoromethane	5.5	U	5.5	1.1	ug/Kg	₽	08/22/13 13:27	08/30/13 20:46	1
1,1,2-Trichloro-1,2,2-trifluoroethane	5.5	U	5.5	2.2	ug/Kg	₽	08/22/13 13:27	08/30/13 20:46	1
Vinyl chloride	5.5	U	5.5	1.0	ug/Kg	\$	08/22/13 13:27	08/30/13 20:46	1
Xylenes, Total	11	U	11	2.1	ug/Kg	₽	08/22/13 13:27	08/30/13 20:46	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	97		72 - 122				08/22/13 13:27	08/30/13 20:46	1
Dibromofluoromethane	100		79 - 123				08/22/13 13:27	08/30/13 20:46	1
Toluene-d8 (Surr)	97		80 - 120				08/22/13 13:27	08/30/13 20:46	1

Toluene-a8 (Surr)	97		80 - 120				08/22/13 13:27	08/30/13 20:46	,
Method: 8270D - Semivolatile Or Analyte	•	nds (GC/M	S)	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzaldehyde	430	U	430	76	ug/Kg	— <del>ÿ</del>	08/25/13 12:13	09/01/13 01:16	1
Phenol	430	-	430	45	ug/Kg ug/Kg	*	08/25/13 12:13	09/01/13 01:16	1
Bis(2-chloroethyl)ether	430		430	59	ug/Kg	*	08/25/13 12:13	09/01/13 01:16	1
2-Chlorophenol	430		430		ug/Kg		08/25/13 12:13	09/01/13 01:16	
2-Methylphenol	430		430	35	ug/Kg ug/Kg	*	08/25/13 12:13	09/01/13 01:16	1
bis (2-chloroisopropyl) ether	430		430	39	ug/Kg	₩	08/25/13 12:13	09/01/13 01:16	1
Acetophenone	430		430		ug/Kg		08/25/13 12:13	09/01/13 01:16	
3 & 4 Methylphenol	430		430		ug/Kg	₩	08/25/13 12:13	09/01/13 01:16	1
N-Nitrosodi-n-propylamine	430		430		ug/Kg	*	08/25/13 12:13	09/01/13 01:16	1
Hexachloroethane	430		430	37	ug/Kg		08/25/13 12:13	09/01/13 01:16	
Nitrobenzene	430		430	34	ug/Kg	₩	08/25/13 12:13	09/01/13 01:16	1
Isophorone	430		430	43	ug/Kg	₩	08/25/13 12:13	09/01/13 01:16	1
2-Nitrophenol	430		430	54	ug/Kg		08/25/13 12:13	09/01/13 01:16	
2,4-Dimethylphenol	430		430	58	ug/Kg ug/Kg	₩	08/25/13 12:13	09/01/13 01:16	1
Bis(2-chloroethoxy)methane	430		430	51	ug/Kg ug/Kg	*	08/25/13 12:13	09/01/13 01:16	1
2,4-Dichlorophenol	430		430		ug/Kg		08/25/13 12:13	09/01/13 01:16	
Naphthalene	430		430	39	ug/Kg ug/Kg	*	08/25/13 12:13	09/01/13 01:16	1
4-Chloroaniline	860		860	68	ug/Kg	₩	08/25/13 12:13	09/01/13 01:16	1
Hexachlorobutadiene	430		430	47	ug/Kg	· · · · · · · · · · · · · · · · · · ·	08/25/13 12:13	09/01/13 01:16	
Caprolactam	430		430	86	ug/Kg	₩	08/25/13 12:13	09/01/13 01:16	1
4-Chloro-3-methylphenol	430		430		ug/Kg	₩	08/25/13 12:13	09/01/13 01:16	1
2-Methylnaphthalene	430		430	50	ug/Kg		08/25/13 12:13	09/01/13 01:16	
Hexachlorocyclopentadiene	430		430	54	ug/Kg	₩	08/25/13 12:13	09/01/13 01:16	1
2,4,6-Trichlorophenol	430		430	38	ug/Kg	₩	08/25/13 12:13	09/01/13 01:16	1
2,4,5-Trichlorophenol	430		430		ug/Kg		08/25/13 12:13	09/01/13 01:16	
1,1'-Biphenyl	970		970	970	ug/Kg	₩	08/25/13 12:13	09/01/13 01:16	1
2-Chloronaphthalene	430		430	46	ug/Kg	₩	08/25/13 12:13	09/01/13 01:16	1
2-Nitroaniline	2200		2200		ug/Kg		08/25/13 12:13	09/01/13 01:16	· · · · · · · · · · · · · · · · · · ·
Dimethyl phthalate	430		430	45	ug/Kg	₩	08/25/13 12:13	09/01/13 01:16	1
2,6-Dinitrotoluene	430		430		ug/Kg	₩	08/25/13 12:13	09/01/13 01:16	1
Acenaphthylene	430		430	47	ug/Kg		08/25/13 12:13	09/01/13 01:16	
3-Nitroaniline	2200		2200	60	ug/Kg	₩	08/25/13 12:13	09/01/13 01:16	1
Acenaphthene	430		430		ug/Kg	₩	08/25/13 12:13	09/01/13 01:16	1
2,4-Dinitrophenol	2200		2200	1100	ug/Kg		08/25/13 12:13	09/01/13 01:16	
4-Nitrophenol	2200		2200	430	ug/Kg	₽	08/25/13 12:13	09/01/13 01:16	1
Dibenzofuran	430		430		ug/Kg	₩	08/25/13 12:13	09/01/13 01:16	1
2,4-Dinitrotoluene	430		430		ug/Kg		08/25/13 12:13	09/01/13 01:16	
Diethyl phthalate	430		430		ug/Kg ug/Kg	<b>#</b>	08/25/13 12:13	09/01/13 01:16	1

TestAmerica Savannah

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Client: ARCADIS U.S., Inc.

ORO C24-C40

o-Terphenyl (Surr)

Surrogate

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB01-05 (8.5-9.5)

Date Collected: 08/19/13 16:50 Date Received: 08/21/13 10:07 Lab Sample ID: 680-93423-11

Matrix: Solid

Percent Solids: 75.1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluorene	430	U	430	47	ug/Kg	*	08/25/13 12:13	09/01/13 01:16	1
4-Chlorophenyl phenyl ether	430	U	430	58	ug/Kg	₩	08/25/13 12:13	09/01/13 01:16	1
4-Nitroaniline	2200	U	2200	64	ug/Kg	₽	08/25/13 12:13	09/01/13 01:16	1
4,6-Dinitro-2-methylphenol	2200	U	2200	220	ug/Kg		08/25/13 12:13	09/01/13 01:16	1
N-Nitrosodiphenylamine	430	U	430	43	ug/Kg	₽	08/25/13 12:13	09/01/13 01:16	1
4-Bromophenyl phenyl ether	430	U	430	47	ug/Kg	₩	08/25/13 12:13	09/01/13 01:16	1
Hexachlorobenzene	430	U	430	51	ug/Kg	₽	08/25/13 12:13	09/01/13 01:16	1
Atrazine	430	U	430	30	ug/Kg	₽	08/25/13 12:13	09/01/13 01:16	1
Pentachlorophenol	2200	U	2200	430	ug/Kg	₽	08/25/13 12:13	09/01/13 01:16	1
Phenanthrene	430	U	430	35	ug/Kg	₩	08/25/13 12:13	09/01/13 01:16	1
Anthracene	430	U	430	33	ug/Kg	₽	08/25/13 12:13	09/01/13 01:16	1
Carbazole	430	U	430	39	ug/Kg	₩	08/25/13 12:13	09/01/13 01:16	1
Di-n-butyl phthalate	430	U	430	39	ug/Kg	₩	08/25/13 12:13	09/01/13 01:16	1
Fluoranthene	430	U	430	42	ug/Kg	₩	08/25/13 12:13	09/01/13 01:16	1
Pyrene	430	U	430	35	ug/Kg	₩	08/25/13 12:13	09/01/13 01:16	1
Butyl benzyl phthalate	430	U	430	34	ug/Kg	₩	08/25/13 12:13	09/01/13 01:16	1
3,3'-Dichlorobenzidine	860	U	860	37	ug/Kg		08/25/13 12:13	09/01/13 01:16	1
Benzo[a]anthracene	430	U	430	35	ug/Kg	₩	08/25/13 12:13	09/01/13 01:16	1
Chrysene	430	U	430	28	ug/Kg	≎	08/25/13 12:13	09/01/13 01:16	1
Bis(2-ethylhexyl) phthalate	430	U	430	38	ug/Kg	₽	08/25/13 12:13	09/01/13 01:16	1
Di-n-octyl phthalate	430	U	430	38	ug/Kg	₽	08/25/13 12:13	09/01/13 01:16	1
Benzo[b]fluoranthene	430	U	430	50	ug/Kg	₩	08/25/13 12:13	09/01/13 01:16	1
Benzo[k]fluoranthene	430	U	430	85	ug/Kg	₽	08/25/13 12:13	09/01/13 01:16	1
Benzo[a]pyrene	430	U	430	68	ug/Kg	₽	08/25/13 12:13	09/01/13 01:16	1
Indeno[1,2,3-cd]pyrene	430	U	430	37	ug/Kg	₽	08/25/13 12:13	09/01/13 01:16	1
Dibenz(a,h)anthracene	430	U	430	51	ug/Kg	\$	08/25/13 12:13	09/01/13 01:16	1
Benzo[g,h,i]perylene	430	U	430	29	ug/Kg	₽	08/25/13 12:13	09/01/13 01:16	1
Surrogate	%Recovery		Limits				Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	36	X	46 - 130				08/25/13 12:13	09/01/13 01:16	1
2-Fluorobiphenyl	60		58 - 130				08/25/13 12:13	09/01/13 01:16	1
Terphenyl-d14 (Surr)	50	X	60 - 130				08/25/13 12:13	09/01/13 01:16	1
Phenol-d5 (Surr)	54		49 - 130				08/25/13 12:13	09/01/13 01:16	1
2-Fluorophenol (Surr)	69		40 - 130				08/25/13 12:13	09/01/13 01:16	1
2,4,6-Tribromophenol (Surr)	66		58 - 130				08/25/13 12:13	09/01/13 01:16	1
Method: 8015C - Nonhalogenate	_	_			ige Organ Unit		Droporod	Analyzed	Dil Eos
Analyte		Qualifier	RL 320			— <del>□</del>	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO) -C6-C10	500		320	24	ug/Kg	~	08/21/13 16:21	08/23/13 15:47	'
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene	92		70 - 131				08/21/13 16:21	08/23/13 15:47	1
Method: 8015C - Nonhalogenate	_	_		_	_	-			
Analyte		Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	25000		6500	1800	ug/Kg	₩	08/24/13 11:08	08/27/13 01:51	1

TestAmerica Savannah

08/27/13 01:51

Analyzed

08/24/13 11:08

Prepared

Limits

50 - 150

1800 ug/Kg

43000 B

%Recovery Qualifier

76

Dil Fac

Client: ARCADIS U.S., Inc.

Date Collected: 08/19/13 16:45

1,1-Dichloroethane

1,2-Dichloroethane

1,1-Dichloroethene

1,2-Dichloropropane

Ethylene Dibromide

Ethyl tert-butyl ether

Isopropylbenzene

Methylcyclohexane

Methylene Chloride

Methyl Ethyl Ketone

methyl isobutyl ketone

Methyl tert-butyl ether

Tert-amyl methyl ether

1,1,2,2-Tetrachloroethane

trans-1,2-Dichloroethene

trans-1,3-Dichloropropene

1,2,4-Trichlorobenzene

1,1,1-Trichloroethane

1,1,2-Trichloroethane

Trichloroethene

tert-Butyl alcohol

Tetrachloroethene

Naphthalene

Styrene

Toluene

Methyl acetate

Diisopropyl ether

Ethylbenzene

2-Hexanone

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB01-05 (1.5-2.5)

TestAmerica Job ID: 680-93423-1

Matrix: Solid

Lab Sample ID: 680-93423-12

ate Received: 08/21/13 10:07								Percent Soli	ds: 86.
Method: 8260B - Volatile Organi									
Analyte		Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
Acetone	22	U	22	6.6	ug/Kg	₽	08/22/13 13:27	08/30/13 21:12	
Benzene	4.5	U	4.5	0.44	ug/Kg	₩	08/22/13 13:27	08/30/13 21:12	
Bromodichloromethane	4.5	U	4.5	0.75	ug/Kg	₽	08/22/13 13:27	08/30/13 21:12	
Bromoform	4.5	U	4.5	0.57	ug/Kg	<b>\$</b>	08/22/13 13:27	08/30/13 21:12	
Bromomethane	4.5	U *	4.5	1.3	ug/Kg	₽	08/22/13 13:27	08/30/13 21:12	
Carbon disulfide	4.5	U	4.5	1.1	ug/Kg	₽	08/22/13 13:27	08/30/13 21:12	
Carbon tetrachloride	4.5	U	4.5	1.5	ug/Kg	<b>\$</b>	08/22/13 13:27	08/30/13 21:12	
Chlorobenzene	4.5	U	4.5	0.47	ug/Kg	₩	08/22/13 13:27	08/30/13 21:12	
Chloroethane	4.5	U	4.5	1.7	ug/Kg	₽	08/22/13 13:27	08/30/13 21:12	
Chloroform	4.5	U	4.5	0.53	ug/Kg	₽	08/22/13 13:27	08/30/13 21:12	
Chloromethane	4.5	U	4.5	0.90	ug/Kg	₽	08/22/13 13:27	08/30/13 21:12	
cis-1,2-Dichloroethene	4.5	U	4.5	0.68	ug/Kg	₽	08/22/13 13:27	08/30/13 21:12	
cis-1,3-Dichloropropene	4.5	U	4.5	1.1	ug/Kg	₩	08/22/13 13:27	08/30/13 21:12	
Cyclohexane	4.5	U	4.5	0.84	ug/Kg	₩	08/22/13 13:27	08/30/13 21:12	
Dibromochloromethane	4.5	U	4.5	0.78	ug/Kg	₩	08/22/13 13:27	08/30/13 21:12	
1,2-Dibromo-3-Chloropropane	4.5	U	4.5	3.0	ug/Kg		08/22/13 13:27	08/30/13 21:12	
1,2-Dichlorobenzene	4.5	U	4.5	0.64	ug/Kg	₩	08/22/13 13:27	08/30/13 21:12	
1,3-Dichlorobenzene	4.5	U	4.5	0.85	ug/Kg	₽	08/22/13 13:27	08/30/13 21:12	
1,4-Dichlorobenzene	4.5	U	4.5	0.74	ug/Kg		08/22/13 13:27	08/30/13 21:12	
Dichlorodifluoromethane	4.5	U	4.5	1.2	ug/Kg	₽	08/22/13 13:27	08/30/13 21:12	

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0.74 ug/Kg

0.74 ug/Kg

0.67 ug/Kg

0.66 ug/Kg

0.50 ug/Kg

4.5 ug/Kg

0.61 ug/Kg

4.1 ug/Kg

0.78 ug/Kg

ug/Kg

ug/Kg

ug/Kg

0.68 ug/Kg

0.39 ug/Kg

3.1 ug/Kg

0.75 ug/Kg

0.83 ug/Kg

0.99 ug/Kg

0.83 ug/Kg

0.43 ug/Kg

ug/Kg

ug/Kg

ug/Kg

9.0 ug/Kg

3.7

3.6 ug/Kg

0.90

0.90

0.65 ug/Kg

0.63

0.68

0.66

ug/Kg

ug/Kg

0.49

0.55

0.43 ug/Kg 08/22/13 13:27

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08/22/13 13:27 08/30/13 21:12 08/22/13 13:27 08/30/13 21:12 08/22/13 13:27 08/30/13 21:12 08/22/13 13:27 08/30/13 21:12 08/22/13 13:27 08/30/13 21:12

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

Lab Sample ID: 680-93423-12 Client Sample ID: SB01-05 (1.5-2.5)

Date Collected: 08/19/13 16:45 Matrix: Solid Date Received: 08/21/13 10:07 Percent Solids: 86.4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichlorofluoromethane	4.5	U	4.5	0.85	ug/Kg	₩	08/22/13 13:27	08/30/13 21:12	1
1,1,2-Trichloro-1,2,2-trifluoroethane	4.5	U	4.5	1.8	ug/Kg	₽	08/22/13 13:27	08/30/13 21:12	1
Vinyl chloride	4.5	U	4.5	0.83	ug/Kg	₽	08/22/13 13:27	08/30/13 21:12	1
Xylenes, Total	9.0	U	9.0	1.7	ug/Kg	₽	08/22/13 13:27	08/30/13 21:12	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	96		72 - 122				08/22/13 13:27	08/30/13 21:12	1
Dibromofluoromethane	104		79 - 123				08/22/13 13:27	08/30/13 21:12	1
Toluene-d8 (Surr)	96		80 - 120				08/22/13 13:27	08/30/13 21:12	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzaldehyde	380	U	380	66	ug/Kg	<u> </u>	08/25/13 12:13	09/01/13 01:41	1
Phenol	380	U	380	39	ug/Kg	₽	08/25/13 12:13	09/01/13 01:41	1
Bis(2-chloroethyl)ether	380	U	380	51	ug/Kg	₽	08/25/13 12:13	09/01/13 01:41	1
2-Chlorophenol	380	U	380	46	ug/Kg	\$	08/25/13 12:13	09/01/13 01:41	1
2-Methylphenol	380	U	380	31	ug/Kg	₽	08/25/13 12:13	09/01/13 01:41	1
bis (2-chloroisopropyl) ether	380	U	380	34	ug/Kg	₽	08/25/13 12:13	09/01/13 01:41	1
Acetophenone	380	U	380	32	ug/Kg	\$	08/25/13 12:13	09/01/13 01:41	1
3 & 4 Methylphenol	380	U	380	49	ug/Kg	₽	08/25/13 12:13	09/01/13 01:41	1
N-Nitrosodi-n-propylamine	380	U	380	37	ug/Kg	₽	08/25/13 12:13	09/01/13 01:41	1
Hexachloroethane	380	U	380	32	ug/Kg	\$	08/25/13 12:13	09/01/13 01:41	1
Nitrobenzene	380	U	380	30	ug/Kg	₽	08/25/13 12:13	09/01/13 01:41	1
Isophorone	380	U	380	38	ug/Kg	₽	08/25/13 12:13	09/01/13 01:41	1
2-Nitrophenol	380	U	380	47	ug/Kg	₽	08/25/13 12:13	09/01/13 01:41	1
2,4-Dimethylphenol	380	U	380	50	ug/Kg	₩	08/25/13 12:13	09/01/13 01:41	1
Bis(2-chloroethoxy)methane	380	U	380	45	ug/Kg	₽	08/25/13 12:13	09/01/13 01:41	1
2,4-Dichlorophenol	380	U	380	40	ug/Kg	₩	08/25/13 12:13	09/01/13 01:41	1
Naphthalene	380	U	380	34	ug/Kg	₩	08/25/13 12:13	09/01/13 01:41	1
4-Chloroaniline	750	U	750	59	ug/Kg	₩	08/25/13 12:13	09/01/13 01:41	1
Hexachlorobutadiene	380	U	380	41	ug/Kg	₩	08/25/13 12:13	09/01/13 01:41	1
Caprolactam	380	U	380	75	ug/Kg	₩	08/25/13 12:13	09/01/13 01:41	1
4-Chloro-3-methylphenol	380	U	380	40	ug/Kg	₽	08/25/13 12:13	09/01/13 01:41	1
2-Methylnaphthalene	380	U	380	43	ug/Kg		08/25/13 12:13	09/01/13 01:41	1
Hexachlorocyclopentadiene	380	U	380	47	ug/Kg	₩	08/25/13 12:13	09/01/13 01:41	1
2,4,6-Trichlorophenol	380	U	380	33	ug/Kg	₩	08/25/13 12:13	09/01/13 01:41	1
2,4,5-Trichlorophenol	380	U	380	40	ug/Kg		08/25/13 12:13	09/01/13 01:41	1
1,1'-Biphenyl	840	U	840	840	ug/Kg	₩	08/25/13 12:13	09/01/13 01:41	1
2-Chloronaphthalene	380	U	380	40	ug/Kg	₩	08/25/13 12:13	09/01/13 01:41	1
2-Nitroaniline	1900	U	1900	51	ug/Kg		08/25/13 12:13	09/01/13 01:41	1
Dimethyl phthalate	380	U	380	39	ug/Kg	₩	08/25/13 12:13	09/01/13 01:41	1
2,6-Dinitrotoluene	380	U	380	48	ug/Kg	₩	08/25/13 12:13	09/01/13 01:41	1
Acenaphthylene	380	U	380	41	ug/Kg	₩	08/25/13 12:13	09/01/13 01:41	1
3-Nitroaniline	1900	U	1900	53	ug/Kg	₩	08/25/13 12:13	09/01/13 01:41	1
Acenaphthene	380	U	380	47	ug/Kg	₽	08/25/13 12:13	09/01/13 01:41	1
2,4-Dinitrophenol	1900	U	1900	950	ug/Kg		08/25/13 12:13	09/01/13 01:41	1
4-Nitrophenol	1900	U	1900	380	ug/Kg	₩	08/25/13 12:13	09/01/13 01:41	1
Dibenzofuran	380	U	380	38	ug/Kg	₽	08/25/13 12:13	09/01/13 01:41	1
2,4-Dinitrotoluene	380	U	380	56	ug/Kg	φ.	08/25/13 12:13	09/01/13 01:41	1
Diethyl phthalate	380	U	380		ug/Kg	₽	08/25/13 12:13	09/01/13 01:41	1

TestAmerica Savannah

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TestAmerica Job ID: 680-93423-1

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB01-05 (1.5-2.5)

Date Collected: 08/19/13 16:45 Date Received: 08/21/13 10:07

Diesel Range Organics [C10-C28]

ORO C24-C40

o-Terphenyl (Surr)

Surrogate

Lab Sample ID: 680-93423-12

Matrix: Solid

Percent Solids: 86.4

Analyte		Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluorene	380	U	380	41	ug/Kg	*	08/25/13 12:13	09/01/13 01:41	
4-Chlorophenyl phenyl ether	380	U	380	50	ug/Kg	₩	08/25/13 12:13	09/01/13 01:41	1
4-Nitroaniline	1900	U	1900	56	ug/Kg	₩	08/25/13 12:13	09/01/13 01:41	1
4,6-Dinitro-2-methylphenol	1900	U	1900	190	ug/Kg	₽	08/25/13 12:13	09/01/13 01:41	1
N-Nitrosodiphenylamine	380	U	380	38	ug/Kg	₽	08/25/13 12:13	09/01/13 01:41	1
4-Bromophenyl phenyl ether	380	U	380	41	ug/Kg	₽	08/25/13 12:13	09/01/13 01:41	1
Hexachlorobenzene	380	U	380	45	ug/Kg	₽	08/25/13 12:13	09/01/13 01:41	1
Atrazine	380	U	380	26	ug/Kg	₩	08/25/13 12:13	09/01/13 01:41	1
Pentachlorophenol	1900	U	1900	380	ug/Kg	₽	08/25/13 12:13	09/01/13 01:41	1
Phenanthrene	380	U	380	31	ug/Kg	₩	08/25/13 12:13	09/01/13 01:41	1
Anthracene	380	U	380	29	ug/Kg	₩	08/25/13 12:13	09/01/13 01:41	1
Carbazole	380	U	380	34	ug/Kg	₩	08/25/13 12:13	09/01/13 01:41	1
Di-n-butyl phthalate	380	U	380	34	ug/Kg	₩	08/25/13 12:13	09/01/13 01:41	1
Fluoranthene	380	U	380	37	ug/Kg	₩	08/25/13 12:13	09/01/13 01:41	1
Pyrene	380	U	380	31	ug/Kg	₽	08/25/13 12:13	09/01/13 01:41	1
Butyl benzyl phthalate	380	U	380	30	ug/Kg	₽	08/25/13 12:13	09/01/13 01:41	1
3,3'-Dichlorobenzidine	750	U	750	32	ug/Kg	\$	08/25/13 12:13	09/01/13 01:41	1
Benzo[a]anthracene	380	U	380	31	ug/Kg	₽	08/25/13 12:13	09/01/13 01:41	1
Chrysene	380	U	380	24	ug/Kg	₽	08/25/13 12:13	09/01/13 01:41	1
Bis(2-ethylhexyl) phthalate	380	U	380	33	ug/Kg	₽	08/25/13 12:13	09/01/13 01:41	1
Di-n-octyl phthalate	380	U	380	33	ug/Kg	₽	08/25/13 12:13	09/01/13 01:41	1
Benzo[b]fluoranthene	380	U	380	43	ug/Kg	₽	08/25/13 12:13	09/01/13 01:41	1
Benzo[k]fluoranthene	380	U	380	74	ug/Kg	₽	08/25/13 12:13	09/01/13 01:41	1
Benzo[a]pyrene	380	U	380	59	ug/Kg	₽	08/25/13 12:13	09/01/13 01:41	1
Indeno[1,2,3-cd]pyrene	380	U	380	32	ug/Kg	₽	08/25/13 12:13	09/01/13 01:41	1
Dibenz(a,h)anthracene	380	U	380	45	ug/Kg	₽	08/25/13 12:13	09/01/13 01:41	1
Benzo[g,h,i]perylene	380	U	380	25	ug/Kg	\$	08/25/13 12:13	09/01/13 01:41	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	62		46 - 130				08/25/13 12:13	09/01/13 01:41	1
2-Fluorobiphenyl	65		58 - 130				08/25/13 12:13	09/01/13 01:41	1
Terphenyl-d14 (Surr)	57	Χ	60 - 130				08/25/13 12:13	09/01/13 01:41	1
Phenol-d5 (Surr)	62		49 - 130				08/25/13 12:13	09/01/13 01:41	1
2-Fluorophenol (Surr)	61		40 - 130				08/25/13 12:13	09/01/13 01:41	1
2,4,6-Tribromophenol (Surr)	79		58 - 130				08/25/13 12:13	09/01/13 01:41	1
- Method: 8015C - Nonhalogenate	d Organics usi	ng GC/FID	-Modified (Gaso	oline Ran	ge Organ	ics)			
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO) -C6-C10	250		230	17	ug/Kg	₩	08/21/13 16:21	08/22/13 20:21	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene	96		70 - 131				08/21/13 16:21	08/22/13 20:21	1
Method: 8015C - Nonhalogenate	d Organics usi	ng GC/FID	-Modified (Dies	el Range	Organics	s)			
Analyte	_	Qualifier	RL		Unit	, D	Prepared	Analyzed	Dil Fac

TestAmerica Savannah

08/27/13 00:02

Analyzed

08/27/13 00:02

08/24/13 11:08

Prepared

08/24/13 11:08

5700

5700

Limits

50 - 150

1600 ug/Kg

1600 ug/Kg

16000

26000 B

%Recovery Qualifier

75

Dil Fac

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93423-1

Lab Sample ID: 680-93423-13

Matrix: Water

**Client Sample ID: Trip Blank** 

Date Collected: 08/19/13 00:00 Date Received: 08/21/13 10:07

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
Acetone	25	U	25	3.5	ug/L			08/31/13 00:12	
Benzene	1.0	U	1.0	0.34	ug/L			08/31/13 00:12	
Bromodichloromethane	1.0	U	1.0	0.50	ug/L			08/31/13 00:12	
3romoform	5.0	U	5.0	0.71	ug/L			08/31/13 00:12	
Carbon disulfide	1.0	U	1.0	0.50	ug/L			08/31/13 00:12	
Carbon tetrachloride	1.0	U	1.0	0.50	ug/L			08/31/13 00:12	
Chlorobenzene	1.0	U	1.0	0.50	ug/L			08/31/13 00:12	
Chloroethane	1.0	U	1.0	0.76	ug/L			08/31/13 00:12	
Chloroform	1.0	U	1.0	0.60	ug/L			08/31/13 00:12	
Chloromethane	1.0	U	1.0	0.83	ug/L			08/31/13 00:12	
cis-1,2-Dichloroethene	1.0	U	1.0	0.50	ug/L			08/31/13 00:12	
cis-1,3-Dichloropropene	5.0	U	5.0	0.50	ug/L			08/31/13 00:12	
Cyclohexane	1.0	U	1.0	0.50	ug/L			08/31/13 00:12	
Dibromochloromethane	1.0	U	1.0		ug/L			08/31/13 00:12	
1,2-Dibromo-3-Chloropropane	5.0	U	5.0		ug/L			08/31/13 00:12	
1,2-Dichlorobenzene	1.0	U	1.0	0.50	ug/L			08/31/13 00:12	
1,3-Dichlorobenzene	1.0	U	1.0		ug/L			08/31/13 00:12	
1,4-Dichlorobenzene	1.0	U	1.0		ug/L			08/31/13 00:12	
Dichlorodifluoromethane	1.0		1.0		ug/L			08/31/13 00:12	
1,1-Dichloroethane	1.0		1.0		ug/L			08/31/13 00:12	
,2-Dichloroethane	1.0		1.0		ug/L			08/31/13 00:12	
,1-Dichloroethene	1.0		1.0		ug/L			08/31/13 00:12	
,2-Dichloropropane	1.0		1.0		ug/L			08/31/13 00:12	
Diisopropyl ether	1.0		1.0		ug/L			08/31/13 00:12	
Ethylbenzene	1.0		1.0		ug/L ug/L			08/31/13 00:12	
Ethylene Dibromide	1.0		1.0		ug/L ug/L			08/31/13 00:12	
Ethyl tert-butyl ether	1.0		1.0		ug/L ug/L			08/31/13 00:12	
2-Hexanone	25		25		ug/L ug/L			08/31/13 00:12	
	1.0		1.0		ug/L ug/L			08/31/13 00:12	
sopropylbenzene	5.0		5.0		ug/L ug/L			08/31/13 00:12	
Methyl acetate									
Methylcyclohexane	1.0		1.0		ug/L			08/31/13 00:12	
Methylene Chloride	5.0		5.0		ug/L			08/31/13 00:12	
Methyl Ethyl Ketone	25		25		ug/L			08/31/13 00:12	
methyl isobutyl ketone	25		25		ug/L			08/31/13 00:12	
Methyl tert-butyl ether	1.0		1.0		ug/L			08/31/13 00:12	
Naphthalene	1.0		1.0		ug/L			08/31/13 00:12	
Styrene	1.0		1.0		ug/L			08/31/13 00:12	
Tert-amyl methyl ether	1.0		1.0		ug/L			08/31/13 00:12	
ert-Butyl alcohol	5.0		5.0		ug/L			08/31/13 00:12	
I,1,2,2-Tetrachloroethane	1.0		1.0		ug/L			08/31/13 00:12	
Tetrachloroethene	1.0		1.0		ug/L			08/31/13 00:12	
Foluene	1.0		1.0		ug/L			08/31/13 00:12	
rans-1,2-Dichloroethene	1.0		1.0		ug/L			08/31/13 00:12	
rans-1,3-Dichloropropene	5.0	U	5.0		ug/L			08/31/13 00:12	
1,2,4-Trichlorobenzene	1.0	U	1.0		ug/L			08/31/13 00:12	
I,1,1-Trichloroethane	1.0	U	1.0	0.50	ug/L			08/31/13 00:12	
1,1,2-Trichloroethane	5.0	U	5.0	0.50	ug/L			08/31/13 00:12	
Trichloroethene	1.0	U	1.0	0.50	ug/L			08/31/13 00:12	

TestAmerica Savannah

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11

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93423-1

**Client Sample ID: Trip Blank** 

Lab Sample ID: 680-93423-13

Matrix: Water

Date Collected: 08/19/13 00:00 Date Received: 08/21/13 10:07

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	1.0	0.50	ug/L			08/31/13 00:12	1
Vinyl chloride	1.0	U	1.0	0.50	ug/L			08/31/13 00:12	1
Xylenes, Total	10	U	10	1.6	ug/L			08/31/13 00:12	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	94		78 - 118			-		08/31/13 00:12	1
Dibromofluoromethane	100		81 - 121					08/31/13 00:12	1
Toluene-d8 (Surr)	95		80 - 120					08/31/13 00:12	1

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11

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93423-1

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

Lab Sample ID: MB 400-190345/4

Matrix: Solid

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

	MB	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
Acetone	25	U	25	7.3	ug/Kg			08/30/13 15:43	
Benzene	5.0	U	5.0	0.49	ug/Kg			08/30/13 15:43	
Bromodichloromethane	5.0	U	5.0	0.84	ug/Kg			08/30/13 15:43	
Bromoform	5.0	U	5.0	0.63	ug/Kg			08/30/13 15:43	
Bromomethane	5.0	U	5.0	1.4	ug/Kg			08/30/13 15:43	
Carbon disulfide	5.0	U	5.0	1.2	ug/Kg			08/30/13 15:43	
Carbon tetrachloride	5.0	U	5.0	1.7	ug/Kg			08/30/13 15:43	
Chlorobenzene	5.0	U	5.0	0.52	ug/Kg			08/30/13 15:43	
Chloroethane	5.0	U	5.0	1.9	ug/Kg			08/30/13 15:43	
Chloroform	5.0	U	5.0	0.59	ug/Kg			08/30/13 15:43	
Chloromethane	5.0	U	5.0	1.0	ug/Kg			08/30/13 15:43	
cis-1,2-Dichloroethene	5.0	U	5.0	0.76	ug/Kg			08/30/13 15:43	
cis-1,3-Dichloropropene	5.0	U	5.0	1.2	ug/Kg			08/30/13 15:43	
Cyclohexane	5.0	U	5.0	0.94	ug/Kg			08/30/13 15:43	
Dibromochloromethane	5.0	U	5.0		ug/Kg			08/30/13 15:43	
1,2-Dibromo-3-Chloropropane	5.0	U	5.0		ug/Kg			08/30/13 15:43	
1,2-Dichlorobenzene	5.0	U	5.0	0.71	ug/Kg			08/30/13 15:43	
1,3-Dichlorobenzene	5.0	U	5.0	0.95	ug/Kg			08/30/13 15:43	
1,4-Dichlorobenzene	5.0		5.0		ug/Kg			08/30/13 15:43	
Dichlorodifluoromethane	5.0	U	5.0		ug/Kg			08/30/13 15:43	
1,1-Dichloroethane	5.0	U	5.0		ug/Kg			08/30/13 15:43	
1.2-Dichloroethane	5.0		5.0		ug/Kg			08/30/13 15:43	
1,1-Dichloroethene	5.0		5.0		ug/Kg			08/30/13 15:43	
1,2-Dichloropropane	5.0		5.0		ug/Kg			08/30/13 15:43	
Diisopropyl ether	5.0		5.0		ug/Kg			08/30/13 15:43	
Ethylbenzene	5.0		5.0	0.61	ug/Kg			08/30/13 15:43	
Ethylene Dibromide	5.0		5.0		ug/Kg			08/30/13 15:43	
Ethyl tert-butyl ether	5.0		5.0		ug/Kg			08/30/13 15:43	
2-Hexanone	25		25		ug/Kg			08/30/13 15:43	
Isopropylbenzene	5.0		5.0		ug/Kg			08/30/13 15:43	
Methyl acetate	5.0		5.0		ug/Kg			08/30/13 15:43	
Methylcyclohexane	5.0		5.0		ug/Kg			08/30/13 15:43	
Methylene Chloride	15		15		ug/Kg			08/30/13 15:43	
Methyl Ethyl Ketone	25		25		ug/Kg			08/30/13 15:43	
methyl isobutyl ketone	25		25		ug/Kg			08/30/13 15:43	
Methyl tert-butyl ether	5.0		5.0		ug/Kg ug/Kg			08/30/13 15:43	
Naphthalene	5.0		5.0		ug/Kg			08/30/13 15:43	
Styrene	5.0		5.0		ug/Kg ug/Kg			08/30/13 15:43	
Tert-amyl methyl ether	5.0		5.0		ug/Kg ug/Kg			08/30/13 15:43	
tert-Butyl alcohol	5.0								
•			5.0		ug/Kg			08/30/13 15:43	
1,1,2,2-Tetrachloroethane	5.0		5.0		ug/Kg			08/30/13 15:43	
Tetrachloroethene	5.0		5.0		ug/Kg			08/30/13 15:43	
Toluene	5.0		5.0		ug/Kg			08/30/13 15:43	
trans-1,2-Dichloroethene	5.0		5.0		ug/Kg			08/30/13 15:43	
trans-1,3-Dichloropropene	5.0		5.0		ug/Kg			08/30/13 15:43	
1,2,4-Trichlorobenzene	5.0		5.0		ug/Kg			08/30/13 15:43	
1,1,1-Trichloroethane	5.0		5.0		ug/Kg			08/30/13 15:43	
1,1,2-Trichloroethane	5.0	U	5.0	0.92	ug/Kg			08/30/13 15:43	

TestAmerica Savannah

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TestAmerica Job ID: 680-93423-1

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

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

Lab Sample ID: MB 400-190345/4

**Matrix: Solid** 

Analysis Batch: 190345

Client	Sampl	e ID:	Meth	od	Blan	ık
	P	rep <sup>-</sup>	Гуре:	То	tal/N	Α

	MB	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichloroethene	5.0	U	5.0	0.48	ug/Kg			08/30/13 15:43	1
Trichlorofluoromethane	5.0	U	5.0	0.95	ug/Kg			08/30/13 15:43	1
1,1,2-Trichloro-1,2,2-trifluoroethane	5.0	U	5.0	2.0	ug/Kg			08/30/13 15:43	1
Vinyl chloride	5.0	U	5.0	0.92	ug/Kg			08/30/13 15:43	1
Xylenes, Total	10	U	10	1.9	ug/Kg			08/30/13 15:43	1

MB MB %Recovery Qualifier

Surrogate Limits 4-Bromofluorobenzene 96 72 - 122 Dibromofluoromethane 102 79 - 123 Toluene-d8 (Surr) 96 80 - 120

08/30/13 15:43 1 08/30/13 15:43 **Client Sample ID: Lab Control Sample** 

Analyzed

08/30/13 15:43

Prep Type: Total/NA

Prepared

**Matrix: Solid** Analysis Petahi 10024E

Lab Sample ID: LCS 400-190345/1000

Analysis Batch: 190345	Spike	1.09	LCS				%Rec.
Analyte	Added		Qualifier	Unit	D	%Rec	Limits
Acetone	200	255		ug/Kg	— <u> </u>	127	43 - 150
Benzene	50.0	48.2		ug/Kg		96	74 - 119
Bromodichloromethane	50.0	49.0		ug/Kg		98	68 - 128
Bromoform	50.0	48.9		ug/Kg		98	54 <sub>-</sub> 125
Bromomethane	50.0	29.1		ug/Kg		58	25 _ 150
Carbon disulfide	50.0	48.8		ug/Kg		98	26 - 150
Carbon tetrachloride	50.0	47.7		ug/Kg		95	70 - 128
Chlorobenzene	50.0	47.1		ug/Kg		94	80 <sub>-</sub> 116
Chloroethane	50.0	37.5		ug/Kg		75	22 _ 150
Chloroform	50.0	47.5		ug/Kg		95	74 <sub>-</sub> 119
Chloromethane	50.0	46.4		ug/Kg		93	36 - 147
cis-1,2-Dichloroethene	50.0	48.4		ug/Kg		97	68 - 126
cis-1,3-Dichloropropene	50.0	51.9		ug/Kg		104	68 - 125
Cyclohexane	50.0	49.5		ug/Kg		99	62 - 126
Dibromochloromethane	50.0	47.9		ug/Kg		96	65 - 131
1,2-Dibromo-3-Chloropropane	50.0	49.3		ug/Kg		99	57 - 123
1,2-Dichlorobenzene	50.0	46.7		ug/Kg		93	76 - 120
1,3-Dichlorobenzene	50.0	48.2		ug/Kg		96	78 <sub>-</sub> 118
1,4-Dichlorobenzene	50.0	48.0		ug/Kg		96	77 - 118
Dichlorodifluoromethane	50.0	39.2		ug/Kg		78	44 - 145
1,1-Dichloroethane	50.0	48.3		ug/Kg		97	61 _ 128
1,2-Dichloroethane	50.0	46.7		ug/Kg		93	70 - 125
1,1-Dichloroethene	50.0	52.5		ug/Kg		105	62 _ 130
1,2-Dichloropropane	50.0	48.9		ug/Kg		98	64 - 129
Diisopropyl ether	50.0	47.8		ug/Kg		96	46 - 144
Ethylbenzene	50.0	47.8		ug/Kg		96	78 - 120
Ethylene Dibromide	50.0	48.7		ug/Kg		97	78 - 119
Ethyl tert-butyl ether	50.0	52.3		ug/Kg		105	60 - 128
2-Hexanone	200	196		ug/Kg		98	54 <sub>-</sub> 140
Isopropylbenzene	50.0	49.3		ug/Kg		99	78 <sub>-</sub> 119
Methyl acetate	250	250		ug/Kg		100	52 - 139
Methylcyclohexane	50.0	50.5		ug/Kg		101	65 - 126

TestAmerica Savannah

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Dil Fac

TestAmerica Job ID: 680-93423-1

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

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

Lab Sample ID: LCS 400-190345/1000

**Matrix: Solid** 

Analysis Batch: 190345

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

	Spike	LCS	LCS				%Rec.
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits
Methylene Chloride	50.0	49.4		ug/Kg		99	45 - 150
Methyl Ethyl Ketone	200	213		ug/Kg		107	62 - 126
methyl isobutyl ketone	200	201		ug/Kg		101	56 - 137
Methyl tert-butyl ether	50.0	48.4		ug/Kg		97	69 - 124
Naphthalene	50.0	49.4		ug/Kg		99	64 - 126
Styrene	50.0	50.7		ug/Kg		101	66 - 132
Tert-amyl methyl ether	50.0	51.2		ug/Kg		102	65 - 124
tert-Butyl alcohol	500	522		ug/Kg		104	12 - 150
1,1,2,2-Tetrachloroethane	50.0	46.4		ug/Kg		93	67 - 120
Tetrachloroethene	50.0	48.7		ug/Kg		97	74 - 126
Toluene	50.0	46.4		ug/Kg		93	76 - 120
trans-1,2-Dichloroethene	50.0	48.4		ug/Kg		97	65 - 130
trans-1,3-Dichloropropene	50.0	49.6		ug/Kg		99	65 - 126
1,2,4-Trichlorobenzene	50.0	48.8		ug/Kg		98	72 - 126
1,1,1-Trichloroethane	50.0	48.0		ug/Kg		96	72 - 121
1,1,2-Trichloroethane	50.0	49.1		ug/Kg		98	75 - 118
Trichloroethene	50.0	51.4		ug/Kg		103	76 - 122
Trichlorofluoromethane	50.0	48.1		ug/Kg		96	65 - 132
1,1,2-Trichloro-1,2,2-trifluoroetha	50.0	51.7		ug/Kg		103	74 - 123
ne							
Vinyl chloride	50.0	48.2		ug/Kg		96	52 - 134
Xylenes, Total	100	97.4		ug/Kg		97	70 - 120

	LCS	LCS
%Reco	verv	Qualifi

Surrogate	%Recovery	Qualifier	Limits
4-Bromofluorobenzene	97		72 - 122
Dibromofluoromethane	100		79 - 123
Toluene-d8 (Surr)	98		80 - 120

Lab Sample ID: LCSD 400-190345/5

Matrix: Solid

Analysis Batch: 190345

Client Sample	ID: I	_ab(	Contro	ol Sar	nple	Dup
			Prep T	ype:	<b>Tota</b>	I/NA

	Spike	LCSD	LCSD				%Rec.		RPD
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Acetone	200	254		ug/Kg		127	43 - 150	0	30
Benzene	50.0	47.0		ug/Kg		94	74 - 119	3	30
Bromodichloromethane	50.0	46.7		ug/Kg		93	68 - 128	5	30
Bromoform	50.0	48.4		ug/Kg		97	54 - 125	1	30
Bromomethane	50.0	46.1	*	ug/Kg		92	25 - 150	45	30
Carbon disulfide	50.0	46.8		ug/Kg		94	26 - 150	4	30
Carbon tetrachloride	50.0	46.5		ug/Kg		93	70 - 128	3	30
Chlorobenzene	50.0	44.1		ug/Kg		88	80 - 116	7	30
Chloroethane	50.0	46.0		ug/Kg		92	22 - 150	21	30
Chloroform	50.0	45.8		ug/Kg		92	74 - 119	4	30
Chloromethane	50.0	46.2		ug/Kg		92	36 - 147	0	30
cis-1,2-Dichloroethene	50.0	47.1		ug/Kg		94	68 - 126	3	30
cis-1,3-Dichloropropene	50.0	49.2		ug/Kg		98	68 - 125	5	30
Cyclohexane	50.0	47.2		ug/Kg		94	62 - 126	5	30
Dibromochloromethane	50.0	47.2		ug/Kg		94	65 - 131	2	30

TestAmerica Savannah

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Spike

LCSD LCSD

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93423-1

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

Lab Sample ID: LCSD 400-190345/5

Matrix: Solid

Analysis Batch: 190345

**Client Sample ID: Lab Control Sample Dup** 

Prep Type: Total/NA

%Rec.

	Spike	LCSD	LCSD				%Rec.		KFD
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
1,2-Dibromo-3-Chloropropane	50.0	47.2		ug/Kg		94	57 - 123	4	30
1,2-Dichlorobenzene	50.0	43.5		ug/Kg		87	76 - 120	7	30
1,3-Dichlorobenzene	50.0	42.6		ug/Kg		85	78 - 118	12	30
1,4-Dichlorobenzene	50.0	42.7		ug/Kg		85	77 - 118	12	30
Dichlorodifluoromethane	50.0	38.7		ug/Kg		77	44 - 145	1	30
1,1-Dichloroethane	50.0	46.8		ug/Kg		94	61 - 128	3	30
1,2-Dichloroethane	50.0	46.1		ug/Kg		92	70 - 125	1	30
1,1-Dichloroethene	50.0	49.1		ug/Kg		98	62 _ 130	7	30
1,2-Dichloropropane	50.0	47.8		ug/Kg		96	64 - 129	2	30
Diisopropyl ether	50.0	46.5		ug/Kg		93	46 - 144	3	30
Ethylbenzene	50.0	44.8		ug/Kg		90	78 - 120	7	30
Ethylene Dibromide	50.0	47.7		ug/Kg		95	78 <sub>-</sub> 119	2	30
Ethyl tert-butyl ether	50.0	50.3		ug/Kg		101	60 - 128	4	30
2-Hexanone	200	195		ug/Kg		97	54 - 140	1	30
Isopropylbenzene	50.0	45.5		ug/Kg		91	78 <sub>-</sub> 119	8	30
Methyl acetate	250	257		ug/Kg		103	52 - 139	3	30
Methylcyclohexane	50.0	48.1		ug/Kg		96	65 - 126	5	30
Methylene Chloride	50.0	48.3		ug/Kg		97	45 - 150	2	30
Methyl Ethyl Ketone	200	220		ug/Kg		110	62 _ 126	3	30
methyl isobutyl ketone	200	202		ug/Kg		101	56 <sub>-</sub> 137	0	30
Methyl tert-butyl ether	50.0	47.7		ug/Kg		95	69 - 124	2	30
Naphthalene	50.0	46.9		ug/Kg		94	64 - 126	5	30
Styrene	50.0	46.5		ug/Kg		93	66 - 132	9	30
Tert-amyl methyl ether	50.0	50.6		ug/Kg		101	65 - 124	1	30
tert-Butyl alcohol	500	404		ug/Kg		81	12 _ 150	25	30
1,1,2,2-Tetrachloroethane	50.0	46.6		ug/Kg		93	67 - 120	0	30
Tetrachloroethene	50.0	46.3		ug/Kg		93	74 - 126	5	30
Toluene	50.0	44.0		ug/Kg		88	76 - 120	5	30
trans-1,2-Dichloroethene	50.0	46.5		ug/Kg		93	65 _ 130	4	30
trans-1,3-Dichloropropene	50.0	47.8		ug/Kg		96	65 - 126	4	30
1,2,4-Trichlorobenzene	50.0	43.4		ug/Kg		87	72 - 126	12	30
1,1,1-Trichloroethane	50.0	46.3		ug/Kg		93	72 - 121	4	30
1,1,2-Trichloroethane	50.0	47.3		ug/Kg		95	75 <sub>-</sub> 118	4	30
Trichloroethene	50.0	48.2		ug/Kg		96	76 - 122	6	30
Trichlorofluoromethane	50.0	48.4		ug/Kg		97	65 - 132	1	30
1,1,2-Trichloro-1,2,2-trifluoroetha	50.0	47.5		ug/Kg		95	74 - 123	8	30
Vinyl chloride	50.0	47.5		ug/Kg		95	52 - 134	1	30
Xylenes, Total	100	90.3		ug/Kg		90	70 - 120	8	30

LCSD LCSD

Surrogate	%Recovery Qualifier	Limits
4-Bromofluorobenzene	99	72 - 122
Dibromofluoromethane	101	79 - 123
Toluene-d8 (Surr)	98	80 - 120

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RPD

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93423-1

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

Lab Sample ID: MB 400-190374/4

Matrix: Water

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

	MB	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
Acetone	25	U	25	3.5	ug/L			08/30/13 15:43	-
Benzene	1.0	U	1.0	0.34	ug/L			08/30/13 15:43	
Bromodichloromethane	1.0	U	1.0	0.50	ug/L			08/30/13 15:43	
Bromoform	5.0	U	5.0	0.71	ug/L			08/30/13 15:43	
Carbon disulfide	1.0	U	1.0	0.50	ug/L			08/30/13 15:43	
Carbon tetrachloride	1.0	U	1.0	0.50	ug/L			08/30/13 15:43	
Chlorobenzene	1.0	U	1.0	0.50	ug/L			08/30/13 15:43	
Chloroethane	1.0	U	1.0	0.76	ug/L			08/30/13 15:43	
Chloroform	1.0	U	1.0	0.60	ug/L			08/30/13 15:43	
Chloromethane	1.0	U	1.0	0.83	ug/L			08/30/13 15:43	
cis-1,2-Dichloroethene	1.0	U	1.0	0.50	ug/L			08/30/13 15:43	
cis-1,3-Dichloropropene	5.0	U	5.0	0.50	ug/L			08/30/13 15:43	
Cyclohexane	1.0	U	1.0	0.50	ug/L			08/30/13 15:43	
Dibromochloromethane	1.0	U	1.0	0.50	ug/L			08/30/13 15:43	
1,2-Dibromo-3-Chloropropane	5.0	U	5.0	0.78	ug/L			08/30/13 15:43	
1,2-Dichlorobenzene	1.0	U	1.0	0.50	ug/L			08/30/13 15:43	
1,3-Dichlorobenzene	1.0	U	1.0	0.54	ug/L			08/30/13 15:43	
1,4-Dichlorobenzene	1.0	U	1.0	0.64	ug/L			08/30/13 15:43	
Dichlorodifluoromethane	1.0	U	1.0	0.85	ug/L			08/30/13 15:43	
1,1-Dichloroethane	1.0	U	1.0	0.50	ug/L			08/30/13 15:43	
1,2-Dichloroethane	1.0	U	1.0	0.50	ug/L			08/30/13 15:43	
1,1-Dichloroethene	1.0	U	1.0	0.50	ug/L			08/30/13 15:43	
1,2-Dichloropropane	1.0	U	1.0		ug/L			08/30/13 15:43	
Diisopropyl ether	1.0	U	1.0		ug/L			08/30/13 15:43	
Ethylbenzene	1.0	U	1.0	0.50	ug/L			08/30/13 15:43	
Ethylene Dibromide	1.0	U	1.0	0.50	ug/L			08/30/13 15:43	
Ethyl tert-butyl ether	1.0	U	1.0		ug/L			08/30/13 15:43	
2-Hexanone	25	U	25	3.1	ug/L			08/30/13 15:43	
Isopropylbenzene	1.0	U	1.0	0.53	ug/L			08/30/13 15:43	
Methyl acetate	5.0	U	5.0		ug/L			08/30/13 15:43	
Methylcyclohexane	1.0	U	1.0		ug/L			08/30/13 15:43	
Methylene Chloride	5.0	U	5.0	3.0	ug/L			08/30/13 15:43	
Methyl Ethyl Ketone	25	U	25		ug/L			08/30/13 15:43	
methyl isobutyl ketone	25	U	25		ug/L			08/30/13 15:43	
Methyl tert-butyl ether	1.0	U	1.0		ug/L			08/30/13 15:43	
Naphthalene	1.0	U	1.0		ug/L			08/30/13 15:43	
Styrene	1.0	U	1.0		ug/L			08/30/13 15:43	
Tert-amyl methyl ether	1.0	U	1.0		ug/L			08/30/13 15:43	
tert-Butyl alcohol	5.0	U	5.0	4.9	ug/L			08/30/13 15:43	
1,1,2,2-Tetrachloroethane	1.0		1.0		ug/L			08/30/13 15:43	
Tetrachloroethene	1.0		1.0		ug/L			08/30/13 15:43	
Toluene	1.0		1.0		ug/L			08/30/13 15:43	
trans-1,2-Dichloroethene	1.0		1.0		ug/L			08/30/13 15:43	
trans-1,3-Dichloropropene	5.0		5.0		ug/L			08/30/13 15:43	
1,2,4-Trichlorobenzene	1.0		1.0		ug/L			08/30/13 15:43	
1,1,1-Trichloroethane	1.0		1.0		ug/L			08/30/13 15:43	
1,1,2-Trichloroethane	5.0		5.0		ug/L			08/30/13 15:43	
Trichloroethene	1.0		1.0		ug/L			08/30/13 15:43	

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93423-1

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

Lab Sample ID: MB 400-190374/4

**Matrix: Water** 

Analysis Batch: 190374

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

	MB	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichlorofluoromethane	1.0	U	1.0	0.52	ug/L			08/30/13 15:43	1
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	1.0	0.50	ug/L			08/30/13 15:43	1
Vinyl chloride	1.0	U	1.0	0.50	ug/L			08/30/13 15:43	1
Xylenes, Total	10	U	10	1.6	ug/L			08/30/13 15:43	1

MB MB %Recovery Qualifier Surrogate Limits Prepared Analyzed Dil Fac 4-Bromofluorobenzene 78 - 118 08/30/13 15:43 96 Dibromofluoromethane 102 81 - 121 08/30/13 15:43 Toluene-d8 (Surr) 96 80 - 120 08/30/13 15:43

Lab Sample ID: LCS 400-190374/1000 Client Sample ID: Lab Control Sample
Matrix: Water Prep Type: Total/NA

Analysis Batch: 190374

Analysis Batch: 190374	Spike	LCS	LCS				%Rec.
Analyte	Added		Qualifier	Unit	D	%Rec	Limits
Acetone		255		ug/L		127	24 - 150
Benzene	50.0	48.2		ug/L		96	79 <sub>-</sub> 120
Bromodichloromethane	50.0	49.0		ug/L		98	75 - 127
Bromoform	50.0	48.9		ug/L		98	65 - 121
Carbon disulfide	50.0	48.8		ug/L		98	41 - 140
Carbon tetrachloride	50.0	47.7		ug/L		95	46 - 141
Chlorobenzene	50.0	47.1		ug/L		94	85 - 120
Chloroethane	50.0	37.5		ug/L		75	37 - 150
Chloroform	50.0	47.5		ug/L		95	73 - 122
Chloromethane	50.0	46.4		ug/L		93	49 - 141
cis-1,2-Dichloroethene	50.0	48.4		ug/L		97	78 <sub>-</sub> 122
cis-1,3-Dichloropropene	50.0	51.9		ug/L		104	70 - 122
Cyclohexane	50.0	49.5		ug/L		99	69 - 123
Dibromochloromethane	50.0	47.9		ug/L		96	63 - 125
1,2-Dibromo-3-Chloropropane	50.0	49.3		ug/L		99	52 _ 124
1,2-Dichlorobenzene	50.0	46.7		ug/L		93	80 - 121
1,3-Dichlorobenzene	50.0	48.2		ug/L		96	77 - 124
1,4-Dichlorobenzene	50.0	48.0		ug/L		96	79 - 119
Dichlorodifluoromethane	50.0	39.2		ug/L		78	27 <sub>-</sub> 144
1,1-Dichloroethane	50.0	48.3		ug/L		97	75 <sub>-</sub> 126
1,2-Dichloroethane	50.0	46.7		ug/L		93	69 - 128
1,1-Dichloroethene	50.0	52.5		ug/L		105	50 <sub>-</sub> 134
1,2-Dichloropropane	50.0	48.9		ug/L		98	77 - 126
Diisopropyl ether	50.0	47.8		ug/L		96	69 - 143
Ethylbenzene	50.0	47.8		ug/L		96	82 - 120
Ethylene Dibromide	50.0	48.7		ug/L		97	82 _ 119
Ethyl tert-butyl ether	50.0	52.3		ug/L		105	58 <sub>-</sub> 142
2-Hexanone	200	196		ug/L		98	60 <sub>-</sub> 150
Isopropylbenzene	50.0	49.3		ug/L		99	76 <sub>-</sub> 118
Methyl acetate	250	250		ug/L		100	58 <sub>-</sub> 150
Methylcyclohexane	50.0	50.5		ug/L		101	72 <sub>-</sub> 121
Methylene Chloride	50.0	49.4		ug/L		99	70 <sub>-</sub> 130
Methyl Ethyl Ketone	200	213		ug/L		107	62 - 137

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TestAmerica Job ID: 680-93423-1

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

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

Lab Sample ID: LCS 400-190374/1000

**Matrix: Water** 

Analysis Batch: 190374

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

LCS LCS Spike %Rec. Added Result Qualifier Analyte %Rec Limits Unit 200 63 - 150 methyl isobutyl ketone 201 ug/L 101 Methyl tert-butyl ether 50.0 48.4 ug/L 97 70 - 124 50.0 49.4 Naphthalene ug/L 99 45 - 131 Styrene 50.0 50.7 ug/L 101 79 - 124 50.0 51.2 102 65 - 125 Tert-amyl methyl ether ug/L tert-Butyl alcohol 500 522 ug/L 104 44 - 150 1,1,2,2-Tetrachloroethane 50.0 46.4 ug/L 93 68 - 132 Tetrachloroethene 50.0 48.7 ug/L 97 76 - 124 Toluene 50.0 46.4 ug/L 93 81 - 120 trans-1,2-Dichloroethene 50.0 48.4 ug/L 97 70 - 126 trans-1,3-Dichloropropene 50.0 49.6 ug/L 99 64 - 120 1,2,4-Trichlorobenzene 50.0 48.8 ug/L 98 69 - 128 1,1,1-Trichloroethane 50.0 48.0 ug/L 96 66 - 130 1,1,2-Trichloroethane 50.0 49.1 ug/L 98 81 - 117 Trichloroethene 50.0 103 77 - 119 51.4 ug/L Trichlorofluoromethane 50.0 ug/L 26 - 150 48.1 96 50.0 45 - 138 1,1,2-Trichloro-1,2,2-trifluoroetha 51.7 ug/L 103 Vinyl chloride 50.0 48.2 ug/L 96 60 - 128Xylenes, Total 100 97.4 ug/L 97 70 - 130

 Surrogate
 %Recovery
 Qualifier
 Limits

 4-Bromofluorobenzene
 97
 78 - 118

 Dibromofluoromethane
 100
 81 - 121

 Toluene-d8 (Surr)
 98
 80 - 120

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

Lab Sample ID: MB 680-290771/19-A

**Matrix: Solid** 

Analysis Batch: 291613

Client Sample ID: Method Blank Prep Type: Total/NA Prep Batch: 290771

	MB	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzaldehyde	330	U	330	57	ug/Kg		08/25/13 12:13	08/30/13 18:41	1
Phenol	330	U	330	34	ug/Kg		08/25/13 12:13	08/30/13 18:41	1
Bis(2-chloroethyl)ether	330	U	330	44	ug/Kg		08/25/13 12:13	08/30/13 18:41	1
2-Chlorophenol	330	U	330	40	ug/Kg		08/25/13 12:13	08/30/13 18:41	1
2-Methylphenol	330	U	330	27	ug/Kg		08/25/13 12:13	08/30/13 18:41	1
bis (2-chloroisopropyl) ether	330	U	330	30	ug/Kg		08/25/13 12:13	08/30/13 18:41	1
Acetophenone	330	U	330	28	ug/Kg		08/25/13 12:13	08/30/13 18:41	1
3 & 4 Methylphenol	330	U	330	42	ug/Kg		08/25/13 12:13	08/30/13 18:41	1
N-Nitrosodi-n-propylamine	330	U	330	32	ug/Kg		08/25/13 12:13	08/30/13 18:41	1
Hexachloroethane	330	U	330	28	ug/Kg		08/25/13 12:13	08/30/13 18:41	1
Nitrobenzene	330	U	330	26	ug/Kg		08/25/13 12:13	08/30/13 18:41	1
Isophorone	330	U	330	33	ug/Kg		08/25/13 12:13	08/30/13 18:41	1
2-Nitrophenol	330	U	330	41	ug/Kg		08/25/13 12:13	08/30/13 18:41	1
2,4-Dimethylphenol	330	U	330	43	ug/Kg		08/25/13 12:13	08/30/13 18:41	1
Bis(2-chloroethoxy)methane	330	U	330	39	ug/Kg		08/25/13 12:13	08/30/13 18:41	1
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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93423-1

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

MR MR

Lab Sample ID: MB 680-290771/19-A

Matrix: Solid

Analysis Batch: 291613

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

**Prep Batch: 290771** 

Analyte	MB	MB							
		Qualifier	RL	MDL		D	Prepared	Analyzed	Dil Fac
2,4-Dichlorophenol	330	U	330	35	ug/Kg		08/25/13 12:13	08/30/13 18:41	1
Naphthalene	330	U	330	30	ug/Kg		08/25/13 12:13	08/30/13 18:41	1
4-Chloroaniline	650	U	650	51	ug/Kg		08/25/13 12:13	08/30/13 18:41	1
Hexachlorobutadiene	330	U	330	36	ug/Kg		08/25/13 12:13	08/30/13 18:41	1
Caprolactam	330	U	330	65	ug/Kg		08/25/13 12:13	08/30/13 18:41	1
4-Chloro-3-methylphenol	330	U	330	35	ug/Kg		08/25/13 12:13	08/30/13 18:41	1
2-Methylnaphthalene	330	U	330	38	ug/Kg		08/25/13 12:13	08/30/13 18:41	1
Hexachlorocyclopentadiene	330	U	330	41	ug/Kg		08/25/13 12:13	08/30/13 18:41	1
2,4,6-Trichlorophenol	330	U	330	29	ug/Kg		08/25/13 12:13	08/30/13 18:41	1
2,4,5-Trichlorophenol	330	U	330	35	ug/Kg		08/25/13 12:13	08/30/13 18:41	1
1,1'-Biphenyl	730	U	730	730	ug/Kg		08/25/13 12:13	08/30/13 18:41	1
2-Chloronaphthalene	330	U	330	35	ug/Kg		08/25/13 12:13	08/30/13 18:41	1
2-Nitroaniline	1700	U	1700	44	ug/Kg		08/25/13 12:13	08/30/13 18:41	1
Dimethyl phthalate	330	U	330	34	ug/Kg		08/25/13 12:13	08/30/13 18:41	1
2,6-Dinitrotoluene	330	U	330		ug/Kg		08/25/13 12:13	08/30/13 18:41	1
Acenaphthylene	330	U	330				08/25/13 12:13	08/30/13 18:41	1
3-Nitroaniline	1700		1700	45			08/25/13 12:13	08/30/13 18:41	1
Acenaphthene	330		330	41	0 0		08/25/13 12:13	08/30/13 18:41	1
2,4-Dinitrophenol	1700		1700	820			08/25/13 12:13	08/30/13 18:41	1
4-Nitrophenol	1700		1700	330	ug/Kg		08/25/13 12:13	08/30/13 18:41	1
Dibenzofuran	330		330	33			08/25/13 12:13	08/30/13 18:41	1
2,4-Dinitrotoluene	330		330	48			08/25/13 12:13	08/30/13 18:41	
Diethyl phthalate	330		330	37			08/25/13 12:13	08/30/13 18:41	1
Fluorene	330		330	36			08/25/13 12:13	08/30/13 18:41	1
4-Chlorophenyl phenyl ether	330		330	43			08/25/13 12:13	08/30/13 18:41	
4-Nitroaniline	1700		1700	48	ug/Kg ug/Kg		08/25/13 12:13	08/30/13 18:41	1
	1700		1700	170	ug/Kg ug/Kg		08/25/13 12:13	08/30/13 18:41	1
4,6-Dinitro-2-methylphenol	330								1
N-Nitrosodiphenylamine			330	33			08/25/13 12:13	08/30/13 18:41	-
4-Bromophenyl phenyl ether	330		330	36	ug/Kg		08/25/13 12:13	08/30/13 18:41	1
Hexachlorobenzene	330		330	39	ug/Kg		08/25/13 12:13	08/30/13 18:41	1
Atrazine	330		330		ug/Kg		08/25/13 12:13	08/30/13 18:41	1
Pentachlorophenol	1700		1700	330			08/25/13 12:13	08/30/13 18:41	1
Phenanthrene	330		330	27			08/25/13 12:13	08/30/13 18:41	1
Anthracene	330		330	25			08/25/13 12:13	08/30/13 18:41	1
Carbazole	330		330	30	ug/Kg		08/25/13 12:13	08/30/13 18:41	1
Di-n-butyl phthalate	330		330		ug/Kg		08/25/13 12:13	08/30/13 18:41	1
Fluoranthene	330		330		ug/Kg		08/25/13 12:13	08/30/13 18:41	1
Pyrene	330		330	27			08/25/13 12:13	08/30/13 18:41	1
Butyl benzyl phthalate	330	U	330				08/25/13 12:13	08/30/13 18:41	1
3,3'-Dichlorobenzidine	650	U	650	28	ug/Kg		08/25/13 12:13	08/30/13 18:41	1
Benzo[a]anthracene	330	U	330	27	ug/Kg		08/25/13 12:13	08/30/13 18:41	1
Chrysene	330	U	330	21	ug/Kg		08/25/13 12:13	08/30/13 18:41	1
Bis(2-ethylhexyl) phthalate	330	U	330	29	ug/Kg		08/25/13 12:13	08/30/13 18:41	1
Di-n-octyl phthalate	330	U	330	29	ug/Kg		08/25/13 12:13	08/30/13 18:41	1
Benzo[b]fluoranthene	330	U	330	38	ug/Kg		08/25/13 12:13	08/30/13 18:41	1
Benzo[k]fluoranthene	330	U	330	64	ug/Kg		08/25/13 12:13	08/30/13 18:41	1
Benzo[a]pyrene	330	U	330	51	ug/Kg		08/25/13 12:13	08/30/13 18:41	1
					ug/Kg				

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TestAmerica Job ID: 680-93423-1

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

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

Lab Sample ID: MB 680-290771/19-A

Lab Sample ID: LCS 680-290771/20-A

**Matrix: Solid** 

Matrix: Solid

Analysis Batch: 291613

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

**Prep Batch: 290771** 

N	в мв							
Analyte Res	lt Quali	lifier RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dibenz(a,h)anthracene 3	0 U	330	39	ug/Kg		08/25/13 12:13	08/30/13 18:41	1
Benzo[g,h,i]perylene 3	0 U	330	22	ug/Kg		08/25/13 12:13	08/30/13 18:41	1

MB MB

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	
Nitrobenzene-d5 (Surr)	70		46 - 130	08/25/13 12:13	08/30/13 18:41	
2-Fluorobiphenyl	79		58 - 130	08/25/13 12:13	08/30/13 18:41	
Terphenyl-d14 (Surr)	69		60 - 130	08/25/13 12:13	08/30/13 18:41	
Phenol-d5 (Surr)	58		49 - 130	08/25/13 12:13	08/30/13 18:41	
2-Fluorophenol (Surr)	61		40 - 130	08/25/13 12:13	08/30/13 18:41	
2,4,6-Tribromophenol (Surr)	78		58 - 130	08/25/13 12:13	08/30/13 18:41	

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analysis Batch: 291613							Prep Batch: 290771
	Spike	LCS	LCS				%Rec.
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits
Benzaldehyde	3300	760		ug/Kg		23	10 - 130
Phenol	3300	2400		ug/Kg		73	46 - 130
Bis(2-chloroethyl)ether	3300	2090		ug/Kg		63	42 _ 130
2-Chlorophenol	3300	2500		ug/Kg		76	51 - 130
2-Methylphenol	3300	2540		ug/Kg		77	49 - 130
bis (2-chloroisopropyl) ether	3300	2150		ug/Kg		65	44 - 130
Acetophenone	3300	2120		ug/Kg		64	42 - 130
3 & 4 Methylphenol	3300	2610		ug/Kg		79	50 _ 130
N-Nitrosodi-n-propylamine	3300	2370		ug/Kg		72	48 - 130
Hexachloroethane	3300	2090		ug/Kg		63	44 - 130
Nitrobenzene	3300	2310		ug/Kg		70	43 - 130
Isophorone	3300	2340		ug/Kg		71	48 - 130
2-Nitrophenol	3300	2680		ug/Kg		81	45 _ 130
2,4-Dimethylphenol	3300	2420		ug/Kg		73	47 - 130
Bis(2-chloroethoxy)methane	3300	2660		ug/Kg		81	56 - 130
2,4-Dichlorophenol	3300	2660		ug/Kg		80	53 - 130
Naphthalene	3300	2510		ug/Kg		76	54 - 130
4-Chloroaniline	3300	2100		ug/Kg		64	36 _ 130
Hexachlorobutadiene	3300	2600		ug/Kg		79	47 - 130
Caprolactam	3300	3100		ug/Kg		94	52 - 130
4-Chloro-3-methylphenol	3300	3080		ug/Kg		93	52 - 130
2-Methylnaphthalene	3300	2450		ug/Kg		74	55 - 130
Hexachlorocyclopentadiene	3300	1230		ug/Kg		37	35 _ 130
2,4,6-Trichlorophenol	3300	2860		ug/Kg		87	53 _ 130
2,4,5-Trichlorophenol	3300	3000		ug/Kg		91	60 - 130
1,1'-Biphenyl	3300	2580		ug/Kg		78	57 <sub>-</sub> 130
2-Chloronaphthalene	3300	2510		ug/Kg		76	55 - 130
2-Nitroaniline	3300	2690		ug/Kg		82	52 - 130
Dimethyl phthalate	3300	2870		ug/Kg		87	63 - 130
2,6-Dinitrotoluene	3300	2860		ug/Kg		87	57 <sub>-</sub> 130
Acenaphthylene	3300	2860		ug/Kg		87	58 - 130
3-Nitroaniline	3300	2620		ug/Kg		79	42 - 130

TestAmerica Savannah

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# **QC Sample Results**

Spike

LCS LCS

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93423-1

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

Lab Sample ID: LCS 680-290771/20-A

Matrix: Solid

Analysis Batch: 291613

**Client Sample ID: Lab Control Sample Prep Type: Total/NA Prep Batch: 290771** 

	opike	LUJ	LUU				/aixec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Acenaphthene	3300	2430		ug/Kg		74	58 - 130	
2,4-Dinitrophenol	3300	2740		ug/Kg		83	10 _ 154	
4-Nitrophenol	3300	2520		ug/Kg		76	30 _ 130	
Dibenzofuran	3300	2600		ug/Kg		79	56 - 130	
2,4-Dinitrotoluene	3300	2820		ug/Kg		85	55 <sub>-</sub> 130	
Diethyl phthalate	3300	2790		ug/Kg		85	62 - 130	
Fluorene	3300	2530		ug/Kg		77	58 _ 130	
4-Chlorophenyl phenyl ether	3300	2660		ug/Kg		81	61 _ 130	
4-Nitroaniline	3300	2690		ug/Kg		82	49 - 130	
4,6-Dinitro-2-methylphenol	3300	2980		ug/Kg		90	14 - 137	
N-Nitrosodiphenylamine	3300	2890		ug/Kg		88	62 - 130	
4-Bromophenyl phenyl ether	3300	2720		ug/Kg		83	65 _ 130	
Hexachlorobenzene	3300	2690		ug/Kg		82	59 _ 130	
Atrazine	3300	2500		ug/Kg		76	54 - 141	
Pentachlorophenol	3300	3200		ug/Kg		97	38 _ 131	
Phenanthrene	3300	2730		ug/Kg		83	61 - 130	
Anthracene	3300	2710		ug/Kg		82	60 _ 130	
Carbazole	3300	2930		ug/Kg		89	60 _ 130	
Di-n-butyl phthalate	3300	2950		ug/Kg		89	65 - 130	
Fluoranthene	3300	2820		ug/Kg		85	62 _ 130	
Pyrene	3300	2310		ug/Kg		70	59 - 130	
Butyl benzyl phthalate	3300	2800		ug/Kg		85	65 _ 134	
3,3'-Dichlorobenzidine	3300	2840		ug/Kg		86	45 _ 130	
Benzo[a]anthracene	3300	2930		ug/Kg		89	62 _ 130	
Chrysene	3300	3000		ug/Kg		91	62 _ 130	
Bis(2-ethylhexyl) phthalate	3300	3200		ug/Kg		97	62 - 132	
Di-n-octyl phthalate	3300	3480		ug/Kg		105	59 <sub>-</sub> 146	
Benzo[b]fluoranthene	3300	2780		ug/Kg		84	53 _ 130	
Benzo[k]fluoranthene	3300	2740		ug/Kg		83	57 <sub>-</sub> 130	
Benzo[a]pyrene	3300	2760		ug/Kg		84	68 _ 131	
Indeno[1,2,3-cd]pyrene	3300	2910		ug/Kg		88	52 - 130	
Dibenz(a,h)anthracene	3300	2810		ug/Kg		85	56 _ 130	
Benzo[g,h,i]perylene	3300	2780		ug/Kg		84	54 _ 130	

	LCS	LCS	
Surrogate	%Recovery	Qualifier	Limits
Nitrobenzene-d5 (Surr)	73		46 - 130
2-Fluorobiphenyl	82		58 - 130
Terphenyl-d14 (Surr)	79		60 - 130
Phenol-d5 (Surr)	70		49 - 130
2-Fluorophenol (Surr)	68		40 - 130
2,4,6-Tribromophenol (Surr)	90		58 <sub>-</sub> 130

TestAmerica Savannah

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9/13/2013

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93423-1

Method: 8015C - Nonhalogenated Organics using GC/FID -Modified (Gasoline Range Organics)

мв мв

Lab Sample ID: MB 680-290369/9 Client Sample ID: Method Blank

**Matrix: Solid** 

Analysis Batch: 290369

Prep Type: Total/NA

RL MDL Unit Result Qualifier D Analyzed Dil Fac Analyte Prepared 250 08/22/13 14:34 250 U 19 ug/Kg Gasoline Range Organics (GRO)

-C6-C10

MB MB Qualifier Surrogate %Recovery Limits Prepared Dil Fac Analyzed 70 - 131 08/22/13 14:34 a,a,a-Trifluorotoluene 90

Lab Sample ID: LCS 680-290369/6 Client Sample ID: Lab Control Sample Prep Type: Total/NA

**Matrix: Solid** 

Analysis Batch: 290369

Spike LCS LCS %Rec. Analyte Added Result Qualifier Unit D %Rec Limits Gasoline Range Organics (GRO) 1000 939 ug/Kg 94 64 - 133

-C6-C10

LCS LCS %Recovery Surrogate Qualifier I imits 70 - 131 a,a,a-Trifluorotoluene 93

Lab Sample ID: LCSD 680-290369/7 Client Sample ID: Lab Control Sample Dup Prep Type: Total/NA

**Matrix: Solid** 

Analysis Batch: 290369

LCSD LCSD %Rec. RPD Spike Analyte Added Result Qualifier Unit D %Rec Limits RPD Limit 1000 1010 ug/Kg 101 64 - 133 Gasoline Range Organics (GRO)

-C6-C10

LCSD LCSD

Surrogate %Recovery Qualifier Limits a,a,a-Trifluorotoluene 95 70 - 131

Lab Sample ID: MB 680-290531/7 Client Sample ID: Method Blank

**Matrix: Solid** 

Analysis Batch: 290531

MR MR Result Qualifier RL MDL Unit Prepared Analyzed Dil Fac 250 250 19 ug/Kg 08/23/13 12:05 Gasoline Range Organics (GRO)

-C6-C10

MB MB Surrogate %Recovery Qualifier Limits Prepared Analyzed Dil Fac a,a,a-Trifluorotoluene 80 70 - 131 08/23/13 12:05

Lab Sample ID: LCS 680-290531/5 **Matrix: Solid** 

Analysis Batch: 290531

LCS LCS Spike %Rec. Added Result Qualifier Unit %Rec 1000 784 Gasoline Range Organics (GRO) ug/Kg 78 64 - 133 -C6-C10

TestAmerica Savannah

Prep Type: Total/NA

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Project/Site: CSX C&O Canal Brunswick, MD

Method: 8015C - Nonhalogenated Organics using GC/FID -Modified (Gasoline Range Organics) (Continued)

Lab Sample ID: LCS 680-290531/5

**Client Sample ID: Lab Control Sample** 

Prep Type: Total/NA

**Matrix: Solid** Analysis Batch: 290531

LCS LCS

Surrogate %Recovery Qualifier Limits a,a,a-Trifluorotoluene 87 70 - 131

Lab Sample ID: LCSD 680-290531/6

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

**Matrix: Solid** 

Analysis Batch: 290531

Spike LCSD LCSD %Rec. RPD Analyte Added Result Qualifier Unit D %Rec Limits **RPD** Limit 1000 879 ug/Kg 50 88 64 \_ 133

Gasoline Range Organics (GRO)

-C6-C10

LCSD LCSD

Surrogate %Recovery Qualifier Limits 70 - 131 a,a,a-Trifluorotoluene 90

Method: 8015C - Nonhalogenated Organics using GC/FID -Modified (Diesel Range Organics)

Lab Sample ID: MB 490-102377/1-A

**Matrix: Solid** 

Analysis Batch: 102839

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 102377

мв мв

RL Analyte Result Qualifier MDL Unit D Prepared Analyzed Dil Fac Diesel Range Organics [C10-C28] 5000 U 5000 1400 ug/Kg 08/24/13 11:08 08/27/13 12:07 ORO C24-C40 2330 J 5000 1400 ug/Kg 08/24/13 11:08 08/27/13 12:07

MB MB

Surrogate %Recovery Qualifier I imits Prepared Dil Fac Analyzed o-Terphenyl (Surr) 7.3 50 - 150 08/24/13 11:08 08/27/13 12:07

Lab Sample ID: LCS 490-102377/2-A

**Matrix: Solid** 

Analysis Batch: 102589

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 102377

LCS LCS Spike %Rec. Analyte Added Result Qualifier Unit %Rec Limits

40000 Diesel Range Organics 38300 ug/Kg 54 - 130

Spike

Added

45900

[C10-C28]

LCS LCS

Sample Sample

Qualifier

Result

16000

Surrogate %Recovery Qualifier Limits o-Terphenyl (Surr) 81 50 - 150

Lab Sample ID: 680-93423-12 MS

**Matrix: Solid** 

Analysis Batch: 102589

Diesel Range Organics

Client Sample ID: SB01-05 (1.5-2.5)

Prep Type: Total/NA

Prep Batch: 102377

MS MS %Rec. Result Qualifier Unit D ₩ 11900 ug/Kg 10 - 142

[C10-C28]

Project/Site: CSX C&O Canal Brunswick, MD

Method: 8015C - Nonhalogenated Organics using GC/FID -Modified (Diesel Range Organics)

(Continued)

Lab Sample ID: 680-93423-12 MS

**Matrix: Solid** 

Analysis Batch: 102589

Client Sample ID: SB01-05 (1.5-2.5) Prep Type: Total/NA

Prep Batch: 102377

MS MS

Surrogate %Recovery Qualifier Limits o-Terphenyl (Surr) 69 50 - 150

Lab Sample ID: 680-93423-12 MSD Client Sample ID: SB01-05 (1.5-2.5) Prep Type: Total/NA

**Matrix: Solid** 

Analysis Batch: 102589

Prep Batch: 102377 Sample Sample Spike MSD MSD %Rec. RPD Result Qualifier Analyte Result Qualifier Added Unit D %Rec Limits **RPD** Limit 16000 45300 42600 59 ug/Kg 10 - 142 113 47 Diesel Range Organics

[C10-C28]

MSD MSD

Surrogate %Recovery Qualifier Limits 50 - 150 o-Terphenyl (Surr) 78

Lab Sample ID: MB 490-103126/1-A Client Sample ID: Method Blank

**Matrix: Solid** 

Analysis Batch: 103420

MB MB Analyte Result Qualifier RL MDL Unit D Prepared Analyzed Dil Fac Diesel Range Organics [C10-C28] 10000 5000 1400 ug/Kg 08/28/13 08:03 08/28/13 19:42 ORO C24-C40 5000

1400

ug/Kg

ug/Kg

08/28/13 08:03

66

54 - 130

MB MB

16100

Dil Fac Surrogate %Recovery Qualifier Limits Prepared Analyzed o-Terphenyl (Surr) 86 50 - 150 08/28/13 08:03 08/28/13 19:42

Lab Sample ID: LCS 490-103126/2-A

**Matrix: Solid** 

Analysis Batch: 103420

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

26600

Prep Batch: 103126

Prep Type: Total/NA

Prep Batch: 103126

08/28/13 19:42

Spike LCS LCS %Rec. Analyte Added Result Qualifier Unit D %Rec Limits

40000

Diesel Range Organics [C10-C28]

LCS LCS

%Recovery Qualifier Surrogate Limits o-Terphenyl (Surr) 101 50 - 150

Client Sample ID: Method Blank Lab Sample ID: MB 490-103975/1-A

**Matrix: Solid** 

Prep Type: Total/NA Analysis Batch: 104206 Prep Batch: 103975

мв мв

Result Qualifier RL MDL Unit Prepared Analyzed Dil Fac Diesel Range Organics [C10-C28] 5000 U 5000 08/30/13 13:38 09/01/13 16:14 1400 ug/Kg ORO C24-C40 2430 J 5000 08/30/13 13:38 09/01/13 16:14 1400 ug/Kg

MB MB

Surrogate %Recovery Qualifier Limits Prepared Analyzed Dil Fac o-Terphenyl (Surr) 71 50 - 150 08/30/13 13:38 09/01/13 16:14

TestAmerica Job ID: 680-93423-1

Client: ARCADIS U.S., Inc. Project/Site: CSX C&O Canal Brunswick, MD

# Method: 8015C - Nonhalogenated Organics using GC/FID -Modified (Diesel Range Organics) (Continued)

Lab Sample ID: LCS 490-103975/2-A				Client	Cample	ID: Lab Control Sample
Lab Sample ID. LCS 450-103575/2-A				Cileiii	Sample	ib. Lab Control Sample
Matrix: Solid						Prep Type: Total/NA
Analysis Batch: 104206						Prep Batch: 103975
	Spike	LCS	LCS			%Rec.
			O 11.0	 _	0/ 5	,

	<b>Spike</b>	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Diesel Range Organics	 40000	34400		ug/Kg		86	54 - 130	
[C10-C28]								

LCS LCS Surrogate %Recovery Qualifier Limits 50 - 150 o-Terphenyl (Surr) 92

Lab Sample ID: 680-93423-9 MS Client Sample ID: SB01-06 (1.0-2.0) **Matrix: Solid** Prep Type: Total/NA Analysis Batch: 104206 Prep Batch: 103975

MS MS Sample Sample Spike Result Qualifier Added Analyte Result Qualifier Unit %Rec Limits 47000 38500 69 10 - 142 5900 ug/Kg Diesel Range Organics

MS MS Surrogate %Recovery Qualifier Limits o-Terphenyl (Surr) 50 - 150 87

Lab Sample ID: 680-93423-9 MSD Client Sample ID: SB01-06 (1.0-2.0) Prep Type: Total/NA

**Matrix: Solid** 

[C10-C28]

Analysis Batch: 104206 **Prep Batch: 103975** Sample Sample Spike MSD MSD %Rec.

Analyte Result Qualifier Added Result Qualifier Limits RPD Limit Unit D %Rec 47300 5900 42400 77 10 ug/Kg 10 - 142 Diesel Range Organics [C10-C28]

MSD MSD Surrogate %Recovery Qualifier Limits 50 - 150 o-Terphenyl (Surr) 85

TestAmerica Job ID: 680-93423-1

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

## **GC/MS VOA**

## **Prep Batch: 189491**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93423-1	SB01-01 (1.0-2.0)	Total/NA	Solid	5035	
680-93423-2	SB01-01 (9.0-10.0)	Total/NA	Solid	5035	
680-93423-3	SB01-03 (0.5-1.5)	Total/NA	Solid	5035	
680-93423-4	SB01-03 (5.0-6.0)	Total/NA	Solid	5035	
680-93423-5	SB01-02 (0.5-1.5)	Total/NA	Solid	5035	
680-93423-6	SB01-02 (5.0-6.0)	Total/NA	Solid	5035	
680-93423-7	SB01-04 (0.0-1.0)	Total/NA	Solid	5035	
680-93423-8	SB01-04 (5.0-6.0)	Total/NA	Solid	5035	
680-93423-9	SB01-06 (1.0-2.0)	Total/NA	Solid	5035	
680-93423-10	SB01-06 (6.5-7.5)	Total/NA	Solid	5035	
680-93423-11	SB01-05 (8.5-9.5)	Total/NA	Solid	5035	
680-93423-12	SB01-05 (1.5-2.5)	Total/NA	Solid	5035	

## Analysis Batch: 190345

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93423-1	SB01-01 (1.0-2.0)	Total/NA	Solid	8260B	189491
680-93423-2	SB01-01 (9.0-10.0)	Total/NA	Solid	8260B	189491
680-93423-3	SB01-03 (0.5-1.5)	Total/NA	Solid	8260B	189491
680-93423-4	SB01-03 (5.0-6.0)	Total/NA	Solid	8260B	189491
680-93423-5	SB01-02 (0.5-1.5)	Total/NA	Solid	8260B	189491
680-93423-6	SB01-02 (5.0-6.0)	Total/NA	Solid	8260B	189491
680-93423-7	SB01-04 (0.0-1.0)	Total/NA	Solid	8260B	189491
680-93423-8	SB01-04 (5.0-6.0)	Total/NA	Solid	8260B	189491
680-93423-9	SB01-06 (1.0-2.0)	Total/NA	Solid	8260B	189491
680-93423-10	SB01-06 (6.5-7.5)	Total/NA	Solid	8260B	189491
680-93423-11	SB01-05 (8.5-9.5)	Total/NA	Solid	8260B	189491
680-93423-12	SB01-05 (1.5-2.5)	Total/NA	Solid	8260B	189491
LCS 400-190345/1000	Lab Control Sample	Total/NA	Solid	8260B	
LCSD 400-190345/5	Lab Control Sample Dup	Total/NA	Solid	8260B	
MB 400-190345/4	Method Blank	Total/NA	Solid	8260B	

## Analysis Batch: 190374

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93423-13	Trip Blank	Total/NA	Water	8260B	
LCS 400-190374/1000	Lab Control Sample	Total/NA	Water	8260B	
MB 400-190374/4	Method Blank	Total/NA	Water	8260B	

## **GC/MS Semi VOA**

# **Prep Batch: 290771**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93423-1	SB01-01 (1.0-2.0)	Total/NA	Solid	3546	
680-93423-2	SB01-01 (9.0-10.0)	Total/NA	Solid	3546	
680-93423-3	SB01-03 (0.5-1.5)	Total/NA	Solid	3546	
680-93423-4	SB01-03 (5.0-6.0)	Total/NA	Solid	3546	
680-93423-5	SB01-02 (0.5-1.5)	Total/NA	Solid	3546	
680-93423-6	SB01-02 (5.0-6.0)	Total/NA	Solid	3546	
680-93423-7	SB01-04 (0.0-1.0)	Total/NA	Solid	3546	
680-93423-8	SB01-04 (5.0-6.0)	Total/NA	Solid	3546	
680-93423-9	SB01-06 (1.0-2.0)	Total/NA	Solid	3546	

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# **QC Association Summary**

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93423-1

# GC/MS Semi VOA (Continued)

# Prep Batch: 290771 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93423-10	SB01-06 (6.5-7.5)	Total/NA	Solid	3546	
680-93423-11	SB01-05 (8.5-9.5)	Total/NA	Solid	3546	
680-93423-12	SB01-05 (1.5-2.5)	Total/NA	Solid	3546	
LCS 680-290771/20-A	Lab Control Sample	Total/NA	Solid	3546	
MB 680-290771/19-A	Method Blank	Total/NA	Solid	3546	

## Analysis Batch: 291613

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 680-290771/20-A	Lab Control Sample	Total/NA	Solid	8270D	290771
MB 680-290771/19-A	Method Blank	Total/NA	Solid	8270D	290771

# Analysis Batch: 291788

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93423-1	SB01-01 (1.0-2.0)	Total/NA	Solid	8270D	290771
680-93423-2	SB01-01 (9.0-10.0)	Total/NA	Solid	8270D	290771
680-93423-3	SB01-03 (0.5-1.5)	Total/NA	Solid	8270D	290771
680-93423-4	SB01-03 (5.0-6.0)	Total/NA	Solid	8270D	290771
680-93423-5	SB01-02 (0.5-1.5)	Total/NA	Solid	8270D	290771
680-93423-6	SB01-02 (5.0-6.0)	Total/NA	Solid	8270D	290771
680-93423-7	SB01-04 (0.0-1.0)	Total/NA	Solid	8270D	290771
680-93423-8	SB01-04 (5.0-6.0)	Total/NA	Solid	8270D	290771
680-93423-9	SB01-06 (1.0-2.0)	Total/NA	Solid	8270D	290771
680-93423-10	SB01-06 (6.5-7.5)	Total/NA	Solid	8270D	290771
680-93423-11	SB01-05 (8.5-9.5)	Total/NA	Solid	8270D	290771
680-93423-12	SB01-05 (1.5-2.5)	Total/NA	Solid	8270D	290771

## **GC VOA**

## **Prep Batch: 290283**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93423-1	SB01-01 (1.0-2.0)	Total/NA	Solid	5035	
680-93423-2	SB01-01 (9.0-10.0)	Total/NA	Solid	5035	
680-93423-3	SB01-03 (0.5-1.5)	Total/NA	Solid	5035	
680-93423-4	SB01-03 (5.0-6.0)	Total/NA	Solid	5035	
680-93423-5	SB01-02 (0.5-1.5)	Total/NA	Solid	5035	
680-93423-6	SB01-02 (5.0-6.0)	Total/NA	Solid	5035	
680-93423-7	SB01-04 (0.0-1.0)	Total/NA	Solid	5035	
680-93423-8	SB01-04 (5.0-6.0)	Total/NA	Solid	5035	
680-93423-9	SB01-06 (1.0-2.0)	Total/NA	Solid	5035	
680-93423-10	SB01-06 (6.5-7.5)	Total/NA	Solid	5035	
680-93423-11	SB01-05 (8.5-9.5)	Total/NA	Solid	5035	
680-93423-12	SB01-05 (1.5-2.5)	Total/NA	Solid	5035	

# Analysis Batch: 290369

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93423-1	SB01-01 (1.0-2.0)	Total/NA	Solid	8015C	290283
680-93423-2	SB01-01 (9.0-10.0)	Total/NA	Solid	8015C	290283
680-93423-3	SB01-03 (0.5-1.5)	Total/NA	Solid	8015C	290283
680-93423-4	SB01-03 (5.0-6.0)	Total/NA	Solid	8015C	290283
680-93423-5	SB01-02 (0.5-1.5)	Total/NA	Solid	8015C	290283

TestAmerica Savannah

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# **QC Association Summary**

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93423-1

# GC VOA (Continued)

# Analysis Batch: 290369 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93423-6	SB01-02 (5.0-6.0)	Total/NA	Solid	8015C	290283
680-93423-7	SB01-04 (0.0-1.0)	Total/NA	Solid	8015C	290283
680-93423-12	SB01-05 (1.5-2.5)	Total/NA	Solid	8015C	290283
LCS 680-290369/6	Lab Control Sample	Total/NA	Solid	8015C	
LCSD 680-290369/7	Lab Control Sample Dup	Total/NA	Solid	8015C	
MB 680-290369/9	Method Blank	Total/NA	Solid	8015C	

#### Analysis Batch: 290531

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93423-9	SB01-06 (1.0-2.0)	Total/NA	Solid	8015C	290283
680-93423-10	SB01-06 (6.5-7.5)	Total/NA	Solid	8015C	290283
680-93423-11	SB01-05 (8.5-9.5)	Total/NA	Solid	8015C	290283
LCS 680-290531/5	Lab Control Sample	Total/NA	Solid	8015C	
LCSD 680-290531/6	Lab Control Sample Dup	Total/NA	Solid	8015C	
MB 680-290531/7	Method Blank	Total/NA	Solid	8015C	

#### Analysis Batch: 290971

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93423-8	SB01-04 (5.0-6.0)	Total/NA	Solid	8015C	290283

## **GC Semi VOA**

#### **Prep Batch: 102377**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batcl
680-93423-7	SB01-04 (0.0-1.0)	Total/NA	Solid	3550C	
680-93423-8	SB01-04 (5.0-6.0)	Total/NA	Solid	3550C	
680-93423-10	SB01-06 (6.5-7.5)	Total/NA	Solid	3550C	
680-93423-11	SB01-05 (8.5-9.5)	Total/NA	Solid	3550C	
680-93423-12	SB01-05 (1.5-2.5)	Total/NA	Solid	3550C	
680-93423-12 MS	SB01-05 (1.5-2.5)	Total/NA	Solid	3550C	
680-93423-12 MSD	SB01-05 (1.5-2.5)	Total/NA	Solid	3550C	
LCS 490-102377/2-A	Lab Control Sample	Total/NA	Solid	3550C	
MB 490-102377/1-A	Method Blank	Total/NA	Solid	3550C	

#### Analysis Batch: 102589

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93423-7	SB01-04 (0.0-1.0)	Total/NA	Solid	8015C	102377
680-93423-8	SB01-04 (5.0-6.0)	Total/NA	Solid	8015C	102377
680-93423-10	SB01-06 (6.5-7.5)	Total/NA	Solid	8015C	102377
680-93423-11	SB01-05 (8.5-9.5)	Total/NA	Solid	8015C	102377
680-93423-12	SB01-05 (1.5-2.5)	Total/NA	Solid	8015C	102377
680-93423-12 MS	SB01-05 (1.5-2.5)	Total/NA	Solid	8015C	102377
680-93423-12 MSD	SB01-05 (1.5-2.5)	Total/NA	Solid	8015C	102377
LCS 490-102377/2-A	Lab Control Sample	Total/NA	Solid	8015C	102377

## Analysis Batch: 102839

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Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 490-102377/1-A	Method Blank	Total/NA	Solid	8015C	102377

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# **QC Association Summary**

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93423-1

# GC Semi VOA (Continued)

# Prep Batch: 103126

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93423-4	SB01-03 (5.0-6.0)	Total/NA	Solid	3550C	
680-93423-6	SB01-02 (5.0-6.0)	Total/NA	Solid	3550C	
LCS 490-103126/2-A	Lab Control Sample	Total/NA	Solid	3550C	
MB 490-103126/1-A	Method Blank	Total/NA	Solid	3550C	

## Analysis Batch: 103420

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93423-4	SB01-03 (5.0-6.0)	Total/NA	Solid	8015C	103126
680-93423-6	SB01-02 (5.0-6.0)	Total/NA	Solid	8015C	103126
LCS 490-103126/2-A	Lab Control Sample	Total/NA	Solid	8015C	103126
MB 490-103126/1-A	Method Blank	Total/NA	Solid	8015C	103126

# Prep Batch: 103975

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93423-1	SB01-01 (1.0-2.0)	Total/NA	Solid	3550C	
680-93423-2	SB01-01 (9.0-10.0)	Total/NA	Solid	3550C	
680-93423-3	SB01-03 (0.5-1.5)	Total/NA	Solid	3550C	
680-93423-5	SB01-02 (0.5-1.5)	Total/NA	Solid	3550C	
680-93423-9	SB01-06 (1.0-2.0)	Total/NA	Solid	3550C	
680-93423-9 MS	SB01-06 (1.0-2.0)	Total/NA	Solid	3550C	
680-93423-9 MSD	SB01-06 (1.0-2.0)	Total/NA	Solid	3550C	
LCS 490-103975/2-A	Lab Control Sample	Total/NA	Solid	3550C	
MB 490-103975/1-A	Method Blank	Total/NA	Solid	3550C	

#### Analysis Batch: 104206

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93423-1	SB01-01 (1.0-2.0)	Total/NA	Solid	8015C	103975
680-93423-2	SB01-01 (9.0-10.0)	Total/NA	Solid	8015C	103975
680-93423-3	SB01-03 (0.5-1.5)	Total/NA	Solid	8015C	103975
680-93423-5	SB01-02 (0.5-1.5)	Total/NA	Solid	8015C	103975
680-93423-9	SB01-06 (1.0-2.0)	Total/NA	Solid	8015C	103975
680-93423-9 MS	SB01-06 (1.0-2.0)	Total/NA	Solid	8015C	103975
680-93423-9 MSD	SB01-06 (1.0-2.0)	Total/NA	Solid	8015C	103975
LCS 490-103975/2-A	Lab Control Sample	Total/NA	Solid	8015C	103975
MB 490-103975/1-A	Method Blank	Total/NA	Solid	8015C	103975

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB01-01 (1.0-2.0)

Date Collected: 08/19/13 12:30

Lab Sample ID: 680-93423-1 Matrix: Solid

Percent Solids: 73.9

Date Received: 08/21/13 10:07

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035			189491	08/22/13 13:27	CAR	TAL PEN
Total/NA	Analysis	8260B		1	190345	08/30/13 17:00	WPD	TAL PEN
Total/NA	Prep	3546			290771	08/25/13 12:13	JCS	TAL SAV
Total/NA	Analysis	8270D		1	291788	08/31/13 21:01	SMP	TAL SAV
Total/NA	Prep	5035			290283	08/21/13 16:21	FES	TAL SAV
Total/NA	Analysis	8015C		1	290369	08/22/13 16:38	AJMC	TAL SAV
Total/NA	Prep	3550C			103975	08/30/13 13:38	JLP	TAL NSH
Total/NA	Analysis	8015C		1	104206	09/01/13 17:32	GMH	TAL NSH

Client Sample ID: SB01-01 (9.0-10.0)

Date Collected: 08/19/13 12:35

Lab Sample ID: 680-93423-2

Matrix: Solid Percent Solids: 82.2

Date Received: 08/21/13 10:07

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035			189491	08/22/13 13:27	CAR	TAL PEN
Total/NA	Analysis	8260B		1	190345	08/30/13 17:24	WPD	TAL PEN
Total/NA	Prep	3546			290771	08/25/13 12:13	JCS	TAL SAV
Total/NA	Analysis	8270D		1	291788	08/31/13 21:26	SMP	TAL SAV
Total/NA	Prep	5035			290283	08/21/13 16:21	FES	TAL SAV
Total/NA	Analysis	8015C		1	290369	08/22/13 16:58	AJMC	TAL SAV
Total/NA	Prep	3550C			103975	08/30/13 13:38	JLP	TAL NSH
Total/NA	Analysis	8015C		1	104206	09/01/13 17:48	GMH	TAL NSH

Client Sample ID: SB01-03 (0.5-1.5)

Date Collected: 08/19/13 14:00

Date Received: 08/21/13 10:07

Lab	Sampl	e ID:	680-934	<b>423-3</b>

Matrix: Solid Percent Solids: 83.3

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035	<del></del>		189491	08/22/13 13:27	CAR	TAL PEN
Total/NA	Analysis	8260B		1	190345	08/30/13 17:47	WPD	TAL PEN
Total/NA	Prep	3546			290771	08/25/13 12:13	JCS	TAL SAV
Total/NA	Analysis	8270D		1	291788	08/31/13 21:52	SMP	TAL SAV
Total/NA	Prep	5035			290283	08/21/13 16:21	FES	TAL SAV
Total/NA	Analysis	8015C		1	290369	08/22/13 17:20	AJMC	TAL SAV
Total/NA	Prep	3550C			103975	08/30/13 13:38	JLP	TAL NSH
Total/NA	Analysis	8015C		1	104206	09/01/13 18:03	GMH	TAL NSH

Client Sample ID: SB01-03 (5.0-6.0)

Date Collected: 08/19/13 14:10

Date Received: 08/21/13 10:07

Lab Sample ID: 680-93423-4

Matrix: Solid Percent Solids: 83.2

	Batch	n Batch		Dilution	Batch	Prepared		
Prep Ty	ре Туре	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035			189491	08/22/13 13:27	CAR	TAL PEN

Project/Site: CSX C&O Canal Brunswick, MD

Lab Sample ID: 680-93423-4

Matrix: Solid

Percent Solids: 83.2

Client Sample ID: SB01-03 (5.0-6.0)

Date Collected: 08/19/13 14:10 Date Received: 08/21/13 10:07

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	190345	08/30/13 18:13	WPD	TAL PEN
Total/NA	Prep	3546			290771	08/25/13 12:13	JCS	TAL SAV
Total/NA	Analysis	8270D		1	291788	08/31/13 22:17	SMP	TAL SAV
Total/NA	Prep	5035			290283	08/21/13 16:21	FES	TAL SAV
Total/NA	Analysis	8015C		1	290369	08/22/13 17:42	AJMC	TAL SAV
Total/NA	Prep	3550C			103126	08/28/13 08:03	JLP	TAL NSH
Total/NA	Analysis	8015C		1	103420	08/29/13 01:39	JML	TAL NSH

Client Sample ID: SB01-02 (0.5-1.5)

Lab Sample ID: 680-93423-5

Date Collected: 08/19/13 14:25

Date Received: 08/21/13 10:07

Matrix: Solid
Percent Solids: 86.7

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035			189491	08/22/13 13:27	CAR	TAL PEN
Total/NA	Analysis	8260B		1	190345	08/30/13 18:37	WPD	TAL PEN
Total/NA	Prep	3546			290771	08/25/13 12:13	JCS	TAL SAV
Total/NA	Analysis	8270D		1	291788	08/31/13 22:43	SMP	TAL SAV
Total/NA	Prep	5035			290283	08/21/13 16:21	FES	TAL SAV
Total/NA	Analysis	8015C		1	290369	08/22/13 18:02	AJMC	TAL SAV
Total/NA	Prep	3550C			103975	08/30/13 13:38	JLP	TAL NSH
Total/NA	Analysis	8015C		1	104206	09/01/13 18:19	GMH	TAL NSH

Client Sample ID: SB01-02 (5.0-6.0)

Lab Sample ID: 680-93423-6

 Date Collected: 08/19/13 14:30
 Matrix: Solid

 Date Received: 08/21/13 10:07
 Percent Solids: 75.5

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035			189491	08/22/13 13:27	CAR	TAL PEN
Total/NA	Analysis	8260B		1	190345	08/30/13 19:03	WPD	TAL PEN
Total/NA	Prep	3546			290771	08/25/13 12:13	JCS	TAL SAV
Total/NA	Analysis	8270D		1	291788	08/31/13 23:09	SMP	TAL SAV
Total/NA	Prep	5035			290283	08/21/13 16:21	FES	TAL SAV
Total/NA	Analysis	8015C		1	290369	08/22/13 18:22	AJMC	TAL SAV
Total/NA	Prep	3550C			103126	08/28/13 08:03	JLP	TAL NSH
Total/NA	Analysis	8015C		1	103420	08/29/13 02:10	JML	TAL NSH

Client Sample ID: SB01-04 (0.0-1.0)

Lab Sample ID: 680-93423-7

 Date Collected: 08/19/13 15:30
 Matrix: Solid

 Date Received: 08/21/13 10:07
 Percent Solids: 81.1

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035			189491	08/22/13 13:27	CAR	TAL PEN
Total/NA	Analysis	8260B		1	190345	08/30/13 19:29	WPD	TAL PEN

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB01-04 (0.0-1.0)

Date Collected: 08/19/13 15:30 Date Received: 08/21/13 10:07

Lab Sample ID: 680-93423-7

Matrix: Solid Percent Solids: 81.1

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	3546			290771	08/25/13 12:13	JCS	TAL SAV
Total/NA	Analysis	8270D		1	291788	08/31/13 23:34	SMP	TAL SAV
Total/NA	Prep	5035			290283	08/21/13 16:21	FES	TAL SAV
Total/NA	Analysis	8015C		1	290369	08/22/13 18:42	AJMC	TAL SAV
Total/NA	Prep	3550C			102377	08/24/13 11:08	JLP	TAL NSH
Total/NA	Analysis	8015C		1	102589	08/27/13 00:49	JML	TAL NSH

Client Sample ID: SB01-04 (5.0-6.0)

Date Collected: 08/19/13 15:35 Date Received: 08/21/13 10:07

Lab Sample ID: 680-93423-8

**Matrix: Solid** Percent Solids: 75.7

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035			189491	08/22/13 13:27	CAR	TAL PEN
Total/NA	Analysis	8260B		50	190345	08/30/13 21:38	WPD	TAL PEN
Total/NA	Prep	3546			290771	08/25/13 12:13	JCS	TAL SAV
Total/NA	Analysis	8270D		1	291788	08/31/13 23:59	SMP	TAL SAV
Total/NA	Prep	5035			290283	08/21/13 16:21	FES	TAL SAV
Total/NA	Analysis	8015C		1	290971	08/27/13 18:11	AJMC	TAL SAV
Total/NA	Prep	3550C			102377	08/24/13 11:08	JLP	TAL NSH
Total/NA	Analysis	8015C		1	102589	08/27/13 01:04	JML	TAL NSH

Client Sample ID: SB01-06 (1.0-2.0)

Date Collected: 08/19/13 16:15 Date Received: 08/21/13 10:07

Lab Sample ID: 680-93423-9 **Matrix: Solid** 

Percent Solids: 84.0

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035			189491	08/22/13 13:27	CAR	TAL PEN
Total/NA	Analysis	8260B		1	190345	08/30/13 19:55	WPD	TAL PEN
Total/NA	Prep	3546			290771	08/25/13 12:13	JCS	TAL SAV
Total/NA	Analysis	8270D		1	291788	09/01/13 00:25	SMP	TAL SAV
Total/NA	Prep	5035			290283	08/21/13 16:21	FES	TAL SAV
Total/NA	Analysis	8015C		1	290531	08/23/13 15:07	AJMC	TAL SAV
Total/NA	Prep	3550C			103975	08/30/13 13:38	JLP	TAL NSH
Total/NA	Analysis	8015C		1	104206	09/01/13 16:45	GMH	TAL NSH

Client Sample ID: SB01-06 (6.5-7.5)

Date Collected: 08/19/13 16:20 Date Received: 08/21/13 10:07

Lab Sample ID: 680-93423-10 **Matrix: Solid** 

Percent Solids: 67.9

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035			189491	08/22/13 13:27	CAR	TAL PEN
Total/NA	Analysis	8260B		1	190345	08/30/13 20:21	WPD	TAL PEN
Total/NA	Prep	3546			290771	08/25/13 12:13	JCS	TAL SAV

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB01-06 (6.5-7.5)

Date Collected: 08/19/13 16:20 Date Received: 08/21/13 10:07 Lab Sample ID: 680-93423-10

Matrix: Solid
Percent Solids: 67.9

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	8270D		1	291788	09/01/13 00:50	SMP	TAL SAV
Total/NA	Prep	5035			290283	08/21/13 16:21	FES	TAL SAV
Total/NA	Analysis	8015C		1	290531	08/23/13 15:27	AJMC	TAL SAV
Total/NA	Prep	3550C			102377	08/24/13 11:08	JLP	TAL NSH
Total/NA	Analysis	8015C		1	102589	08/27/13 01:36	JML	TAL NSH

Client Sample ID: SB01-05 (8.5-9.5)

Date Collected: 08/19/13 16:50

Date Received: 08/21/13 10:07

Lab Sample ID: 680-93423-11

Matrix: Solid Percent Solids: 75.1

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035			189491	08/22/13 13:27	CAR	TAL PEN
Total/NA	Analysis	8260B		1	190345	08/30/13 20:46	WPD	TAL PEN
Total/NA	Prep	3546			290771	08/25/13 12:13	JCS	TAL SAV
Total/NA	Analysis	8270D		1	291788	09/01/13 01:16	SMP	TAL SAV
Total/NA	Prep	5035			290283	08/21/13 16:21	FES	TAL SAV
Total/NA	Analysis	8015C		1	290531	08/23/13 15:47	AJMC	TAL SAV
Total/NA	Prep	3550C			102377	08/24/13 11:08	JLP	TAL NSH
Total/NA	Analysis	8015C		1	102589	08/27/13 01:51	JML	TAL NSH

Client Sample ID: SB01-05 (1.5-2.5)

Date Collected: 08/19/13 16:45

Date Received: 08/21/13 10:07

Lab Sample ID: 680-93423-12

Percent Solids: 86.4

**Matrix: Solid** 

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035			189491	08/22/13 13:27	CAR	TAL PEN
Total/NA	Analysis	8260B		1	190345	08/30/13 21:12	WPD	TAL PEN
Total/NA	Prep	3546			290771	08/25/13 12:13	JCS	TAL SAV
Total/NA	Analysis	8270D		1	291788	09/01/13 01:41	SMP	TAL SAV
Total/NA	Prep	5035			290283	08/21/13 16:21	FES	TAL SAV
Total/NA	Analysis	8015C		1	290369	08/22/13 20:21	AJMC	TAL SAV
Total/NA	Prep	3550C			102377	08/24/13 11:08	JLP	TAL NSH
Total/NA	Analysis	8015C		1	102589	08/27/13 00:02	JML	TAL NSH

**Client Sample ID: Trip Blank** 

Date Collected: 08/19/13 00:00

Date Received: 08/21/13 10:07

Lab Sample	ID: 680-93423-13
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Matrix: Water

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	190374	08/31/13 00:12	WPD	TAL PEN

## **Lab Chronicle**

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93423-1

#### Laboratory References:

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

TAL PEN = TestAmerica Pensacola, 3355 McLemore Drive, Pensacola, FL 32514, TEL (850)474-1001

TAL SAV = TestAmerica Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

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					0011.000H		247-	7-4	TS LAB USE					1			<b>20</b> -200-	an sahali an					3-21-ma						Comments & Special Analytical Requirements:			LAB Log Number #	TAL-6006 (0509)
	MATION				743. 89.	LINGR	INCR 6	OG\$2-EX	COMMENTS																	of Custod			pecial Analyti	J.		# Log	INAL COC
5))	SHIPMENT INFORMATION	Shipment Method:	Shipment Tracking No:	Project #:	MDOOD 843.	PM: MEGAN KELLNGR	Email: MEDAN. KERNER @ ORCADIS	Phone: (410)487- 0032		FOR ANALYSIS																980-93423 Chain of Custody			Comments & Spec			Custody Seal #	INVOICE MUST BE SUBMITTED TO CSXT WITH ORIGINAL COC
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	C	) ANA ST		MOTTANGO THE TANGO	CAL PRO	CSXT Project Number: 9415351	CSXT Project Name:	CSXT Contact:	Turnaround Time:	☐ 1 Day Rush	2 Day Rush		Veliverables:		Level IV	SAMPLE INFORMATION			S801-01	SR01-01	58c1-03	560 -03	5801-02	\$ 5801-02	5801-04	SB01-04	5801-06 (1.0-2.0)	S801-06	Relinduished By	Relinquished By:	Relinquished By:	Received By Laboratdry:	RIGINAL - R

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2 Day Rush Standa	Standard 14 Days Other	1 = Hydrochloric Acid 2 = Nitric Acid		5 = Sodium 6 = Other	5 = Sodium Hydroxide 6 = Other	Code	ψ <sub>1</sub>					
	Other Deliv:	Matrix Codes:		SO = Soil		LIQ = Liquid						
ndard (Level II)		GW = Groundwater		SL = Sludge	63		01					
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SAMPLE INFORMATION							<u>}</u>					
	Containers	Sample	Sample Collection	ij.	Filtered	Type Matrix	-					
Sample Identification	Number & Type	Date		Sampler	Y or N or	Comp Code or Grab	2NS					
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coc # 130814-01		Shipment Method: 60 COM	Shipment Tracking No:	Project #: MY ACAKTY 3 ACAL BOOKE	PW: 1/2000 1 3. 10000			COMMENTS   LAB			-																Comments & Special Analytical Requirements:	7.9.0		Custody Seal *. LAB Log Number	CSXT WITH ORIGINAL (
2-354-7858 F: 012-352-0165	97-9	F P: 813-885-7427 F: 813-885-7049 P: 850-474-1001 F: 850-478-2671	P; 716-691-2600 F; 716-961-7991 8-534-5200 F; 708-534-5211		< IVC.	O la Rica	OIIC VIM O		ABETHODS FOR ANALYSIS	228	0 1 £	B) OV AUS	Ro Te	XX   S	- }-	191 129 129	× ×	<del>! - </del>	<del></del>	×	×	××	×	×	×	XX	Date/Time: / 100%	Date/Time:	Date/Time:	LAB USE: Custody Intact	NVOICE MUST BE SUBMITTE
NAY INFORMATION Swantah - 5107 Lafoche Avenue Savannah CA 814/04 P - 619-354-7858	Irive NW, North Canton, OH 44720	Suite 100, Tampa, P.L. 33534 P. 37 Drive, Pensacola, FL 32514 P. 85	C TestAmerica Buffalo - 10 Hazelwood Drive, Suite 106, Amherst, NY 14228 P. 716-691- C TestAmerica Chicago - 2417 Bond Street, University Park, IL 60466 P: 708-634-5200	CONSULTANT INFORMATION	Company 0 / AN	Address: 114 B.0	City, State, Ziph	= Sulfuric Acid Note	sulfate	um Hydroxicle Code	11	dge	SOL = Other Solid		Filtered Type Matrix	YorN Comp Code	2 0000	_	3	2	N 50	ס5   א	N   50	N 50	N + 50	N GRND SO	P	,	A LAC II.		
LABORATORY INFORMATION  Dissibilities Savatual - 5102 LaBoche Ave	North Canton - 4101 Shuffel D	i lanipa - oz 12 Benjamin Rozo, I Pensacola - 3355 McLemore D	ı Buffalo - 10 Hazelwood Drive, : I Chicago - 2417 Bond Street, U.	Proj. State (State of Origin)	PUNSUAICK	al Yand	FNV33682	ص 3:	4.	ic Acid		indwater SL = Sludge te Water Ol = Oil			Sample Collection	Time Sampler	3 1230 11	1235	17 901	77 01111	17 SZH1	1436 LL	1630 LL	1,535	1015 11	77 02.91	Received by:	Heceivedday:	Received By:	Lab Remarks:	1
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	CHAIN OF	# CUSTODY		HMATION	415381	O Earl B	Jahre 1	Standard 6-13 Days	Specify # Days	Other	Other Deliv:	evel II)  EDD Required, Format:		Š					١٠٤)	5.0-5.5	1.0-1.5)	.5.5)	-1.0)	- 5.5)	- 2.0)	- 7.0>	X. 24	January De		CO	BORATORY WITH SAMPLES
		TRANSPORTATION		CSXT PROJECT INFORMATION	CSXT Project Number: 94	CSXT Project Name:	CSXT Contact:	Turnaround Time:	1 Day Rush	3 Day Rush	Deliverables:	CSX1 Standard (Level II)	Level IV	SAMPLE INFORMATION		Sample Identification	7.	Sec. 9 9.0-9.5	5801-03 (1.0-1.5	5801-03 (5.0	SB01-02 (1.0	5301-02 (5.0	SB01-04 (0.5 -1.0	SB0-04 (5.0	SBO1 - 06 (1.5 -	SB1-06 (6.5	Relinquished By:		2) Relinquished By:	Received By Labyrath C.	ORIGINAL - RETURN TO LABORATORY WITH SAMPLES

TAL-6006 (0509

<u>ځ</u> Phone (410) 987-0032 (410) 907- 4847 Email:
Meg AD. Kelliner CAPCABIS - US Comments & Special Analytical Requirements: Project # WWOGOSHIS GOIN GOOH LAB Log Number COMMENTS PM: MEGALS FELLINGE SHIPMENT INFORMATION 1,5.0.0 6-43423 INVOICE MUST BE SUBMITTED TO CSXT WITH ORIGINAL COC Shipment Tracking No. Shipment Method: # 000 Custody Seal-#. METHODS FOR ANALYSIS ☐ TestAmerica North Canton - 4101 Shuffel Drive NW, North Canton, OH 44720 P: 330-497-9396 F: 330-497-0772 ☐ TestAmerica Tampa - 6712 Benjamin Road, Sulte 100, Tampa, FL 33634 P: 813-885-7427 F: 813-885-7049 20112 DiestAmerica Buffalo - 10 Hazelwood Drive, Suite 106, Amherst, NY 14228 P. 716-691-2800 F. 716-961-7991 TestAmerica Chicago - 2417 Bond Street, University Park, IL 60466 P. 708-534-5200 F. 708-534-5211 Custody Intact ☐ TestAmerica Savannah - 5102 LaRoche Avenue, Savannah, GA 31404 P: 912-354-7858 F: 912-352-0165 TestAmerica Pensacola - 3355 McLemore Drive, Pensacola, FL 32514 P: 850-474-1001 F: 850-478-2671 Bend City, State, Zip;
MILLORSVILLE, MD full-suite voc w Fuel oxygenars ( (0928) Address: 1114 BONFIELD 61201 LAB USE: Date/Fime: Date/Time: Date/Time CONSULTANT INFORMATION 194-GRO (8016) Note # 6 X × Pres. Code Company: ARCADIS Code 20 Matrix GRAYD |50 LIQ = Liquid Geno Comp or Grab 6 = Other TREPACCALE Туре 4 = Sodium Thiosulfate 5 ≈ Sodium Hydroxide SOL = Other Solid Filtered Sampler Yor N 3 = Sulfuric Acid Z Z SL = Sludge SO = Soil 0 = 0 Proj. State (State of Origin) M.D. ٢ ۲ LABORATORY INFORMATION Proj. City: LWON: ENV 336 83 Received By: Lab Remarks: Sample Collection Received By: Received By: 645 1650 Time Preservative Codes: 1 = Hydrochloric Acid 0 = No Preservatives SW = Surface Water GW = Groundwater WW = Waste Water Matrix Codes: 2 = Nitric Acid 8-14-13 1000000 6-19-13 Date/Timps Will 1007 RAILYARD Date Sate/Time: \$\2200 Date/Time: // Terrocoe Containers Number & EDD Required, Format: Type • CSXT Project Name: C+O CANN | BRUNSWICK CHAIN OF CUSTODY Standard 6-13 Days Standard 14 Days Specify.# Days ORIGINAL - RETURN TO LABORATORY WITH SAMPLES Other Deliv: CSXT Contact: PANL KURZANSKI Other CSXT Project Number: 94, 538 CSXT PROJECT INFORMATION Sample Identification X 5801-05 (5.5-9.0) 5801-06 (2.0.2.5 CSXT Standard (Level II) SAMPLE INFORMATION Received By Laboral orly Turnaround Time 1 Day Rush 2 Day Rush 3 Day Rush CSXT Stand
Level III
Level IV Level IV Relinquished By: Relinquished By: Relinquished

WASTE (1/2)

# 500 # 500 I	ORMATION	•		INOP & APCANC - US COM		ENTS LAB US	-							-											Comments & Special Analytical Requirements:			LAB Log Number
# 200 T	SHIPMENT INFORMATION Shipment Method: Shipment Tracking No:	Project # MD20 6443	PM: Machan Kayara	Email Mos AN. Kellyop &	1	Γ-	ANALYSIS		· · · · ·		····			· · · · · · · · · · · · · · · · · · ·											Comments & Sp	····	·	Custody Seal-#.
147 101Hp	7858 F. 912-352-0165 330-427-9096 F. 330-497-07 885-7427 F. 813-885-7049 4-1001 F. 850-478-2571 5-891-2500 F. 716-961-7991 5200 F. 708-534-5211	NO		Ruo	LE. MD 21108	F	METHODS FOR ANALYSIS	(9	101		)/08c	  	11	HUI											Date/Fime: / //DZD	Date/Time:	Date/Time:	LAB USE: Custody Imact Custody Seal #. LAB I
La I VO TOSION ON COLUMN Summer Control of the Column Summer Charles of States on the Column Summer Charles on the Charles o	LO reschimenta Savarnian - 5102 Lafloche Avenue, Savannah, GA 51404 Pr. 912-354-77858 Pr. 912-352-70165  [ TestAmerica North Canton - 4101 Shuffel Drive NW, North Canton, OH 44720 Pr. 930-457-9396 Fr. 912-932-7772  [ TestAmerica Langa - 6712 Benjamia Boad, Sulfe 100, Tampa, Fr. 1365-44 Pr. 813-885-7-247 Pr. 813-885-7-049  [ TestAmerica Pensacolar - 8355 McLemore Prive, Pensacola, Fr. 1251-4 Pr. 850-474-1001 Pr. 850-478-2571  [ TestAmerica Buffalo - 10 Hazziwood Drive, Sulte 106, Ambrett, NY 14229 Pr. 716-991-2800 Fr. 716-961-7991  [ TestAmerica Chicago - 2417 Bond Street, University Park, II. 80466 Pr. 708-534-5200 Pr. 708-534-5211	CONSULTANT INFORMATION	Company: ARCADIS	Address: [][U BANGE	Chy. State, Zlp:	Sulfuric Acid Note ■ (	4 = Sodium Thiosulfate Pres.	Code	LIQ = Liquid		OI = Oil SOL = Other Solid		Matrix	Yorn Comp Code	श	x 9 1 N	X 95 N	X .05 Z	X OS N	X 05 🛦 N	N GEAPO SO X	N 1 So X	X OS A N	N Calento So X	Sem Paris	Date	Date	LAB
Y INFORMATION	varnah - 5.10Z LaRoche Avei th Canton - 4.101 Shuffel Di mpa - 67.12 Benjamin Boad, nsacola - 3355 McLemore Di ffalo - 10 Hazelwood Drive, ( fago - 2417 Bond Street, Ui	te of Origin)	Mak		683	odes: 3=		ic Acid	SO = Soil				Collection	Time Sampler	1230 EL	1235	1400	1410	142S CL	1430	1530	1535	<b>→</b>   5191	1620 11	Received By J. J.	Received By:	Received By:	Lab Remarks:
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	TRANSPORTATION CUI	CSXT PROJECT INFORMATION	CSXT Project Number, 94,5381	PO CANFIE		ië.		2 Day Rush CA Standard 14 Days	Deliverables: Other Deliv:	dard (Level II)		SAMPLE INFORMATION		Sample Identification	SB01-01(1,0-2.0)	5801-01 (4.0-10.0)	5801-03 (0.5-1.5)	SBO1-03 (50-6.0)	$\neg$	<b>~</b> 1	S801-04(00-1.0)	SBO1-04 (5.0-6.0)	5801-06 (1.0-2.0)	SBO1_06 (6,5-7.5)	Reilinguistiques	Refinquished By: (4)	Refinquished By:	Received By Laboratory; Dat

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CONTROLLE TREPLANT NECROLLEGY COUNTRY OF THE ACTION OF THE				LABORATOR TestAmenta S	IY INFORMA Ivannati - 5102 L	ABoche Avent	e. Savannah. (	A 31404 P	.912-354-785	8 F-912-352	-mes		# ()			
The Same is a second to the	į	: : : ••	_ - - - - - - - - - - - - -	O TestAmerica N	orth-Canton - 410 mpa - 6712 Benj	n Shuffel Driv amin Road, Si	e NW, North C	anton, OH:44 a, Fl. 33634	720 P: 330-4 P: 813-885-7	97-9396 F:	330-497-077; 185-7049	بئيا	I INFORM	ATION "		
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Personative Codes: 3 = Sulfunc Acid   Note = O   Note = O		CSXT Contact  PAUL KURZA NSK1		LWON:	3643		ity, State, Z	Į Ž	INS D'I	¥ 33	25408		7 6 6 7	32.25	10- N'a+	<u> </u>
1 = No Preservatives		Turnaround Time: Standard 6-13	3 Days	Preservative	Codes:	= Sulfur	Acid	2	e <b>1</b>					MMENTS	3011801	T
1 = Hydrochloric Acid   5 = Sodium Hydroxide   Code   G		)	8	0 = No Prese	rvatives	4 = Sodiur	1 Thiosulfa			METHO	DS FOR A	NALYSIS			200	Т
Matrix Codes: SO = Soil   LIO = Liquid   Street   Stree		<b>Ø</b> 0	Days	1 = Hydrochir 2 = Nitric Acir	ic Acid	5 = Sodiur 6 = Other	n Hydroxide		<u> , , , , , , , , , , , , , , , , , , ,</u>	<i>:</i>			<del> </del>			
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#1978 \$-19-13 1656 LL N Getto SO X  #1978 \$-19-15 1656 LL N Getto SO X  #1978 \$-19-12 1656 LL N Getto SO X  #1978 #1		Sample Identification	Nember & Type	Date	Time		S S						<del></del>		-	
# 976 \$-19-15 1645 LL N Gerpo S X  in the second By the se	:	05(8.5-9.5)		8-19-13	1656	1	ئ 2	₹  }			-		+			<del>.</del>
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ORIGINAL - RETURN TO LABORATORY WITH SAMPI ES			ate/Time*		Lab Remarks:				LAB USE	1		Custody Seal *		AB Loo Mimbo		
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Colorest Notice and Page   State   Colorest Notice   Colorest No		<u> </u>	TestAmerica Pens	acola - 3355 M	min Hoad, Sui Lemore Drive	te 100, Tamp s, Pensacola,	a, Fl. 33634 Fl. 32514 P:	P: 813-84 850-474	35-7427 -1001 F:	: 813-885-7049 350-478-2671	Shipment Method:	ab can	S
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ay Rush   Specify # Days   1 = Hydrocholor Acid   5 = Section Thibasulation   Press   Agenthy # Days   1 = Hydrocholor Acid   5 = Section Thibasulation   Content of 14 Days   1 = Hydrocholor Acid   5 = Section Thibasulation   Content of 14 Days   1 = Hydrocholor Acid   5 = Section Thibasulation   Content of 14 Days   1 = Hydrocholor Acid   5 = Section Thibasulation   Content of 14 Days   1 = Hydrocholor Acid   5 = Section Thibasulation   Content of 14 Days   1 = Hydrocholor Acid   1 = Hydrocholor Ac		13 Days	Preservative (		3 = Sulfuric	Acid	S	1	, ~			COMMENTS	LAB USE
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Sample identification   Containers   Sample Collection   Filtered   Type   Matrix   T = 7	SAMPLE INFORMATION								ار ا ا	**			
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_		LABORATORY INFORMATION	INFORMACION		- 1		1		# つ つ	#		
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VIIVIO V		TestAmerica Tampa - 6712 Benjamin Road, Sulta 100, Tampa, FL 33634	1 - 6712 Benjamin Ro	ad, Sulte 100, Tar	mpa, FL 33634	P: 813-885-7427	27 F. 813-8	F: 813-885-7049		Sarro Ivi		
TRANSPORTATION CUSTODY		estAmerica Pensacola - 8355 McLemore Driva, Pensacola, FL 32514 P: 850-474-1001 F: 850-478-2671	cola - 8355 McLemoi	e Drive, Pensaco	)la, FL 32514 P:	850-474-1001	F: 850-473	-2671	Shipment Method:	:pot		
		☐ TestAmerica Buffalo ☐ TéstAmerica Chicag	10 • 10 Hazelwood Drive, Sulte 106, Amherst, NY 14228     P: 716-691-2600     F. 716-961 go - 2417 Bond Ștreet, University Park, IL 60466     P: 708-534-5200     F. 708-5211	ve, Sulte 106, Arr t, University Park	nherst, NY 14228 c, IL 60466 P: 70	P: 716-691-; 08-534-5200	2500 F. 716 F. 708-534-5	F: 716-961-7991 9-534-5211	Shipment Tracking No:	King No:		
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CSXT Project Number: 941 5381		Proj. City. BRUNSWICK	SWICK	Company:	Company: ARCADIS	9			PM: MEGAL KELLYER	3	LN CR	
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		LWON: ENI 3	3683	City, State	17	SWILLE	23	20	Phone: 410/987-0032	487-00	32 Fax (4	410/900-4340
Turnaround Time: Standard 6-13 Days		Preservative Codes:	odes: 3=St	= Sulfuric Acid	No	Note <b>■</b> 6	ı		-  -	Ö	T/n	LAB USE
Ì	ays	0 = No Preservatives	•	4 ≈ Sodium Thlosulfate		ŝ	METHO	METHODS FOR ANALYSIS	ALYSIS	_		
2 Day Rush Standard 14 Days 3 Day Rush	4 Days	1 = Hydrochlorio 2 = Nitric Acid	Acid	5 = Sodium Hydroxide 6 = Other <b>TSPRACORE</b>	xide Code	de	(09			ļ		
liverables:		Matrix Codes:	SO = Soil	Soil	bind = OL	T		-				
CSXT Standard (Level II)	EDD Beniral Format	GW = Groundwater		SL = Sludge		(911	94c 01					
		SW = Surface Water		SOL = Other Solid	٠	(ی	NO.		•			-
SAMPLE INFORMATION	-		l			02	CK CK	<del></del>		<b>,</b>		
	Containers	Sample	Collection	Filtered	Type Matrix	リシ	प्रव ५०६					
Sample Identification	Number & Type	Date	Time Sampler	YorN	Comp or Grab	-H9T	Encj tali-					
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Heceled By Jaffornick;	Date/Time)	7837	Lab Remarks:	18-5		LAB USE		Custody Intact	Custody Seal-#		LAB Log Number	er
ORIGINAL A RETURN TO LABORATORY WITH SAMPLES	•											

Client: ARCADIS U.S., Inc.

Job Number: 680-93423-1

Login Number: 93423 List Source: TestAmerica Savannah

List Number: 1

Creator: Conner, Keaton

Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>N/A</td> <td></td>	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	False	Received Trip Blank(s) not listed on COC.
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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Client: ARCADIS U.S., Inc. Job Number: 680-93423-1

List Source: TestAmerica Nashville
List Number: 1
List Creation: 08/21/13 01:57 PM

Creator: McBride, Mike

Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>True</td> <td></td>	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
s the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is 6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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Client: ARCADIS U.S., Inc. Job Number: 680-93423-1

List Source: TestAmerica Pensacola
List Number: 1
List Creation: 08/21/13 06:47 PM

Creator: Nak, Deend

Creator: Nak, Deend		
Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>N/A</td> <td></td>	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	0.7°C IR-5
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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Client: ARCADIS U.S., Inc. Job Number: 680-93423-1

Login Number: 93423 List Source: TestAmerica Pensacola

List Number: 2 List Creation: 08/29/13 05:00 PM Creator: Meade, Chris J

Question Answer Comment

Radioactivity wasn't checked or is </= background as measured by a survey meter.

The cooler's custody seal, if present, is intact. Sample custody seals, if present, are intact.

The cooler or samples do not appear to have been compromised or

tampered with.

Samples were received on ice.

Cooler Temperature is acceptable.

Cooler Temperature is recorded.

COC is present.

COC is filled out in ink and legible.

COC is filled out with all pertinent information.

Is the Field Sampler's name present on COC?

There are no discrepancies between the containers received and the COC.

Samples are received within Holding Time.

Sample containers have legible labels.

Containers are not broken or leaking.

Sample collection date/times are provided.

Appropriate sample containers are used.

Sample bottles are completely filled.

Sample Preservation Verified.

There is sufficient vol. for all requested analyses, incl. any requested

MS/MSDs

Containers requiring zero headspace have no headspace or bubble is

<6mm (1/4").

Multiphasic samples are not present.

Samples do not require splitting or compositing.

Residual Chlorine Checked.

TestAmerica Job ID: 680-93423-1

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

## **Laboratory: TestAmerica Savannah**

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

Authority	Program	EPA Region	Certification ID	Expiration Date
	AFCEE		SAVLAB	
A2LA	DoD ELAP		399.01	07-31-14
A2LA	ISO/IEC 17025		399.01	02-28-15
Alabama	State Program	4	41450	06-30-14
Arkansas DEQ	State Program	6	88-0692	02-01-14 *
California	NELAP	9	3217CA	07-31-14 *
Colorado	State Program	8	N/A	12-31-13
Connecticut	State Program	1	PH-0161	03-31-15
Florida	NELAP	4	E87052	06-30-14
GA Dept. of Agriculture	State Program	4	N/A	12-31-13
Georgia	State Program	4	N/A	06-30-14
Georgia	State Program	4	803	06-30-14
Guam	State Program	9	09-005r	06-17-14
Hawaii	State Program	9	N/A	06-30-14
Illinois	NELAP	5	200022	11-30-13
Indiana	State Program	5	N/A	06-30-14
lowa	State Program	7	353	07-01-15
Kentucky	State Program	4	90084	12-31-13
Kentucky (UST)	State Program	4	18	06-30-14
_ouisiana	NELAP	6	30690	06-30-14
Maine	State Program	1	GA00006	08-16-14
Maryland	State Program	3	250	12-31-13
Massachusetts	State Program	1	M-GA006	06-30-14
lichigan	State Program	5	9925	06-30-14
lississippi	State Program	4	N/A	06-30-14
Montana	State Program	8	CERT0081	01-01-14
Nebraska	State Program	7	TestAmerica-Savannah	06-30-14
lew Jersey	NELAP	2	GA769	06-30-14
New Mexico	State Program	6	N/A	06-30-14
New York	NELAP	2	10842	04-01-14
North Carolina DENR	State Program	4	269	12-31-13
North Carolina DENK	State Program	4	13701	07-31-14
Oklahoma	State Program	6	9984	08-31-13 *
Pennsylvania	NELAP	3	68-00474	06-30-14
Puerto Rico		2	GA00006	01-01-14
South Carolina	State Program	4	98001	06-30-13 *
	State Program			
Tennessee	State Program NELAP	4 6	TN02961	06-30-14 11 30 13
Texas		O	T104704185-08-TX	11-30-13
JSDA /irainia	Federal		SAV 3-04	04-07-14
Virginia	NELAP	3	460161	06-14-14
Washington	State Program	10	C1794	06-10-14
West Virginia	State Program	3	9950C	12-31-13
West Virginia DEP	State Program	3	94	09-30-13 *
Wisconsin	State Program	5	999819810	08-31-14
Wyoming	State Program	8	8TMS-L	06-30-14

#### Laboratory: TestAmerica Nashville

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

TestAmerica Savannah

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<sup>\*</sup> Expired certification is currently pending renewal and is considered valid.

TestAmerica Job ID: 680-93423-1

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

## Laboratory: TestAmerica Nashville (Continued)

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

Authority	Program	EPA Region	Certification ID	Expiration Date
A2LA	ISO/IEC 17025		0453.07	12-31-13
AIHA	IHLAP		100790	09-01-13
Alaska (UST)	State Program	10	UST-087	07-24-14
Arizona	State Program	9	AZ0473	05-05-14
Arizona	State Program	9	AZ0473	05-05-14 *
Arkansas DEQ	State Program	6	88-0737	04-25-14
California	NELAP	9	1168CA	10-31-13
Canadian Assoc Lab Accred (CALA)	Canada		3744	03-08-14
Connecticut	State Program	1	PH-0220	12-31-13
Florida	NELAP	4	E87358	06-30-14
Illinois	NELAP	5	200010	12-09-13
lowa	State Program	7	131	05-01-14
Kansas	NELAP	7	E-10229	10-31-13
Kentucky (UST)	State Program	4	19	06-30-14
Louisiana	NELAP	6	30613	06-30-14
Maryland	State Program	3	316	03-31-14
Massachusetts	State Program	1	M-TN032	06-30-14
Minnesota	NELAP	5	047-999-345	12-31-13
Mississippi	State Program	4	N/A	06-30-14
Montana (UST)	State Program	8	NA	01-01-15
Nevada	State Program	9	TN00032	07-31-14
New Hampshire	NELAP	1	2963	10-10-13
New Jersey	NELAP	2	TN965	06-30-14
New York	NELAP	2	11342	04-01-14
North Carolina DENR	State Program	4	387	12-31-13
North Dakota	State Program	8	R-146	06-30-14
Ohio VAP	State Program	5	CL0033	01-19-14
Oklahoma	State Program	6	9412	08-31-14
Oregon	NELAP	10	TN200001	04-29-14
Pennsylvania	NELAP	3	68-00585	06-30-14
Rhode Island	State Program	1	LAO00268	12-30-13
South Carolina	State Program	4	84009 (001)	02-28-14
Tennessee	State Program	4	2008	02-23-14
Texas	NELAP	6	T104704077-09-TX	08-31-14
USDA	Federal		S-48469	11-02-13
Utah	NELAP	8	TN00032	07-31-14
Virginia	NELAP	3	460152	06-14-14
Washington	State Program	10	C789	07-19-14
West Virginia DEP	State Program	3	219	02-28-14
Wisconsin	State Program	5	998020430	08-31-14
Wyoming (UST)	A2LA	8	453.07	12-31-13

## **Laboratory: TestAmerica Pensacola**

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

Authority	Program	EPA Region	Certification ID	Expiration Date
Alabama	State Program	4	40150	06-30-14
Arizona	State Program	9	AZ0710	01-11-14
Arkansas DEQ	State Program	6	88-0689	09-01-13
Florida	NELAP	4	E81010	06-30-14

 $<sup>\</sup>ensuremath{^{\star}}$  Expired certification is currently pending renewal and is considered valid.

TestAmerica Savannah

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# **Certification Summary**

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93423-1

## Laboratory: TestAmerica Pensacola (Continued)

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

Authority	Program	EPA Region	Certification ID	<b>Expiration Date</b>
Georgia	State Program	4	N/A	06-30-14
Illinois	NELAP	5	200041	10-09-13
lowa	State Program	7	367	08-01-14
Kansas	NELAP	7	E-10253	10-31-13
Kentucky (UST)	State Program	4	53	06-30-14
Louisiana	NELAP	6	30976	06-30-14
Maryland	State Program	3	233	09-30-14
Massachusetts	State Program	1	M-FL094	06-30-13 *
Michigan	State Program	5	9912	06-30-13 *
New Jersey	NELAP	2	FL006	06-30-13 *
North Carolina DENR	State Program	4	314	12-31-13
Oklahoma	State Program	6	9810	08-31-14
Pennsylvania	NELAP	3	68-00467	01-31-14
Rhode Island	State Program	1	LAO00307	12-31-13
South Carolina	State Program	4	96026	06-30-13 *
Tennessee	State Program	4	TN02907	06-30-14
Texas	NELAP	6	T104704286-12-5	09-30-13
USDA	Federal		P330-10-00407	12-10-13
Virginia	NELAP	3	460166	06-14-14
West Virginia DEP	State Program	3	136	06-30-14

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<sup>\*</sup> Expired certification is currently pending renewal and is considered valid.

TestAmerica Savannah



THE LEADER IN ENVIRONMENTAL TESTING

# ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Savannah 5102 LaRoche Avenue Savannah, GA 31404 Tel: (912)354-7858

TestAmerica Job ID: 680-93445-1

Client Project/Site: CSX C&O Canal Brunswick, MD

For:

ARCADIS U.S., Inc. 1114 Benfield Blvd. Suite A Millersville, Maryland 21108

Attn: Ms. Megan Kellner

ONONA YORKY

Authorized for release by: 9/11/2013 6:36:08 PM

Lisa Harvey, Project Manager II lisa.harvey@testamericainc.com

.....LINKS .....

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**Have a Question?** 



Visit us at: www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93445-1

Job ID: 680-93445-1

Laboratory: TestAmerica Savannah

Narrative

# CASE NARRATIVE Client: ARCADIS U.S., Inc.

Project: CSX C&O Canal Brunswick, MD Report Number: 680-93445-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

#### **RECEIPT**

The samples were received on 8/21/2013 10:07 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 5 coolers at receipt time were 0.8° C, 2.8° C, 3.2° C, 3.4° C and 3.4° C.

The footage on the COC for the VOCs and GRO is a shorter range than what was indicated for the SVOCs and DRO. For consistancy in reporting moisture values, the specific soil boring was logged in for all tests based on the sample ID and date/time sampled, and were subsequently logged in so as to report at the largest of the depth range.

#### **VOLATILE ORGANIC COMPOUNDS (GC-MS)**

Samples SB01-07 (0.5-1.5) (680-93445-3), SB01-07 (9.0-10.0) (680-93445-4), SB01-08 (1.5-2.5) (680-93445-5), SB01-08 (9.0-10.0) (680-93445-6), SB01-09 (0.0-1.0) (680-93445-7), SB01-09 (4.0-5.0) (680-93445-8), SB01-10 (0.0-1.0) (680-93445-9), SB01-10 (4.0-5.0) (680-93445-10), SB02-01 (0.0-1.0) (680-93445-11), SB02-01 (7.0-8.0) (680-93445-12), SB02-02 (0.0-1.0) (680-93445-13), SB02-02 (4.5-5.5) (680-93445-14), SB02-03 (0.5-1.5) (680-93445-15), SB02-03 (5.0-6.0) (680-93445-16), SB02-04 (0.5-1.5) (680-93445-17), SB02-04 (7.0-8.0) (680-93445-18), SB02-05 (0.5-1.5) (680-93445-19), SB02-05 (7.0-8.0) (680-93445-20), SB02-06 (0.5-1.5) (680-93445-21) and SB02-06 (6.5-7.5) (680-93445-22) were analyzed for Volatile Organic Compounds (GC-MS) in accordance with EPA SW-846 Method 8260B.

Samples PZ01-04 (680-93445-1), PZ01-09 (680-93445-2), TB 130820-1 (680-93445-25) and TB 130820-2 (680-93445-26) were analyzed for Volatile Organic Compounds (GC-MS) in accordance with EPA SW-846 Method 8260B.

#### SEMIVOLATILE ORGANIC COMPOUNDS

Samples SB01-07 (0.5-1.5) (680-93445-3), SB01-07 (9.0-10.0) (680-93445-4), SB01-08 (1.5-2.5) (680-93445-5), SB01-08 (9.0-10.0) (680-93445-6), SB01-09 (0.0-1.0) (680-93445-7), SB01-09 (4.0-5.0) (680-93445-8), SB01-10 (0.0-1.0) (680-93445-9), SB01-10 (4.0-5.0) (680-93445-10), SB02-01 (0.0-1.0) (680-93445-11), SB02-01 (7.0-8.0) (680-93445-12), SB02-02 (0.0-1.0) (680-93445-13), SB02-02 (4.5-5.5) (680-93445-14), SB02-03 (0.5-1.5) (680-93445-15), SB02-03 (5.0-6.0) (680-93445-16), SB02-04 (0.5-1.5) (680-93445-17), SB02-04 (7.0-8.0) (680-93445-18), SB02-05 (0.5-1.5) (680-93445-19), SB02-05 (7.0-8.0) (680-93445-20), SB02-06 (0.5-1.5) (680-93445-21) and SB02-06 (6.5-7.5) (680-93445-22) were analyzed for Semivolatile Organic Compounds (Solid) in accordance with EPA SW-846 Method 8270D.

Samples PZ01-04 (680-93445-1) and PZ01-09 (680-93445-2) were analyzed for Semivolatile Organic Compounds (Aqueous) in accordance with EPA SW-846 Method 8270D.

The following analytes have been identified, in the reference method and/or via historical data, to be poor and/or erratic performers: Famphur, 1,4-Napthaquinone, Methane sulfonate, Benzaldehyde, 1-naphthylamine, 2-naphthylamine, p-Dimethylamino azobenzene, p-phenylenediamine, a,a-dimethylphenethylamine, Methapyriline, 2-picoline (2-methylpyridine), 3,3'-dimethylbenzidine, 3,3'-dichlorobenzidine, Benzaldehyde, Benzoic acid, Dinoseb, Hexachlorophene, Hexachlorocyclopentadiene,

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93445-1

#### Job ID: 680-93445-1 (Continued)

#### Laboratory: TestAmerica Savannah (Continued)

o,o,o-triethylphosphoro-thioate. These analytes may have a %D>60% if the average %D of all the analytes in the initial calibration verification (ICV) is 30%. These analytes may have a %D>60% if the average %D of all the analytes in the continuing calibration verification (CCV) is 30%.

A full list spike was utilized for this method. Due to the large number of spiked analytes, there is a high probability that one or more analytes will recover outside acceptance limits. The laboratory's SOP allows for up to 4 analytes to recover outside criteria for this method when a full list spike is utilized. The LCS associated with batch 290598 had one analyte outside control limits; therefore, re-extraction/re-analysis was not performed. These results have been reported and qualified.

The matrix spike / matrix spike duplicate (MS/MSD) recoveries and precision for sample(s) PZ01-04 (680-93445-1) and SB01-08 (1.5-2.5)MSD (680-93445-5) were outside control limits.

The initial calibration curve analyzed in batch 290775 was outside method criteria for the following analyte(s): Atrazine and Benzidine. As indicated in the reference method, sample analysis may proceed; however, any detection or non-detection for the affected analyte(s) is considered an estimated concentration.

The initial calibration verification (ICV) analyzed in batch 290775 was outside method criteria for the following analyte(s): Benzidine and Benzaldehyde. As indicated in the reference method, sample analysis may proceed; however, any detection for the affected analyte(s) is considered estimated.

Internal standard (ISTD) response for the following sample(s) was outside control limits: PZ01-04 (680-93445-1). The sample(s) was re-analyzed with concurring results. The original set of data has been reported.

The minimum response factor (RF) criteria for the initial calibration (ICAL) analyzed in batch 291413 was outside criteria for the following analyte(s): bis(2-chloroethyl) ether. As indicated in the reference method, sample analysis may proceed; however, any detection or non-detection for the affected analyte(s) is considered estimated.

The initial calibration curve analyzed in batch 291781 was outside method criteria for the following analyte(s): benzoic acid. As indicated in the reference method, sample analysis may proceed; however, any detection or non-detection for the affected analyte(s) is considered an estimated concentration.

The continuing calibration verification (CCV) analyzed in batch 291613 was outside the method criteria for the following analyte(s): 2,2'oxybis[1-chloropropane], 2-Methylphenol, 3&4 Methylphenol, Anthracene, Benzidine, 1,2 Dichlorbenzene, Benzyl alcohol, Butyl benzyl phthalate, Carbazole, Di-n-butyl phthalate, Fluoranthene, Hexachloroethane, N-Nitrosodimethylamine, N-Nitrosodi-n-propylamine, phenol, pyrene, pyridine and Terphenyl-d14. A CCV standard at or below the reporting limit (RL) was analyzed with the affected samples and found to be acceptable. As indicated in the reference method, sample analysis may proceed; however, any detection for the affected analyte(s) is considered estimated.

The continuing calibration verification (CCV) analyzed in batch 291919 was outside the method criteria for the following analyte(s): 1,4 Dioxane, 2,3,4,6 Tetrachlorophenol, 2,4 Dinitrophenol, 2,4 Dinitrotoluene, 4,6-Dintro-2-methylphenol, 4 Nitroaniline, Caprolactum, Fluoranthene, N-Nitrosodimethylamine, and Pyridine. A CCV standard at or below the reporting limit (RL) was analyzed with the affected samples and found to be acceptable. As indicated in the reference method, sample analysis may proceed; however, any detection for the affected analyte(s) is considered estimated.

The initial calibration curve analyzed in batch 291440 was outside method criteria for the following analyte(s): Acetophenone and Butyl benzyl phthalate. As indicated in the reference method, sample analysis may proceed; however, any detection or non-detection for the affected analyte(s) is considered an estimated concentration.

The initial calibration verification (ICV) analyzed in batch 291440 was outside method criteria for the following analyte(s): 1,2,4,5 Tetrachlorobenzene and Di-n-butyl phthalate. As indicated in the reference method, sample analysis may proceed; however, any detection for the affected analyte(s) is considered estimated.

Surrogate recovery for the following sample(s) was outside control limits: SB01-08 (1.5-2.5) (680-93445-5). Re-extraction and/or re-analysis was performed with concurring results. The original analysis has been reported.

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93445-1

#### Job ID: 680-93445-1 (Continued)

#### Laboratory: TestAmerica Savannah (Continued)

Benzo[g,h,i]perylene, Dibenz(a,h)anthracene and Indeno[1,2,3-cd]pyrene were detected in method blank MB 680-290598/21-A at levels that were above the method detection limit but below the reporting limit. The values should be considered estimates, and have been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. Refer to the QC report for details.

#### **GASOLINE RANGE ORGANICS (GRO)**

Samples SB01-07 (0.5-1.5) (680-93445-3), SB01-07 (9.0-10.0) (680-93445-4), SB01-08 (1.5-2.5) (680-93445-5), SB01-08 (9.0-10.0) (680-93445-6), SB01-09 (0.0-1.0) (680-93445-7), SB01-09 (4.0-5.0) (680-93445-8), SB01-10 (0.0-1.0) (680-93445-9), SB01-10 (4.0-5.0) (680-93445-10), SB02-01 (0.0-1.0) (680-93445-11), SB02-01 (7.0-8.0) (680-93445-12), SB02-02 (0.0-1.0) (680-93445-13), SB02-02 (4.5-5.5) (680-93445-14), SB02-03 (0.5-1.5) (680-93445-15), SB02-03 (5.0-6.0) (680-93445-16), SB02-04 (0.5-1.5) (680-93445-17), SB02-04 (7.0-8.0) (680-93445-18), SB02-05 (0.5-1.5) (680-93445-19), SB02-05 (7.0-8.0) (680-93445-20), SB02-06 (0.5-1.5) (680-93445-21) and SB02-06 (6.5-7.5) (680-93445-22) were analyzed for gasoline range organics (GRO) in accordance with EPA SW-846 Method 8015B.

Samples PZ01-04 (680-93445-1) and PZ01-09 (680-93445-2) were analyzed for gasoline range organics (GRO) in accordance with EPA SW-846 Method 8015C.

Due to the nature of this analysis which involves a total area sum over the entire retention time range, manual integrations are routinely performed for target analytes and surrogates to ensure consistent integration.

The tare weights were covered by the client ID labels on 54 of 60 terracores. Tare weights of the vials are used in the calculation of original soil weight.

Method(s) 8015C: Terra core vial 93445-22E (H2O) has a low weight; see batch 680-290368.

Gasoline Range Organics (GRO)-C6-C10 was detected in method blank MB 680-291184/5 at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. Refer to the QC report for details.

Internal standard (ISTD) response for the following samples was outside of acceptance limits: SB02-03 (0.5-1.5) (680-93445-15), SB02-04 (7.0-8.0) (680-93445-18), SB02-05 (0.5-1.5) (680-93445-19), SB01-08 (1.5-2.5) (680-93445-5), SB01-08 (9.0-10.0) (680-93445-6), SB02-01 (0.0-1.0) (680-93445-11), SB01-09 (0.0-1.0) (680-93445-7), SB01-10 (0.0-1.0) (680-93445-9), SB02-02 (0.0-1.0) (680-93445-13), SB02-04 (0.5-1.5) (680-93445-17), SB02-06 (0.5-1.5) (680-93445-21), SB01-07 (9.0-10.0) (680-93445-4). The project shows evidence of matrix interference. Sample(s) were reanalyzed confirming the internal standard reponse outside acceptance limites; data have been reported.

Surrogate recovery for the following samples were outside control limits: SB02-03 (0.5-1.5) (680-93445-15), SB02-05 (0.5-1.5) (680-93445-19), SB01-07 (0.5-1.5) (680-93445-3), SB02-01 (0.0-1.0) (680-93445-11). Evidence of matrix interference is present t hroughout the project; therefore, re-analysis was not performed. Data have been reported.

#### **DIESEL RANGE ORGANICS (DRO) and DRO-SGT**

Samples SB01-07 (0.5-1.5) (680-93445-3), SB01-07 (9.0-10.0) (680-93445-4), SB01-08 (1.5-2.5) (680-93445-5), SB01-08 (9.0-10.0) (680-93445-6), SB01-09 (0.0-1.0) (680-93445-7), SB01-09 (4.0-5.0) (680-93445-8), SB01-10 (0.0-1.0) (680-93445-9), SB01-10 (4.0-5.0) (680-93445-10), SB02-01 (0.0-1.0) (680-93445-11), SB02-01 (7.0-8.0) (680-93445-12), SB02-02 (0.0-1.0) (680-93445-13), SB02-02 (4.5-5.5) (680-93445-14), SB02-03 (0.5-1.5) (680-93445-15), SB02-03 (5.0-6.0) (680-93445-16), SB02-04 (0.5-1.5) (680-93445-17), SB02-04 (7.0-8.0) (680-93445-18), SB02-05 (0.5-1.5) (680-93445-19), SB02-05 (7.0-8.0) (680-93445-20), SB02-06 (0.5-1.5) (680-93445-21) and SB02-06 (6.5-7.5) (680-93445-22) were analyzed for Diesel Range Organics (DRO) in accordance with EPA SW-846 Method 8015C.

Samples PZ01-04 (680-93445-1), PZ01-09 (680-93445-2), PZ01-04 (DRO-SGT) (680-93445-23) and PZ01-09 (DRO-SGT) (680-93445-24) were analyzed for Diesel Range Organics (DRO) in accordance with EPA SW-846 Method 8015C. The samples were prepared and analyzed on 08/31/2013.

Due to the nature of this analysis which involves a total area sum over the entire retention time range, manual integrations are routinely performed for target analytes and surrogates to ensure consistent integration.

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93445-1

Job ID: 680-93445-1 (Continued)

Laboratory: TestAmerica Savannah (Continued)

Diesel Range Organics [C10-C28] and ORO C24-C40 were detected in method blank MB 490-103240/1-A at levels exceeding the reporting limit. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. ORO C24-C40 was detected in method blank MB 490-104094/1-A at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. Refer to the QC report for details.

Internal standard responses were outside of acceptance limits for the following sample(s): SB01-09 (0.0-1.0) (680-93445-7), SB01-09 (4.0-5.0) (680-93445-8), SB01-10 (0.0-1.0) (680-93445-9), SB01-10 (4.0-5.0) (680-93445-10), SB02-01 (0.0-1.0) (680-93445-11), SB02-01 (7.0-8.0) (680-93445-12), SB02-02 (4.5-5.5) (680-93445-14), SB02-03 (0.5-1.5) (680-93445-15), SB02-03 (5.0-6.0) (680-93445-16), SB02-04 (0.5-1.5) (680-93445-17), SB02-04 (7.0-8.0) (680-93445-18), SB02-05 (7.0-8.0) (680-93445-20), SB02-06 (0.5-1.5) (680-93445-21). Samples in this project shows evidence of matrix interference. Samples were reanalyzed confirming the internal standard reponse outside acceptance limites; data have been reported.

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# **Sample Summary**

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93445-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
680-93445-1	PZ01-04	Water	08/20/13 15:40	08/21/13 10:07
680-93445-2	PZ01-09	Water	08/20/13 16:10	08/21/13 10:07
680-93445-3	SB01-07 (0.5-1.5)	Solid	08/20/13 08:30	08/21/13 10:07
680-93445-4	SB01-07 (9.0-10.0)	Solid	08/20/13 08:40	08/21/13 10:07
680-93445-5	SB01-08 (1.5-2.5)	Solid	08/20/13 09:00	08/21/13 10:07
680-93445-6	SB01-08 (9.0-10.0)	Solid	08/20/13 09:10	08/21/13 10:07
680-93445-7	SB01-09 (0.0-1.0)	Solid	08/20/13 09:30	08/21/13 10:07
680-93445-8	SB01-09 (4.0-5.0)	Solid	08/20/13 09:40	08/21/13 10:07
680-93445-9	SB01-10 (0.0-1.0)	Solid	08/20/13 10:15	08/21/13 10:07
680-93445-10	SB01-10 (4.0-5.0)	Solid	08/20/13 10:25	08/21/13 10:07
680-93445-11	SB02-01 (0.0-1.0)	Solid	08/20/13 11:15	08/21/13 10:07
680-93445-12	SB02-01 (7.0-8.0)	Solid	08/20/13 11:25	08/21/13 10:07
680-93445-13	SB02-02 (0.0-1.0)	Solid	08/20/13 11:45	08/21/13 10:07
680-93445-14	SB02-02 (4.5-5.5)	Solid	08/20/13 11:50	08/21/13 10:07
680-93445-15	SB02-03 (0.5-1.5)	Solid	08/20/13 14:10	08/21/13 10:07
680-93445-16	SB02-03 (5.0-6.0)	Solid	08/20/13 14:15	08/21/13 10:07
680-93445-17	SB02-04 (0.5-1.5)	Solid	08/20/13 14:25	08/21/13 10:07
680-93445-18	SB02-04 (7.0-8.0)	Solid	08/20/13 14:30	08/21/13 10:07
680-93445-19	SB02-05 (0.5-1.5)	Solid	08/20/13 14:50	08/21/13 10:07
680-93445-20	SB02-05 (7.0-8.0)	Solid	08/20/13 15:00	08/21/13 10:07
680-93445-21	SB02-06 (0.5-1.5)	Solid	08/20/13 15:25	08/21/13 10:07
680-93445-22	SB02-06 (6.5-7.5)	Solid	08/20/13 15:35	08/21/13 10:07
680-93445-23	PZ01-04 (DRO-SGT)	Water	08/20/13 15:40	08/21/13 10:07
680-93445-24	PZ01-09 (DRO-SGT)	Water	08/20/13 16:10	08/21/13 10:07
680-93445-25	TB 130820-1	Water	08/20/13 00:00	08/21/13 10:07
680-93445-26	TB 130820-2	Water	08/20/13 00:00	08/21/13 10:07

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#### **Method Summary**

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93445-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL PEN
8270D	Semivolatile Organic Compounds (GC/MS)	SW846	TAL SAV
8015C	Nonhalogenated Organics using GC/FID -Modified (Gasoline Range Organics)	SW846	TAL SAV
8015C	Nonhalogenated Organics using GC/FID -Modified (Diesel Range Organics)	SW846	TAL NSH

#### Protocol References:

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

#### Laboratory References:

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

TAL PEN = TestAmerica Pensacola, 3355 McLemore Drive, Pensacola, FL 32514, TEL (850)474-1001

TAL SAV = TestAmerica Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

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#### **Definitions/Glossary**

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93445-1

#### **Qualifiers**

#### **GC/MS VOA**

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

#### **GC/MS Semi VOA**

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
*	LCS or LCSD exceeds the control limits
В	Compound was found in the blank and sample.
X	Surrogate is outside control limits
F	MS/MSD Recovery and/or RPD exceeds the control limits

#### **GC VOA**

Qualifier	Qualifier Description
В	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.
X	Surrogate is outside control limits
00.0	•

#### GC Semi VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.
В	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

These commonly used abbreviations may or may not be present in this report.

#### **Glossary**

Abbreviation

¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93445-1

Lab Sample ID: 680-93445-1

Matrix: Water

Client Sample ID: PZ01-04 Date Collected: 08/20/13 15:40

Date Received: 08/21/13 10:07

Analyte		Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
Acetone	25	U	25	3.5	ug/L			08/28/13 22:50	
Benzene	1.0	U	1.0	0.34	ug/L			08/28/13 22:50	
Bromodichloromethane	1.0	U	1.0	0.50	ug/L			08/28/13 22:50	
Bromoform	5.0	U	5.0	0.71	ug/L			08/28/13 22:50	
Carbon disulfide	1.0	U	1.0	0.50	ug/L			08/28/13 22:50	
Carbon tetrachloride	1.0	U	1.0	0.50	ug/L			08/28/13 22:50	
Chlorobenzene	1.0	U	1.0	0.50	ug/L			08/28/13 22:50	
Chloroethane	1.0	U	1.0	0.76	ug/L			08/28/13 22:50	
Chloroform	1.0	U	1.0	0.60	ug/L			08/28/13 22:50	
Chloromethane	1.0	U	1.0	0.83	ug/L			08/28/13 22:50	
cis-1,2-Dichloroethene	1.0	U	1.0	0.50	ug/L			08/28/13 22:50	
cis-1,3-Dichloropropene	5.0	U	5.0	0.50	ug/L			08/28/13 22:50	
Cyclohexane	1.0	U	1.0	0.50	ug/L			08/28/13 22:50	
Dibromochloromethane	1.0	U	1.0	0.50	•			08/28/13 22:50	
1,2-Dibromo-3-Chloropropane	5.0	U	5.0		ug/L			08/28/13 22:50	
1,2-Dichlorobenzene	1.0		1.0		ug/L			08/28/13 22:50	
1,3-Dichlorobenzene	1.0		1.0		ug/L			08/28/13 22:50	
1,4-Dichlorobenzene	1.0		1.0		ug/L			08/28/13 22:50	
Dichlorodifluoromethane	1.0		1.0		ug/L			08/28/13 22:50	
1,1-Dichloroethane	1.0		1.0		ug/L			08/28/13 22:50	
1,2-Dichloroethane	1.0		1.0		ug/L			08/28/13 22:50	
1,1-Dichloroethene	1.0		1.0		ug/L			08/28/13 22:50	
1,2-Dichloropropane	1.0		1.0		ug/L			08/28/13 22:50	
Diisopropyl ether	1.0		1.0	0.50	ug/L			08/28/13 22:50	
Ethylbenzene	1.0		1.0	0.50	ug/L			08/28/13 22:50	
•	1.0				_				
Ethylene Dibromide			1.0	0.50	ug/L			08/28/13 22:50	
Ethyl tert-butyl ether	1.0		1.0	0.68	ug/L			08/28/13 22:50	
2-Hexanone	25		25	3.1	•			08/28/13 22:50	
Isopropylbenzene	1.0		1.0	0.53	•			08/28/13 22:50	
Methyl acetate	5.0		5.0	2.1				08/28/13 22:50	
Methylcyclohexane	1.0		1.0	0.50	•			08/28/13 22:50	
Methylene Chloride	5.0		5.0		•			08/28/13 22:50	
Methyl Ethyl Ketone	25		25		ug/L			08/28/13 22:50	
methyl isobutyl ketone	25		25		ug/L			08/28/13 22:50	
Methyl tert-butyl ether	0.87		1.0		ug/L			08/28/13 22:50	
Naphthalene	1.0		1.0		ug/L			08/28/13 22:50	
Styrene	1.0	U	1.0	1.0	ug/L			08/28/13 22:50	
Tert-amyl methyl ether	1.0	U	1.0		ug/L			08/28/13 22:50	
tert-Butyl alcohol	5.0	U	5.0		ug/L			08/28/13 22:50	
1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.50	ug/L			08/28/13 22:50	
Tetrachloroethene	1.0	U	1.0	0.58	ug/L			08/28/13 22:50	
Toluene	1.0	U	1.0	0.70	ug/L			08/28/13 22:50	
rans-1,2-Dichloroethene	1.0	U	1.0	0.50	ug/L			08/28/13 22:50	
trans-1,3-Dichloropropene	5.0	U	5.0	0.50	ug/L			08/28/13 22:50	
1,2,4-Trichlorobenzene	1.0	U	1.0	0.82	ug/L			08/28/13 22:50	
1,1,1-Trichloroethane	1.0	U	1.0	0.50	ug/L			08/28/13 22:50	
1,1,2-Trichloroethane	5.0	U	5.0		ug/L			08/28/13 22:50	
Trichloroethene	1.0		1.0		ug/L			08/28/13 22:50	
Trichlorofluoromethane	1.0		1.0		ug/L			08/28/13 22:50	

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93445-1

Lab Sample ID: 680-93445-1

Matrix: Water

Client Sample ID: PZ01-04

Date Collected: 08/20/13 15:40 Date Received: 08/21/13 10:07

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	1.0	0.50	ug/L			08/28/13 22:50	1
Vinyl chloride	1.0	U	1.0	0.50	ug/L			08/28/13 22:50	1
Xylenes, Total	10	U	10	1.6	ug/L			08/28/13 22:50	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	99		78 - 118			-		08/28/13 22:50	1
Dibromofluoromethane	103		81 - 121					08/28/13 22:50	1
Toluene-d8 (Surr)	99		80 - 120					08/28/13 22:50	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	2.1	J	9.5	0.72	ug/L		08/22/13 14:46	08/26/13 21:55	1
Acenaphthylene	9.5	U	9.5	0.81	ug/L		08/22/13 14:46	08/26/13 21:55	1
Acetophenone	9.5	U	9.5	0.54	ug/L		08/22/13 14:46	08/26/13 21:55	1
Anthracene	9.5	U	9.5	0.66	ug/L		08/22/13 14:46	08/26/13 21:55	1
Atrazine	9.5	U	9.5	1.1	ug/L		08/22/13 14:46	08/26/13 21:55	1
Benzaldehyde	9.5	U	9.5	1.0	ug/L		08/22/13 14:46	08/26/13 21:55	1
Benzo[a]anthracene	9.5	U	9.5	0.52	ug/L		08/22/13 14:46	08/26/13 21:55	1
Benzo[a]pyrene	3.2	J	9.5	0.68	ug/L		08/22/13 14:46	08/26/13 21:55	1
Benzo[b]fluoranthene	9.5	U	9.5	2.5	ug/L		08/22/13 14:46	08/26/13 21:55	1
Benzo[g,h,i]perylene	12		9.5	0.83	ug/L		08/22/13 14:46	08/26/13 21:55	1
Benzo[k]fluoranthene	2.0	J	9.5	1.1	ug/L		08/22/13 14:46	08/26/13 21:55	1
1,1'-Biphenyl	9.5	U	9.5	0.55	ug/L		08/22/13 14:46	08/26/13 21:55	1
Bis(2-chloroethoxy)methane	9.5		9.5	0.90	ug/L		08/22/13 14:46	08/26/13 21:55	1
Bis(2-chloroethyl)ether	9.5	U	9.5	1.0	ug/L		08/22/13 14:46	08/26/13 21:55	1
bis (2-chloroisopropyl) ether	9.5	U	9.5	0.74	ug/L		08/22/13 14:46	08/26/13 21:55	1
Bis(2-ethylhexyl) phthalate	9.5		9.5	1.5	ug/L		08/22/13 14:46	08/26/13 21:55	1
4-Bromophenyl phenyl ether	9.5	U	9.5	0.73	ug/L		08/22/13 14:46	08/26/13 21:55	1
Butyl benzyl phthalate	9.5	U	9.5	1.1	ug/L		08/22/13 14:46	08/26/13 21:55	1
Caprolactam	9.5	U	9.5	0.75	ug/L		08/22/13 14:46	08/26/13 21:55	1
Carbazole	9.5		9.5		_		08/22/13 14:46	08/26/13 21:55	1
4-Chloroaniline	19	U	19	2.1	ug/L		08/22/13 14:46	08/26/13 21:55	1
4-Chloro-3-methylphenol	9.5	U	9.5	0.95			08/22/13 14:46	08/26/13 21:55	1
2-Chloronaphthalene	9.5	U	9.5		ug/L		08/22/13 14:46	08/26/13 21:55	1
2-Chlorophenol	9.5	U	9.5		ug/L		08/22/13 14:46	08/26/13 21:55	1
4-Chlorophenyl phenyl ether	9.5		9.5	0.80	ug/L		08/22/13 14:46	08/26/13 21:55	1
Chrysene	9.5	U	9.5	0.49	ug/L		08/22/13 14:46	08/26/13 21:55	1
Dibenz(a,h)anthracene	9.8		9.5	0.95	ug/L		08/22/13 14:46	08/26/13 21:55	1
Dibenzofuran	9.5		9.5		ug/L		08/22/13 14:46	08/26/13 21:55	1
3,3'-Dichlorobenzidine	57	U	57	29	ug/L		08/22/13 14:46	08/26/13 21:55	1
2,4-Dichlorophenol	9.5	U	9.5		•		08/22/13 14:46	08/26/13 21:55	1
Diethyl phthalate	9.5		9.5		ug/L		08/22/13 14:46	08/26/13 21:55	1
2,4-Dimethylphenol	9.5	U	9.5		ug/L		08/22/13 14:46	08/26/13 21:55	1
Dimethyl phthalate	9.5	U	9.5		ug/L		08/22/13 14:46	08/26/13 21:55	1
Di-n-butyl phthalate	9.5		9.5	0.79	ug/L		08/22/13 14:46	08/26/13 21:55	1
4,6-Dinitro-2-methylphenol	48		48		ug/L		08/22/13 14:46	08/26/13 21:55	1
2,4-Dinitrophenol	48	U	48		ug/L		08/22/13 14:46	08/26/13 21:55	1
2,4-Dinitrotoluene	9.5		9.5	1.1			08/22/13 14:46	08/26/13 21:55	1
2,6-Dinitrotoluene	9.5		9.5	1.0	ug/L		08/22/13 14:46	08/26/13 21:55	1
Di-n-octyl phthalate	9.5		9.5		ug/L		08/22/13 14:46	08/26/13 21:55	1

TestAmerica Savannah

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

Lab Sample ID: 680-93445-1

TestAmerica Job ID: 680-93445-1

Matrix: Water

Client Sample ID: PZ01-04

Date Collected: 08/20/13 15:40 Date Received: 08/21/13 10:07

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued) Result Qualifier **MDL** Unit Dil Fac Analyte D Prepared Analyzed Fluoranthene 9.5 Ū 9.5 08/22/13 14:46 08/26/13 21:55 0.70 ug/L 9.5 08/22/13 14:46 08/26/13 21:55 **Fluorene** 3.7 J 0.91 ug/L Hexachlorobenzene 9.5 U 9.5 0.75 ug/L 08/22/13 14:46 08/26/13 21:55 Hexachlorobutadiene 9.5 U 9.5 08/22/13 14:46 08/26/13 21:55 0.59 ug/L Hexachlorocyclopentadiene 9.5 U 9.5 2.4 ug/L 08/22/13 14:46 08/26/13 21:55 08/26/13 21:55 Hexachloroethane 95 U 9.5 0.72 ug/L 08/22/13 14:46 9.5 0.95 ug/L 08/22/13 14:46 08/26/13 21:55 Indeno[1,2,3-cd]pyrene 1.8 9.5 U 9.5 08/22/13 14:46 Isophorone 0.86 ug/L 08/26/13 21:55 9.5 U 2-Methylnaphthalene 9.5 0.74 ug/L 08/22/13 14:46 08/26/13 21:55 2-Methylphenol 9.5 U 9.5 0.85 ug/L 08/22/13 14:46 08/26/13 21:55 3 & 4 Methylphenol 9.5 U 9.5 1.2 ug/L 08/22/13 14:46 08/26/13 21:55 08/22/13 14:46 Naphthalene 9.5 U 9.5 0.67 ug/L 08/26/13 21:55 2-Nitroaniline 48 U 48 1.2 ug/L 08/22/13 14:46 08/26/13 21:55 3-Nitroaniline 48 48 4.8 ug/L 08/22/13 14:46 08/26/13 21:55 4-Nitroaniline 48 U 48 08/22/13 14:46 08/26/13 21:55 4.8 ug/L Nitrobenzene 9.5 U 9.5 ug/L 08/22/13 14:46 08/26/13 21:55 0.70 2-Nitrophenol 9.5 U 9.5 0.72 ug/L 08/22/13 14:46 08/26/13 21:55 4-Nitrophenol 48 U 48 08/22/13 14:46 08/26/13 21:55 1.8 ug/L 9.5 U 9.5 08/22/13 14:46 08/26/13 21:55 N-Nitrosodi-n-propylamine 0.69 ug/L N-Nitrosodiphenylamine 9.5 U 9.5 88.0 ug/L 08/22/13 14:46 08/26/13 21:55 08/22/13 14:46 08/26/13 21:55 Pentachlorophenol 48 U 48 1.9 ug/L 95 U 9.5 Phenanthrene 0.73 ug/L 08/22/13 14:46 08/26/13 21:55 Phenol 9.5 U 9.5 0.79 ug/L 08/22/13 14:46 08/26/13 21:55 Pyrene 9.5 U 9.5 0.60 ug/L 08/22/13 14:46 08/26/13 21:55 2,4,5-Trichlorophenol 9.5 U 9.5 1.1 ug/L 08/22/13 14:46 08/26/13 21:55 2,4,6-Trichlorophenol 9.5 U 9.5 0.81 ug/L 08/22/13 14:46 08/26/13 21:55

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl	69		38 - 130	08/22/13 14:46	08/26/13 21:55	1
2-Fluorophenol (Surr)	68		25 - 130	08/22/13 14:46	08/26/13 21:55	1
Nitrobenzene-d5 (Surr)	67		39 - 130	08/22/13 14:46	08/26/13 21:55	1
Phenol-d5 (Surr)	54		25 - 130	08/22/13 14:46	08/26/13 21:55	1
Terphenyl-d14 (Surr)	70		10 - 143	08/22/13 14:46	08/26/13 21:55	1
2,4,6-Tribromophenol (Surr)	93		31 - 141	08/22/13 14:46	08/26/13 21:55	1

Method: 8015C - Nonhalogenated Organics using GC/FID -Modified (Gasoline Range Organics)

Analyte Result Qualifier RL MDL Unit D Prepared Analyzed Dil Fac
Gasoline Range Organics (GRO) 34 J B 50 11 ug/L 08/28/13 12:34 1

-C6-C10

 Surrogate
 %Recovery a.a.a-Trifluorotoluene
 Qualifier
 Limits
 Prepared
 Analyzed
 Dil Fac

 08/28/13 12:34
 1

Method: 8015C - Nonhalogenate	d Organics usi	ng GC/FID	-Modified (Dies	el Range	Organic	s)			
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	1500		95	27	ug/L		08/31/13 08:40	08/31/13 19:20	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
o-Terphenyl (Surr)	91		50 - 150				08/31/13 08:40	08/31/13 19:20	1

TestAmerica Savannah

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93445-1

Client Sample ID: PZ01-09

Date Collected: 08/20/13 16:10 Date Received: 08/21/13 10:07 Lab Sample ID: 680-93445-2

Matrix: Water

Analyte		Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil F
Acetone	25	U	25	3.5	ug/L			08/28/13 23:15	
Benzene	1.0	U	1.0	0.34	ug/L			08/28/13 23:15	
Bromodichloromethane	1.0	U	1.0	0.50	ug/L			08/28/13 23:15	
Bromoform	5.0	U	5.0	0.71	ug/L			08/28/13 23:15	
Carbon disulfide	1.0	U	1.0	0.50	ug/L			08/28/13 23:15	
Carbon tetrachloride	1.0	U	1.0	0.50	ug/L			08/28/13 23:15	
Chlorobenzene	1.0	U	1.0	0.50	ug/L			08/28/13 23:15	
Chloroethane	1.0	U	1.0	0.76	ug/L			08/28/13 23:15	
Chloroform	1.0	U	1.0	0.60	ug/L			08/28/13 23:15	
Chloromethane	1.0	U	1.0	0.83	ug/L			08/28/13 23:15	
cis-1,2-Dichloroethene	1.0	U	1.0	0.50	ug/L			08/28/13 23:15	
cis-1,3-Dichloropropene	5.0	U	5.0	0.50	ug/L			08/28/13 23:15	
Cyclohexane	1.0	U	1.0	0.50	ug/L			08/28/13 23:15	
Dibromochloromethane	1.0	U	1.0	0.50	ug/L			08/28/13 23:15	
,2-Dibromo-3-Chloropropane	5.0	U	5.0	0.78	ug/L			08/28/13 23:15	
,2-Dichlorobenzene	1.0	U	1.0	0.50	ug/L			08/28/13 23:15	
,3-Dichlorobenzene	1.0	U	1.0	0.54	ug/L			08/28/13 23:15	
,4-Dichlorobenzene	1.0	U	1.0		ug/L			08/28/13 23:15	
Dichlorodifluoromethane	1.0	U	1.0		ug/L			08/28/13 23:15	
,1-Dichloroethane	1.0	U	1.0		ug/L			08/28/13 23:15	
,2-Dichloroethane	1.0	U	1.0		ug/L			08/28/13 23:15	
,1-Dichloroethene	1.0		1.0		ug/L			08/28/13 23:15	
,2-Dichloropropane	1.0		1.0		ug/L			08/28/13 23:15	
Diisopropyl ether	1.0		1.0		ug/L			08/28/13 23:15	
Ethylbenzene	1.0		1.0		ug/L			08/28/13 23:15	
Ethylene Dibromide	1.0		1.0		ug/L			08/28/13 23:15	
Ethyl tert-butyl ether	1.0		1.0	0.68	ug/L			08/28/13 23:15	
2-Hexanone	25		25		ug/L			08/28/13 23:15	
sopropylbenzene	1.0		1.0		ug/L			08/28/13 23:15	
Methyl acetate	5.0		5.0	2.1	ug/L			08/28/13 23:15	
/lethylcyclohexane	1.0		1.0		ug/L			08/28/13 23:15	
Methylene Chloride	5.0		5.0		ug/L			08/28/13 23:15	
Methyl Ethyl Ketone	25		25		ug/L			08/28/13 23:15	
nethyl isobutyl ketone	25		25		ug/L			08/28/13 23:15	
Methyl tert-butyl ether	3.0	Ü	1.0		ug/L			08/28/13 23:15	
Naphthalene	1.0	П	1.0		ug/L			08/28/13 23:15	
Styrene	1.0		1.0		ug/L			08/28/13 23:15	
ert-amyl methyl ether	1.0		1.0		ug/L			08/28/13 23:15	
ert-Butyl alcohol	5.0		5.0		ug/L ug/L			08/28/13 23:15	
,1,2,2-Tetrachloroethane	1.0		1.0		ug/L ug/L			08/28/13 23:15	
etrachloroethene	1.0		1.0		ug/L ug/L			08/28/13 23:15	
oluene	1.0		1.0		ug/L ug/L			08/28/13 23:15	
rans-1,2-Dichloroethene	1.0				ug/L ug/L			08/28/13 23:15	
	5.0		1.0 5.0		ug/L ug/L				
rans-1,3-Dichloropropene					-			08/28/13 23:15	
,2,4-Trichlorobenzene	1.0		1.0		ug/L			08/28/13 23:15	
,1,1-Trichloroethane	1.0		1.0		ug/L			08/28/13 23:15	
,1,2-Trichloroethane	5.0		5.0		ug/L			08/28/13 23:15	
Frichloroethene Frichlorofluoromethane	1.0		1.0	0.50	ug/L			08/28/13 23:15 08/28/13 23:15	

TestAmerica Savannah

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

Lab Sample ID: 680-93445-2

TestAmerica Job ID: 680-93445-1

Matrix: Water

Client Sample ID: PZ01-09

Date Collected: 08/20/13 16:10 Date Received: 08/21/13 10:07

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	1.0	0.50	ug/L			08/28/13 23:15	1
Vinyl chloride	1.0	U	1.0	0.50	ug/L			08/28/13 23:15	1
Xylenes, Total	10	U	10	1.6	ug/L			08/28/13 23:15	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	96		78 - 118			-		08/28/13 23:15	1
Dibromofluoromethane	103		81 - 121					08/28/13 23:15	1
Toluene-d8 (Surr)	99		80 <sub>-</sub> 120					08/28/13 23:15	1

Method: 8270D - Semivolatile O	rganic Compou	nds (GC/M	S)						
Analyte	•	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	9.7	U	9.7	0.74	ug/L	<del></del>	08/22/13 14:46	08/26/13 22:20	1
Acenaphthylene	9.7	U	9.7	0.82	ug/L		08/22/13 14:46	08/26/13 22:20	1
Acetophenone	9.7	U	9.7	0.55	ug/L		08/22/13 14:46	08/26/13 22:20	1
Anthracene	9.7	U	9.7	0.67	ug/L		08/22/13 14:46	08/26/13 22:20	1
Atrazine	9.7	U	9.7	1.2	ug/L		08/22/13 14:46	08/26/13 22:20	1
Benzaldehyde	9.7	U	9.7	1.1	ug/L		08/22/13 14:46	08/26/13 22:20	1
Benzo[a]anthracene	9.7	U	9.7	0.53	ug/L		08/22/13 14:46	08/26/13 22:20	1
Benzo[a]pyrene	9.7	U	9.7	0.69	ug/L		08/22/13 14:46	08/26/13 22:20	1
Benzo[b]fluoranthene	9.7	U	9.7	2.5	ug/L		08/22/13 14:46	08/26/13 22:20	1
Benzo[g,h,i]perylene	9.7	U	9.7	0.84	ug/L		08/22/13 14:46	08/26/13 22:20	1
Benzo[k]fluoranthene	9.7	U	9.7	1.2	ug/L		08/22/13 14:46	08/26/13 22:20	1
1,1'-Biphenyl	9.7	U	9.7	0.56	ug/L		08/22/13 14:46	08/26/13 22:20	1
Bis(2-chloroethoxy)methane	9.7	U	9.7	0.91	ug/L		08/22/13 14:46	08/26/13 22:20	1
Bis(2-chloroethyl)ether	9.7	U	9.7	1.1	ug/L		08/22/13 14:46	08/26/13 22:20	1
bis (2-chloroisopropyl) ether	9.7	U	9.7	0.76	ug/L		08/22/13 14:46	08/26/13 22:20	1
Bis(2-ethylhexyl) phthalate	9.7		9.7		ug/L		08/22/13 14:46	08/26/13 22:20	1
4-Bromophenyl phenyl ether	9.7	U	9.7	0.75	ug/L		08/22/13 14:46	08/26/13 22:20	1
Butyl benzyl phthalate	9.7	U	9.7		ug/L		08/22/13 14:46	08/26/13 22:20	1
Caprolactam	9.7		9.7		ug/L		08/22/13 14:46	08/26/13 22:20	1
Carbazole	9.7	U	9.7	0.69	ug/L		08/22/13 14:46	08/26/13 22:20	1
4-Chloroaniline	19	U	19	2.1	ug/L		08/22/13 14:46	08/26/13 22:20	1
4-Chloro-3-methylphenol	9.7		9.7	0.97	ug/L		08/22/13 14:46	08/26/13 22:20	1
2-Chloronaphthalene	9.7	U	9.7		ug/L		08/22/13 14:46	08/26/13 22:20	1
2-Chlorophenol	9.7	U	9.7	0.84	-		08/22/13 14:46	08/26/13 22:20	1
4-Chlorophenyl phenyl ether	9.7		9.7		ug/L		08/22/13 14:46	08/26/13 22:20	1
Chrysene	9.7	U	9.7		ug/L		08/22/13 14:46	08/26/13 22:20	1
Dibenz(a,h)anthracene	9.7	U	9.7		ug/L		08/22/13 14:46	08/26/13 22:20	1
Dibenzofuran	9.7		9.7		ug/L		08/22/13 14:46	08/26/13 22:20	1
3,3'-Dichlorobenzidine	58	U	58		ug/L		08/22/13 14:46	08/26/13 22:20	1
2,4-Dichlorophenol	9.7	U	9.7	1.1	ug/L		08/22/13 14:46	08/26/13 22:20	1
Diethyl phthalate	9.7		9.7		ug/L		08/22/13 14:46	08/26/13 22:20	1
2,4-Dimethylphenol	9.7	U	9.7		ug/L		08/22/13 14:46	08/26/13 22:20	1
Dimethyl phthalate	9.7		9.7		ug/L		08/22/13 14:46	08/26/13 22:20	1
Di-n-butyl phthalate	9.7		9.7	0.81	ug/L		08/22/13 14:46	08/26/13 22:20	1
4,6-Dinitro-2-methylphenol	49		49		ug/L		08/22/13 14:46	08/26/13 22:20	1
2,4-Dinitrophenol	49		49		ug/L		08/22/13 14:46	08/26/13 22:20	1
2,4-Dinitrotoluene	9.7		9.7		ug/L ug/L		08/22/13 14:46	08/26/13 22:20	
2,6-Dinitrotoluene	9.7		9.7	1.1	ug/L		08/22/13 14:46	08/26/13 22:20	1
Di-n-octyl phthalate	9.7		9.7		ug/L		08/22/13 14:46	08/26/13 22:20	1

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93445-1

Client Sample ID: PZ01-09

Date Received: 08/21/13 10:07

Surrogate

o-Terphenyl (Surr)

Lab Sample ID: 680-93445-2 Date Collected: 08/20/13 16:10

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoranthene	9.7	U	9.7	0.72	ug/L		08/22/13 14:46	08/26/13 22:20	
Fluorene	9.7	U	9.7	0.93	ug/L		08/22/13 14:46	08/26/13 22:20	
Hexachlorobenzene	9.7	U	9.7	0.77	ug/L		08/22/13 14:46	08/26/13 22:20	
Hexachlorobutadiene	9.7	U	9.7	0.60	ug/L		08/22/13 14:46	08/26/13 22:20	
Hexachlorocyclopentadiene	9.7	U	9.7	2.4	ug/L		08/22/13 14:46	08/26/13 22:20	
Hexachloroethane	9.7	U	9.7	0.74	ug/L		08/22/13 14:46	08/26/13 22:20	
Indeno[1,2,3-cd]pyrene	9.7	U	9.7	0.97	ug/L		08/22/13 14:46	08/26/13 22:20	
Isophorone	9.7	U	9.7	0.87	ug/L		08/22/13 14:46	08/26/13 22:20	
2-Methylnaphthalene	9.7	U	9.7	0.76	ug/L		08/22/13 14:46	08/26/13 22:20	
2-Methylphenol	9.7	U	9.7	0.86	ug/L		08/22/13 14:46	08/26/13 22:20	,
3 & 4 Methylphenol	9.7	U	9.7	1.3	ug/L		08/22/13 14:46	08/26/13 22:20	
Naphthalene	9.7	U	9.7	0.68	ug/L		08/22/13 14:46	08/26/13 22:20	
2-Nitroaniline	49	U	49	1.3	ug/L		08/22/13 14:46	08/26/13 22:20	
3-Nitroaniline	49	U	49	4.9	ug/L		08/22/13 14:46	08/26/13 22:20	
4-Nitroaniline	49	U	49	4.9	ug/L		08/22/13 14:46	08/26/13 22:20	
Nitrobenzene	9.7	U	9.7	0.71	ug/L		08/22/13 14:46	08/26/13 22:20	• • • • • • • •
2-Nitrophenol	9.7	U	9.7	0.74	ug/L		08/22/13 14:46	08/26/13 22:20	
4-Nitrophenol	49	U	49	1.8	ug/L		08/22/13 14:46	08/26/13 22:20	
N-Nitrosodi-n-propylamine	9.7	U	9.7	0.70	ug/L		08/22/13 14:46	08/26/13 22:20	
N-Nitrosodiphenylamine	9.7	U	9.7	0.89	ug/L		08/22/13 14:46	08/26/13 22:20	
Pentachlorophenol	49	U	49	1.9	ug/L		08/22/13 14:46	08/26/13 22:20	
Phenanthrene	9.7	U	9.7	0.75	ug/L		08/22/13 14:46	08/26/13 22:20	• • • • • • • •
Phenol	9.7	U	9.7	0.81	ug/L		08/22/13 14:46	08/26/13 22:20	
Pyrene	9.7	U	9.7	0.61	ug/L		08/22/13 14:46	08/26/13 22:20	
2,4,5-Trichlorophenol	9.7	U	9.7	1.2	ug/L		08/22/13 14:46	08/26/13 22:20	,
2,4,6-Trichlorophenol	9.7	U	9.7		ug/L		08/22/13 14:46	08/26/13 22:20	,
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fa
2-Fluorobiphenyl	78		38 - 130				08/22/13 14:46	08/26/13 22:20	
2-Fluorophenol (Surr)	71		25 _ 130				08/22/13 14:46	08/26/13 22:20	
Nitrobenzene-d5 (Surr)	77		39 - 130				08/22/13 14:46	08/26/13 22:20	
Phenol-d5 (Surr)	66		25 - 130				08/22/13 14:46	08/26/13 22:20	
Terphenyl-d14 (Surr)	53		10 - 143				08/22/13 14:46	08/26/13 22:20	1
2,4,6-Tribromophenol (Surr)	90		31 - 141				08/22/13 14:46	08/26/13 22:20	:
Method: 8015C - Nonhalogenate	d Organics usi	ng GC/FID ·	-Modified (Gaso	line Ran	ge Organ	ics)			
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO) -C6-C10	18	JB	50	11	ug/L			08/28/13 12:59	•
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fa
a,a,a-Trifluorotoluene	92		70 - 130					08/28/13 12:59	
Method: 8015C - Nonhalogenate	d Organics usi	ng GC/FID	-Modified (Diese	l Range	Organics	)			
Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fa
Diesel Range Organics [C10-C28]	140		95	27	ug/L		08/31/13 08:40	08/31/13 19:36	

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Analyzed

Prepared

08/31/13 08:40 08/31/13 19:36

Limits

50 - 150

%Recovery Qualifier

83

Dil Fac

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93445-1

Client Sample ID: SB01-07 (0.5-1.5)

Lab Sample ID: 680-93445-3

Date Collected: 08/20/13 08:30

Date Received: 08/21/13 10:07

Matrix: Solid
Percent Solids: 71.7

Method: 8260B - Volatile Organio Analyte	•	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
Acetone	_ <del></del>		45	13	ug/Kg	— <del>-</del>	08/23/13 16:13	08/27/13 17:55	
Benzene	9.0		9.0	0.88	ug/Kg	₽	08/23/13 16:13	08/27/13 17:55	
Bromodichloromethane	9.0		9.0	1.5	ug/Kg	₽	08/23/13 16:13	08/27/13 17:55	
Bromoform	9.0		9.0	1.1	ug/Kg		08/23/13 16:13	08/27/13 17:55	
Bromomethane	9.0		9.0	2.5	ug/Kg	₽	08/23/13 16:13	08/27/13 17:55	
Carbon disulfide	9.0		9.0		ug/Kg	.⇔	08/23/13 16:13	08/27/13 17:55	
Carbon tetrachloride	9.0		9.0	3.1	ug/Kg		08/23/13 16:13	08/27/13 17:55	
Chlorobenzene	9.0		9.0	0.94	ug/Kg ug/Kg		08/23/13 16:13	08/27/13 17:55	
Chloroethane	9.0		9.0		ug/Kg ug/Kg	₩	08/23/13 16:13	08/27/13 17:55	
Chloroform	9.0		9.0	1.1	ug/Kg		08/23/13 16:13	08/27/13 17:55	
Chloromethane	9.0	_	9.0	1.8	ug/Kg ug/Kg	₩	08/23/13 16:13	08/27/13 17:55	
cis-1,2-Dichloroethene	9.0		9.0	1.4	ug/Kg ug/Kg	₩	08/23/13 16:13	08/27/13 17:55	
	9.0						08/23/13 16:13	08/27/13 17:55	
cis-1,3-Dichloropropene			9.0		ug/Kg	~ ⇔			
Cyclohexane	9.0 9.0		9.0	1.7	ug/Kg	₩	08/23/13 16:13 08/23/13 16:13	08/27/13 17:55	
Dibromochloromethane			9.0	1.6	ug/Kg	¥	08/23/13 16:13	08/27/13 17:55	
1,2-Dibromo-3-Chloropropane	9.0 9.0		9.0	6.0	ug/Kg	₩		08/27/13 17:55	
1,2-Dichlorobenzene		_	9.0	1.3	ug/Kg		08/23/13 16:13	08/27/13 17:55	
1,3-Dichlorobenzene	9.0		9.0	1.7	ug/Kg	<u>"</u> .	08/23/13 16:13	08/27/13 17:55	
1,4-Dichlorobenzene	9.0		9.0	1.5	ug/Kg		08/23/13 16:13	08/27/13 17:55	
Dichlorodifluoromethane	9.0		9.0	2.3	ug/Kg	Ψ.	08/23/13 16:13	08/27/13 17:55	
1,1-Dichloroethane	9.0		9.0	1.5	ug/Kg	<u>.</u>	08/23/13 16:13	08/27/13 17:55	
1,2-Dichloroethane	9.0		9.0	1.5	ug/Kg	₽-	08/23/13 16:13	08/27/13 17:55	
1,1-Dichloroethene	9.0		9.0	1.4	ug/Kg	₽.	08/23/13 16:13	08/27/13 17:55	
1,2-Dichloropropane	9.0		9.0	1.3	ug/Kg		08/23/13 16:13	08/27/13 17:55	
Diisopropyl ether	9.0	U	9.0	0.99	ug/Kg	₽	08/23/13 16:13	08/27/13 17:55	
Ethylbenzene	9.0	U	9.0	1.1	ug/Kg	₽	08/23/13 16:13	08/27/13 17:55	
Ethylene Dibromide	9.0	U	9.0	0.87	ug/Kg		08/23/13 16:13	08/27/13 17:55	
Ethyl tert-butyl ether	9.0	U	9.0	1.0	ug/Kg	₽	08/23/13 16:13	08/27/13 17:55	
2-Hexanone	45	U	45	9.0	ug/Kg	₽	08/23/13 16:13	08/27/13 17:55	
sopropylbenzene	9.0	U	9.0	1.2	ug/Kg	₩	08/23/13 16:13	08/27/13 17:55	
Methyl acetate	9.0	U	9.0	8.3	ug/Kg	\$	08/23/13 16:13	08/27/13 17:55	
Methylcyclohexane	9.0	U	9.0	1.6	ug/Kg	₩	08/23/13 16:13	08/27/13 17:55	
Methylene Chloride	27	U	27	18	ug/Kg	₽	08/23/13 16:13	08/27/13 17:55	
Methyl Ethyl Ketone	45	U	45	7.4	ug/Kg	₽	08/23/13 16:13	08/27/13 17:55	
methyl isobutyl ketone	45	U	45	7.2	ug/Kg	₩	08/23/13 16:13	08/27/13 17:55	
Methyl tert-butyl ether	9.0	U	9.0	1.8	ug/Kg	₽	08/23/13 16:13	08/27/13 17:55	
Naphthalene	9.0	U	9.0		ug/Kg		08/23/13 16:13	08/27/13 17:55	
Styrene	9.0	U	9.0	1.4	ug/Kg	₩	08/23/13 16:13	08/27/13 17:55	
Fert-amyl methyl ether	9.0	U	9.0	0.79	ug/Kg	₩	08/23/13 16:13	08/27/13 17:55	
ert-Butyl alcohol	9.0		9.0		ug/Kg		08/23/13 16:13	08/27/13 17:55	
1,1,2,2-Tetrachloroethane	9.0		9.0	1.3	ug/Kg	₩	08/23/13 16:13	08/27/13 17:55	
Tetrachloroethene	9.0		9.0		ug/Kg	₽	08/23/13 16:13	08/27/13 17:55	
Foluene	9.0		9.0		ug/Kg	 ₽	08/23/13 16:13	08/27/13 17:55	
rans-1,2-Dichloroethene	9.0		9.0	1.4	ug/Kg ug/Kg	₽	08/23/13 16:13	08/27/13 17:55	
rans-1,3-Dichloropropene	9.0		9.0		ug/Kg ug/Kg	₽	08/23/13 16:13	08/27/13 17:55	
1,2,4-Trichlorobenzene	9.0		9.0		ug/Kg ug/Kg		08/23/13 16:13	08/27/13 17:55	
, ,	9.0					₩			
I,1,1-Trichloroethane			9.0		ug/Kg		08/23/13 16:13	08/27/13 17:55	
1,1,2-Trichloroethane Trichloroethene	9.0		9.0		ug/Kg ug/Kg	 \$	08/23/13 16:13 08/23/13 16:13	08/27/13 17:55 08/27/13 17:55	

TestAmerica Savannah

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93445-1

Client Sample ID: SB01-07 (0.5-1.5)

Date Collected: 08/20/13 08:30

Lab Sample ID: 680-93445-3

Matrix: Solid

Date Received: 08/21/13 10:07 Percent Solids: 71.7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichlorofluoromethane	2.4	J	9.0	1.7	ug/Kg	₩	08/23/13 16:13	08/27/13 17:55	1
1,1,2-Trichloro-1,2,2-trifluoroethane	9.0	U	9.0	3.6	ug/Kg	₽	08/23/13 16:13	08/27/13 17:55	1
Vinyl chloride	9.0	U	9.0	1.7	ug/Kg	₽	08/23/13 16:13	08/27/13 17:55	1
Xylenes, Total	18	U	18	3.4	ug/Kg	₽	08/23/13 16:13	08/27/13 17:55	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	99		72 - 122				08/23/13 16:13	08/27/13 17:55	1
Dibromofluoromethane	105		79 - 123				08/23/13 16:13	08/27/13 17:55	1
Toluene-d8 (Surr)	97		80 - 120				08/23/13 16:13	08/27/13 17:55	1

- Columnia - Columnia	37		00 - 120				00/23/13 10.13	00/21/13 17:55	,
Method: 8270D - Semivolatile O	•	•	•	MDI	1114		Dunnand	Austral	D!! F
Analyte		Qualifier J	RL 450	MDL 80		— <del>D</del>	Prepared 08/23/13 13:40	Analyzed 08/30/13 01:07	Dil Fac
Benzaldehyde	450	-	450 450		ug/Kg	₩			1
Phenol  Pia/2 chloroothyl) other	450		450 450		ug/Kg		08/23/13 13:40	08/30/13 01:07	1 1
Bis(2-chloroethyl)ether				62	ug/Kg	<del>*</del>	08/23/13 13:40	08/30/13 01:07	
2-Chlorophenol	450		450		ug/Kg	₩	08/23/13 13:40	08/30/13 01:07	1
2-Methylphenol	450		450	37	ug/Kg	<b>~</b>	08/23/13 13:40	08/30/13 01:07	1
bis (2-chloroisopropyl) ether	450		450	41	ug/Kg		08/23/13 13:40	08/30/13 01:07	1
Acetophenone	74		450	39	ug/Kg	*	08/23/13 13:40	08/30/13 01:07	1
3 & 4 Methylphenol	450		450	59	ug/Kg	*	08/23/13 13:40	08/30/13 01:07	1
N-Nitrosodi-n-propylamine	450		450	44	ug/Kg	<u></u>	08/23/13 13:40	08/30/13 01:07	1
Hexachloroethane	450		450	39	ug/Kg	*	08/23/13 13:40	08/30/13 01:07	1
Nitrobenzene	450		450	36	ug/Kg	₩	08/23/13 13:40	08/30/13 01:07	1
Isophorone	450	U	450	45	ug/Kg		08/23/13 13:40	08/30/13 01:07	1
2-Nitrophenol	450	U	450	57	ug/Kg	₩	08/23/13 13:40	08/30/13 01:07	1
2,4-Dimethylphenol	450	U	450	61	ug/Kg	₩	08/23/13 13:40	08/30/13 01:07	1
Bis(2-chloroethoxy)methane	450	U	450	54	ug/Kg	₩	08/23/13 13:40	08/30/13 01:07	1
2,4-Dichlorophenol	450	U	450	48	ug/Kg	₩	08/23/13 13:40	08/30/13 01:07	1
Naphthalene	490		450	41	ug/Kg	₩	08/23/13 13:40	08/30/13 01:07	1
4-Chloroaniline	910	U *	910	72	ug/Kg	₽	08/23/13 13:40	08/30/13 01:07	1
Hexachlorobutadiene	450	U	450	50	ug/Kg	₩	08/23/13 13:40	08/30/13 01:07	1
Caprolactam	450	U	450	91	ug/Kg	₩	08/23/13 13:40	08/30/13 01:07	1
4-Chloro-3-methylphenol	450	U	450	48	ug/Kg	₩	08/23/13 13:40	08/30/13 01:07	1
2-Methylnaphthalene	570		450	52	ug/Kg		08/23/13 13:40	08/30/13 01:07	1
Hexachlorocyclopentadiene	450	U	450	57	ug/Kg	₩	08/23/13 13:40	08/30/13 01:07	1
2,4,6-Trichlorophenol	450	U	450	40	ug/Kg	₩	08/23/13 13:40	08/30/13 01:07	1
2,4,5-Trichlorophenol	450	U	450	48	ug/Kg		08/23/13 13:40	08/30/13 01:07	1
1,1'-Biphenyl	1000	U	1000	1000	ug/Kg	₩	08/23/13 13:40	08/30/13 01:07	1
2-Chloronaphthalene	450	U	450	48	ug/Kg	₽	08/23/13 13:40	08/30/13 01:07	1
2-Nitroaniline	2300	U	2300	62	ug/Kg	ф	08/23/13 13:40	08/30/13 01:07	1
Dimethyl phthalate	450	U	450	47	ug/Kg	₩	08/23/13 13:40	08/30/13 01:07	1
2,6-Dinitrotoluene	450	U	450	58	ug/Kg	₩	08/23/13 13:40	08/30/13 01:07	1
Acenaphthylene	450		450	50	ug/Kg		08/23/13 13:40	08/30/13 01:07	1
3-Nitroaniline	2300	U	2300	63	ug/Kg	₽	08/23/13 13:40	08/30/13 01:07	1
Acenaphthene	450	U	450		ug/Kg	₩	08/23/13 13:40	08/30/13 01:07	1
2,4-Dinitrophenol	2300		2300	1100	ug/Kg		08/23/13 13:40	08/30/13 01:07	1
4-Nitrophenol	2300		2300	450	ug/Kg	₽	08/23/13 13:40	08/30/13 01:07	1
Dibenzofuran	200		450		ug/Kg	₩	08/23/13 13:40	08/30/13 01:07	. 1
2,4-Dinitrotoluene	450		450	68	ug/Kg	· · · · · · · · · · · · · · · ·	08/23/13 13:40	08/30/13 01:07	
	450		450				08/23/13 13:40	08/30/13 01:07	1
Diethyl phthalate	450	U	400	51	ug/Kg	~	00/23/13 13:40	00/30/13 01:07	1

TestAmerica Savannah

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11

TestAmerica Job ID: 680-93445-1

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB01-07 (0.5-1.5)

Date Collected: 08/20/13 08:30 Date Received: 08/21/13 10:07

ORO C24-C40

o-Terphenyl (Surr)

Surrogate

Lab Sample ID: 680-93445-3

Matrix: Solid

Percent Solids: 71.7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluorene	450	U	450	50	ug/Kg	<del></del>	08/23/13 13:40	08/30/13 01:07	1
4-Chlorophenyl phenyl ether	450	U	450	61	ug/Kg	₽	08/23/13 13:40	08/30/13 01:07	1
4-Nitroaniline	2300	U	2300	68	ug/Kg	₩	08/23/13 13:40	08/30/13 01:07	1
4,6-Dinitro-2-methylphenol	2300	U	2300	230	ug/Kg	₩	08/23/13 13:40	08/30/13 01:07	1
N-Nitrosodiphenylamine	450	U	450	45	ug/Kg	₽	08/23/13 13:40	08/30/13 01:07	1
4-Bromophenyl phenyl ether	450	U	450	50	ug/Kg	₽	08/23/13 13:40	08/30/13 01:07	1
Hexachlorobenzene	450	U	450	54	ug/Kg	₽	08/23/13 13:40	08/30/13 01:07	1
Atrazine	450	U	450	32	ug/Kg	₽	08/23/13 13:40	08/30/13 01:07	1
Pentachlorophenol	2300	U	2300	450	ug/Kg	₽	08/23/13 13:40	08/30/13 01:07	1
Phenanthrene	750		450	37	ug/Kg	₽	08/23/13 13:40	08/30/13 01:07	1
Anthracene	71	J	450	34	ug/Kg	₽	08/23/13 13:40	08/30/13 01:07	1
Carbazole	45	J	450	41	ug/Kg	₽	08/23/13 13:40	08/30/13 01:07	1
Di-n-butyl phthalate	450	U	450	41	ug/Kg	₩	08/23/13 13:40	08/30/13 01:07	1
Fluoranthene	750		450	44	ug/Kg	₩.	08/23/13 13:40	08/30/13 01:07	1
Pyrene	450		450	37	ug/Kg	₽	08/23/13 13:40	08/30/13 01:07	1
Butyl benzyl phthalate	450	U	450	36	ug/Kg	₽	08/23/13 13:40	08/30/13 01:07	1
3,3'-Dichlorobenzidine	910	U	910	39	ug/Kg		08/23/13 13:40	08/30/13 01:07	1
Benzo[a]anthracene	280	J	450	37	ug/Kg	₽	08/23/13 13:40	08/30/13 01:07	1
Chrysene	440	J	450	29	ug/Kg	₽	08/23/13 13:40	08/30/13 01:07	1
Bis(2-ethylhexyl) phthalate	450	U	450	40	ug/Kg	ф.	08/23/13 13:40	08/30/13 01:07	1
Di-n-octyl phthalate	450	U	450	40	ug/Kg	₽	08/23/13 13:40	08/30/13 01:07	1
Benzo[b]fluoranthene	500		450	52	ug/Kg	₽	08/23/13 13:40	08/30/13 01:07	1
Benzo[k]fluoranthene	180	J	450	90	ug/Kg	ф.	08/23/13 13:40	08/30/13 01:07	1
Benzo[a]pyrene	280	J	450		ug/Kg	₽	08/23/13 13:40	08/30/13 01:07	1
Indeno[1,2,3-cd]pyrene	320	JB	450	39	ug/Kg	₽	08/23/13 13:40	08/30/13 01:07	1
Dibenz(a,h)anthracene	240	JB	450	54	ug/Kg	ф.	08/23/13 13:40	08/30/13 01:07	1
Benzo[g,h,i]perylene	320	JB	450	30	ug/Kg	₽	08/23/13 13:40	08/30/13 01:07	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	61	-	46 - 130				08/23/13 13:40	08/30/13 01:07	1
2-Fluorobiphenyl	76		58 - 130				08/23/13 13:40	08/30/13 01:07	1
Terphenyl-d14 (Surr)	82		60 - 130				08/23/13 13:40	08/30/13 01:07	1
Phenol-d5 (Surr)	50		49 - 130				08/23/13 13:40	08/30/13 01:07	1
2-Fluorophenol (Surr)	47		40 - 130				08/23/13 13:40	08/30/13 01:07	1
2,4,6-Tribromophenol (Surr)	59		58 - 130				08/23/13 13:40	08/30/13 01:07	1
Method: 8015C - Nonhalogenate	ed Organics usi	na GC/FID	-Modified (Gaso	oline Ran	ige Organ	ics)			
Analyte	_	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Constitut Danes Owneries (CDO)	28000		13000	960	ug/Kg	**	08/22/13 10:07	08/27/13 17:48	1
Gasoline Range Organics (GRO) -C6-C10									
	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
-C6-C10		Qualifier X	70 - 131				<b>Prepared</b> 08/22/13 10:07	Analyzed 08/27/13 17:48	Dil Fac
-C6-C10 Surrogate		X	70 - 131	el Range	Organics	s)			
-C6-C10  Surrogate a,a,a-Trifluorotoluene	20 ed Organics usi	X	70 - 131	_	Organics Unit ug/Kg	S)			

TestAmerica Savannah

08/31/13 21:43

Analyzed

08/31/13 21:43

08/31/13 08:51

Prepared

08/31/13 08:51

6700

Limits

50 - 150

1900 ug/Kg

25000 B

%Recovery Qualifier

76

Dil Fac

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

Lab Sample ID: 680-93445-4

TestAmerica Job ID: 680-93445-1

Matrix: Solid

Percent Solids: 74.4

Client Sample ID: SB01-07 (9.0-10.0)

Date Collected: 08/20/13 08:40 Date Received: 08/21/13 10:07

Method: 8260B - Volatile Organi	c Compounds	(GC/MS)							
Analyte		Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
Acetone	110		29	8.3	ug/Kg	<del>-</del>	08/23/13 16:13	08/27/13 18:18	
Benzene	5.7	U	5.7	0.56	ug/Kg	₩	08/23/13 16:13	08/27/13 18:18	
Bromodichloromethane	5.7	U	5.7	0.96	ug/Kg	₩	08/23/13 16:13	08/27/13 18:18	
3romoform	5.7	U	5.7	0.72	ug/Kg	₽	08/23/13 16:13	08/27/13 18:18	
Bromomethane	5.7	U	5.7	1.6	ug/Kg	₩	08/23/13 16:13	08/27/13 18:18	
Carbon disulfide	5.7	U	5.7	1.4	ug/Kg	₩	08/23/13 16:13	08/27/13 18:18	
Carbon tetrachloride	5.7	U	5.7	1.9	ug/Kg		08/23/13 16:13	08/27/13 18:18	
Chlorobenzene	5.7	U	5.7	0.59	ug/Kg	₩	08/23/13 16:13	08/27/13 18:18	
Chloroethane	5.7	U	5.7	2.2	ug/Kg	₩	08/23/13 16:13	08/27/13 18:18	
Chloroform	5.7	U	5.7	0.67	ug/Kg		08/23/13 16:13	08/27/13 18:18	
Chloromethane	5.7	U	5.7	1.1	ug/Kg	₩	08/23/13 16:13	08/27/13 18:18	
cis-1,2-Dichloroethene	5.7	U	5.7	0.87	ug/Kg	₩	08/23/13 16:13	08/27/13 18:18	
cis-1,3-Dichloropropene	5.7	U	5.7	1.4	ug/Kg	ф.	08/23/13 16:13	08/27/13 18:18	
Cyclohexane	5.7	U	5.7	1.1	ug/Kg	₩	08/23/13 16:13	08/27/13 18:18	
Dibromochloromethane	5.7		5.7	0.99	ug/Kg	₽	08/23/13 16:13	08/27/13 18:18	
1,2-Dibromo-3-Chloropropane	5.7		5.7	3.8	ug/Kg		08/23/13 16:13	08/27/13 18:18	
1,2-Dichlorobenzene	5.7		5.7	0.81	ug/Kg	₽	08/23/13 16:13	08/27/13 18:18	
1,3-Dichlorobenzene	5.7		5.7	1.1	ug/Kg	₽	08/23/13 16:13	08/27/13 18:18	
1.4-Dichlorobenzene	5.7		5.7		ug/Kg		08/23/13 16:13	08/27/13 18:18	
Dichlorodifluoromethane	5.7		5.7	1.5	ug/Kg	₩	08/23/13 16:13	08/27/13 18:18	
1,1-Dichloroethane	5.7		5.7	0.95	ug/Kg	₩	08/23/13 16:13	08/27/13 18:18	
1,2-Dichloroethane	5.7		5.7		ug/Kg		08/23/13 16:13	08/27/13 18:18	
1,1-Dichloroethene	5.7		5.7	0.86	ug/Kg ug/Kg	₽	08/23/13 16:13	08/27/13 18:18	
1,2-Dichloropropane	5.7		5.7	0.84		₽	08/23/13 16:13	08/27/13 18:18	
	5.7		5.7		ug/Kg ug/Kg		08/23/13 16:13	08/27/13 18:18	
Diisopropyl ether	5.7		5.7 5.7				08/23/13 16:13	08/27/13 18:18	
Ethylbenzene Ethylono Dibromido	5.7		5.7	0.70	ug/Kg				
Ethylene Dibromide				0.55	ug/Kg		08/23/13 16:13	08/27/13 18:18	
Ethyl tert-butyl ether	5.7		5.7	0.64	ug/Kg	₩	08/23/13 16:13	08/27/13 18:18	
2-Hexanone	29		29	5.7	ug/Kg		08/23/13 16:13	08/27/13 18:18	
sopropylbenzene	5.7		5.7	0.78	ug/Kg	<u></u>	08/23/13 16:13	08/27/13 18:18	
Methyl acetate	5.7	U	5.7		ug/Kg	*	08/23/13 16:13	08/27/13 18:18	
Methylcyclohexane	18		5.7	0.99	ug/Kg		08/23/13 16:13	08/27/13 18:18	
Methylene Chloride	17		17	11	ug/Kg	<u></u> .	08/23/13 16:13	08/27/13 18:18	
Methyl Ethyl Ketone	23		29	4.7	ug/Kg	₽	08/23/13 16:13	08/27/13 18:18	
methyl isobutyl ketone	29		29		ug/Kg	*	08/23/13 16:13	08/27/13 18:18	
Methyl tert-butyl ether	2.1		5.7		ug/Kg		08/23/13 16:13	08/27/13 18:18	
Naphthalene	5.7		5.7		ug/Kg	**	08/23/13 16:13	08/27/13 18:18	
Styrene	5.7		5.7	0.87	ug/Kg	**	08/23/13 16:13	08/27/13 18:18	
Tert-amyl methyl ether	5.7	U	5.7	0.50	ug/Kg		08/23/13 16:13	08/27/13 18:18	
tert-Butyl alcohol	5.7	U	5.7	3.9	ug/Kg	₩	08/23/13 16:13	08/27/13 18:18	
1,1,2,2-Tetrachloroethane	5.7	U	5.7	0.82	ug/Kg	₩	08/23/13 16:13	08/27/13 18:18	
Tetrachloroethene	5.7	U	5.7	0.96	ug/Kg	₩	08/23/13 16:13	08/27/13 18:18	
Toluene	5.7	U	5.7	0.80	ug/Kg	₽	08/23/13 16:13	08/27/13 18:18	
rans-1,2-Dichloroethene	5.7	U	5.7	0.87	ug/Kg	₽	08/23/13 16:13	08/27/13 18:18	
trans-1,3-Dichloropropene	5.7	U	5.7	1.0	ug/Kg	≎	08/23/13 16:13	08/27/13 18:18	
1,2,4-Trichlorobenzene	5.7	U	5.7	0.83	ug/Kg		08/23/13 16:13	08/27/13 18:18	
1,1,1-Trichloroethane	5.7	U	5.7	1.3	ug/Kg	₽	08/23/13 16:13	08/27/13 18:18	
1,1,2-Trichloroethane	5.7	U	5.7	1.0	ug/Kg	₩	08/23/13 16:13	08/27/13 18:18	
Trichloroethene	5.7		5.7	0.55	ug/Kg	· · · · · · · · · · · · · · · · · · ·	08/23/13 16:13	08/27/13 18:18	

TestAmerica Savannah

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93445-1

Client Sample ID: SB01-07 (9.0-10.0) Lab Sample ID: 680-93445-4

Date Collected: 08/20/13 08:40 Matrix: Solid Date Received: 08/21/13 10:07 Percent Solids: 74.4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichlorofluoromethane	5.7	U	5.7	1.1	ug/Kg	₩	08/23/13 16:13	08/27/13 18:18	1
1,1,2-Trichloro-1,2,2-trifluoroethane	5.7	U	5.7	2.3	ug/Kg	₽	08/23/13 16:13	08/27/13 18:18	1
Vinyl chloride	5.7	U	5.7	1.0	ug/Kg	₽	08/23/13 16:13	08/27/13 18:18	1
Xylenes, Total	11	U	11	2.2	ug/Kg	₩	08/23/13 16:13	08/27/13 18:18	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	98		72 - 122				08/23/13 16:13	08/27/13 18:18	1
Dibromofluoromethane	104		79 - 123				08/23/13 16:13	08/27/13 18:18	1
Toluene-d8 (Surr)	97		80 - 120				08/23/13 16:13	08/27/13 18:18	1

-							00.20.70.70.70	00/2///01/01/0	,
Method: 8270D - Semivolatile Orga	•	•	•						
Analyte		Qualifier	RL	MDL		D	Prepared	Analyzed	Dil Fac
Benzaldehyde	440		440	77	ug/Kg	<u></u>	08/23/13 13:40	09/03/13 15:11	1
Phenol	440		440	45	ug/Kg	₩.	08/23/13 13:40	09/03/13 15:11	1
Bis(2-chloroethyl)ether	440		440	60	ug/Kg	₩	08/23/13 13:40	09/03/13 15:11	1
2-Chlorophenol	440		440	53	ug/Kg	₩	08/23/13 13:40	09/03/13 15:11	1
2-Methylphenol	440		440	36	ug/Kg	₩	08/23/13 13:40	09/03/13 15:11	1
bis (2-chloroisopropyl) ether	440	U	440	40	ug/Kg	₩	08/23/13 13:40	09/03/13 15:11	1
Acetophenone	440	U	440	37	ug/Kg	₩	08/23/13 13:40	09/03/13 15:11	1
3 & 4 Methylphenol	440	U	440	57	ug/Kg	₩	08/23/13 13:40	09/03/13 15:11	1
N-Nitrosodi-n-propylamine	440	U	440	42	ug/Kg	₩	08/23/13 13:40	09/03/13 15:11	1
Hexachloroethane	440	U	440	37	ug/Kg	₽	08/23/13 13:40	09/03/13 15:11	1
Nitrobenzene	440	U	440	35	ug/Kg	₩	08/23/13 13:40	09/03/13 15:11	1
Isophorone	440	U	440	44	ug/Kg	₩	08/23/13 13:40	09/03/13 15:11	1
2-Nitrophenol	440	U	440	54	ug/Kg	₽	08/23/13 13:40	09/03/13 15:11	1
2,4-Dimethylphenol	440	U	440	58	ug/Kg	₩	08/23/13 13:40	09/03/13 15:11	1
Bis(2-chloroethoxy)methane	440	U	440	52	ug/Kg	₩	08/23/13 13:40	09/03/13 15:11	1
2,4-Dichlorophenol	440	U	440	46	ug/Kg	₩	08/23/13 13:40	09/03/13 15:11	1
Naphthalene	440	U	440	40	ug/Kg	₩	08/23/13 13:40	09/03/13 15:11	1
4-Chloroaniline	880	U *	880	69	ug/Kg	₩	08/23/13 13:40	09/03/13 15:11	1
Hexachlorobutadiene	440	U	440	48	ug/Kg	₩.	08/23/13 13:40	09/03/13 15:11	1
Caprolactam	440	U	440	88	ug/Kg	₩	08/23/13 13:40	09/03/13 15:11	1
4-Chloro-3-methylphenol	440	U	440	46	ug/Kg	₩	08/23/13 13:40	09/03/13 15:11	1
2-Methylnaphthalene	440	U	440	50	ug/Kg		08/23/13 13:40	09/03/13 15:11	1
Hexachlorocyclopentadiene	440	U	440	54	ug/Kg	₩	08/23/13 13:40	09/03/13 15:11	1
2,4,6-Trichlorophenol	440	U	440	38	ug/Kg	₩	08/23/13 13:40	09/03/13 15:11	1
2,4,5-Trichlorophenol	440	U	440	46	ug/Kg		08/23/13 13:40	09/03/13 15:11	1
1,1'-Biphenyl	980	U	980	980	ug/Kg	₩	08/23/13 13:40	09/03/13 15:11	1
2-Chloronaphthalene	440	U	440	46	ug/Kg	₩	08/23/13 13:40	09/03/13 15:11	1
2-Nitroaniline	2300	U	2300	60	ug/Kg		08/23/13 13:40	09/03/13 15:11	1
Dimethyl phthalate	440	U	440	45	ug/Kg	₩	08/23/13 13:40	09/03/13 15:11	1
2,6-Dinitrotoluene	440	U	440	56	ug/Kg	₩	08/23/13 13:40	09/03/13 15:11	1
Acenaphthylene	440	U	440	48	ug/Kg		08/23/13 13:40	09/03/13 15:11	1
3-Nitroaniline	2300	U	2300	61	ug/Kg	₩	08/23/13 13:40	09/03/13 15:11	1
Acenaphthene	440	U	440	54	ug/Kg	₽	08/23/13 13:40	09/03/13 15:11	1
2,4-Dinitrophenol	2300		2300	1100	ug/Kg		08/23/13 13:40	09/03/13 15:11	1
4-Nitrophenol	2300		2300	440	ug/Kg	₽	08/23/13 13:40	09/03/13 15:11	1
Dibenzofuran	440		440		ug/Kg	₩	08/23/13 13:40	09/03/13 15:11	1
2,4-Dinitrotoluene	440		440		ug/Kg		08/23/13 13:40	09/03/13 15:11	· · · · · · · · · · · · · · · · · · ·
Diethyl phthalate	440		440		ug/Kg	<b>#</b>	08/23/13 13:40	09/03/13 15:11	1
Dictity philialate	440	5	440	49	agritg		00/20/10 10.40	03/03/13 13.11	'

TestAmerica Savannah

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Client: ARCADIS U.S., Inc.

Surrogate

o-Terphenyl (Surr)

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB01-07 (9.0-10.0)

Date Collected: 08/20/13 08:40 Date Received: 08/21/13 10:07

Lab Sample ID: 680-93445-4

Matrix: Solid

Percent Solids: 74.4

Analyte		Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Fluorene	440	U	440	48	ug/Kg	₩	08/23/13 13:40	09/03/13 15:11	
4-Chlorophenyl phenyl ether	440	U	440	58	ug/Kg	₩	08/23/13 13:40	09/03/13 15:11	•
4-Nitroaniline	2300	U	2300	65	ug/Kg	₩	08/23/13 13:40	09/03/13 15:11	•
4,6-Dinitro-2-methylphenol	2300	U	2300	230	ug/Kg		08/23/13 13:40	09/03/13 15:11	1
N-Nitrosodiphenylamine	440	U	440	44	ug/Kg	₩	08/23/13 13:40	09/03/13 15:11	1
4-Bromophenyl phenyl ether	440	U	440	48	ug/Kg	₩	08/23/13 13:40	09/03/13 15:11	1
Hexachlorobenzene	440	U	440	52	ug/Kg	₩	08/23/13 13:40	09/03/13 15:11	1
Atrazine	440	U	440	31	ug/Kg	₩	08/23/13 13:40	09/03/13 15:11	1
Pentachlorophenol	2300	U	2300	440	ug/Kg	₩	08/23/13 13:40	09/03/13 15:11	1
Phenanthrene	440	U	440	36	ug/Kg	₩	08/23/13 13:40	09/03/13 15:11	1
Anthracene	440	U	440	33	ug/Kg	*	08/23/13 13:40	09/03/13 15:11	1
Carbazole	440	U	440	40	ug/Kg	₩	08/23/13 13:40	09/03/13 15:11	1
Di-n-butyl phthalate	440	U	440	40	ug/Kg	₽	08/23/13 13:40	09/03/13 15:11	1
Fluoranthene	440	U	440	42	ug/Kg	₽	08/23/13 13:40	09/03/13 15:11	1
Pyrene	440	U	440	36	ug/Kg	₩	08/23/13 13:40	09/03/13 15:11	1
Butyl benzyl phthalate	440	U	440	35	ug/Kg	₩	08/23/13 13:40	09/03/13 15:11	1
3,3'-Dichlorobenzidine	880	U	880	37	ug/Kg		08/23/13 13:40	09/03/13 15:11	1
Benzo[a]anthracene	440	U	440	36	ug/Kg	₽	08/23/13 13:40	09/03/13 15:11	1
Chrysene	440	U	440	28	ug/Kg	₩	08/23/13 13:40	09/03/13 15:11	1
Bis(2-ethylhexyl) phthalate	440	U	440	38	ug/Kg		08/23/13 13:40	09/03/13 15:11	1
Di-n-octyl phthalate	440	U	440	38	ug/Kg	₩	08/23/13 13:40	09/03/13 15:11	1
Benzo[b]fluoranthene	440	U	440	50	ug/Kg	₽	08/23/13 13:40	09/03/13 15:11	1
Benzo[k]fluoranthene	440	U	440	86	ug/Kg		08/23/13 13:40	09/03/13 15:11	1
Benzo[a]pyrene	440	U	440	69	ug/Kg	₩	08/23/13 13:40	09/03/13 15:11	1
Indeno[1,2,3-cd]pyrene	440	U	440	37	ug/Kg	₩	08/23/13 13:40	09/03/13 15:11	1
Dibenz(a,h)anthracene	440		440		ug/Kg		08/23/13 13:40	09/03/13 15:11	1
Benzo[g,h,i]perylene	440	U	440		ug/Kg	₩	08/23/13 13:40	09/03/13 15:11	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	58		46 - 130				08/23/13 13:40	09/03/13 15:11	1
2-Fluorobiphenyl	76		58 - 130				08/23/13 13:40	09/03/13 15:11	1
Terphenyl-d14 (Surr)	69		60 - 130				08/23/13 13:40	09/03/13 15:11	1
Phenol-d5 (Surr)	76		49 - 130				08/23/13 13:40	09/03/13 15:11	1
2-Fluorophenol (Surr)	91		40 - 130				08/23/13 13:40	09/03/13 15:11	1
2,4,6-Tribromophenol (Surr)	85		58 - 130				08/23/13 13:40	09/03/13 15:11	1
- Method: 8015C - Nonhalogenate	d Organics usi	ng GC/FID	-Modified (Gaso	oline Ran	ige Organi	ics)			
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO) -C6-C10	4500		270	21	ug/Kg	<del></del>	08/22/13 10:07	08/28/13 19:20	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene	113		70 - 131				08/22/13 10:07	08/28/13 19:20	1
Method: 8015C - Nonhalogenate	d Organics usi	ng GC/FID	-Modified (Dies	el Range	Organics	)			
Analyte		Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	1800	J	6500	1800	ug/Kg	<u> </u>	08/31/13 08:51	08/31/13 21:59	1
ORO C24-C40	4400	J B	6500	1800	ug/Kg	₽	08/31/13 08:51	08/31/13 21:59	1

TestAmerica Savannah

Analyzed

Prepared

08/31/13 08:51 08/31/13 21:59

Limits

50 - 150

%Recovery Qualifier

101

Dil Fac

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

Lab Sample ID: 680-93445-5

TestAmerica Job ID: 680-93445-1

Matrix: Solid Percent Solids: 78.8

Client Sample ID: SB01-08 (1.5-2.5) Date Collected: 08/20/13 09:00

Date Received: 08/21/13 10:07

Method: 8260B - Volatile Organic	Compounds	(GC/MS)							
Analyte		Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
Acetone	34	U	34	9.8	ug/Kg	₩	08/23/13 16:13	08/27/13 18:44	
Benzene	6.7	U	6.7	0.66	ug/Kg	₩	08/23/13 16:13	08/27/13 18:44	
Bromodichloromethane	6.7	U	6.7	1.1	ug/Kg	₽	08/23/13 16:13	08/27/13 18:44	
Bromoform	6.7	U	6.7	0.84	ug/Kg	\$	08/23/13 16:13	08/27/13 18:44	
Bromomethane	6.7	U	6.7	1.9	ug/Kg	₽	08/23/13 16:13	08/27/13 18:44	
Carbon disulfide	6.7	U	6.7	1.6	ug/Kg	₽	08/23/13 16:13	08/27/13 18:44	
Carbon tetrachloride	6.7	U	6.7	2.3	ug/Kg	\$	08/23/13 16:13	08/27/13 18:44	
Chlorobenzene	6.7	U	6.7	0.70	ug/Kg	₽	08/23/13 16:13	08/27/13 18:44	
Chloroethane	6.7	U	6.7	2.5	ug/Kg	₽	08/23/13 16:13	08/27/13 18:44	
Chloroform	6.7	U	6.7	0.79	ug/Kg	₽	08/23/13 16:13	08/27/13 18:44	
Chloromethane	6.7	U	6.7	1.3	ug/Kg	₽	08/23/13 16:13	08/27/13 18:44	
cis-1,2-Dichloroethene	6.7	U	6.7	1.0	ug/Kg	₽	08/23/13 16:13	08/27/13 18:44	
cis-1,3-Dichloropropene	6.7	U	6.7	1.6	ug/Kg	\$	08/23/13 16:13	08/27/13 18:44	
Cyclohexane	6.7	U	6.7	1.3	ug/Kg	₩	08/23/13 16:13	08/27/13 18:44	
Dibromochloromethane	6.7	U	6.7	1.2	ug/Kg	₩	08/23/13 16:13	08/27/13 18:44	
1,2-Dibromo-3-Chloropropane	6.7	U	6.7	4.4	ug/Kg		08/23/13 16:13	08/27/13 18:44	
1,2-Dichlorobenzene	6.7	U	6.7	0.95	ug/Kg	₽	08/23/13 16:13	08/27/13 18:44	
I,3-Dichlorobenzene	6.7	U	6.7	1.3	ug/Kg	₽	08/23/13 16:13	08/27/13 18:44	
I,4-Dichlorobenzene	6.7		6.7	1.1	ug/Kg		08/23/13 16:13	08/27/13 18:44	
Dichlorodifluoromethane	6.7	U	6.7	1.7	ug/Kg	₽	08/23/13 16:13	08/27/13 18:44	
.1-Dichloroethane	6.7	U	6.7	1.1	ug/Kg	₽	08/23/13 16:13	08/27/13 18:44	
,2-Dichloroethane	6.7		6.7	1.1		ф	08/23/13 16:13	08/27/13 18:44	
,1-Dichloroethene	6.7		6.7	1.0	ug/Kg	₽	08/23/13 16:13	08/27/13 18:44	
,2-Dichloropropane	6.7		6.7	0.99	ug/Kg	₽	08/23/13 16:13	08/27/13 18:44	
Diisopropyl ether	6.7		6.7		ug/Kg	ф	08/23/13 16:13	08/27/13 18:44	
ithylbenzene	6.7		6.7	0.82	ug/Kg	₽	08/23/13 16:13	08/27/13 18:44	
Ethylene Dibromide	6.7		6.7	0.64	ug/Kg	₽	08/23/13 16:13	08/27/13 18:44	
thyl tert-butyl ether	6.7		6.7	0.75	ug/Kg		08/23/13 16:13	08/27/13 18:44	
-Hexanone	34		34	6.7	ug/Kg	₽	08/23/13 16:13	08/27/13 18:44	
sopropylbenzene	6.7		6.7	0.91	ug/Kg	₽	08/23/13 16:13	08/27/13 18:44	
Methyl acetate	6.7		6.7		ug/Kg	· · · · · · · · · · · · · · · · · · ·	08/23/13 16:13	08/27/13 18:44	
Methylcyclohexane	6.7		6.7		ug/Kg	₽	08/23/13 16:13	08/27/13 18:44	
Methylene Chloride	20	U	20		ug/Kg		08/23/13 16:13	08/27/13 18:44	
Methyl Ethyl Ketone			34		ug/Kg		08/23/13 16:13	08/27/13 18:44	
methyl isobutyl ketone		U	34		ug/Kg ug/Kg		08/23/13 16:13	08/27/13 18:44	
Methyl tert-butyl ether	6.7		6.7		ug/Kg ug/Kg	₩	08/23/13 16:13	08/27/13 18:44	
Naphthalene	6.7		6.7		ug/Kg		08/23/13 16:13	08/27/13 18:44	
•	6.7		6.7		ug/Kg ug/Kg	₽	08/23/13 16:13	08/27/13 18:44	
Styrene	6.7		6.7			т Ф			
Fert-amyl methyl ether					ug/Kg		08/23/13 16:13	08/27/13 18:44	
ert-Butyl alcohol	6.7		6.7		ug/Kg	~ ⇔	08/23/13 16:13	08/27/13 18:44	
,1,2,2-Tetrachloroethane	6.7		6.7		ug/Kg	~ Ф	08/23/13 16:13	08/27/13 18:44	
Tetrachloroethene	6.7		6.7	1.1	ug/Kg		08/23/13 16:13	08/27/13 18:44	
Foluene	6.7		6.7	0.94	ug/Kg		08/23/13 16:13	08/27/13 18:44	
rans-1,2-Dichloroethene	6.7		6.7		ug/Kg	<b>‡</b>	08/23/13 16:13	08/27/13 18:44	
rans-1,3-Dichloropropene	6.7		6.7		ug/Kg	<del>%</del> .	08/23/13 16:13	08/27/13 18:44	
,2,4-Trichlorobenzene	6.7		6.7		ug/Kg	<b>‡</b>	08/23/13 16:13	08/27/13 18:44	
I,1,1-Trichloroethane	6.7		6.7		ug/Kg	<b>\$</b>	08/23/13 16:13	08/27/13 18:44	
1,1,2-Trichloroethane	6.7		6.7		ug/Kg ug/Kg	<del>.</del>	08/23/13 16:13	08/27/13 18:44	

Client: ARCADIS U.S., Inc.

Date Received: 08/21/13 10:07

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93445-1

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Lab Sample ID: 680-93445-5 Matrix: Solid

Percent Solids: 78.8

Client Sample ID: SB01-08 (1.5-2.5)
Date Collected: 08/20/13 09:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichlorofluoromethane	6.7	U	6.7	1.3	ug/Kg	₩	08/23/13 16:13	08/27/13 18:44	1
1,1,2-Trichloro-1,2,2-trifluoroethane	6.7	U	6.7	2.7	ug/Kg	₽	08/23/13 16:13	08/27/13 18:44	1
Vinyl chloride	6.7	U	6.7	1.2	ug/Kg	₽	08/23/13 16:13	08/27/13 18:44	1
Xylenes, Total	13	U	13	2.5	ug/Kg	₽	08/23/13 16:13	08/27/13 18:44	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	99		72 - 122				08/23/13 16:13	08/27/13 18:44	1
Dibromofluoromethane	103		79 - 123				08/23/13 16:13	08/27/13 18:44	1
Toluene-d8 (Surr)	97		80 - 120				08/23/13 16:13	08/27/13 18:44	1

Toluene-as (Surr)	97		80 - 120				08/23/13 16:13	08/27/13 18:44	7
Method: 8270D - Semivolatile C	•	nds (GC/M	S)	MDL	Unit	D	Prepared	Anglyzod	Dil Fac
Analyte Benzaldehyde	420	U	420	73	ug/Kg	— <del>ÿ</del>	08/23/13 13:40	Analyzed 08/30/13 18:59	1
Phenol	420	-	420	43	ug/Kg ug/Kg	₩	08/23/13 13:40	08/30/13 18:59	1
Bis(2-chloroethyl)ether	420		420	57	ug/Kg	<b>#</b>	08/23/13 13:40	08/30/13 18:59	1
2-Chlorophenol	420		420	50	ug/Kg		08/23/13 13:40	08/30/13 18:59	
2-Methylphenol	420		420	34	ug/Kg ug/Kg	₩	08/23/13 13:40	08/30/13 18:59	1
bis (2-chloroisopropyl) ether	420		420	38	ug/Kg ug/Kg	<b>#</b>	08/23/13 13:40	08/30/13 18:59	1
Acetophenone	420		420		ug/Kg		08/23/13 13:40	08/30/13 18:59	
3 & 4 Methylphenol	420		420		ug/Kg ug/Kg	<b>#</b>	08/23/13 13:40	08/30/13 18:59	1
N-Nitrosodi-n-propylamine	420		420	40	ug/Kg	₩	08/23/13 13:40	08/30/13 18:59	1
Hexachloroethane	420		420	35	ug/Kg		08/23/13 13:40	08/30/13 18:59	
Nitrobenzene	420		420	33	ug/Kg	₩	08/23/13 13:40	08/30/13 18:59	1
Isophorone	420		420		ug/Kg	₩	08/23/13 13:40	08/30/13 18:59	1
2-Nitrophenol	420		420		ug/Kg		08/23/13 13:40	08/30/13 18:59	· · · · · · · · · · · · · · · · · · ·
2,4-Dimethylphenol	420		420		ug/Kg	₩	08/23/13 13:40	08/30/13 18:59	1
Bis(2-chloroethoxy)methane	420		420	49	ug/Kg	₩	08/23/13 13:40	08/30/13 18:59	1
2,4-Dichlorophenol	420		420		ug/Kg		08/23/13 13:40	08/30/13 18:59	 1
Naphthalene	420		420	38	ug/Kg	₩	08/23/13 13:40	08/30/13 18:59	1
4-Chloroaniline	830		830		ug/Kg	₩	08/23/13 13:40	08/30/13 18:59	1
Hexachlorobutadiene	420		420	45	ug/Kg		08/23/13 13:40	08/30/13 18:59	1
Caprolactam	420		420	83	ug/Kg	₽	08/23/13 13:40	08/30/13 18:59	1
4-Chloro-3-methylphenol	420		420		ug/Kg	₽	08/23/13 13:40	08/30/13 18:59	1
2-Methylnaphthalene	420		420		ug/Kg		08/23/13 13:40	08/30/13 18:59	1
Hexachlorocyclopentadiene	420		420		ug/Kg	₽	08/23/13 13:40	08/30/13 18:59	1
2,4,6-Trichlorophenol	420	U	420	37	ug/Kg	₽	08/23/13 13:40	08/30/13 18:59	1
2,4,5-Trichlorophenol	420		420		ug/Kg		08/23/13 13:40	08/30/13 18:59	1
1,1'-Biphenyl	930	U	930	930	ug/Kg	₩	08/23/13 13:40	08/30/13 18:59	1
2-Chloronaphthalene	420		420		ug/Kg	₩	08/23/13 13:40	08/30/13 18:59	1
2-Nitroaniline	2100		2100		ug/Kg		08/23/13 13:40	08/30/13 18:59	1
Dimethyl phthalate	420	U	420	43	ug/Kg	₩	08/23/13 13:40	08/30/13 18:59	1
2,6-Dinitrotoluene	420	U	420		ug/Kg	₩	08/23/13 13:40	08/30/13 18:59	1
Acenaphthylene	420	U	420		ug/Kg		08/23/13 13:40	08/30/13 18:59	1
3-Nitroaniline	2100	U	2100	58	ug/Kg	₩	08/23/13 13:40	08/30/13 18:59	1
Acenaphthene	420	U	420	52	ug/Kg	₩	08/23/13 13:40	08/30/13 18:59	1
2,4-Dinitrophenol	2100	U	2100	1000	ug/Kg		08/23/13 13:40	08/30/13 18:59	1
4-Nitrophenol	2100	U	2100	420	ug/Kg	₩	08/23/13 13:40	08/30/13 18:59	1
Dibenzofuran	420	U	420	42	ug/Kg	₩	08/23/13 13:40	08/30/13 18:59	1
2,4-Dinitrotoluene	420	U	420		ug/Kg	· · · · · · · · · · · · · · · · · · ·	08/23/13 13:40	08/30/13 18:59	1
Diethyl phthalate	420		420		ug/Kg	₩	08/23/13 13:40	08/30/13 18:59	1

TestAmerica Savannah

3

5

6

8

3

11

Client: ARCADIS U.S., Inc.

a,a,a-Trifluorotoluene

ORO C24-C40

o-Terphenyl (Surr)

Surrogate

Diesel Range Organics [C10-C28]

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB01-08 (1.5-2.5)

Date Collected: 08/20/13 09:00 Date Received: 08/21/13 10:07

Lab Sample ID: 680-93445-5

Matrix: Solid Percent Solids: 78.8

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluorene	420	U	420	45	ug/Kg	₩	08/23/13 13:40	08/30/13 18:59	1
4-Chlorophenyl phenyl ether	420	U	420	55	ug/Kg	ф.	08/23/13 13:40	08/30/13 18:59	
4-Nitroaniline	2100	U	2100	62	ug/Kg	₩	08/23/13 13:40	08/30/13 18:59	1
4,6-Dinitro-2-methylphenol	2100	U	2100	210	ug/Kg	₽	08/23/13 13:40	08/30/13 18:59	1
N-Nitrosodiphenylamine	420	U	420	42	ug/Kg	₽	08/23/13 13:40	08/30/13 18:59	1
4-Bromophenyl phenyl ether	420	U	420	45	ug/Kg	₩	08/23/13 13:40	08/30/13 18:59	1
Hexachlorobenzene	420	U	420	49	ug/Kg	₩	08/23/13 13:40	08/30/13 18:59	1
Atrazine	420	U	420	29	ug/Kg		08/23/13 13:40	08/30/13 18:59	1
Pentachlorophenol	2100	U	2100	420	ug/Kg	₩	08/23/13 13:40	08/30/13 18:59	1
Phenanthrene	420	U	420	34	ug/Kg	₩	08/23/13 13:40	08/30/13 18:59	1
Anthracene	420	U	420	32	ug/Kg		08/23/13 13:40	08/30/13 18:59	1
Carbazole	420	U	420	38	ug/Kg	₩	08/23/13 13:40	08/30/13 18:59	1
Di-n-butyl phthalate	420	U	420	38	ug/Kg	₩	08/23/13 13:40	08/30/13 18:59	1
Fluoranthene	420	U	420	40	ug/Kg		08/23/13 13:40	08/30/13 18:59	1
Pyrene	420	U	420	34	ug/Kg	₩	08/23/13 13:40	08/30/13 18:59	1
Butyl benzyl phthalate	420	U	420	33	ug/Kg	₩	08/23/13 13:40	08/30/13 18:59	1
3,3'-Dichlorobenzidine	830	U	830	35	ug/Kg		08/23/13 13:40	08/30/13 18:59	1
Benzo[a]anthracene	420	U	420	34	ug/Kg	₩	08/23/13 13:40	08/30/13 18:59	1
Chrysene	420	U	420	26	ug/Kg	₩	08/23/13 13:40	08/30/13 18:59	1
Bis(2-ethylhexyl) phthalate	420	U	420	37	ug/Kg		08/23/13 13:40	08/30/13 18:59	1
Di-n-octyl phthalate	420	U	420	37	ug/Kg	₩	08/23/13 13:40	08/30/13 18:59	1
Benzo[b]fluoranthene	420	U	420	48	ug/Kg	₩	08/23/13 13:40	08/30/13 18:59	1
Benzo[k]fluoranthene	420	U	420	82	ug/Kg		08/23/13 13:40	08/30/13 18:59	1
Benzo[a]pyrene	420	U	420	66	ug/Kg	₩	08/23/13 13:40	08/30/13 18:59	1
Indeno[1,2,3-cd]pyrene	420	U	420	35	ug/Kg	₩	08/23/13 13:40	08/30/13 18:59	1
Dibenz(a,h)anthracene	420	U	420	49	ug/Kg	₩.	08/23/13 13:40	08/30/13 18:59	1
Benzo[g,h,i]perylene	420	U	420	28	ug/Kg	\$	08/23/13 13:40	08/30/13 18:59	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	14	X	46 - 130				08/23/13 13:40	08/30/13 18:59	1
2-Fluorobiphenyl	14	Χ	58 - 130				08/23/13 13:40	08/30/13 18:59	1
Terphenyl-d14 (Surr)	11	Χ	60 - 130				08/23/13 13:40	08/30/13 18:59	1
Phenol-d5 (Surr)	9	X	49 - 130				08/23/13 13:40	08/30/13 18:59	1
2-Fluorophenol (Surr)	8	X	40 - 130				08/23/13 13:40	08/30/13 18:59	1
2,4,6-Tribromophenol (Surr)	5	X	58 - 130				08/23/13 13:40	08/30/13 18:59	1
Method: 8015C - Nonhalogenate Analyte	•	ng GC/FID Qualifier	-Modified (Gaso RL		ge Organ Unit	ics)	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)	860	- Guainioi	500		ug/Kg	— <del>¤</del>	08/22/13 10:07	08/24/13 18:17	1
-C6-C10	860		300	30	ugrity		00/22/10 10:07	00/2 <del>1</del> /10 10.1/	'
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac

TestAmerica Savannah

Analyzed

08/31/13 22:46

08/31/13 22:46

Analyzed

08/31/13 22:46

08/22/13 10:07 08/24/13 18:17

70 - 131

RL

6300

6300

Limits

50 - 150

MDL Unit

1800 ug/Kg

1800 ug/Kg

D

Prepared

08/31/13 08:51

08/31/13 08:51

Prepared

08/31/13 08:51

Method: 8015C - Nonhalogenated Organics using GC/FID -Modified (Diesel Range Organics) Result Qualifier

9700

9700 B

%Recovery Qualifier

73

Dil Fac

Dil Fac

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93445-1

Client Sample ID: SB01-08 (9.0-10.0)

Lab Sample ID: 680-93445-6

Date Collected: 08/20/13 09:10

Date Received: 08/21/13 10:07

Matrix: Solid
Percent Solids: 80.2

Mothod: 9260B Valatila Organia	Compound-	(CC/MC)							
Method: 8260B - Volatile Organic ( Analyte	•	(GC/MS) Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	22		18	5.3	ug/Kg	<del></del>	08/23/13 16:13	08/27/13 19:10	1
Benzene	3.6	U	3.6	0.35	ug/Kg	₩	08/23/13 16:13	08/27/13 19:10	1
Bromodichloromethane	3.6	U	3.6	0.60	ug/Kg	₩	08/23/13 16:13	08/27/13 19:10	1
Bromoform	3.6	U	3.6	0.45	ug/Kg		08/23/13 16:13	08/27/13 19:10	1
Bromomethane	3.6	U	3.6	1.0	ug/Kg	₩	08/23/13 16:13	08/27/13 19:10	1
Carbon disulfide	3.6	U	3.6	0.86	ug/Kg	₩	08/23/13 16:13	08/27/13 19:10	1
Carbon tetrachloride	3.6	U	3.6	1.2	ug/Kg		08/23/13 16:13	08/27/13 19:10	1
Chlorobenzene	3.6	U	3.6	0.37	ug/Kg	₽	08/23/13 16:13	08/27/13 19:10	1
Chloroethane	3.6	U	3.6	1.4	ug/Kg	₩	08/23/13 16:13	08/27/13 19:10	1
Chloroform	3.6	U	3.6	0.42	ug/Kg		08/23/13 16:13	08/27/13 19:10	1
Chloromethane	3.6	U	3.6	0.72	ug/Kg	₽	08/23/13 16:13	08/27/13 19:10	1
cis-1,2-Dichloroethene	3.6	U	3.6	0.55	ug/Kg	₽	08/23/13 16:13	08/27/13 19:10	1
cis-1,3-Dichloropropene	3.6	U	3.6	0.86	ug/Kg	ф.	08/23/13 16:13	08/27/13 19:10	1
Cyclohexane	3.6	U	3.6	0.68	ug/Kg	₽	08/23/13 16:13	08/27/13 19:10	1
Dibromochloromethane	3.6	U	3.6		ug/Kg	₩	08/23/13 16:13	08/27/13 19:10	1
1,2-Dibromo-3-Chloropropane	3.6		3.6	2.4	ug/Kg		08/23/13 16:13	08/27/13 19:10	1
I,2-Dichlorobenzene	3.6		3.6		ug/Kg	₽	08/23/13 16:13	08/27/13 19:10	1
I,3-Dichlorobenzene	3.6	U	3.6		ug/Kg	₽	08/23/13 16:13	08/27/13 19:10	1
I,4-Dichlorobenzene	3.6		3.6		ug/Kg	<del>-</del>	08/23/13 16:13	08/27/13 19:10	1
Dichlorodifluoromethane	3.6	U	3.6		ug/Kg	₽	08/23/13 16:13	08/27/13 19:10	1
1,1-Dichloroethane	3.6	U	3.6		ug/Kg	₽	08/23/13 16:13	08/27/13 19:10	1
I,2-Dichloroethane	3.6		3.6		ug/Kg		08/23/13 16:13	08/27/13 19:10	1
I,1-Dichloroethene	3.6		3.6		ug/Kg	₽	08/23/13 16:13	08/27/13 19:10	1
I,2-Dichloropropane	3.6		3.6		ug/Kg	₩	08/23/13 16:13	08/27/13 19:10	1
Diisopropyl ether	3.6		3.6		ug/Kg		08/23/13 16:13	08/27/13 19:10	· · · · · · · · · 1
Ethylbenzene	3.6		3.6		ug/Kg	₩	08/23/13 16:13	08/27/13 19:10	
Ethylene Dibromide	3.6		3.6		ug/Kg	₩	08/23/13 16:13	08/27/13 19:10	1
Ethyl tert-butyl ether	3.6		3.6		ug/Kg		08/23/13 16:13	08/27/13 19:10	· · · · · · · · · · 1
2-Hexanone	18		18		ug/Kg	₩	08/23/13 16:13	08/27/13 19:10	1
sopropylbenzene	3.6		3.6		ug/Kg	₩	08/23/13 16:13	08/27/13 19:10	1
Methyl acetate	3.6		3.6		ug/Kg		08/23/13 16:13	08/27/13 19:10	
Methylcyclohexane	3.6		3.6		ug/Kg ug/Kg	*	08/23/13 16:13	08/27/13 19:10	
Methylene Chloride	11		11		ug/Kg ug/Kg	₽	08/23/13 16:13	08/27/13 19:10	
Methyl Ethyl Ketone	18		18		ug/Kg		08/23/13 16:13	08/27/13 19:10	
	18		18		ug/Kg ug/Kg		08/23/13 16:13	08/27/13 19:10	. 1
nethyl isobutyl ketone Vlethyl tert-butyl ether	3.6		3.6			₽	08/23/13 16:13	08/27/13 19:10	1
					ug/Kg		08/23/13 16:13		
Naphthalene	3.6		3.6		ug/Kg	₽		08/27/13 19:10	1
Styrene	3.6		3.6		ug/Kg		08/23/13 16:13	08/27/13 19:10	1
Fert-amyl methyl ether	3.6		3.6		ug/Kg	ф	08/23/13 16:13	08/27/13 19:10	1
ert-Butyl alcohol	3.6		3.6		ug/Kg	₽	08/23/13 16:13	08/27/13 19:10	1
I,1,2,2-Tetrachloroethane	3.6		3.6		ug/Kg		08/23/13 16:13	08/27/13 19:10	1
Fetrachloroethene	3.6		3.6		ug/Kg	<del></del>	08/23/13 16:13	08/27/13 19:10	
Foluene	3.6		3.6		ug/Kg	<b>#</b>	08/23/13 16:13	08/27/13 19:10	1
rans-1,2-Dichloroethene	3.6		3.6		ug/Kg	Ψ *	08/23/13 16:13	08/27/13 19:10	1
rans-1,3-Dichloropropene	3.6		3.6		ug/Kg	<del>X</del>	08/23/13 16:13	08/27/13 19:10	
1,2,4-Trichlorobenzene	3.6		3.6		ug/Kg	<b>‡</b>	08/23/13 16:13	08/27/13 19:10	1
I,1,1-Trichloroethane	3.6		3.6		ug/Kg	<b>\$</b>	08/23/13 16:13	08/27/13 19:10	1
I,1,2-Trichloroethane Frichloroethene	3.6		3.6		ug/Kg ug/Kg	ф	08/23/13 16:13 08/23/13 16:13	08/27/13 19:10 08/27/13 19:10	1 1

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93445-1

Lab Sample ID: 680-93445-6

Matrix: Solid Percent Solids: 80.2

Client Sample ID: SB01-08 (9.0-10.0)

Date Collected: 08/20/13 09:10 Date Received: 08/21/13 10:07

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichlorofluoromethane	3.6	U	3.6	0.68	ug/Kg	₽	08/23/13 16:13	08/27/13 19:10	1
1,1,2-Trichloro-1,2,2-trifluoroethane	3.6	U	3.6	1.4	ug/Kg	₽	08/23/13 16:13	08/27/13 19:10	1
Vinyl chloride	3.6	U	3.6	0.66	ug/Kg	₽	08/23/13 16:13	08/27/13 19:10	1
Xylenes, Total	7.2	U	7.2	1.4	ug/Kg	₽	08/23/13 16:13	08/27/13 19:10	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	98		72 - 122				08/23/13 16:13	08/27/13 19:10	1
Dibromofluoromethane	102		79 - 123				08/23/13 16:13	08/27/13 19:10	1
Toluene-d8 (Surr)	96		80 - 120				08/23/13 16:13	08/27/13 19:10	1

Toluene-as (Surr)	96		80 - 120				08/23/13 16:13	08/27/13 19:10	,
Method: 8270D - Semivolatile On	•	•	•		1114	_	<b>D</b>	Amal !	D:: =
Analyte		Qualifier U	RL	MDL		— <del>D</del>	Prepared	Analyzed	Dil Fac
Benzaldehyde	410	-	410	72	ug/Kg		08/23/13 13:40	08/30/13 19:25	1
Phenol	410		410	42	ug/Kg	₩	08/23/13 13:40	08/30/13 19:25	1
Bis(2-chloroethyl)ether	410		410	56	ug/Kg		08/23/13 13:40	08/30/13 19:25	
2-Chlorophenol	410		410	50	ug/Kg	₩	08/23/13 13:40	08/30/13 19:25	1
2-Methylphenol	410		410	34	ug/Kg		08/23/13 13:40	08/30/13 19:25	1
bis (2-chloroisopropyl) ether	410		410	37	ug/Kg	<u></u>	08/23/13 13:40	08/30/13 19:25	1
Acetophenone	410		410		ug/Kg	₩	08/23/13 13:40	08/30/13 19:25	1
3 & 4 Methylphenol	410		410	54	ug/Kg	₩	08/23/13 13:40	08/30/13 19:25	1
N-Nitrosodi-n-propylamine	410	U	410	40	ug/Kg		08/23/13 13:40	08/30/13 19:25	1
Hexachloroethane	410	U	410	35	ug/Kg	₩	08/23/13 13:40	08/30/13 19:25	1
Nitrobenzene	410	U	410	32	ug/Kg	₽	08/23/13 13:40	08/30/13 19:25	1
Isophorone	410	U	410	41	ug/Kg	₽	08/23/13 13:40	08/30/13 19:25	1
2-Nitrophenol	410	U	410	51	ug/Kg	₩	08/23/13 13:40	08/30/13 19:25	1
2,4-Dimethylphenol	410	U	410	55	ug/Kg	₩	08/23/13 13:40	08/30/13 19:25	1
Bis(2-chloroethoxy)methane	410	U	410	49	ug/Kg	₩	08/23/13 13:40	08/30/13 19:25	1
2,4-Dichlorophenol	410	U	410	44	ug/Kg	₽	08/23/13 13:40	08/30/13 19:25	1
Naphthalene	410	U	410	37	ug/Kg	₩	08/23/13 13:40	08/30/13 19:25	1
4-Chloroaniline	820	U *	820	65	ug/Kg	₩	08/23/13 13:40	08/30/13 19:25	1
Hexachlorobutadiene	410	U	410	45	ug/Kg	₩	08/23/13 13:40	08/30/13 19:25	1
Caprolactam	410	U	410	82	ug/Kg	₩	08/23/13 13:40	08/30/13 19:25	1
4-Chloro-3-methylphenol	410	U	410	44	ug/Kg	₩	08/23/13 13:40	08/30/13 19:25	1
2-Methylnaphthalene	410	U	410	47	ug/Kg	Φ.	08/23/13 13:40	08/30/13 19:25	1
Hexachlorocyclopentadiene	410	U	410	51	ug/Kg	₩	08/23/13 13:40	08/30/13 19:25	1
2,4,6-Trichlorophenol	410	U	410	36	ug/Kg	₩	08/23/13 13:40	08/30/13 19:25	1
2,4,5-Trichlorophenol	410	U	410	44	ug/Kg	Φ	08/23/13 13:40	08/30/13 19:25	1
1,1'-Biphenyl	920	U	920	920	ug/Kg	₩	08/23/13 13:40	08/30/13 19:25	1
2-Chloronaphthalene	410	U	410	44	ug/Kg	₩	08/23/13 13:40	08/30/13 19:25	1
2-Nitroaniline	2100	U	2100	56	ug/Kg		08/23/13 13:40	08/30/13 19:25	1
Dimethyl phthalate	410	U	410		ug/Kg	₩	08/23/13 13:40	08/30/13 19:25	1
2,6-Dinitrotoluene	410	U	410	52	ug/Kg	₩	08/23/13 13:40	08/30/13 19:25	1
Acenaphthylene	410	U	410	45	ug/Kg		08/23/13 13:40	08/30/13 19:25	1
3-Nitroaniline	2100	U	2100	57	ug/Kg	₩	08/23/13 13:40	08/30/13 19:25	1
Acenaphthene	410	U	410	51	ug/Kg	₩	08/23/13 13:40	08/30/13 19:25	1
2,4-Dinitrophenol	2100		2100	1000	ug/Kg		08/23/13 13:40	08/30/13 19:25	1
4-Nitrophenol	2100		2100	410	ug/Kg	₩	08/23/13 13:40	08/30/13 19:25	1
Dibenzofuran	410		410	41	ug/Kg	₽	08/23/13 13:40	08/30/13 19:25	1
2,4-Dinitrotoluene	410		410		ug/Kg		08/23/13 13:40	08/30/13 19:25	· · · · · · · · · · · · · · · · · · ·
Diethyl phthalate	410		410		ug/Kg	₩	08/23/13 13:40	08/30/13 19:25	1

Client: ARCADIS U.S., Inc.

Surrogate

o-Terphenyl (Surr)

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB01-08 (9.0-10.0)

Date Collected: 08/20/13 09:10 Date Received: 08/21/13 10:07 Lab Sample ID: 680-93445-6

Matrix: Solid

Percent Solids: 80.2

Analyte		Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fa
Fluorene	410	U	410	45	ug/Kg	₩	08/23/13 13:40	08/30/13 19:25	
4-Chlorophenyl phenyl ether	410	U	410	55	ug/Kg	₽	08/23/13 13:40	08/30/13 19:25	
4-Nitroaniline	2100	U	2100	61	ug/Kg	₩	08/23/13 13:40	08/30/13 19:25	
4,6-Dinitro-2-methylphenol	2100	U	2100	210	ug/Kg	₩	08/23/13 13:40	08/30/13 19:25	
N-Nitrosodiphenylamine	410	U	410	41	ug/Kg	₽	08/23/13 13:40	08/30/13 19:25	
4-Bromophenyl phenyl ether	410	U	410	45	ug/Kg	₽	08/23/13 13:40	08/30/13 19:25	
Hexachlorobenzene	410	U	410	49	ug/Kg	₽	08/23/13 13:40	08/30/13 19:25	
Atrazine	410	U	410	29	ug/Kg	₩	08/23/13 13:40	08/30/13 19:25	
Pentachlorophenol	2100	U	2100	410	ug/Kg	₩	08/23/13 13:40	08/30/13 19:25	
Phenanthrene	410	U	410	34	ug/Kg	₽	08/23/13 13:40	08/30/13 19:25	
Anthracene	410	U	410	31	ug/Kg	φ.	08/23/13 13:40	08/30/13 19:25	
Carbazole	410	U	410	37	ug/Kg	₽	08/23/13 13:40	08/30/13 19:25	
Di-n-butyl phthalate	410	U	410		ug/Kg	₩	08/23/13 13:40	08/30/13 19:25	
Fluoranthene	410		410		ug/Kg	ф	08/23/13 13:40	08/30/13 19:25	
Pyrene	410		410	34		₽	08/23/13 13:40	08/30/13 19:25	
Butyl benzyl phthalate	410		410		ug/Kg	₽	08/23/13 13:40	08/30/13 19:25	
3,3'-Dichlorobenzidine	820		820		ug/Kg		08/23/13 13:40	08/30/13 19:25	
Benzo[a]anthracene	410		410	34		₩	08/23/13 13:40	08/30/13 19:25	
Chrysene	410		410	26	0 0	₩	08/23/13 13:40	08/30/13 19:25	
Bis(2-ethylhexyl) phthalate	410		410		ug/Kg		08/23/13 13:40	08/30/13 19:25	
Di-n-octyl phthalate	410	U	410	36	ug/Kg ug/Kg		08/23/13 13:40	08/30/13 19:25	
Benzo[b]fluoranthene	410		410		ug/Kg ug/Kg		08/23/13 13:40	08/30/13 19:25	
							08/23/13 13:40		
Benzo[k]fluoranthene	410 410		410	81	0 0	₩		08/30/13 19:25	
Benzo[a]pyrene			410		ug/Kg		08/23/13 13:40	08/30/13 19:25	
Indeno[1,2,3-cd]pyrene	410		410		ug/Kg	<del></del>	08/23/13 13:40	08/30/13 19:25	
Dibenz(a,h)anthracene	410		410		ug/Kg	<b>₽</b>	08/23/13 13:40	08/30/13 19:25	
Benzo[g,h,i]perylene	410	U	410	27	ug/Kg	₽	08/23/13 13:40	08/30/13 19:25	
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fa
Nitrobenzene-d5 (Surr)	66		46 - 130				08/23/13 13:40	08/30/13 19:25	
2-Fluorobiphenyl	76		58 - 130				08/23/13 13:40	08/30/13 19:25	
Terphenyl-d14 (Surr)	88		60 - 130				08/23/13 13:40	08/30/13 19:25	
Phenol-d5 (Surr)	73		49 - 130				08/23/13 13:40	08/30/13 19:25	
2-Fluorophenol (Surr)	75		40 - 130				08/23/13 13:40	08/30/13 19:25	
2,4,6-Tribromophenol (Surr)	89		58 - 130				08/23/13 13:40	08/30/13 19:25	
Method: 8015C - Nonhalogenate	_	_	•		-		Dramar	A malum1	D:: -
Analyte		Qualifier	RL		Unit	— <del>□</del>	Prepared	Analyzed	Dil Fa
Gasoline Range Organics (GRO) -C6-C10	320		250	19	ug/Kg	¥	08/22/13 10:07	08/24/13 18:37	
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fa
a,a,a-Trifluorotoluene	113		70 - 131				08/22/13 10:07	08/24/13 18:37	
Method: 8015C - Nonhalogenate							Danie I	A1 .	<b>.</b>
Analyte	Result	Qualifier	RL		Unit	— <del>D</del>	Prepared 08/31/13 08:51	Analyzed	Dil F
Diesel Range Organics [C10-C28]	1800	J	6100	1700				08/31/13 20:55	

TestAmerica Savannah

Analyzed

Prepared

08/31/13 08:51 08/31/13 20:55

Limits

50 - 150

%Recovery Qualifier

74

Dil Fac

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93445-1

Client Sample ID: SB01-09 (0.0-1.0)

Date Collected: 08/20/13 09:30 Date Received: 08/21/13 10:07 Lab Sample ID: 680-93445-7

Matrix: Solid Percent Solids: 71.4

27 U 5.4 U	27 5.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4	0.56 2.0 0.63 1.1 0.81 1.3 1.0 0.93 3.5 0.76 1.0	ug/Kg ug/Kg ug/Kg		08/23/13 16:13 08/23/13 16:13	08/27/13 19:36 08/27/13 19:36	
5.4 U 5.4 U	5.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4	0.90 0.68 1.5 1.3 1.8 0.56 2.0 0.63 1.1 0.81 1.3 1.0 0.93 3.5 0.76 1.0	ug/Kg ug/Kg ug/Kg ug/Kg ug/Kg ug/Kg ug/Kg ug/Kg ug/Kg ug/Kg ug/Kg ug/Kg ug/Kg ug/Kg ug/Kg ug/Kg ug/Kg ug/Kg		08/23/13 16:13 08/23/13 16:13	08/27/13 19:36 08/27/13 19:36	
5.4 U 5.4 U 5.4 U 5.4 U 5.4 U 5.4 U 5.4 U 5.4 U 5.4 U 5.4 U 5.4 U 5.4 U 5.4 U 5.4 U 5.4 U 5.4 U 5.4 U 5.4 U 5.4 U	5.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4	0.68 1.5 1.3 1.8 0.56 2.0 0.63 1.1 0.81 1.3 1.0 0.93 3.5 0.76 1.0	ug/Kg ug/Kg ug/Kg ug/Kg ug/Kg ug/Kg ug/Kg ug/Kg ug/Kg ug/Kg ug/Kg ug/Kg ug/Kg ug/Kg ug/Kg		08/23/13 16:13 08/23/13 16:13	08/27/13 19:36 08/27/13 19:36 08/27/13 19:36 08/27/13 19:36 08/27/13 19:36 08/27/13 19:36 08/27/13 19:36 08/27/13 19:36 08/27/13 19:36 08/27/13 19:36	
5.4 U 5.4 U 5.4 U 5.4 U 5.4 U 5.4 U 5.4 U 5.4 U 5.4 U 5.4 U 5.4 U 5.4 U 5.4 U 5.4 U 5.4 U 5.4 U 5.4 U 5.4 U 5.4 U	5.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4	1.5 1.3 1.8 0.56 2.0 0.63 1.1 0.81 1.3 1.0 0.93 3.5 0.76 1.0	ug/Kg ug/Kg ug/Kg ug/Kg ug/Kg ug/Kg ug/Kg ug/Kg ug/Kg ug/Kg ug/Kg ug/Kg ug/Kg		08/23/13 16:13 08/23/13 16:13	08/27/13 19:36 08/27/13 19:36 08/27/13 19:36 08/27/13 19:36 08/27/13 19:36 08/27/13 19:36 08/27/13 19:36 08/27/13 19:36 08/27/13 19:36	
5.4 U 5.4 U 5.4 U 5.4 U 5.4 U 5.4 U 5.4 U 5.4 U 5.4 U 5.4 U 5.4 U 5.4 U 5.4 U 5.4 U 5.4 U 5.4 U 5.4 U	5.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4	1.3 1.8 0.56 2.0 0.63 1.1 0.81 1.3 1.0 0.93 3.5 0.76 1.0	ug/Kg ug/Kg ug/Kg ug/Kg ug/Kg ug/Kg ug/Kg ug/Kg ug/Kg ug/Kg ug/Kg		08/23/13 16:13 08/23/13 16:13 08/23/13 16:13 08/23/13 16:13 08/23/13 16:13 08/23/13 16:13 08/23/13 16:13 08/23/13 16:13 08/23/13 16:13 08/23/13 16:13	08/27/13 19:36 08/27/13 19:36 08/27/13 19:36 08/27/13 19:36 08/27/13 19:36 08/27/13 19:36 08/27/13 19:36 08/27/13 19:36	
5.4 U 5.4 U 5.4 U 5.4 U 5.4 U 5.4 U 5.4 U 5.4 U 5.4 U 5.4 U 5.4 U 5.4 U 5.4 U 5.4 U 5.4 U 5.4 U	5.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4	1.8 0.56 2.0 0.63 1.1 0.81 1.3 1.0 0.93 3.5 0.76 1.0	ug/Kg ug/Kg ug/Kg ug/Kg ug/Kg ug/Kg ug/Kg ug/Kg ug/Kg ug/Kg		08/23/13 16:13 08/23/13 16:13 08/23/13 16:13 08/23/13 16:13 08/23/13 16:13 08/23/13 16:13 08/23/13 16:13 08/23/13 16:13	08/27/13 19:36 08/27/13 19:36 08/27/13 19:36 08/27/13 19:36 08/27/13 19:36 08/27/13 19:36 08/27/13 19:36	
5.4 U 5.4 U	5.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4	0.56 2.0 0.63 1.1 0.81 1.3 1.0 0.93 3.5 0.76	ug/Kg ug/Kg ug/Kg ug/Kg ug/Kg ug/Kg ug/Kg ug/Kg ug/Kg		08/23/13 16:13 08/23/13 16:13 08/23/13 16:13 08/23/13 16:13 08/23/13 16:13 08/23/13 16:13 08/23/13 16:13	08/27/13 19:36 08/27/13 19:36 08/27/13 19:36 08/27/13 19:36 08/27/13 19:36 08/27/13 19:36	
5.4 U 5.4 U 5.4 U 5.4 U 5.4 U 5.4 U 5.4 U 5.4 U 5.4 U 5.4 U	5.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4	2.0 0.63 1.1 0.81 1.3 1.0 0.93 3.5 0.76	ug/Kg ug/Kg ug/Kg ug/Kg ug/Kg ug/Kg ug/Kg ug/Kg	***	08/23/13 16:13 08/23/13 16:13 08/23/13 16:13 08/23/13 16:13 08/23/13 16:13 08/23/13 16:13	08/27/13 19:36 08/27/13 19:36 08/27/13 19:36 08/27/13 19:36 08/27/13 19:36	
5.4 U 5.4 U 5.4 U 5.4 U 5.4 U 5.4 U 5.4 U 5.4 U 5.4 U	5.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4	0.63 1.1 0.81 1.3 1.0 0.93 3.5 0.76	ug/Kg ug/Kg ug/Kg ug/Kg ug/Kg ug/Kg ug/Kg	* * * *	08/23/13 16:13 08/23/13 16:13 08/23/13 16:13 08/23/13 16:13 08/23/13 16:13 08/23/13 16:13	08/27/13 19:36 08/27/13 19:36 08/27/13 19:36 08/27/13 19:36 08/27/13 19:36	
5.4 U 5.4 U 5.4 U 5.4 U 5.4 U 5.4 U 5.4 U 5.4 U	5.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4	1.1 0.81 1.3 1.0 0.93 3.5 0.76	ug/Kg ug/Kg ug/Kg ug/Kg ug/Kg ug/Kg	\$ \$ \$ \$ \$	08/23/13 16:13 08/23/13 16:13 08/23/13 16:13 08/23/13 16:13 08/23/13 16:13	08/27/13 19:36 08/27/13 19:36 08/27/13 19:36 08/27/13 19:36	
5.4 U 5.4 U 5.4 U 5.4 U 5.4 U 5.4 U 5.4 U	5.4 5.4 5.4 5.4 5.4 5.4 5.4	0.81 1.3 1.0 0.93 3.5 0.76 1.0	ug/Kg ug/Kg ug/Kg ug/Kg ug/Kg	\$ \$ \$	08/23/13 16:13 08/23/13 16:13 08/23/13 16:13 08/23/13 16:13	08/27/13 19:36 08/27/13 19:36 08/27/13 19:36	
5.4 U 5.4 U 5.4 U 5.4 U 5.4 U 5.4 U 5.4 U	5.4 5.4 5.4 5.4 5.4 5.4	1.3 1.0 0.93 3.5 0.76 1.0	ug/Kg ug/Kg ug/Kg ug/Kg	\$ \$ \$	08/23/13 16:13 08/23/13 16:13 08/23/13 16:13	08/27/13 19:36 08/27/13 19:36	
5.4 U 5.4 U 5.4 U 5.4 U 5.4 U 5.4 U	5.4 5.4 5.4 5.4 5.4 5.4	1.0 0.93 3.5 0.76 1.0	ug/Kg ug/Kg ug/Kg	<b>*</b>	08/23/13 16:13 08/23/13 16:13	08/27/13 19:36	
5.4 U 5.4 U 5.4 U 5.4 U 5.4 U	5.4 5.4 5.4 5.4 5.4	0.93 3.5 0.76 1.0	ug/Kg ug/Kg	\$ \$	08/23/13 16:13		
5.4 U 5.4 U 5.4 U 5.4 U	5.4 5.4 5.4 5.4	3.5 0.76 1.0	ug/Kg			08/27/13 19:36	
5.4 U 5.4 U 5.4 U 5.4 U	5.4 5.4 5.4	0.76 1.0			00/00/40 40 45		
5.4 U 5.4 U 5.4 U	5.4 5.4	0.76 1.0			08/23/13 16:13	08/27/13 19:36	
5.4 U 5.4 U	5.4			₩	08/23/13 16:13	08/27/13 19:36	
5.4 U			ug/Kg	₽	08/23/13 16:13	08/27/13 19:36	
	5.4	0.88	ug/Kg		08/23/13 16:13	08/27/13 19:36	
5.4 U			ug/Kg	₽	08/23/13 16:13	08/27/13 19:36	
	5.4	0.89	ug/Kg	₽	08/23/13 16:13	08/27/13 19:36	
5.4 U	5.4		ug/Kg		08/23/13 16:13	08/27/13 19:36	
5.4 U	5.4	0.80	ug/Kg	₽	08/23/13 16:13	08/27/13 19:36	
5.4 U	5.4	0.79	ug/Kg	₩	08/23/13 16:13	08/27/13 19:36	
5.4 U	5.4	0.59	ug/Kg		08/23/13 16:13	08/27/13 19:36	
5.4 U	5.4	0.65	ug/Kg ug/Kg	₽	08/23/13 16:13	08/27/13 19:36	
5.4 U	5.4	0.51	ug/Kg ug/Kg	₽	08/23/13 16:13	08/27/13 19:36	
5.4 U	5.4	0.60	ug/Kg		08/23/13 16:13	08/27/13 19:36	
27 U	27	5.4		₩	08/23/13 16:13	08/27/13 19:36	
5.4 U	5.4		ug/Kg		08/23/13 16:13	08/27/13 19:36	
		0.73	ug/Kg				
5.4 U	5.4	4.9	ug/Kg	~ ⇔	08/23/13 16:13	08/27/13 19:36	
5.4 U	5.4		ug/Kg		08/23/13 16:13	08/27/13 19:36	
16 U	16	11	ug/Kg	<del>X</del> .	08/23/13 16:13	08/27/13 19:36	
27 U	27		ug/Kg	<b>\$</b>	08/23/13 16:13	08/27/13 19:36	
27 U	27		ug/Kg	<b>\$</b>	08/23/13 16:13	08/27/13 19:36	
5.4 U	5.4		ug/Kg	<u>.</u> .	08/23/13 16:13	08/27/13 19:36	
	5.4			<b>*</b>	08/23/13 16:13	08/27/13 19:36	
5.4 U	5.4	0.90	ug/Kg		08/23/13 16:13	08/27/13 19:36	
	5.4			₩	08/23/13 16:13	08/27/13 19:36	
5.4 U	5.4			₩	08/23/13 16:13	08/27/13 19:36	
5.4 U	5.4	0.99	ug/Kg	₩	08/23/13 16:13	08/27/13 19:36	
5.4 U	5.4	0.78	ug/Kg	₽	08/23/13 16:13	08/27/13 19:36	
	5.4	1.2	ug/Kg	₩	08/23/13 16:13	08/27/13 19:36	
5.4 U	5.4	0.99	ug/Kg	₽	08/23/13 16:13	08/27/13 19:36	
5 5 5 5 5	5.4 U 5.4 U 5.4 U 5.4 U 5.4 U 5.4 U 5.4 U 5.4 U 5.4 U 5.4 U 5.4 U 5.4 U 5.4 U 5.4 U 5.4 U	5.4       U       5.4         5.4       U       5.4         5.4       U       5.4         5.4       U       5.4         5.4       U       5.4         5.4       U       5.4         5.4       U       5.4         5.4       U       5.4         5.4       U       5.4         5.4       U       5.4         5.4       U       5.4         5.4       U       5.4         5.4       U       5.4         5.4       U       5.4         5.4       U       5.4	5.4     U     5.4     1.1       5.4     U     5.4     0.81       5.4     U     5.4     0.47       5.4     U     5.4     0.77       5.4     U     5.4     0.90       5.4     U     5.4     0.75       5.4     U     5.4     0.81       5.4     U     5.4     0.99       5.4     U     5.4     0.78       5.4     U     5.4     1.2       5.4     U     5.4     0.99	5.4       U       5.4       1.1       ug/Kg         5.4       U       5.4       0.81       ug/Kg         5.4       U       5.4       0.47       ug/Kg         5.4       U       5.4       3.6       ug/Kg         5.4       U       5.4       0.77       ug/Kg         5.4       U       5.4       0.90       ug/Kg         5.4       U       5.4       0.75       ug/Kg         5.4       U       5.4       0.99       ug/Kg         5.4       U       5.4       0.78       ug/Kg         5.4       U       5.4       1.2       ug/Kg         5.4       U       5.4       0.99       ug/Kg	5.4       U       5.4       1.1       ug/Kg       \$         5.4       U       5.4       0.81       ug/Kg       \$         5.4       U       5.4       0.47       ug/Kg       \$         5.4       U       5.4       0.77       ug/Kg       \$         5.4       U       5.4       0.90       ug/Kg       \$         5.4       U       5.4       0.75       ug/Kg       \$         5.4       U       5.4       0.81       ug/Kg       \$         5.4       U       5.4       0.99       ug/Kg       \$         5.4       U       5.4       0.78       ug/Kg       \$         5.4       U       5.4       0.29       ug/Kg       \$         5.4       U       5.4       0.99       ug/Kg       \$         5.4       U       5.4       0.99       ug/Kg       \$	5.4       U       5.4       1.1       ug/Kg       © 08/23/13 16:13         5.4       U       5.4       0.81       ug/Kg       © 08/23/13 16:13         5.4       U       5.4       0.47       ug/Kg       © 08/23/13 16:13         5.4       U       5.4       3.6       ug/Kg       © 08/23/13 16:13         5.4       U       5.4       0.77       ug/Kg       © 08/23/13 16:13         5.4       U       5.4       0.90       ug/Kg       © 08/23/13 16:13         5.4       U       5.4       0.75       ug/Kg       © 08/23/13 16:13         5.4       U       5.4       0.81       ug/Kg       © 08/23/13 16:13         5.4       U       5.4       0.99       ug/Kg       © 08/23/13 16:13         5.4       U       5.4       0.78       ug/Kg       © 08/23/13 16:13         5.4       U       5.4       0.78       ug/Kg       © 08/23/13 16:13         5.4       U       5.4       0.29       ug/Kg       © 08/23/13 16:13         5.4       U       5.4       0.99       ug/Kg       © 08/23/13 16:13         5.4       U       5.4       0.99       ug/Kg       © 08/23/13	5.4       U       5.4       1.1       ug/Kg       © 08/23/13 16:13       08/27/13 19:36         5.4       U       5.4       0.81       ug/Kg       © 08/23/13 16:13       08/27/13 19:36         5.4       U       5.4       0.47       ug/Kg       © 08/23/13 16:13       08/27/13 19:36         5.4       U       5.4       3.6       ug/Kg       © 08/23/13 16:13       08/27/13 19:36         5.4       U       5.4       0.77       ug/Kg       © 08/23/13 16:13       08/27/13 19:36         5.4       U       5.4       0.90       ug/Kg       © 08/23/13 16:13       08/27/13 19:36         5.4       U       5.4       0.75       ug/Kg       © 08/23/13 16:13       08/27/13 19:36         5.4       U       5.4       0.81       ug/Kg       © 08/23/13 16:13       08/27/13 19:36         5.4       U       5.4       0.99       ug/Kg       © 08/23/13 16:13       08/27/13 19:36         5.4       U       5.4       0.78       ug/Kg       © 08/23/13 16:13       08/27/13 19:36         5.4       U       5.4       0.78       ug/Kg       © 08/23/13 16:13       08/27/13 19:36         5.4       U       5.4       0.78

TestAmerica Savannah

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93445-1

Client Sample ID: SB01-09 (0.0-1.0) Lab Sample ID: 680-93445-7 Date Collected: 08/20/13 09:30 Matrix: Solid Date Received: 08/21/13 10:07

Percent Solids: 71.4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichlorofluoromethane	5.4	U	5.4	1.0	ug/Kg	<u></u>	08/23/13 16:13	08/27/13 19:36	1
1,1,2-Trichloro-1,2,2-trifluoroethane	5.4	U	5.4	2.1	ug/Kg	₩	08/23/13 16:13	08/27/13 19:36	1
Vinyl chloride	5.4	U	5.4	0.99	ug/Kg		08/23/13 16:13	08/27/13 19:36	1
Xylenes, Total	11	U	11	2.0	ug/Kg	₽	08/23/13 16:13	08/27/13 19:36	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	98		72 - 122				08/23/13 16:13	08/27/13 19:36	1
Dibromofluoromethane	104		79 - 123				08/23/13 16:13	08/27/13 19:36	1
Toluene-d8 (Surr)	96		80 - 120				08/23/13 16:13	08/27/13 19:36	1

- Toldene-do (dull)	30		00 - 120				00/23/13 10.13	00/21/13 19.30	,
Method: 8270D - Semivolatile O	•	•	•						
Analyte		Qualifier	RL	MDL		D	Prepared	Analyzed	Dil Fac
Benzaldehyde	460		460	81	ug/Kg	<u>₩</u>	08/23/13 13:40	08/30/13 19:50	1
Phenol	460		460		ug/Kg	₩	08/23/13 13:40	08/30/13 19:50	1
Bis(2-chloroethyl)ether	460	U	460	63	ug/Kg		08/23/13 13:40	08/30/13 19:50	1
2-Chlorophenol	460	U	460	56	ug/Kg	₽	08/23/13 13:40	08/30/13 19:50	1
2-Methylphenol	460	U	460	38	ug/Kg	₩	08/23/13 13:40	08/30/13 19:50	1
bis (2-chloroisopropyl) ether	460	U	460	42	ug/Kg		08/23/13 13:40	08/30/13 19:50	1
Acetophenone	460	U	460	39	ug/Kg	₽	08/23/13 13:40	08/30/13 19:50	1
3 & 4 Methylphenol	460	U	460	60	ug/Kg	₽	08/23/13 13:40	08/30/13 19:50	1
N-Nitrosodi-n-propylamine	460	U	460	45	ug/Kg	₩	08/23/13 13:40	08/30/13 19:50	1
Hexachloroethane	460	U	460	39	ug/Kg	₽	08/23/13 13:40	08/30/13 19:50	1
Nitrobenzene	460	U	460	36	ug/Kg	₩	08/23/13 13:40	08/30/13 19:50	1
Isophorone	460	U	460	46	ug/Kg	₩	08/23/13 13:40	08/30/13 19:50	1
2-Nitrophenol	460	U	460	57	ug/Kg	₽	08/23/13 13:40	08/30/13 19:50	1
2,4-Dimethylphenol	460	U	460	61	ug/Kg	₽	08/23/13 13:40	08/30/13 19:50	1
Bis(2-chloroethoxy)methane	460	U	460	54	ug/Kg	₽	08/23/13 13:40	08/30/13 19:50	1
2,4-Dichlorophenol	460	U	460	49	ug/Kg	\$	08/23/13 13:40	08/30/13 19:50	1
Naphthalene	460	U	460	42	ug/Kg	₩	08/23/13 13:40	08/30/13 19:50	1
4-Chloroaniline	920	U *	920	73	ug/Kg	₩	08/23/13 13:40	08/30/13 19:50	1
Hexachlorobutadiene	460	U	460	50	ug/Kg	\$	08/23/13 13:40	08/30/13 19:50	1
Caprolactam	460	U	460	92	ug/Kg	₩	08/23/13 13:40	08/30/13 19:50	1
4-Chloro-3-methylphenol	460	U	460	49	ug/Kg	₩	08/23/13 13:40	08/30/13 19:50	1
2-Methylnaphthalene	310	J	460	53	ug/Kg	φ.	08/23/13 13:40	08/30/13 19:50	1
Hexachlorocyclopentadiene	460	U	460	57	ug/Kg	₽	08/23/13 13:40	08/30/13 19:50	1
2,4,6-Trichlorophenol	460	U	460	40	ug/Kg	₩	08/23/13 13:40	08/30/13 19:50	1
2,4,5-Trichlorophenol	460	U	460	49	ug/Kg	φ	08/23/13 13:40	08/30/13 19:50	1
1,1'-Biphenyl	1000	U	1000	1000	ug/Kg	₽	08/23/13 13:40	08/30/13 19:50	1
2-Chloronaphthalene	460	U	460	49	ug/Kg	₽	08/23/13 13:40	08/30/13 19:50	1
2-Nitroaniline	2400	U	2400	63	ug/Kg		08/23/13 13:40	08/30/13 19:50	1
Dimethyl phthalate	460	U	460	47	ug/Kg	₽	08/23/13 13:40	08/30/13 19:50	1
2,6-Dinitrotoluene	460	U	460	59	ug/Kg	₽	08/23/13 13:40	08/30/13 19:50	1
Acenaphthylene	460	U	460	50	ug/Kg		08/23/13 13:40	08/30/13 19:50	1
3-Nitroaniline	2400	U	2400	64	ug/Kg	₽	08/23/13 13:40	08/30/13 19:50	1
Acenaphthene	460	U	460	57	ug/Kg	₩	08/23/13 13:40	08/30/13 19:50	1
2,4-Dinitrophenol	2400	U	2400	1200	ug/Kg		08/23/13 13:40	08/30/13 19:50	1
4-Nitrophenol	2400	U	2400	460	ug/Kg	₽	08/23/13 13:40	08/30/13 19:50	1
Dibenzofuran	88	J	460		ug/Kg	₩	08/23/13 13:40	08/30/13 19:50	1
2,4-Dinitrotoluene	460		460		ug/Kg		08/23/13 13:40	08/30/13 19:50	1
Diethyl phthalate	460	U	460		ug/Kg	₩	08/23/13 13:40	08/30/13 19:50	1

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB01-09 (0.0-1.0)

Date Collected: 08/20/13 09:30 Date Received: 08/21/13 10:07

Diesel Range Organics [C10-C28]

ORO C24-C40

o-Terphenyl (Surr)

Surrogate

Lab Sample ID: 680-93445-7

Matrix: Solid

Percent Solids: 71.4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluorene	460	U	460	50	ug/Kg	₩	08/23/13 13:40	08/30/13 19:50	1
4-Chlorophenyl phenyl ether	460	U	460	61	ug/Kg	\$	08/23/13 13:40	08/30/13 19:50	1
4-Nitroaniline	2400	U	2400	68	ug/Kg	₽	08/23/13 13:40	08/30/13 19:50	1
4,6-Dinitro-2-methylphenol	2400	U	2400	240	ug/Kg	₽	08/23/13 13:40	08/30/13 19:50	1
N-Nitrosodiphenylamine	460	U	460	46	ug/Kg	\$	08/23/13 13:40	08/30/13 19:50	1
4-Bromophenyl phenyl ether	460	U	460	50	ug/Kg	₽	08/23/13 13:40	08/30/13 19:50	1
Hexachlorobenzene	460	U	460	54	ug/Kg	₽	08/23/13 13:40	08/30/13 19:50	1
Atrazine	460	U	460	32	ug/Kg	₽	08/23/13 13:40	08/30/13 19:50	1
Pentachlorophenol	2400	U	2400	460	ug/Kg	₽	08/23/13 13:40	08/30/13 19:50	1
Phenanthrene	180	J	460	38	ug/Kg	₩	08/23/13 13:40	08/30/13 19:50	1
Anthracene	460	U	460	35	ug/Kg	₽	08/23/13 13:40	08/30/13 19:50	1
Carbazole	460	U	460	42	ug/Kg	₽	08/23/13 13:40	08/30/13 19:50	1
Di-n-butyl phthalate	460	U	460	42	ug/Kg	₽	08/23/13 13:40	08/30/13 19:50	1
Fluoranthene	110	J	460	45	ug/Kg	<b>\$</b>	08/23/13 13:40	08/30/13 19:50	1
Pyrene	69	J	460	38	ug/Kg	₽	08/23/13 13:40	08/30/13 19:50	1
Butyl benzyl phthalate	460	U	460	36	ug/Kg	₽	08/23/13 13:40	08/30/13 19:50	1
3,3'-Dichlorobenzidine	920	U	920	39	ug/Kg	<b>\$</b>	08/23/13 13:40	08/30/13 19:50	1
Benzo[a]anthracene	460	U	460	38	ug/Kg	₩	08/23/13 13:40	08/30/13 19:50	1
Chrysene	84	J	460	29	ug/Kg	₽	08/23/13 13:40	08/30/13 19:50	1
Bis(2-ethylhexyl) phthalate	460	U	460	40	ug/Kg		08/23/13 13:40	08/30/13 19:50	1
Di-n-octyl phthalate	460	U	460	40	ug/Kg	₽	08/23/13 13:40	08/30/13 19:50	1
Benzo[b]fluoranthene	75	J	460	53	ug/Kg	₽	08/23/13 13:40	08/30/13 19:50	1
Benzo[k]fluoranthene	460	U	460	91	ug/Kg	₩.	08/23/13 13:40	08/30/13 19:50	1
Benzo[a]pyrene	460	U	460	73	ug/Kg	₩	08/23/13 13:40	08/30/13 19:50	1
Indeno[1,2,3-cd]pyrene	460	U	460	39	ug/Kg	₩	08/23/13 13:40	08/30/13 19:50	1
Dibenz(a,h)anthracene	460	U	460	54	ug/Kg		08/23/13 13:40	08/30/13 19:50	1
Benzo[g,h,i]perylene	34	JB	460	31	ug/Kg	\$	08/23/13 13:40	08/30/13 19:50	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	65		46 - 130				08/23/13 13:40	08/30/13 19:50	1
2-Fluorobiphenyl	70		58 - 130				08/23/13 13:40	08/30/13 19:50	1
Terphenyl-d14 (Surr)	68		60 - 130				08/23/13 13:40	08/30/13 19:50	1
Phenol-d5 (Surr)	57		49 - 130				08/23/13 13:40	08/30/13 19:50	1
2-Fluorophenol (Surr)	60		40 - 130				08/23/13 13:40	08/30/13 19:50	1
2,4,6-Tribromophenol (Surr)	77		58 - 130				08/23/13 13:40	08/30/13 19:50	1
Method: 8015C - Nonhalogenate	d Organics usi	ng GC/FID	-Modified (Gasol	ine Ran	ge Organ	ics)			
Analyte		Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO) -C6-C10	260	J	310	24	ug/Kg	<del></del>	08/22/13 10:07	08/28/13 20:19	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene	120		70 - 131				08/22/13 10:07	08/28/13 20:19	1

TestAmerica Savannah

Analyzed

08/30/13 00:58

08/30/13 00:58

Analyzed

08/30/13 00:58

RL

6800

6800

Limits

50 - 150

MDL Unit

1900 ug/Kg

1900 ug/Kg

D

Prepared

08/28/13 11:44

08/28/13 11:44

Prepared

08/28/13 11:44

Method: 8015C - Nonhalogenated Organics using GC/FID -Modified (Diesel Range Organics) Result Qualifier

6800 U

4400 JB

%Recovery Qualifier

74

Dil Fac

Dil Fac

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB01-09 (4.0-5.0)

Lab Sample ID: 680-93445-8

TestAmerica Job ID: 680-93445-1

Matrix: Solid

Percent Solids: 84.6

	•	-		
Date Collected: 08/20/13 09:40				
Date Received: 08/21/13 10:07				

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	26		26	7.7	ug/Kg	<u></u>	08/23/13 16:13	08/27/13 20:01	1
Benzene	5.3	U	5.3	0.52	ug/Kg	₩	08/23/13 16:13	08/27/13 20:01	1
Bromodichloromethane	5.3	U	5.3	0.88	ug/Kg	₩	08/23/13 16:13	08/27/13 20:01	1
Bromoform	5.3	U	5.3	0.66	ug/Kg		08/23/13 16:13	08/27/13 20:01	
Bromomethane	5.3	U	5.3	1.5	ug/Kg	₩	08/23/13 16:13	08/27/13 20:01	1
Carbon disulfide	5.3	U	5.3	1.3	ug/Kg	₩	08/23/13 16:13	08/27/13 20:01	1
Carbon tetrachloride	5.3	U	5.3	1.8	ug/Kg		08/23/13 16:13	08/27/13 20:01	1
Chlorobenzene	5.3	U	5.3	0.55	ug/Kg	₽	08/23/13 16:13	08/27/13 20:01	1
Chloroethane	5.3	U	5.3	2.0	ug/Kg	₽	08/23/13 16:13	08/27/13 20:01	1
Chloroform	5.3	U	5.3	0.62	ug/Kg		08/23/13 16:13	08/27/13 20:01	1
Chloromethane	5.3	U	5.3	1.1	ug/Kg	₩	08/23/13 16:13	08/27/13 20:01	1
cis-1,2-Dichloroethene	5.3	U	5.3	0.80	ug/Kg	₩	08/23/13 16:13	08/27/13 20:01	1
cis-1,3-Dichloropropene	5.3	U	5.3	1.3	ug/Kg	⊕	08/23/13 16:13	08/27/13 20:01	1
Cyclohexane	5.3		5.3	0.99	ug/Kg	₩	08/23/13 16:13	08/27/13 20:01	1
Dibromochloromethane	5.3		5.3	0.91	ug/Kg	₩	08/23/13 16:13	08/27/13 20:01	1
1,2-Dibromo-3-Chloropropane	5.3		5.3		ug/Kg		08/23/13 16:13	08/27/13 20:01	1
1,2-Dichlorobenzene	5.3		5.3	0.75	ug/Kg	₽	08/23/13 16:13	08/27/13 20:01	1
1,3-Dichlorobenzene	5.3		5.3	1.0	ug/Kg	₽	08/23/13 16:13	08/27/13 20:01	1
1,4-Dichlorobenzene	5.3		5.3		ug/Kg		08/23/13 16:13	08/27/13 20:01	
Dichlorodifluoromethane	5.3		5.3		ug/Kg	₩	08/23/13 16:13	08/27/13 20:01	1
1,1-Dichloroethane	5.3		5.3		ug/Kg	₩	08/23/13 16:13	08/27/13 20:01	· 1
1.2-Dichloroethane	5.3		5.3		ug/Kg		08/23/13 16:13	08/27/13 20:01	· · · · · · · · · · · · · · · · · · ·
1,1-Dichloroethene	5.3		5.3		ug/Kg ug/Kg	₩	08/23/13 16:13	08/27/13 20:01	1
1,2-Dichloropropane	5.3		5.3	0.78	ug/Kg ug/Kg	₩	08/23/13 16:13	08/27/13 20:01	1
	5.3		5.3	0.78			08/23/13 16:13	08/27/13 20:01	
Diisopropyl ether Ethylbenzene	5.3		5.3		ug/Kg ug/Kg	₩	08/23/13 16:13	08/27/13 20:01	
Ethylene Dibromide	5.3		5.3	0.50	ug/Kg ug/Kg	₩	08/23/13 16:13	08/27/13 20:01	1
	5.3		5.3			· · · · · · · · · · · ·	08/23/13 16:13		
Ethyl tert-butyl ether	26		26	0.59	ug/Kg		08/23/13 16:13	08/27/13 20:01	1
2-Hexanone	5.3		5.3	5.3	ug/Kg	~ \$		08/27/13 20:01	1
Isopropylbenzene				0.71	ug/Kg		08/23/13 16:13	08/27/13 20:01	1
Methyl acetate	5.3		5.3	4.8	ug/Kg	* \$	08/23/13 16:13	08/27/13 20:01	1
Methylcyclohexane	5.3		5.3	0.91	ug/Kg	<b>~</b>	08/23/13 16:13	08/27/13 20:01	1
Methylene Chloride	16		16	11	ug/Kg	¥	08/23/13 16:13	08/27/13 20:01	1
Methyl Ethyl Ketone	26		26		ug/Kg		08/23/13 16:13	08/27/13 20:01	1
methyl isobutyl ketone	26		26		ug/Kg	*	08/23/13 16:13	08/27/13 20:01	1
Methyl tert-butyl ether	1.7		5.3		ug/Kg		08/23/13 16:13	08/27/13 20:01	1
Naphthalene	5.3		5.3		ug/Kg	₩	08/23/13 16:13	08/27/13 20:01	1
Styrene	5.3		5.3		ug/Kg	₩	08/23/13 16:13	08/27/13 20:01	1
Tert-amyl methyl ether	5.3		5.3		ug/Kg		08/23/13 16:13	08/27/13 20:01	1
tert-Butyl alcohol	5.3		5.3		ug/Kg		08/23/13 16:13	08/27/13 20:01	1
1,1,2,2-Tetrachloroethane	5.3		5.3		ug/Kg	₩	08/23/13 16:13	08/27/13 20:01	1
Tetrachloroethene	5.3		5.3		ug/Kg		08/23/13 16:13	08/27/13 20:01	
Toluene	5.3		5.3		ug/Kg	₩	08/23/13 16:13	08/27/13 20:01	1
trans-1,2-Dichloroethene	5.3		5.3		ug/Kg	₩	08/23/13 16:13	08/27/13 20:01	1
trans-1,3-Dichloropropene	5.3		5.3		ug/Kg		08/23/13 16:13	08/27/13 20:01	1
1,2,4-Trichlorobenzene	5.3		5.3		ug/Kg	₩	08/23/13 16:13	08/27/13 20:01	1
1,1,1-Trichloroethane	5.3	U	5.3	1.2	ug/Kg	₩	08/23/13 16:13	08/27/13 20:01	1
1,1,2-Trichloroethane	5.3	U	5.3	0.97	ug/Kg	₩	08/23/13 16:13	08/27/13 20:01	1
Trichloroethene	5.3	U	5.3	0.50	ug/Kg	\$	08/23/13 16:13	08/27/13 20:01	1

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93445-1

Client Sample ID: SB01-09 (4.0-5.0)

Lab Sample ID: 680-93445-8

Date Collected: 08/20/13 09:40

Date Received: 08/21/13 10:07

Matrix: Solid
Percent Solids: 84.6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichlorofluoromethane	5.3	U	5.3	1.0	ug/Kg	₩	08/23/13 16:13	08/27/13 20:01	1
1,1,2-Trichloro-1,2,2-trifluoroethane	5.3	U	5.3	2.1	ug/Kg	☼	08/23/13 16:13	08/27/13 20:01	1
Vinyl chloride	5.3	U	5.3	0.97	ug/Kg	₽	08/23/13 16:13	08/27/13 20:01	1
Xylenes, Total	11	U	11	2.0	ug/Kg	₩	08/23/13 16:13	08/27/13 20:01	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	95		72 - 122				08/23/13 16:13	08/27/13 20:01	1
Dibromofluoromethane	103		79 - 123				08/23/13 16:13	08/27/13 20:01	1
Toluene-d8 (Surr)	96		80 - 120				08/23/13 16:13	08/27/13 20:01	1

Toluene-d8 (Surr)	96		80 - 120				08/23/13 16:13	08/27/13 20:01	1
Method: 8270D - Semivolatile Or	ganic Compou	nds (GC/MS	)						
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzaldehyde	390	U	390	68	ug/Kg	<del>-</del>	08/23/13 13:40	08/30/13 20:16	1
Phenol	390	U	390	40	ug/Kg	₽	08/23/13 13:40	08/30/13 20:16	1
Bis(2-chloroethyl)ether	390	U	390	53	ug/Kg	₩	08/23/13 13:40	08/30/13 20:16	1
2-Chlorophenol	390	U	390	47	ug/Kg	₩	08/23/13 13:40	08/30/13 20:16	1
2-Methylphenol	390	U	390	32	ug/Kg	₩	08/23/13 13:40	08/30/13 20:16	1
bis (2-chloroisopropyl) ether	390	U	390	35	ug/Kg	₽	08/23/13 13:40	08/30/13 20:16	1
Acetophenone	390	U	390	33	ug/Kg	₽	08/23/13 13:40	08/30/13 20:16	1
3 & 4 Methylphenol	390	U	390	51	ug/Kg	₽	08/23/13 13:40	08/30/13 20:16	1
N-Nitrosodi-n-propylamine	390	U	390	38	ug/Kg	₽	08/23/13 13:40	08/30/13 20:16	1
Hexachloroethane	390	U	390	33	ug/Kg	₽	08/23/13 13:40	08/30/13 20:16	1
Nitrobenzene	390	U	390	31	ug/Kg	₽	08/23/13 13:40	08/30/13 20:16	1
Isophorone	390	U	390	39	ug/Kg	₽	08/23/13 13:40	08/30/13 20:16	1
2-Nitrophenol	390	U	390	48	ug/Kg	\$	08/23/13 13:40	08/30/13 20:16	1
2,4-Dimethylphenol	390	U	390	52	ug/Kg	₽	08/23/13 13:40	08/30/13 20:16	1
Bis(2-chloroethoxy)methane	390	U	390	46	ug/Kg	₽	08/23/13 13:40	08/30/13 20:16	1
2,4-Dichlorophenol	390	U	390	41	ug/Kg	₩.	08/23/13 13:40	08/30/13 20:16	1
Naphthalene	390	U	390	35	ug/Kg	₽	08/23/13 13:40	08/30/13 20:16	1
4-Chloroaniline	780	U *	780	61	ug/Kg	₩	08/23/13 13:40	08/30/13 20:16	1
Hexachlorobutadiene	390	U	390	42	ug/Kg		08/23/13 13:40	08/30/13 20:16	1
Caprolactam	390	U	390	78	ug/Kg	₩	08/23/13 13:40	08/30/13 20:16	1
4-Chloro-3-methylphenol	390	U	390	41	ug/Kg	₩	08/23/13 13:40	08/30/13 20:16	1
2-Methylnaphthalene	390	U	390	45	ug/Kg		08/23/13 13:40	08/30/13 20:16	1
Hexachlorocyclopentadiene	390	U	390	48	ug/Kg	₩	08/23/13 13:40	08/30/13 20:16	1
2,4,6-Trichlorophenol	390	U	390	34	ug/Kg	₩	08/23/13 13:40	08/30/13 20:16	1
2,4,5-Trichlorophenol	390	U	390	41	ug/Kg	Φ	08/23/13 13:40	08/30/13 20:16	1
1,1'-Biphenyl	870	U	870	870	ug/Kg	₩	08/23/13 13:40	08/30/13 20:16	1
2-Chloronaphthalene	390	U	390	41	ug/Kg	₩	08/23/13 13:40	08/30/13 20:16	1
2-Nitroaniline	2000	U	2000	53	ug/Kg		08/23/13 13:40	08/30/13 20:16	1
Dimethyl phthalate	390	U	390	40	ug/Kg	₩	08/23/13 13:40	08/30/13 20:16	1
2,6-Dinitrotoluene	390	U	390	49	ug/Kg	₩	08/23/13 13:40	08/30/13 20:16	1
Acenaphthylene	390	U	390	42	ug/Kg		08/23/13 13:40	08/30/13 20:16	1
3-Nitroaniline	2000	U	2000	54	ug/Kg	₽	08/23/13 13:40	08/30/13 20:16	1
Acenaphthene	390	U	390	48	ug/Kg	₽	08/23/13 13:40	08/30/13 20:16	1
2,4-Dinitrophenol	2000	U	2000	980	ug/Kg		08/23/13 13:40	08/30/13 20:16	1
4-Nitrophenol	2000	U	2000	390	ug/Kg	₽	08/23/13 13:40	08/30/13 20:16	1
Dibenzofuran	390	U	390	39	ug/Kg	₩	08/23/13 13:40	08/30/13 20:16	1
2,4-Dinitrotoluene	390	U	390			· · · · · · · · · · · · · · · · · · ·	08/23/13 13:40	08/30/13 20:16	1
Diethyl phthalate	390	U	390		ug/Kg	₽	08/23/13 13:40	08/30/13 20:16	1

TestAmerica Savannah

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Client: ARCADIS U.S., Inc.

Date Collected: 08/20/13 09:40

Date Received: 08/21/13 10:07

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB01-09 (4.0-5.0)

TestAmerica Job ID: 680-93445-1

Lab Sample ID: 680-93445-8

Matrix: Solid
Percent Solids: 84.6

Matrix: Solid

C	5
1 1	6
1	

8

10

12

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
Fluorene	390	U	390	42	ug/Kg	<del>*</del>	08/23/13 13:40	08/30/13 20:16	
4-Chlorophenyl phenyl ether	390	U	390	52	ug/Kg		08/23/13 13:40	08/30/13 20:16	
4-Nitroaniline	2000	U	2000	58	ug/Kg	₩	08/23/13 13:40	08/30/13 20:16	
4,6-Dinitro-2-methylphenol	2000	U	2000	200	ug/Kg	₩	08/23/13 13:40	08/30/13 20:16	
N-Nitrosodiphenylamine	390	U	390	39	ug/Kg	₩	08/23/13 13:40	08/30/13 20:16	
4-Bromophenyl phenyl ether	390	U	390	42	ug/Kg	₩	08/23/13 13:40	08/30/13 20:16	
Hexachlorobenzene	390	U	390	46	ug/Kg	₩	08/23/13 13:40	08/30/13 20:16	
Atrazine	390	U	390	27	ug/Kg	₩	08/23/13 13:40	08/30/13 20:16	
Pentachlorophenol	2000	U	2000	390	ug/Kg	₩	08/23/13 13:40	08/30/13 20:16	
Phenanthrene	390	U	390	32	ug/Kg	₩	08/23/13 13:40	08/30/13 20:16	
Anthracene	390	U	390	29	ug/Kg	₩.	08/23/13 13:40	08/30/13 20:16	
Carbazole	390	U	390	35	ug/Kg	₩	08/23/13 13:40	08/30/13 20:16	
Di-n-butyl phthalate	390	U	390	35	ug/Kg	₩	08/23/13 13:40	08/30/13 20:16	
Fluoranthene	390	U	390	38	ug/Kg		08/23/13 13:40	08/30/13 20:16	
Pyrene	390	U	390	32	ug/Kg	₩	08/23/13 13:40	08/30/13 20:16	
Butyl benzyl phthalate	390	U	390	31	ug/Kg	₩	08/23/13 13:40	08/30/13 20:16	
3,3'-Dichlorobenzidine	780	U	780	33	ug/Kg		08/23/13 13:40	08/30/13 20:16	
Benzo[a]anthracene	390	U	390	32	ug/Kg	₩	08/23/13 13:40	08/30/13 20:16	
Chrysene	390	U	390	25	ug/Kg	₩	08/23/13 13:40	08/30/13 20:16	
Bis(2-ethylhexyl) phthalate	390	U	390	34	ug/Kg		08/23/13 13:40	08/30/13 20:16	
Di-n-octyl phthalate	390	U	390	34	ug/Kg	₩	08/23/13 13:40	08/30/13 20:16	
Benzo[b]fluoranthene	390	U	390	45	ug/Kg	₩	08/23/13 13:40	08/30/13 20:16	
Benzo[k]fluoranthene	390	U	390	76	ug/Kg		08/23/13 13:40	08/30/13 20:16	
Benzo[a]pyrene	390	U	390	61	ug/Kg	₩	08/23/13 13:40	08/30/13 20:16	
Indeno[1,2,3-cd]pyrene	390	U	390	33	ug/Kg	₩	08/23/13 13:40	08/30/13 20:16	
Dibenz(a,h)anthracene	390	U	390	46	ug/Kg	₩	08/23/13 13:40	08/30/13 20:16	
Benzo[g,h,i]perylene	390	U	390	26	ug/Kg	₽	08/23/13 13:40	08/30/13 20:16	
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fa
Nitrobenzene-d5 (Surr)	71		46 - 130				08/23/13 13:40	08/30/13 20:16	
2-Fluorobiphenyl	81		58 - 130				08/23/13 13:40	08/30/13 20:16	
Terphenyl-d14 (Surr)	92		60 - 130				08/23/13 13:40	08/30/13 20:16	
Phenol-d5 (Surr)	75		49 - 130				08/23/13 13:40	08/30/13 20:16	
2-Fluorophenol (Surr)	80		40 - 130				08/23/13 13:40	08/30/13 20:16	
2,4,6-Tribromophenol (Surr)	88		58 - 130				08/23/13 13:40	08/30/13 20:16	
Method: 8015C - Nonhalogenat	ed Organics usi	ng GC/FID -	Modified (Gaso	line Ran	ge Organ	ics)			
Analyte		Qualifier	RL	MDL		D	Prepared	Analyzed	Dil Fa
Gasoline Range Organics (GRO) -C6-C10	220	U	220	17	ug/Kg	<del>\</del>	08/22/13 10:07	08/24/13 19:17	
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fa
a,a,a-Trifluorotoluene	88		70 - 131				08/22/13 10:07	08/24/13 19:17	

 Method: 8015C - Nonhalogenate	od Organice usi	ng GC/FID	Modified (Dies	ol Pango	Organica	-1			
Analyte	_	Qualifier	RL	MDL	_	D D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	5900	U	5900	1600	ug/Kg	<u> </u>	08/28/13 11:44	08/30/13 01:14	1
ORO C24-C40	3500	JB	5900	1600	ug/Kg	₽	08/28/13 11:44	08/30/13 01:14	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
o-Terphenyl (Surr)	87		50 - 150				08/28/13 11:44	08/30/13 01:14	1

Client: ARCADIS U.S., Inc.

Date Collected: 08/20/13 10:15

Date Received: 08/21/13 10:07

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB01-10 (0.0-1.0)

Lab Sample ID: 680-93445-9

TestAmerica Job ID: 680-93445-1

Matrix: Solid

Percent Solids: 77.1

Analyte		Qualifier	RL	MDL		D	Prepared	Analyzed	Dil F
Acetone	26	U	26	7.6	ug/Kg	<u> </u>	08/23/13 16:13	08/27/13 20:27	
Benzene	5.2	U	5.2	0.51	ug/Kg	₽	08/23/13 16:13	08/27/13 20:27	
Bromodichloromethane	5.2	U	5.2	0.87	ug/Kg	₩	08/23/13 16:13	08/27/13 20:27	
Bromoform	5.2	U	5.2	0.65	ug/Kg	₽	08/23/13 16:13	08/27/13 20:27	
Bromomethane	5.2	U	5.2	1.5	ug/Kg	₽	08/23/13 16:13	08/27/13 20:27	
Carbon disulfide	5.2	U	5.2	1.2	ug/Kg	₽	08/23/13 16:13	08/27/13 20:27	
Carbon tetrachloride	5.2	U	5.2	1.8	ug/Kg	₽	08/23/13 16:13	08/27/13 20:27	
Chlorobenzene	5.2	U	5.2	0.54	ug/Kg	₽	08/23/13 16:13	08/27/13 20:27	
Chloroethane	5.2	U	5.2	2.0	ug/Kg	₩	08/23/13 16:13	08/27/13 20:27	
Chloroform	5.2	U	5.2	0.61	ug/Kg		08/23/13 16:13	08/27/13 20:27	
Chloromethane	5.2	U	5.2	1.0	ug/Kg	₩	08/23/13 16:13	08/27/13 20:27	
cis-1,2-Dichloroethene	5.2	U	5.2	0.79	ug/Kg	₽	08/23/13 16:13	08/27/13 20:27	
cis-1,3-Dichloropropene	5.2	U	5.2	1.2	ug/Kg		08/23/13 16:13	08/27/13 20:27	
Cyclohexane	5.2	U	5.2	0.97		₩	08/23/13 16:13	08/27/13 20:27	
Dibromochloromethane	5.2	U	5.2	0.90		₽	08/23/13 16:13	08/27/13 20:27	
1,2-Dibromo-3-Chloropropane	5.2	U	5.2		ug/Kg		08/23/13 16:13	08/27/13 20:27	
,2-Dichlorobenzene	5.2		5.2	0.74		₩	08/23/13 16:13	08/27/13 20:27	
,3-Dichlorobenzene	5.2	U	5.2	0.98	ug/Kg	₽	08/23/13 16:13	08/27/13 20:27	
.4-Dichlorobenzene	5.2		5.2	0.85			08/23/13 16:13	08/27/13 20:27	
Dichlorodifluoromethane	5.2		5.2	1.3	ug/Kg	₩	08/23/13 16:13	08/27/13 20:27	
,1-Dichloroethane	5.2		5.2	0.86	ug/Kg	₩	08/23/13 16:13	08/27/13 20:27	
,2-Dichloroethane	5.2		5.2	0.85			08/23/13 16:13	08/27/13 20:27	
,1-Dichloroethene	5.2		5.2	0.78	ug/Kg	₽	08/23/13 16:13	08/27/13 20:27	
,2-Dichloropropane	5.2		5.2	0.77		₽	08/23/13 16:13	08/27/13 20:27	
Diisopropyl ether	5.2		5.2	0.57			08/23/13 16:13	08/27/13 20:27	
Ethylbenzene	5.2		5.2	0.63			08/23/13 16:13	08/27/13 20:27	
Ethylene Dibromide	5.2		5.2	0.50			08/23/13 16:13	08/27/13 20:27	
	5.2		5.2				08/23/13 16:13	08/27/13 20:27	
Ethyl tert-butyl ether P-Hexanone	26		26		ug/Kg		08/23/13 16:13	08/27/13 20:27	
	5.2		5.2		ug/Kg ug/Kg		08/23/13 16:13	08/27/13 20:27	
sopropylbenzene	5.2			0.70			08/23/13 16:13	08/27/13 20:27	
Methyl acetate			5.2		0 0	~ ⇔			
Methylcyclohexane	5.2		5.2	0.90			08/23/13 16:13	08/27/13 20:27	
Methylene Chloride	16		16	10		 \$	08/23/13 16:13	08/27/13 20:27	
Methyl Ethyl Ketone	26		26		ug/Kg		08/23/13 16:13	08/27/13 20:27	
nethyl isobutyl ketone	26		26		ug/Kg	<b>‡</b>	08/23/13 16:13	08/27/13 20:27	
Methyl tert-butyl ether	5.2		5.2	1.0			08/23/13 16:13	08/27/13 20:27	
Naphthalene	5.2		5.2		ug/Kg	ψ.	08/23/13 16:13	08/27/13 20:27	
Styrene	5.2		5.2			ψ.	08/23/13 16:13	08/27/13 20:27	
ert-amyl methyl ether	5.2		5.2		ug/Kg	<u>.</u>	08/23/13 16:13	08/27/13 20:27	
ert-Butyl alcohol	5.2		5.2		ug/Kg		08/23/13 16:13	08/27/13 20:27	
,1,2,2-Tetrachloroethane	5.2		5.2		ug/Kg		08/23/13 16:13	08/27/13 20:27	
etrachloroethene	5.2		5.2		ug/Kg	<u>.</u>	08/23/13 16:13	08/27/13 20:27	
oluene	5.2		5.2		ug/Kg	<b>*</b>	08/23/13 16:13	08/27/13 20:27	
rans-1,2-Dichloroethene	5.2		5.2	0.79	ug/Kg	*	08/23/13 16:13	08/27/13 20:27	
rans-1,3-Dichloropropene	5.2	U	5.2	0.95	ug/Kg	<b>#</b>	08/23/13 16:13	08/27/13 20:27	
,2,4-Trichlorobenzene	5.2	U	5.2	0.76	ug/Kg	₩	08/23/13 16:13	08/27/13 20:27	
,1,1-Trichloroethane	5.2	U	5.2	1.1	ug/Kg	₽	08/23/13 16:13	08/27/13 20:27	
1,1,2-Trichloroethane	5.2	U	5.2	0.95	ug/Kg	₩	08/23/13 16:13	08/27/13 20:27	
Frichloroethene	5.2	U	5.2	0.50	ug/Kg	φ.	08/23/13 16:13	08/27/13 20:27	

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93445-1

Client Sample ID: SB01-10 (0.0-1.0)

Lab Sample ID: 680-93445-9 Date Collected: 08/20/13 10:15 Matrix: Solid Date Received: 08/21/13 10:07

Percent Solids: 77.1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichlorofluoromethane	5.2	U	5.2	0.98	ug/Kg	₩	08/23/13 16:13	08/27/13 20:27	1
1,1,2-Trichloro-1,2,2-trifluoroethane	5.2	U	5.2	2.1	ug/Kg	₽	08/23/13 16:13	08/27/13 20:27	1
Vinyl chloride	5.2	U	5.2	0.95	ug/Kg	₽	08/23/13 16:13	08/27/13 20:27	1
Xylenes, Total	10	U	10	2.0	ug/Kg	\$	08/23/13 16:13	08/27/13 20:27	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	95		72 - 122				08/23/13 16:13	08/27/13 20:27	1
Dibromofluoromethane	103		79 - 123				08/23/13 16:13	08/27/13 20:27	1
Toluene-d8 (Surr)	98		80 - 120				08/23/13 16:13	08/27/13 20:27	1

Toldene-do (Sull)	30		00 - 120				00,20,70,70.70	00/2//10/20:2/	,
Method: 8270D - Semivolatile Or	•	•	•						
Analyte		Qualifier	RL	MDL		D	Prepared	Analyzed	Dil Fac
Benzaldehyde	420		420	74	ug/Kg	*	08/23/13 13:40	08/30/13 20:41	1
Phenol	420		420		ug/Kg	₩	08/23/13 13:40	08/30/13 20:41	1
Bis(2-chloroethyl)ether	420	U	420	58	ug/Kg	₩	08/23/13 13:40	08/30/13 20:41	1
2-Chlorophenol	420	U	420	51	ug/Kg	₩	08/23/13 13:40	08/30/13 20:41	1
2-Methylphenol	420	U	420	35	ug/Kg	₩	08/23/13 13:40	08/30/13 20:41	1
bis (2-chloroisopropyl) ether	420	U	420	38	ug/Kg	₩	08/23/13 13:40	08/30/13 20:41	1
Acetophenone	420	U	420	36	ug/Kg	₩	08/23/13 13:40	08/30/13 20:41	1
3 & 4 Methylphenol	420	U	420	55	ug/Kg	₩	08/23/13 13:40	08/30/13 20:41	1
N-Nitrosodi-n-propylamine	420	U	420	41	ug/Kg	₩	08/23/13 13:40	08/30/13 20:41	1
Hexachloroethane	420	U	420	36	ug/Kg	₽	08/23/13 13:40	08/30/13 20:41	1
Nitrobenzene	420	U	420	33	ug/Kg	₩	08/23/13 13:40	08/30/13 20:41	1
Isophorone	420	U	420	42	ug/Kg	₩	08/23/13 13:40	08/30/13 20:41	1
2-Nitrophenol	420	U	420	53	ug/Kg	₽	08/23/13 13:40	08/30/13 20:41	1
2,4-Dimethylphenol	420	U	420	56	ug/Kg	₩	08/23/13 13:40	08/30/13 20:41	1
Bis(2-chloroethoxy)methane	420	U	420	50	ug/Kg	₩	08/23/13 13:40	08/30/13 20:41	1
2,4-Dichlorophenol	420	U	420	45	ug/Kg		08/23/13 13:40	08/30/13 20:41	1
Naphthalene	38	J	420	38	ug/Kg	₩	08/23/13 13:40	08/30/13 20:41	1
4-Chloroaniline	850	U *	850	67	ug/Kg	₩	08/23/13 13:40	08/30/13 20:41	1
Hexachlorobutadiene	420	U	420	46	ug/Kg		08/23/13 13:40	08/30/13 20:41	1
Caprolactam	420	U	420	85	ug/Kg	₩	08/23/13 13:40	08/30/13 20:41	1
4-Chloro-3-methylphenol	420	U	420	45	ug/Kg	₩	08/23/13 13:40	08/30/13 20:41	1
2-Methylnaphthalene	54	J	420	49	ug/Kg		08/23/13 13:40	08/30/13 20:41	1
Hexachlorocyclopentadiene	420	U	420	53	ug/Kg	₩	08/23/13 13:40	08/30/13 20:41	1
2,4,6-Trichlorophenol	420	U	420	37	ug/Kg	₩	08/23/13 13:40	08/30/13 20:41	1
2,4,5-Trichlorophenol	420	U	420	45	ug/Kg		08/23/13 13:40	08/30/13 20:41	1
1,1'-Biphenyl	950	U	950	950	ug/Kg	₩	08/23/13 13:40	08/30/13 20:41	1
2-Chloronaphthalene	420	U	420	45	ug/Kg	₩	08/23/13 13:40	08/30/13 20:41	1
2-Nitroaniline	2200	U	2200	58	ug/Kg		08/23/13 13:40	08/30/13 20:41	1
Dimethyl phthalate	420	U	420	44	ug/Kg	₩	08/23/13 13:40	08/30/13 20:41	1
2,6-Dinitrotoluene	420	U	420	54	ug/Kg	₩	08/23/13 13:40	08/30/13 20:41	1
Acenaphthylene	420	U	420	46	ug/Kg		08/23/13 13:40	08/30/13 20:41	1
3-Nitroaniline	2200	U	2200	59	ug/Kg	₩	08/23/13 13:40	08/30/13 20:41	1
Acenaphthene	420	U	420	53	ug/Kg	₩	08/23/13 13:40	08/30/13 20:41	1
2,4-Dinitrophenol	2200	U	2200	1100	ug/Kg	<del>.</del>	08/23/13 13:40	08/30/13 20:41	1
4-Nitrophenol	2200	U	2200	420	ug/Kg	₩	08/23/13 13:40	08/30/13 20:41	1
Dibenzofuran	420	U	420	42	ug/Kg	₩	08/23/13 13:40	08/30/13 20:41	1
2,4-Dinitrotoluene	420		420		ug/Kg		08/23/13 13:40	08/30/13 20:41	1
Diethyl phthalate	420	U	420		ug/Kg	₩	08/23/13 13:40	08/30/13 20:41	1

Client: ARCADIS U.S., Inc.

Date Collected: 08/20/13 10:15

Date Received: 08/21/13 10:07

Chrysene

Bis(2-ethylhexyl) phthalate

Di-n-octyl phthalate

Benzo[b]fluoranthene

Benzo[k]fluoranthene

Indeno[1,2,3-cd]pyrene

Dibenz(a,h)anthracene

Benzo[g,h,i]perylene

Benzo[a]pyrene

Project/Site: CSX C&O Canal Brunswick, MD Client Sample ID: SB01-10 (0.0-1.0)

TestAmerica Job ID: 680-93445-1

Lab Sample ID: 680-93445-9

08/23/13 13:40

08/23/13 13:40

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08/30/13 20:41

08/30/13 20:41

08/30/13 20:41

Matrix: Solid Percent Solids: 77.1

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued) Result Qualifier MDL Unit D Prepared Dil Fac Analyte Analyzed Fluorene 420 Ū 420 46 ug/Kg 08/23/13 13:40 08/30/13 20:41 φ 420 U 420 4-Chlorophenyl phenyl ether 08/23/13 13:40 08/30/13 20:41 56 ug/Kg Ö 4-Nitroaniline 2200 U 2200 63 ug/Kg 08/23/13 13:40 08/30/13 20:41 08/23/13 13:40 4,6-Dinitro-2-methylphenol 2200 U 2200 ug/Kg 08/30/13 20:41 220 ä N-Nitrosodiphenylamine 420 U 420 42 ug/Kg 08/23/13 13:40 08/30/13 20:41 420 U 420 08/23/13 13:40 08/30/13 20:41 4-Bromophenyl phenyl ether 46 ug/Kg ₽ Hexachlorobenzene 420 U 420 50 ug/Kg 08/23/13 13:40 08/30/13 20:41 420 U 420 08/23/13 13:40 08/30/13 20:41 Atrazine 29 ug/Kg 2200 Pentachlorophenol 2200 U 420 ug/Kg 08/23/13 13:40 08/30/13 20:41 **Phenanthrene** 50 420 35 ug/Kg 08/23/13 13:40 08/30/13 20:41 ₽ 420 Anthracene 420 U 32 ug/Kg 08/23/13 13:40 08/30/13 20:41 420 U 420 ₩ 08/23/13 13:40 08/30/13 20:41 Carbazole 38 ug/Kg Di-n-butyl phthalate 420 U 420 38 ug/Kg 08/23/13 13:40 08/30/13 20:41 ₽ **Fluoranthene** 49 420 41 ug/Kg 08/23/13 13:40 08/30/13 20:41 420 420 U 08/23/13 13:40 08/30/13 20:41 Pyrene 35 ug/Kg Ö Butyl benzyl phthalate 420 U 420 ug/Kg 08/23/13 13:40 08/30/13 20:41 3,3'-Dichlorobenzidine 850 U 850 08/23/13 13:40 36 ug/Kg 08/30/13 20:41 Benzo[a]anthracene 420 U 420 08/23/13 13:40 08/30/13 20:41 35 ug/Kg

gate	%Recovery G	Qualifier Limits	Prepared	Anal
robenzene-d5 (Surr)	76	46 - 130	08/23/13 13:40	08/30/13
-Fluorobiphenyl	81	58 - 130	08/23/13 13:40	08/30/13
erphenyl-d14 (Surr)	81	60 - 130	08/23/13 13:40	08/30/13 2
nenol-d5 (Surr)	70	49 - 130	08/23/13 13:40	08/30/13 2
-Fluorophenol (Surr)	69	40 - 130	08/23/13 13:40	08/30/13 2
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420 U

420 U

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420

27 ug/Kg

37 ug/Kg

37 ug/Kg

49 ug/Kg

83 ug/Kg

67 ug/Kg

50

ug/Kg

ug/Kg

ug/Kg

2,4,6-Tribromophenol (Surr)	76		58 - 130				08/23/13 13:40	08/30/13 20:41	1
Method: 8015C - Nonhalogenated	•	•	•			cs)			
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)	310	J	350	26	ug/Kg	<del>*</del>	08/22/13 10:07	08/28/13 20:39	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene	131		70 - 131	08/22/13 10:07	08/28/13 20:39	1

Method: 8015C - Nonhalogenate	ed Organics usi	na GC/FID	-Modified (Dies	el Range	Organics	s)			
Analyte	•	Qualifier	RL	MDL	_	, D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	6300	U	6300	1800	ug/Kg	<u> </u>	08/28/13 11:44	08/30/13 01:30	1
ORO C24-C40	3400	JB	6300	1800	ug/Kg	₽	08/28/13 11:44	08/30/13 01:30	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
o-Terphenyl (Surr)	69		50 - 150				08/28/13 11:44	08/30/13 01:30	1

TestAmerica Savannah

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93445-1

Lab Sample ID: 680-93445-10

Matrix: Solid

Percent Solids: 72.7

Cli	ent S	Sampl	le ID:	SB0	1-10	(4.0	0-5.0	)
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Date Collected: 08/20/13 10:25 Date Received: 08/21/13 10:07

Method: 8260B - Volatile Organic Analyte	•	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
Acetone	24		24	7.0	ug/Kg	<del>=</del>	08/23/13 16:13	08/27/13 20:53	
Benzene	4.8		4.8	0.47	ug/Kg	₽	08/23/13 16:13	08/27/13 20:53	
Bromodichloromethane	4.8		4.8	0.80	ug/Kg	₽	08/23/13 16:13	08/27/13 20:53	
Bromoform	4.8		4.8	0.60	ug/Kg		08/23/13 16:13	08/27/13 20:53	
Bromomethane	4.8		4.8	1.3	ug/Kg	₽	08/23/13 16:13	08/27/13 20:53	
Carbon disulfide	4.8		4.8	1.1	ug/Kg	₽	08/23/13 16:13	08/27/13 20:53	
Carbon tetrachloride	4.8		4.8		ug/Kg		08/23/13 16:13	08/27/13 20:53	
Chlorobenzene	4.8		4.8	0.50	ug/Kg	₽	08/23/13 16:13	08/27/13 20:53	
Chloroethane	4.8		4.8		ug/Kg	₽	08/23/13 16:13	08/27/13 20:53	
Chloroform	4.8		4.8		ug/Kg		08/23/13 16:13	08/27/13 20:53	
Chloromethane	4.8		4.8	0.96	ug/Kg	₽	08/23/13 16:13	08/27/13 20:53	
cis-1,2-Dichloroethene	4.8		4.8	0.73	ug/Kg ug/Kg	₽	08/23/13 16:13	08/27/13 20:53	
cis-1,3-Dichloropropene	4.8		4.8	1.1	ug/Kg		08/23/13 16:13	08/27/13 20:53	
	4.8		4.8	0.90		₩	08/23/13 16:13	08/27/13 20:53	
Cyclohexane Dibromochloromethane	4.8		4.8	0.83	ug/Kg ug/Kg	₩	08/23/13 16:13	08/27/13 20:53	
	4.0						08/23/13 16:13	08/27/13 20:53	
1,2-Dibromo-3-Chloropropane 1,2-Dichlorobenzene	4.8		4.8 4.8	0.68	ug/Kg ug/Kg	₩	08/23/13 16:13	08/27/13 20:53	
,						₩			
1,3-Dichlorobenzene	4.8		4.8	0.91	ug/Kg		08/23/13 16:13	08/27/13 20:53	
1,4-Dichlorobenzene	4.8		4.8	0.79	ug/Kg		08/23/13 16:13	08/27/13 20:53	
Dichlorodifluoromethane	4.8		4.8			*	08/23/13 16:13	08/27/13 20:53	
1,1-Dichloroethane	4.8		4.8	0.80	ug/Kg	<u></u> .	08/23/13 16:13	08/27/13 20:53	
1,2-Dichloroethane	4.8		4.8	0.79	ug/Kg		08/23/13 16:13	08/27/13 20:53	
1,1-Dichloroethene	4.8		4.8			₩.	08/23/13 16:13	08/27/13 20:53	
1,2-Dichloropropane	4.8		4.8	0.71	ug/Kg		08/23/13 16:13	08/27/13 20:53	
Diisopropyl ether	4.8		4.8		0 0	₩.	08/23/13 16:13	08/27/13 20:53	
Ethylbenzene	4.8		4.8	0.58	ug/Kg	₩	08/23/13 16:13	08/27/13 20:53	
Ethylene Dibromide	4.8	U	4.8	0.46	ug/Kg		08/23/13 16:13	08/27/13 20:53	
Ethyl tert-butyl ether	4.8		4.8		ug/Kg	₽.	08/23/13 16:13	08/27/13 20:53	
2-Hexanone	24		24	4.8	ug/Kg	₽	08/23/13 16:13	08/27/13 20:53	
Isopropylbenzene	4.8	U	4.8		ug/Kg		08/23/13 16:13	08/27/13 20:53	
Methyl acetate	4.8	U	4.8		ug/Kg	₽	08/23/13 16:13	08/27/13 20:53	
Methylcyclohexane	4.8	U	4.8	0.83	ug/Kg	₩	08/23/13 16:13	08/27/13 20:53	
Methylene Chloride	14	U	14	9.6	ug/Kg	₽	08/23/13 16:13	08/27/13 20:53	
Methyl Ethyl Ketone	24	U	24	3.9	ug/Kg	₽	08/23/13 16:13	08/27/13 20:53	
methyl isobutyl ketone	24	U	24	3.8	ug/Kg	₽	08/23/13 16:13	08/27/13 20:53	
Methyl tert-butyl ether	4.8	U	4.8	0.96	ug/Kg	₽	08/23/13 16:13	08/27/13 20:53	
Naphthalene	4.8	U	4.8	0.96	ug/Kg	*	08/23/13 16:13	08/27/13 20:53	
Styrene	4.8	U	4.8	0.73	ug/Kg	₩	08/23/13 16:13	08/27/13 20:53	
Tert-amyl methyl ether	4.8	U	4.8	0.42	ug/Kg	₽	08/23/13 16:13	08/27/13 20:53	
tert-Butyl alcohol	4.8	U	4.8	3.3	ug/Kg	₽	08/23/13 16:13	08/27/13 20:53	
1,1,2,2-Tetrachloroethane	4.8	U	4.8	0.69	ug/Kg	₽	08/23/13 16:13	08/27/13 20:53	
Tetrachloroethene	4.8	U	4.8	0.80	ug/Kg	₽	08/23/13 16:13	08/27/13 20:53	
Toluene	4.8	U	4.8		ug/Kg		08/23/13 16:13	08/27/13 20:53	
trans-1,2-Dichloroethene	4.8	U	4.8	0.73	ug/Kg	₽	08/23/13 16:13	08/27/13 20:53	
trans-1,3-Dichloropropene	4.8		4.8		ug/Kg	₩	08/23/13 16:13	08/27/13 20:53	
1,2,4-Trichlorobenzene	4.8		4.8		ug/Kg		08/23/13 16:13	08/27/13 20:53	
1,1,1-Trichloroethane	4.8		4.8	1.1	ug/Kg	₽	08/23/13 16:13	08/27/13 20:53	
1,1,2-Trichloroethane	4.8		4.8		ug/Kg	₽	08/23/13 16:13	08/27/13 20:53	
Trichloroethene	4.8		4.8		ug/Kg		08/23/13 16:13	08/27/13 20:53	

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

Lab Sample ID: 680-93445-10

TestAmerica Job ID: 680-93445-1

Matrix: Solid

Percent Solids: 72.7

Client Sample ID: SB01-10 (4.0-5.0)

Date Collected: 08/20/13 10:25 Date Received: 08/21/13 10:07

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichlorofluoromethane	4.8	U	4.8	0.91	ug/Kg	\$	08/23/13 16:13	08/27/13 20:53	1
1,1,2-Trichloro-1,2,2-trifluoroethane	4.8	U	4.8	1.9	ug/Kg	₽	08/23/13 16:13	08/27/13 20:53	1
Vinyl chloride	4.8	U	4.8	0.88	ug/Kg	₽	08/23/13 16:13	08/27/13 20:53	1
Xylenes, Total	9.6	U	9.6	1.8	ug/Kg	₽	08/23/13 16:13	08/27/13 20:53	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	98		72 - 122				08/23/13 16:13	08/27/13 20:53	1
Dibromofluoromethane	103		79 - 123				08/23/13 16:13	08/27/13 20:53	1
Toluene-d8 (Surr)	96		80 - 120				08/23/13 16:13	08/27/13 20:53	1

Toluene-d8 (Surr) -	96		80 - 120				08/23/13 16:13	08/27/13 20:53	1
Method: 8270D - Semivolatile O	•	nds (GC/MS	S) RL	MDI	Unit	D	Prepared	Analyzed	Dil Fac
Benzaldehyde			450	79	ug/Kg	— <del>ÿ</del>	08/23/13 13:40	08/30/13 21:06	1
Phenol	450	-	450	46	ug/Kg		08/23/13 13:40	08/30/13 21:06	1
Bis(2-chloroethyl)ether	450		450	61	ug/Kg ug/Kg		08/23/13 13:40	08/30/13 21:06	1
2-Chlorophenol	450		450				08/23/13 13:40	08/30/13 21:06	·
2-Methylphenol	450		450	37	ug/Kg		08/23/13 13:40	08/30/13 21:06	1
bis (2-chloroisopropyl) ether	450		450	41	ug/Kg	<b>#</b>	08/23/13 13:40	08/30/13 21:06	1
Acetophenone	450		450	38	ug/Kg	· · · · · · · · · · · · · · · ·	08/23/13 13:40	08/30/13 21:06	
3 & 4 Methylphenol	450		450	59	ug/Kg	₩	08/23/13 13:40	08/30/13 21:06	1
N-Nitrosodi-n-propylamine	450		450	44		₩	08/23/13 13:40	08/30/13 21:06	1
Hexachloroethane	450		450	38	ug/Kg		08/23/13 13:40	08/30/13 21:06	
Nitrobenzene	450		450	35	ug/Kg		08/23/13 13:40	08/30/13 21:06	1
Isophorone	450		450 450	45	ug/Kg ug/Kg	₩	08/23/13 13:40	08/30/13 21:06	1
2-Nitrophenol	450		450	56			08/23/13 13:40	08/30/13 21:06	
2,4-Dimethylphenol	450		450	60	ug/Kg ug/Kg		08/23/13 13:40	08/30/13 21:06	1
Bis(2-chloroethoxy)methane	450		450	53	ug/Kg ug/Kg		08/23/13 13:40	08/30/13 21:06	1
2,4-Dichlorophenol	450		450	48	ug/Kg		08/23/13 13:40	08/30/13 21:06	
Naphthalene	450		450	41	ug/Kg ug/Kg		08/23/13 13:40	08/30/13 21:06	1
4-Chloroaniline	900		900	71	ug/Kg ug/Kg		08/23/13 13:40	08/30/13 21:06	1
Hexachlorobutadiene	450		450	49	ug/Kg		08/23/13 13:40	08/30/13 21:06	 1
Caprolactam	450		450	90	ug/Kg ug/Kg		08/23/13 13:40	08/30/13 21:06	1
•	450		450				08/23/13 13:40	08/30/13 21:06	1
4-Chloro-3-methylphenol	450		450	48	ug/Kg		08/23/13 13:40	08/30/13 21:06	
2-Methylnaphthalene	450		450 450	52 56	ug/Kg ug/Kg	~ \$	08/23/13 13:40	08/30/13 21:06	1 1
Hexachlorocyclopentadiene					• •	* \$			
2,4,6-Trichlorophenol	450 450		450 450	40	ug/Kg		08/23/13 13:40	08/30/13 21:06	1 1
2,4,5-Trichlorophenol					ug/Kg	~ \$	08/23/13 13:40	08/30/13 21:06	•
1,1'-Biphenyl	1000		1000	1000	ug/Kg	<i>¥</i>	08/23/13 13:40	08/30/13 21:06	1
2-Chloronaphthalene	450		450	48	ug/Kg		08/23/13 13:40	08/30/13 21:06	
2-Nitroaniline	2300		2300	61	ug/Kg	<i>¥</i>	08/23/13 13:40	08/30/13 21:06	1
Dimethyl phthalate	450		450	46	ug/Kg	<i>¥</i>	08/23/13 13:40	08/30/13 21:06	1
2,6-Dinitrotoluene	450		450		ug/Kg		08/23/13 13:40	08/30/13 21:06	
Acenaphthylene	450		450	49	ug/Kg		08/23/13 13:40	08/30/13 21:06	1
3-Nitroaniline	2300		2300	63	ug/Kg	<b>*</b>	08/23/13 13:40	08/30/13 21:06	1
Acenaphthene	450		450	56	ug/Kg	<del>,</del>	08/23/13 13:40	08/30/13 21:06	
2,4-Dinitrophenol	2300		2300	1100	ug/Kg	*	08/23/13 13:40	08/30/13 21:06	1
4-Nitrophenol	2300		2300	450	ug/Kg	*	08/23/13 13:40	08/30/13 21:06	1
Dibenzofuran	450		450	45		₩	08/23/13 13:40	08/30/13 21:06	
2,4-Dinitrotoluene	450		450	67	0 0	₩	08/23/13 13:40	08/30/13 21:06	1
Diethyl phthalate	450	U	450	50	ug/Kg	₩	08/23/13 13:40	08/30/13 21:06	1

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10

Client: ARCADIS U.S., Inc.

Date Collected: 08/20/13 10:25

Date Received: 08/21/13 10:07

Diesel Range Organics [C10-C28]

ORO C24-C40

o-Terphenyl (Surr)

Surrogate

Project/Site: CSX C&O Canal Brunswick, MD Client Sample ID: SB01-10 (4.0-5.0)

TestAmerica Job ID: 680-93445-1

Lab Sample ID: 680-93445-10

Matrix: Solid Percent Solids: 72.7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluorene	450	U	450	49	ug/Kg	<u> </u>	08/23/13 13:40	08/30/13 21:06	1
4-Chlorophenyl phenyl ether	450	U	450	60	ug/Kg	\$	08/23/13 13:40	08/30/13 21:06	1
4-Nitroaniline	2300	U	2300	67	ug/Kg	₽	08/23/13 13:40	08/30/13 21:06	•
4,6-Dinitro-2-methylphenol	2300	U	2300	230	ug/Kg	₽	08/23/13 13:40	08/30/13 21:06	1
N-Nitrosodiphenylamine	450	U	450	45	ug/Kg	₽	08/23/13 13:40	08/30/13 21:06	1
4-Bromophenyl phenyl ether	450	U	450	49	ug/Kg	₽	08/23/13 13:40	08/30/13 21:06	1
Hexachlorobenzene	450	U	450	53	ug/Kg	₽	08/23/13 13:40	08/30/13 21:06	1
Atrazine	450	U	450	31	ug/Kg	₽	08/23/13 13:40	08/30/13 21:06	1
Pentachlorophenol	2300	U	2300	450	ug/Kg	₽	08/23/13 13:40	08/30/13 21:06	1
Phenanthrene	450	U	450	37	ug/Kg	₩	08/23/13 13:40	08/30/13 21:06	1
Anthracene	450	U	450	34	ug/Kg	₩.	08/23/13 13:40	08/30/13 21:06	1
Carbazole	450	U	450	41	ug/Kg	₩	08/23/13 13:40	08/30/13 21:06	1
Di-n-butyl phthalate	450	U	450	41	ug/Kg	₩	08/23/13 13:40	08/30/13 21:06	1
Fluoranthene	450	U	450	44	ug/Kg		08/23/13 13:40	08/30/13 21:06	1
Pyrene	450	U	450	37	ug/Kg	₽	08/23/13 13:40	08/30/13 21:06	1
Butyl benzyl phthalate	450	U	450	35	ug/Kg	₽	08/23/13 13:40	08/30/13 21:06	1
3,3'-Dichlorobenzidine	900	U	900	38	ug/Kg		08/23/13 13:40	08/30/13 21:06	1
Benzo[a]anthracene	450	U	450	37	ug/Kg	₽	08/23/13 13:40	08/30/13 21:06	
Chrysene	450	U	450	29	ug/Kg	₽	08/23/13 13:40	08/30/13 21:06	1
Bis(2-ethylhexyl) phthalate	450	U	450	40	ug/Kg	₽	08/23/13 13:40	08/30/13 21:06	• • • • • • • •
Di-n-octyl phthalate	450	U	450	40	ug/Kg	₽	08/23/13 13:40	08/30/13 21:06	1
Benzo[b]fluoranthene	450	U	450	52	ug/Kg	₽	08/23/13 13:40	08/30/13 21:06	
Benzo[k]fluoranthene	450	U	450	89	ug/Kg		08/23/13 13:40	08/30/13 21:06	1
Benzo[a]pyrene	450	U	450	71	ug/Kg	₽	08/23/13 13:40	08/30/13 21:06	1
Indeno[1,2,3-cd]pyrene	450	U	450	38	ug/Kg	₽	08/23/13 13:40	08/30/13 21:06	1
Dibenz(a,h)anthracene	450	U	450	53	ug/Kg		08/23/13 13:40	08/30/13 21:06	1
Benzo[g,h,i]perylene	450	U	450	30	ug/Kg	₽	08/23/13 13:40	08/30/13 21:06	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	74		46 - 130				08/23/13 13:40	08/30/13 21:06	
2-Fluorobiphenyl	79		58 - 130				08/23/13 13:40	08/30/13 21:06	1
Terphenyl-d14 (Surr)	85		60 - 130				08/23/13 13:40	08/30/13 21:06	1
Phenol-d5 (Surr)	74		49 - 130				08/23/13 13:40	08/30/13 21:06	
2-Fluorophenol (Surr)	77		40 - 130				08/23/13 13:40	08/30/13 21:06	1
2,4,6-Tribromophenol (Surr)	85		58 - 130				08/23/13 13:40	08/30/13 21:06	1
Method: 8015C - Nonhalogenat	ed Organics usi	na GC/FID	-Modified (Gaso	oline Ran	ge Organ	ics)			
Analyte	_	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO) -C6-C10	270	U	270	20	ug/Kg	₩	08/22/13 10:07	08/24/13 19:56	
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene	97		70 - 131				08/22/13 10:07	08/24/13 19:56	

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Analyzed

08/30/13 01:45

08/30/13 01:45

Analyzed

08/30/13 01:45

RL

6800

6800

Limits

50 - 150

MDL Unit

1900 ug/Kg

1900 ug/Kg

D

Prepared

08/28/13 11:44

08/28/13 11:44

Prepared

08/28/13 11:44

Method: 8015C - Nonhalogenated Organics using GC/FID -Modified (Diesel Range Organics) Result Qualifier

6800 U

2300 JB

%Recovery Qualifier

96

Dil Fac

Dil Fac

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB02-01 (0.0-1.0)

Lab Sample ID: 680-93445-11

Date Collected: 08/20/13 11:15

Date Received: 08/21/13 10:07

Matrix: Solid
Percent Solids: 59.7

Method: 8260B - Volatile Organi	c Compounds	(GC/MS)							
Analyte		Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
Acetone	38	U	38	11	ug/Kg	<u></u>	08/23/13 16:13	08/27/13 21:18	
Benzene	7.6	U	7.6	0.74	ug/Kg	₩	08/23/13 16:13	08/27/13 21:18	
Bromodichloromethane	7.6	U	7.6	1.3	ug/Kg	₩	08/23/13 16:13	08/27/13 21:18	
Bromoform	7.6	U	7.6	0.96	ug/Kg		08/23/13 16:13	08/27/13 21:18	
Bromomethane	7.6	U	7.6	2.1	ug/Kg	₩	08/23/13 16:13	08/27/13 21:18	
Carbon disulfide	7.6	U	7.6	1.8	ug/Kg	₩	08/23/13 16:13	08/27/13 21:18	
Carbon tetrachloride	7.6	U	7.6	2.6	ug/Kg		08/23/13 16:13	08/27/13 21:18	
Chlorobenzene	7.6	U	7.6	0.79	ug/Kg	₩	08/23/13 16:13	08/27/13 21:18	
Chloroethane	7.6	U	7.6	2.9	ug/Kg	₩	08/23/13 16:13	08/27/13 21:18	
Chloroform	7.6	U	7.6	0.90	ug/Kg		08/23/13 16:13	08/27/13 21:18	
Chloromethane	7.6	U	7.6	1.5	ug/Kg	₩	08/23/13 16:13	08/27/13 21:18	
cis-1,2-Dichloroethene	7.6	U	7.6	1.2	ug/Kg	₩	08/23/13 16:13	08/27/13 21:18	
cis-1,3-Dichloropropene	7.6	U	7.6	1.8	ug/Kg		08/23/13 16:13	08/27/13 21:18	
Cyclohexane	7.6	U	7.6	1.4	ug/Kg	₩	08/23/13 16:13	08/27/13 21:18	
Dibromochloromethane	7.6	U	7.6	1.3	ug/Kg	☼	08/23/13 16:13	08/27/13 21:18	
1,2-Dibromo-3-Chloropropane	7.6	U	7.6	5.0	ug/Kg		08/23/13 16:13	08/27/13 21:18	
I,2-Dichlorobenzene	7.6	U	7.6	1.1	ug/Kg	₩	08/23/13 16:13	08/27/13 21:18	
,3-Dichlorobenzene	7.6	U	7.6	1.4	ug/Kg	₽	08/23/13 16:13	08/27/13 21:18	
I,4-Dichlorobenzene	7.6		7.6		ug/Kg		08/23/13 16:13	08/27/13 21:18	
Dichlorodifluoromethane	7.6		7.6	2.0	ug/Kg	₽	08/23/13 16:13	08/27/13 21:18	
.1-Dichloroethane	7.6		7.6		ug/Kg	₽	08/23/13 16:13	08/27/13 21:18	
,2-Dichloroethane	7.6		7.6		ug/Kg		08/23/13 16:13	08/27/13 21:18	
,1-Dichloroethene	7.6		7.6	1.1	ug/Kg	₩	08/23/13 16:13	08/27/13 21:18	
,2-Dichloropropane	7.6		7.6	1.1	ug/Kg	₩	08/23/13 16:13	08/27/13 21:18	
Diisopropyl ether	7.6		7.6		ug/Kg		08/23/13 16:13	08/27/13 21:18	
Ethylbenzene	7.6		7.6	0.93	ug/Kg ug/Kg	₽	08/23/13 16:13	08/27/13 21:18	
Ethylene Dibromide	7.6		7.6	0.93	ug/Kg ug/Kg	₽	08/23/13 16:13	08/27/13 21:18	
Ethyl tert-butyl ether	7.6		7.6	0.85	ug/Kg		08/23/13 16:13	08/27/13 21:18	
?-Hexanone	38		38	7.6	ug/Kg ug/Kg		08/23/13 16:13	08/27/13 21:18	
sopropylbenzene	7.6		7.6	1.0	ug/Kg ug/Kg	₽	08/23/13 16:13	08/27/13 21:18	
	7.6		7.6	7.0	ug/Kg		08/23/13 16:13	08/27/13 21:18	
Methyl acetate	7.6		7.6	1.3	ug/Kg ug/Kg		08/23/13 16:13	08/27/13 21:18	
Methylcyclohexane									
Methylene Chloride	23		23		ug/Kg	<del></del>	08/23/13 16:13	08/27/13 21:18	
Methyl Ethyl Ketone	38		38		ug/Kg	₩	08/23/13 16:13	08/27/13 21:18	
nethyl isobutyl ketone	38		38	6.1	ug/Kg		08/23/13 16:13	08/27/13 21:18	
Methyl tert-butyl ether	7.6		7.6		ug/Kg		08/23/13 16:13	08/27/13 21:18	
Naphthalene	7.6		7.6		ug/Kg	<b>₽</b>	08/23/13 16:13	08/27/13 21:18	
Styrene	7.6		7.6		ug/Kg	<b>₽</b>	08/23/13 16:13	08/27/13 21:18	
ert-amyl methyl ether	7.6		7.6		ug/Kg	<u></u>	08/23/13 16:13	08/27/13 21:18	
ert-Butyl alcohol	7.6		7.6		ug/Kg	₩	08/23/13 16:13	08/27/13 21:18	
,1,2,2-Tetrachloroethane	7.6		7.6	1.1	ug/Kg	‡ n	08/23/13 16:13	08/27/13 21:18	
etrachloroethene	7.6		7.6		ug/Kg	<del>, ,</del>	08/23/13 16:13	08/27/13 21:18	
oluene	7.6		7.6	1.1	ug/Kg	*	08/23/13 16:13	08/27/13 21:18	
rans-1,2-Dichloroethene	7.6		7.6		ug/Kg		08/23/13 16:13	08/27/13 21:18	
rans-1,3-Dichloropropene	7.6		7.6		ug/Kg	<u></u>	08/23/13 16:13	08/27/13 21:18	
,2,4-Trichlorobenzene	7.6		7.6	1.1	ug/Kg	*	08/23/13 16:13	08/27/13 21:18	
,1,1-Trichloroethane	7.6		7.6		ug/Kg	₩.	08/23/13 16:13	08/27/13 21:18	
I,1,2-Trichloroethane	7.6	U	7.6	1.4	ug/Kg	≎	08/23/13 16:13	08/27/13 21:18	

TestAmerica Savannah

TestAmerica Job ID: 680-93445-1

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

in Didinowick, IND

Client Sample ID: SB02-01 (0.0-1.0)

Lab Sample ID: 680-93445-11

Date Collected: 08/20/13 11:15

Date Received: 08/21/13 10:07

Matrix: Solid
Percent Solids: 59.7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichlorofluoromethane	7.6	U	7.6	1.4	ug/Kg	₽	08/23/13 16:13	08/27/13 21:18	1
1,1,2-Trichloro-1,2,2-trifluoroethane	7.6	U	7.6	3.0	ug/Kg	₽	08/23/13 16:13	08/27/13 21:18	1
Vinyl chloride	7.6	U	7.6	1.4	ug/Kg	₽	08/23/13 16:13	08/27/13 21:18	1
Xylenes, Total	15	U	15	2.9	ug/Kg	₽	08/23/13 16:13	08/27/13 21:18	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	99		72 - 122				08/23/13 16:13	08/27/13 21:18	1
Dibromofluoromethane	104		79 - 123				08/23/13 16:13	08/27/13 21:18	1
Toluene-d8 (Surr)	97		80 - 120				08/23/13 16:13	08/27/13 21:18	1

2-Nitroaniline 2800 U 2800 74 ug/Kg © 08/23/13 13:40 08/30/13 21:32 1 Dimethyl phthalate 550 U 550 56 ug/Kg © 08/23/13 13:40 08/30/13 21:32 1 2,6-Dinitrotoluene 550 U 550 69 ug/Kg © 08/23/13 13:40 08/30/13 21:32 1 Acenaphthylene 550 U 550 60 ug/Kg © 08/23/13 13:40 08/30/13 21:32 1 3-Nitroaniline 2800 U 2800 76 ug/Kg © 08/23/13 13:40 08/30/13 21:32 1 Acenaphthene 550 U 550 68 ug/Kg © 08/23/13 13:40 08/30/13 21:32 1 2,4-Dinitrophenol 2800 U 2800 1400 ug/Kg © 08/23/13 13:40 08/30/13 21:32 1 4-Nitrophenol 2800 U 2800 550 ug/Kg © 08/23/13 13:40 08/30/13 21:32 1 5-Dibenzofuran 550 U 550 55 ug/Kg © 08/23/13 13:40 08/30/13 21:32 1 2,4-Dinitrotoluene 550 U 550 81 ug/Kg © 08/23/13 13:40 08/30/13 21:32 1	Toluene-d8 (Surr) -	97		80 - 120				08/23/13 16:13	08/27/13 21:18	1
Denzaldehyde	- Method: 8270D - Semivolatile C	rganic Compou	nds (GC/M	S)						
Phenol 550 U 550 56 ug/kg 0 08/23/13 13-40 08/30/13 21-32 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1										Dil Fac
Bis(2-chloroethyl)ether   550	Benzaldehyde			550	96			08/23/13 13:40	08/30/13 21:32	1
2-Chlorophenol 550 U 550 66 ug/Kg 0 08/23/13 13.40 08/30/13 21.32 1 2-Methylphenol 560 U 550 45 ug/Kg 0 08/23/13 13.40 08/30/13 21.32 1 Acetophenone 550 U 550 50 ug/Kg 0 08/23/13 13.40 08/30/13 21.32 1 Acetophenone 550 U 550 50 ug/Kg 0 08/23/13 13.40 08/30/13 21.32 1 Acetophenone 550 U 550 50 ug/Kg 0 08/23/13 13.40 08/30/13 21.32 1 Acetophenone 550 U 550 51 ug/Kg 0 08/23/13 13.40 08/30/13 21.32 1 Acetophenone 550 U 550 51 ug/Kg 0 08/23/13 13.40 08/30/13 21.32 1 Hexachloroethane 550 U 550 550 53 ug/Kg 0 08/23/13 13.40 08/30/13 21.32 1 Hexachloroethane 550 U 550 550 46 ug/Kg 0 08/23/13 13.40 08/30/13 21.32 1 Nitrobenzene 550 U 550 550 46 ug/Kg 0 08/23/13 13.40 08/30/13 21.32 1 Suphronne 550 U 550 550 56 ug/Kg 0 08/23/13 13.40 08/30/13 21.32 1 2-Nitrophenol 550 U 550 550 56 ug/Kg 0 08/23/13 13.40 08/30/13 21.32 1 2-Nitrophenol 550 U 550 550 56 ug/Kg 0 08/23/13 13.40 08/30/13 21.32 1 2-Nitrophenol 550 U 550 550 68 ug/Kg 0 08/23/13 13.40 08/30/13 21.32 1 2-Homethylphenol 550 U 550 550 56 ug/Kg 0 08/23/13 13.40 08/30/13 21.32 1 2-Homethylphenol 550 U 550 65 ug/Kg 0 08/23/13 13.40 08/30/13 21.32 1 2-Homethylphenol 550 U 550 650 ug/Kg 0 08/23/13 13.40 08/30/13 21.32 1 3-Homethylphenol 550 U 550 650 ug/Kg 0 08/23/13 13.40 08/30/13 21.32 1 3-Homethylphenol 550 U 550 650 ug/Kg 0 08/23/13 13.40 08/30/13 21.32 1 3-Homethylphenol 550 U 550 650 ug/Kg 0 08/23/13 13.40 08/30/13 21.32 1 3-Homethylphenol 550 U 550 650 ug/Kg 0 08/23/13 13.40 08/30/13 21.32 1 3-Homethylphenol 550 U 550 66 ug/Kg 0 08/23/13 13.40 08/30/13 21.32 1 3-Homethylphenol 550 U 550 66 ug/Kg 0 08/23/13 13.40 08/30/13 21.32 1 3-Homethylphenol 550 U 550 66 ug/Kg 0 08/23/13 13.40 08/30/13 21.32 1 3-Homethylphenol 550 U 550 66 ug/Kg 0 08/23/13 13.40 08/30/13 21.32 1 3-Homethylphenol 550 U 550 66 ug/Kg 0 08/23/13 13.40 08/30/13 21.32 1 3-Homethylphenol 550 U 550 66 ug/Kg 0 08/23/13 13.40 08/30/13 21.32 1 3-Homethylphenol 550 U 550 66 ug/Kg 0 08/23/13 13.40 08/30/13 21.32 1 3-Homethylphenol 550 U 550 66 ug/Kg 0 08/23/13 13.40 08/30/13 21.32 1 3-Homethylphenol 550 U	Phenol			550	56		₩	08/23/13 13:40	08/30/13 21:32	1
2-Methylphenol   550   U   550   550   45   ug/Kg   G   08/23/13 13:40   08/30/13 21:32   1	Bis(2-chloroethyl)ether	550	U	550	74	ug/Kg		08/23/13 13:40	08/30/13 21:32	1
bis (2-chloroisopropyl) ether	2-Chlorophenol	550	U	550	66	ug/Kg		08/23/13 13:40	08/30/13 21:32	1
Acetophenone 550 U 550 As ug/Kg 0 08/33/13 13:40 08/30/13 21:32 1 1 3 3 4 Methylphenol 550 U 550 71 Ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 1 N-Nitrosodi-n-propylamine 550 U 550 53 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 1 N-Nitrosenzem 550 U 550 43 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 1 Nitrobenzeme 550 U 550 43 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 1 Nitrobenzeme 550 U 550 43 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 1 Nitrobenzeme 550 U 550 43 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 1 Nitrobenzeme 550 U 550 43 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 1 Nitrobenzeme 550 U 550 650 U 550 650 U 650 08 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 1 Nitrobenzeme 550 U 550 650 U 550 650 Ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 1 Nitrobenzeme 550 U 550 650 Ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 1 Nitrobenzeme 550 U 550 650 Ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 1 Nitrobenzeme 550 U 550 650 Ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 1 Nitrobenzeme 550 U 550 650 Ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 1 Nitrobenzeme 550 U 550 650 Ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 1 Nitrobenzeme 550 U 550 650 Ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 1 Nitrobenzeme 550 U 550 650 Ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 1 Nitrobenzeme 550 U 550 650 Ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 1 Nitrobenzeme 550 U 550 650 Ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 1 Nitrobenzeme 550 U 550 650 Ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 1 Nitrobenzeme 550 U 550 650 Ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 1 Nitrobenzeme 550 U 550 650 Ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 1 Nitrobenzeme 550 U 550 650 Ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 1 Nitrobenzeme 550 U 550 650 Ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 1 Nitrobenzeme 550 U 550 650 Ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 1 Nitrobenzeme 550 U 550 650 Ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 1 Nitrobenzeme 550 U 550 660 Ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 1 Nitrobenzeme 550 U 550 660 Ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 1 Nitrobenzeme 550 U 550 660 Ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 1 Nitr	2-Methylphenol	550	U	550	45	ug/Kg	₽	08/23/13 13:40	08/30/13 21:32	1
3 & 4 Methylphenol 550 U 550 S ug/Kg 0 08/23/13 13.40 08/30/13 21:32 1 1 N-Nitrosodripropylamine 550 U 550 53 ug/Kg 0 08/23/13 13.40 08/30/13 21:32 1 1 Nitrobenzene 550 U 550 46 ug/Kg 0 08/23/13 13.40 08/30/13 21:32 1 1 Nitrobenzene 550 U 550 46 ug/Kg 0 08/23/13 13.40 08/30/13 21:32 1 1 Nitrobenzene 550 U 550 55 ug/Kg 0 08/23/13 13.40 08/30/13 21:32 1 1 Sephorone 550 U 550 65 ug/Kg 0 08/23/13 13.40 08/30/13 21:32 1 1 Sephorone 550 U 550 65 ug/Kg 0 08/23/13 13.40 08/30/13 21:32 1 1 Sephorone 550 U 550 65 ug/Kg 0 08/23/13 13.40 08/30/13 21:32 1 1 Sephorone 550 U 550 65 ug/Kg 0 08/23/13 13.40 08/30/13 21:32 1 1 Sephorone 550 U 550 65 ug/Kg 0 08/23/13 13.40 08/30/13 21:32 1 1 Sephorone 550 U 550 65 ug/Kg 0 08/23/13 13.40 08/30/13 21:32 1 1 Sephorone 550 U 550 65 ug/Kg 0 08/23/13 13.40 08/30/13 21:32 1 1 Sephorone 550 U 550 550 65 ug/Kg 0 08/23/13 13.40 08/30/13 21:32 1 1 Sephorone 550 U 550 550 550 ug/Kg 0 08/23/13 13.40 08/30/13 21:32 1 1 Sephorone 550 U 550 550 550 ug/Kg 0 08/23/13 13.40 08/30/13 21:32 1 1 Sephorone 550 U 550 550 ug/Kg 0 08/23/13 13.40 08/30/13 21:32 1 1 Sephorone 550 U 550 550 ug/Kg 0 08/23/13 13.40 08/30/13 21:32 1 1 Sephorone 550 U 550 550 ug/Kg 0 08/23/13 13.40 08/30/13 21:32 1 1 Sephorone 550 U 550 550 Ug/Kg 0 08/23/13 13.40 08/30/13 21:32 1 1 Sephorone 550 U 550 550 560 ug/Kg 0 08/23/13 13.40 08/30/13 21:32 1 1 Sephorone 550 U 550 560 Ug/Kg 0 08/23/13 13.40 08/30/13 21:32 1 1 Sephorone 550 U 550 560 Ug/Kg 0 08/23/13 13.40 08/30/13 21:32 1 1 Sephorone 550 U 550 560 Ug/Kg 0 08/23/13 13.40 08/30/13 21:32 1 1 Sephorone 550 U 550 560 Ug/Kg 0 08/23/13 13.40 08/30/13 21:32 1 1 Sephorone 550 U 550 560 Ug/Kg 0 08/23/13 13.40 08/30/13 21:32 1 1 Sephorone 550 U 550 560 Ug/Kg 0 08/23/13 13.40 08/30/13 21:32 1 1 Sephorone 550 U 550 560 Ug/Kg 0 08/23/13 13.40 08/30/13 21:32 1 1 Sephorone 550 U 550 560 Ug/Kg 0 08/23/13 13.40 08/30/13 21:32 1 1 Sephorone 550 U 550 560 Ug/Kg 0 08/23/13 13.40 08/30/13 21:32 1 1 Sephorone 550 U 550 560 Ug/Kg 0 08/23/13 13.40 08/30/13 21:32 1 1 Sephorone 550 U 550 560 Ug/Kg	bis (2-chloroisopropyl) ether	550	U	550	50	ug/Kg	₩	08/23/13 13:40	08/30/13 21:32	1
N-Nitrosodi-n-propylamine 550 U 550 53 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 Hexachloroethane 550 U 550 46 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 Isophorone 550 U 550 43 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 Isophorone 550 U 550 43 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 Isophorone 550 U 550 68 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 2-Nitrophenol 550 U 550 68 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 2-Horthylphenol 550 U 550 68 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 2-Horthylphenol 550 U 550 65 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 2-Horthylphenol 550 U 550 56 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 2-Horthorophenol 550 U 550 56 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 2-Horthorophenol 550 U 550 50 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 2-Horthorophenol 550 U 550 50 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 2-Horthorophenol 550 U 550 50 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 1-Hoxachlorophadiene 550 U 550 60 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 1-Hoxachlorophadiene 550 U 550 60 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 1-Hoxachlorophadiene 550 U 550 60 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 1-Hoxachlorophadiene 550 U 550 68 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 1-Hoxachlorophadiene 550 U 550 68 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 1-Hoxachlorophadiene 550 U 550 68 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 1-Hoxachlorophadiene 550 U 550 68 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 1-Hoxachlorophanol 550 U 550 68 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 1-Hoxachlorophanol 550 U 550 68 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 1-Hoxachlorophanol 550 U 550 68 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 1-Hoxachlorophanol 550 U 550 68 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 1-Hoxachlorophanol 550 U 550 68 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 1-Hoxachlorophanol 550 U 550 68 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 1-Hoxachlorophanol 550 U 550 68 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 1-Hoxachlorophanol 550 U 550 68 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 1-Hoxachlorophanol 550 U 550 68 ug/Kg 0 08/23/13 13:40 08	Acetophenone	550	U	550	46	ug/Kg	₽	08/23/13 13:40	08/30/13 21:32	1
Hexachloroethane	3 & 4 Methylphenol	550	U	550	71	ug/Kg	₩	08/23/13 13:40	08/30/13 21:32	1
Nitrobenzene 550 U 550 43 ug/kg 8 08/23/13 13:40 08/30/13 21:32 1 1 sophorone 550 U 550 55 ug/kg 9 08/23/13 13:40 08/30/13 21:32 1 2 2-Nitrophenol 550 U 550 68 ug/kg 9 08/23/13 13:40 08/30/13 21:32 1 2 2-Dinethylphenol 550 U 550 68 ug/kg 9 08/23/13 13:40 08/30/13 21:32 1 1 2 2-Dinethylphenol 550 U 550 68 ug/kg 9 08/23/13 13:40 08/30/13 21:32 1 1 2 2-Dinethylphenol 550 U 550 65 ug/kg 9 08/23/13 13:40 08/30/13 21:32 1 1 2 2-Dinethylphenol 550 U 550 550 U 550 08/2 ug/kg 9 08/23/13 13:40 08/30/13 21:32 1 1 2 2-Dinethylphenol 550 U 550 550 ug/kg 9 08/23/13 13:40 08/30/13 21:32 1 1 2 2-Dinethylphenol 550 U 550 550 ug/kg 9 08/23/13 13:40 08/30/13 21:32 1 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	N-Nitrosodi-n-propylamine	550	U	550	53	ug/Kg	₩	08/23/13 13:40	08/30/13 21:32	1
Sephorone   550   U   550   55   Ug/Kg   0   08/23/13 13:40   08/30/13 21:32   1	Hexachloroethane	550	U	550	46	ug/Kg	₽	08/23/13 13:40	08/30/13 21:32	1
2-Nitrophenol 550 U 550 68 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 2,4-Dimethylphenol 550 U 550 65 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 2,4-Dimethylphenol 550 U 550 65 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 2,4-Dichlorophenol 550 U 550 50 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 2,4-Dichlorophenol 550 U 550 50 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 4-Chloroanlline 1100 U 10 1100 86 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 4-Chloroanlline 1100 U 10 1100 86 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 4-Chloroanlline 150 U 550 50 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 4-Chloroanlline 550 U 550 60 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 4-Chloroanlline 550 U 550 60 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 4-Chloro-a-methylphenol 550 U 550 10 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 4-Chloro-a-methylphenol 550 U 550 81 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 4-Chloro-a-methylphenol 550 U 550 68 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 4-Chloro-a-methylphenol 550 U 550 68 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 4-Chloro-a-methylphenol 550 U 550 68 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 4-Chloro-a-methylphenol 550 U 550 68 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 4-Chlorophenol 550 U 550 68 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 4-Chlorophenol 550 U 550 68 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 4-Chlorophenol 550 U 550 58 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 4-Chlorophenol 550 U 550 58 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 4-Chlorophenol 550 U 550 58 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 4-Chlorophenol 550 U 550 56 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 4-Chlorophenol 550 U 550 69 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 4-Chlorophenol 550 U 550 69 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 4-Chlorophenol 550 U 550 69 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 4-Chlorophenol 550 U 550 69 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 4-Chlorophenol 550 U 550 69 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 4-Chlorophenol 2800 U 2800 76 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 4-Chlorophenol 2800 U 2800 50 0g/Kg 0 08/23/13 13:40 08/	Nitrobenzene	550	U	550	43	ug/Kg	₽	08/23/13 13:40	08/30/13 21:32	1
2,4-Dimethylphenol 550 U 550 73 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Isophorone	550	U	550	55	ug/Kg	₩	08/23/13 13:40	08/30/13 21:32	1
Bis(2-chloroethoxy)methane 550 U 550 65 ug/kg 08/23/13 13:40 08/30/13 21:32 1 2,4-Dichlorophenol 550 U 550 58 ug/kg 08/23/13 13:40 08/30/13 21:32 1 Naphthalene 550 U 550 50 ug/kg 08/23/13 13:40 08/30/13 21:32 1 4-Chloroanliline 1100 U 100 1100 86 ug/kg 08/23/13 13:40 08/30/13 21:32 1 4-Chloroanliline 550 U 550 60 ug/kg 08/23/13 13:40 08/30/13 21:32 1 4-Chloroanliline 550 U 550 60 ug/kg 08/23/13 13:40 08/30/13 21:32 1 4-Chloro-3-methylphenol 550 U 550 60 ug/kg 08/23/13 13:40 08/30/13 21:32 1 4-Chloro-3-methylphenol 550 U 550 68 ug/kg 08/23/13 13:40 08/30/13 21:32 1 4-Chloro-3-methylphenol 550 U 550 63 ug/kg 08/23/13 13:40 08/30/13 21:32 1 4-Exachlorocyclopentadiene 78 J 550 63 ug/kg 08/23/13 13:40 08/30/13 21:32 1 4-Exachlorocyclopentadiene 550 U 550 68 ug/kg 08/23/13 13:40 08/30/13 21:32 1 4-Exachlorocyclopentadiene 550 U 550 68 ug/kg 08/23/13 13:40 08/30/13 21:32 1 4-Exachlorocyclopentadiene 550 U 550 68 ug/kg 08/23/13 13:40 08/30/13 21:32 1 4-Exachlorocyclopentadiene 550 U 550 68 ug/kg 08/23/13 13:40 08/30/13 21:32 1 4-Exachlorocyclopentadiene 550 U 550 68 ug/kg 08/23/13 13:40 08/30/13 21:32 1 4-Exachlorocyclopentadiene 550 U 550 68 ug/kg 08/23/13 13:40 08/30/13 21:32 1 4-Exachlorocyclopentadiene 550 U 550 68 ug/kg 08/23/13 13:40 08/30/13 21:32 1 4-Exachlorocyclopentadiene 550 U 550 68 ug/kg 08/23/13 13:40 08/30/13 21:32 1 4-Exachlorocyclopentadiene 550 U 550 68 ug/kg 08/23/13 13:40 08/30/13 21:32 1 4-Exachlorocyclopentadiene 550 U 550 68 ug/kg 08/23/13 13:40 08/30/13 21:32 1 4-Exachlorocyclopentadiene 550 U 550 68 ug/kg 08/23/13 13:40 08/30/13 21:32 1 4-Exachlorocyclopentadiene 550 U 550 68 ug/kg 08/23/13 13:40 08/30/13 21:32 1 4-Exachlorocyclopentadiene 550 U 550 68 ug/kg 08/23/13 13:40 08/30/13 21:32 1 4-Exachlorocyclopentadiene 550 U 550 68 ug/kg 08/23/13 13:40 08/30/13 21:32 1 4-Exachlorocyclopentadiene 550 U 550 68 ug/kg 08/23/13 13:40 08/30/13 21:32 1 4-Exachlorocyclopentadiene 550 U 550 68 ug/kg 08/23/13 13:40 08/30/13 21:32 1 4-Exachlorocyclopentadiene 550 U 550 68 ug/kg 08/23/13 13:40 08/30/13 21:32	2-Nitrophenol	550	U	550	68	ug/Kg	₩.	08/23/13 13:40	08/30/13 21:32	1
2,4-Dichlorophenol       550       U       550       58       ug/kg       0 08/23/13 13:40       08/30/13 21:32       1         Naphthalene       550       U       550       50       ug/kg       0 08/23/13 13:40       08/30/13 21:32       1         4-Chloropalline       1100       U*       1100       86       ug/kg       0 08/23/13 13:40       08/30/13 21:32       1         1 + Chloropalline       550       U       550       60       ug/kg       0 08/23/13 13:40       08/30/13 21:32       1         Caprolactam       550       U       550       110       ug/kg       0 08/23/13 13:40       08/30/13 21:32       1         4-Chloro-3-methylphenol       550       U       550       63       ug/kg       0 08/23/13 13:40       08/30/13 21:32       1         4-Enthylnaphthalene       78       J       550       63       ug/kg       0 08/23/13 13:40       08/30/13 21:32       1         4-Exterhylnaphthalene       78       J       550       68       ug/kg       0 08/23/13 13:40       08/30/13 21:32       1         4-Kethylnaphthalene       550       U       550       68       ug/kg       0 08/23/13 13:40       08/30/13 21:32       1 <t< td=""><td>2,4-Dimethylphenol</td><td>550</td><td>U</td><td>550</td><td>73</td><td>ug/Kg</td><td>₩</td><td>08/23/13 13:40</td><td>08/30/13 21:32</td><td>1</td></t<>	2,4-Dimethylphenol	550	U	550	73	ug/Kg	₩	08/23/13 13:40	08/30/13 21:32	1
Naphthalene 550 U 550 50 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 4-Chloroaniline 1100 U* 1100 86 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 Hexachlorobutadiene 550 U 550 60 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 Caprolactam 550 U 550 110 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 4-Chloro-3-methylphenol 550 U 550 58 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 4-Chloro-3-methylphenol 550 U 550 58 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 2-Methylnaphthalene 78 J 550 63 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 2-Methylnaphthalene 550 U 550 68 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 2-Methylnaphthalene 550 U 550 68 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 2-Methylnaphthalene 550 U 550 68 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 2-Methylnaphthalene 550 U 550 68 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 2-Methylnaphthalene 550 U 550 68 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 2-Methylnaphthalene 550 U 550 58 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 2-Methylnaphthalene 550 U 550 58 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 2-Methylnaphthalene 550 U 550 58 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 2-Methylnaphthalene 550 U 550 58 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 2-Methylnaphthalene 550 U 550 58 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 2-Methylnaphthalene 550 U 550 68 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 2-Methylnaphthalene 550 U 550 69 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 2-Chloronaphthalene 550 U 550 69 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 2-Chloronaphthylnene 550 U 550 69 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 2-Methylnaphthalene 550 U 550 69 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 2-Chloronaphthylnene 550 U 550 69 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 2-Chloronaphthylnene 550 U 550 69 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 2-Chloronaphthylnene 550 U 550 69 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 2-Chloronaphthylnene 550 U 550 68 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 2-Chloronaphthylnene 550 U 550 68 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 2-Chloronaphthylnene 550 U 550 68 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 2-Chloronaphthylnene 550 U 550 68 ug/Kg 08/23/13 13:40 08/30	Bis(2-chloroethoxy)methane	550	U	550	65	ug/Kg	₩	08/23/13 13:40	08/30/13 21:32	1
4-Chloroaniline 1100 U* 1100 86 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 Hexachlorobutadiene 550 U 550 60 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 Caprolactam 550 U 550 110 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 4-Chloro-3-methylphenol 550 U 550 58 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 2-Methylnaphthalene 78 J 550 63 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 2-Methylnaphthalene 550 U 550 68 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 2-Methylnaphthalene 550 U 550 68 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 2-Methylnaphthalene 550 U 550 68 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 2-Methylnaphthalene 550 U 550 68 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 2-Methylnaphthalene 550 U 550 48 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 2-Methylnaphthalene 550 U 550 58 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 2-Methylnaphthalene 550 U 550 58 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 2-Methylnaphthalene 550 U 550 58 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 2-Methylnaphthalene 550 U 550 58 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 2-Methylphthalene 550 U 550 58 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 2-Methylphthalene 550 U 550 58 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 2-Methylphthalene 550 U 550 69 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 2-Methylphthalene 550 U 550 69 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 2-Methylphthalene 550 U 550 69 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 2-Methylphthalene 550 U 550 68 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 2-Methylphthalene 550 U 550 68 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 2-Methylphenol 2800 U 2800 76 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 2-Methylphenol 2800 U 2800 76 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 2-Methylphenol 2800 U 2800 750 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 2-Methylphenol 2800 U 550 68 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 2-Methylphenol 2800 U 550 650 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 2-Methylphenol 2800 U 550 650 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 2-Methylphenol 2800 U 550 650 ug/Kg 0 08/23/13 13:40 08/30/13 21:32 1 2-Methylphenol 2800 U 550 650 0g/Kg 0 08/2	2,4-Dichlorophenol	550	U	550	58	ug/Kg		08/23/13 13:40	08/30/13 21:32	1
Hexachlorobutadiene         550         U         550         60         ug/kg         08/23/13 13:40         08/30/13 21:32         1           Caprolactam         550         U         550         110         ug/kg         08/23/13 13:40         08/30/13 21:32         1           4-Chloro-3-methylphenol         550         U         550         58         ug/kg         08/23/13 13:40         08/30/13 21:32         1           2-Methylnaphthalene         78         J         550         63         ug/kg         08/23/13 13:40         08/30/13 21:32         1           Hexachlorocyclopentadiene         550         U         550         68         ug/kg         08/23/13 13:40         08/30/13 21:32         1           2,4,6-Trichlorophenol         550         U         550         48         ug/kg         08/23/13 13:40         08/30/13 21:32         1           1,1'-Biphenyl         1200         U         1200         1200         ug/kg         08/23/13 13:40         08/30/13 21:32         1           2-Chloronaphthalene         550         U         550         58         ug/kg         08/23/13 13:40         08/30/13 21:32         1           2-Nitroaniline         2800         U         550<	Naphthalene	550	U	550	50	ug/Kg	₩	08/23/13 13:40	08/30/13 21:32	1
Caprolactam 550 U 550 110 ug/kg 08/23/13 13:40 08/30/13 21:32 1 4-Chloro-3-methylphenol 550 U 550 58 ug/kg 08/23/13 13:40 08/30/13 21:32 1 2 2-Methylnaphthalene 78 J 550 63 ug/kg 08/23/13 13:40 08/30/13 21:32 1 1 2,4,6-Trichlorophenol 550 U 550 68 ug/kg 08/23/13 13:40 08/30/13 21:32 1 1 2,4,6-Trichlorophenol 550 U 550 68 ug/kg 08/23/13 13:40 08/30/13 21:32 1 1 2,4,5-Trichlorophenol 550 U 550 58 ug/kg 08/23/13 13:40 08/30/13 21:32 1 1 1,1'-Biphenyl 1200 U 550 58 ug/kg 08/23/13 13:40 08/30/13 21:32 1 1 1,1'-Biphenyl 1200 U 1200 1200 ug/kg 08/23/13 13:40 08/30/13 21:32 1 1 2-Chloronaphthalene 550 U 550 58 ug/kg 08/23/13 13:40 08/30/13 21:32 1 1 2-Chloronaphthalene 550 U 550 58 ug/kg 08/23/13 13:40 08/30/13 21:32 1 1 2-Chloronaphthalene 550 U 550 58 ug/kg 08/23/13 13:40 08/30/13 21:32 1 1 2-Chloronaphthalene 550 U 550 56 ug/kg 08/23/13 13:40 08/30/13 21:32 1 1 2-Chloronaphthylone 550 U 550 69 ug/kg 08/23/13 13:40 08/30/13 21:32 1 1 2-Chloronaphthylone 550 U 550 69 ug/kg 08/23/13 13:40 08/30/13 21:32 1 1 2-Chloronaphthylone 550 U 550 69 ug/kg 08/23/13 13:40 08/30/13 21:32 1 1 2-Chloronaphthylone 550 U 550 69 ug/kg 08/23/13 13:40 08/30/13 21:32 1 1 2-Chloronaphthylone 550 U 550 69 ug/kg 08/23/13 13:40 08/30/13 21:32 1 1 2-Chloronaphthylone 550 U 550 69 ug/kg 08/23/13 13:40 08/30/13 21:32 1 1 2-Chloronaphthylone 550 U 550 69 ug/kg 08/23/13 13:40 08/30/13 21:32 1 1 2-Chloronaphthylone 550 U 550 69 ug/kg 08/23/13 13:40 08/30/13 21:32 1 1 2-Chloronaphthylone 550 U 550 68 ug/kg 08/23/13 13:40 08/30/13 21:32 1 1 2-Chloronaphthylone 550 U 550 68 ug/kg 08/23/13 13:40 08/30/13 21:32 1 1 2-Chloronaphthylone 550 U 550 68 ug/kg 08/23/13 13:40 08/30/13 21:32 1 1 2-Chloronaphthylone 550 U 550 68 ug/kg 08/23/13 13:40 08/30/13 21:32 1 1 2-Chloronaphthylone 550 U 550 68 ug/kg 08/23/13 13:40 08/30/13 21:32 1 1 2-Chloronaphthylone 550 U 550 68 ug/kg 08/23/13 13:40 08/30/13 21:32 1 1 2-Chloronaphthylone 550 U 550 55 ug/kg 08/23/13 13:40 08/30/13 21:32 1 1 2-Chloronaphthylone 550 U 550 55 ug/kg 08/23/13 13:40 08/30/13 21:32 1 1 2-Chloron	4-Chloroaniline	1100	U *	1100	86	ug/Kg	₩	08/23/13 13:40	08/30/13 21:32	1
A-Chloro-3-methylphenol 550 U 550 58 ug/Kg 08/23/13 13:40 08/30/13 21:32 1  2-Methylnaphthalene 78 J 550 63 ug/Kg 08/23/13 13:40 08/30/13 21:32 1  2-Methylnaphthalene 550 U 550 68 ug/Kg 08/23/13 13:40 08/30/13 21:32 1  2-4,6-Trichlorophenol 550 U 550 68 ug/Kg 08/23/13 13:40 08/30/13 21:32 1  2-4,6-Trichlorophenol 550 U 550 68 ug/Kg 08/23/13 13:40 08/30/13 21:32 1  2-4,5-Trichlorophenol 550 U 550 58 ug/Kg 08/23/13 13:40 08/30/13 21:32 1  1,1'-Biphenyl 1200 U 1200 1200 ug/Kg 08/23/13 13:40 08/30/13 21:32 1  2-Chloronaphthalene 550 U 550 58 ug/Kg 08/23/13 13:40 08/30/13 21:32 1  2-Nitroaniline 2800 U 2800 74 ug/Kg 08/23/13 13:40 08/30/13 21:32 1  Dimethyl phthalate 550 U 550 69 ug/Kg 08/23/13 13:40 08/30/13 21:32 1  2-6-Dinitrotoluene 550 U 550 69 ug/Kg 08/23/13 13:40 08/30/13 21:32 1  3-Nitroaniline 2800 U 550 60 ug/Kg 08/23/13 13:40 08/30/13 21:32 1  3-Nitroaniline 2800 U 2800 76 ug/Kg 08/23/13 13:40 08/30/13 21:32 1  Acenaphthylene 550 U 550 68 ug/Kg 08/23/13 13:40 08/30/13 21:32 1  Acenaphthene 550 U 550 68 ug/Kg 08/23/13 13:40 08/30/13 21:32 1  Acenaphthene 550 U 550 68 ug/Kg 08/23/13 13:40 08/30/13 21:32 1  Acenaphthene 550 U 550 68 ug/Kg 08/23/13 13:40 08/30/13 21:32 1  Acenaphthene 550 U 550 68 ug/Kg 08/23/13 13:40 08/30/13 21:32 1  Acenaphthene 550 U 550 68 ug/Kg 08/23/13 13:40 08/30/13 21:32 1  Acenaphthene 550 U 550 68 ug/Kg 08/23/13 13:40 08/30/13 21:32 1  Acenaphthene 550 U 550 68 ug/Kg 08/23/13 13:40 08/30/13 21:32 1  Acenaphtholone 550 U 550 550 ug/Kg 08/23/13 13:40 08/30/13 21:32 1  Acenaphtholone 550 U 550 550 ug/Kg 08/23/13 13:40 08/30/13 21:32 1  Acenaphtholone 550 U 550 550 ug/Kg 08/23/13 13:40 08/30/13 21:32 1  Acenaphtholone 550 U 550 550 ug/Kg 08/23/13 13:40 08/30/13 21:32 1  Acenaphtholone 550 U 550 550 ug/Kg 08/23/13 13:40 08/30/13 21:32 1	Hexachlorobutadiene	550	U	550	60	ug/Kg		08/23/13 13:40	08/30/13 21:32	1
2-Methylnaphthalene         78         J         550         63         ug/Kg         08/23/13 13:40         08/30/13 21:32         1           Hexachlorocyclopentadiene         550         U         550         68         ug/Kg         08/23/13 13:40         08/30/13 21:32         1           2,4,6-Trichlorophenol         550         U         550         48         ug/Kg         08/23/13 13:40         08/30/13 21:32         1           2,4,5-Trichlorophenol         550         U         550         58         ug/Kg         08/23/13 13:40         08/30/13 21:32         1           1,1'-Biphenyl         1200         U         1200         ug/Kg         08/23/13 13:40         08/30/13 21:32         1           2-Chloronaphthalene         550         U         550         58         ug/Kg         08/23/13 13:40         08/30/13 21:32         1           2-Nitroaniline         2800         U         2800         74         ug/Kg         08/23/13 13:40         08/30/13 21:32         1           2,6-Dinitrotoluene         550         U         550         69         ug/Kg         08/23/13 13:40         08/30/13 21:32         1           Acenaphthylene         550         U         550         69 <td>Caprolactam</td> <td>550</td> <td>U</td> <td>550</td> <td>110</td> <td>ug/Kg</td> <td>₩</td> <td>08/23/13 13:40</td> <td>08/30/13 21:32</td> <td>1</td>	Caprolactam	550	U	550	110	ug/Kg	₩	08/23/13 13:40	08/30/13 21:32	1
Hexachlorocyclopentadiene 550 U 550 68 ug/kg 08/23/13 13:40 08/30/13 21:32 1 2,4,6-Trichlorophenol 550 U 550 48 ug/kg 08/23/13 13:40 08/30/13 21:32 1 1 2,4,5-Trichlorophenol 550 U 550 58 ug/kg 08/23/13 13:40 08/30/13 21:32 1 1 1,1'-Biphenyl 1200 U 1200 1200 ug/kg 08/23/13 13:40 08/30/13 21:32 1 1 2-Chloronaphthalene 550 U 550 58 ug/kg 08/23/13 13:40 08/30/13 21:32 1 1 2-Nitroanilline 2800 U 2800 74 ug/kg 08/23/13 13:40 08/30/13 21:32 1 1 2-Nitroanilline 550 U 550 56 ug/kg 08/23/13 13:40 08/30/13 21:32 1 1 2-Nitroanilline 550 U 550 56 ug/kg 08/23/13 13:40 08/30/13 21:32 1 1 2-Nitroanilline 550 U 550 56 ug/kg 08/23/13 13:40 08/30/13 21:32 1 1 2-Nitroanilline 550 U 550 56 ug/kg 08/23/13 13:40 08/30/13 21:32 1 1 2-Nitroanilline 550 U 550 69 ug/kg 08/23/13 13:40 08/30/13 21:32 1 1 2-Nitroanilline 2800 U 550 69 ug/kg 08/23/13 13:40 08/30/13 21:32 1 1 2-Nitroanilline 2800 U 550 69 ug/kg 08/23/13 13:40 08/30/13 21:32 1 1 2-Nitroanilline 2800 U 2800 76 ug/kg 08/23/13 13:40 08/30/13 21:32 1 1 2-Nitroanilline 2800 U 2800 76 ug/kg 08/23/13 13:40 08/30/13 21:32 1 1 2-Nitrophenol 2800 U 2800 76 ug/kg 08/23/13 13:40 08/30/13 21:32 1 1 2-Nitrophenol 2800 U 2800 1400 ug/kg 08/23/13 13:40 08/30/13 21:32 1 1 2-Nitrophenol 2800 U 550 55 ug/kg 08/23/13 13:40 08/30/13 21:32 1 1 2-Nitrophenol 550 U 550 55 ug/kg 08/23/13 13:40 08/30/13 21:32 1 1 2-Nitrophenol 550 U 550 55 ug/kg 08/23/13 13:40 08/30/13 21:32 1 1 2-Nitrophenol 550 U 550 55 ug/kg 08/23/13 13:40 08/30/13 21:32 1 1 2-Nitrophenol 550 U 550 55 ug/kg 08/23/13 13:40 08/30/13 21:32 1 1 2-Nitrophenol 550 U 550 55 ug/kg 08/23/13 13:40 08/30/13 21:32 1 1 2-Nitrophenol 550 U 550 55 ug/kg 08/23/13 13:40 08/30/13 21:32 1 1 2-Nitrophenol 550 U 550 55 ug/kg 08/23/13 13:40 08/30/13 21:32 1 1 2-Nitrophenol 550 U 550 55 ug/kg 08/23/13 13:40 08/30/13 21:32 1 1 2-Nitrophenol 550 U 550 55 ug/kg 08/23/13 13:40 08/30/13 21:32 1 1 2-Nitrophenol 550 U 550 55 ug/kg 08/23/13 13:40 08/30/13 21:32 1 1 2-Nitrophenol 550 U 550 55 ug/kg 08/23/13 13:40 08/30/13 21:32 1 1 2-Nitrophenol 550 U 550 550 81 u	4-Chloro-3-methylphenol	550	U	550	58	ug/Kg	₩	08/23/13 13:40	08/30/13 21:32	1
2,4,6-Trichlorophenol       550       U       550       48       ug/Kg       08/23/13 13:40       08/30/13 21:32       1         2,4,5-Trichlorophenol       550       U       550       58       ug/Kg       08/23/13 13:40       08/30/13 21:32       1         1,1'-Biphenyl       1200       U       1200       1200       ug/Kg       08/23/13 13:40       08/30/13 21:32       1         2-Chloronaphthalene       550       U       550       58       ug/Kg       08/23/13 13:40       08/30/13 21:32       1         2-Nitroaniline       2800       U       2800       74       ug/Kg       08/23/13 13:40       08/30/13 21:32       1         Dimethyl phthalate       550       U       550       56       ug/Kg       08/23/13 13:40       08/30/13 21:32       1         2,6-Dinitrotoluene       550       U       550       69       ug/Kg       08/23/13 13:40       08/30/13 21:32       1         Acenaphthylene       550       U       550       60       ug/Kg       08/23/13 13:40       08/30/13 21:32       1         3-Nitroaniline       2800       U       2800       76       ug/Kg       08/23/13 13:40       08/30/13 21:32       1         4	2-Methylnaphthalene	78	J	550	63	ug/Kg		08/23/13 13:40	08/30/13 21:32	1
2,4,6-Trichlorophenol       550       U       550       48       ug/Kg       08/23/13 13:40       08/30/13 21:32       1         2,4,5-Trichlorophenol       550       U       550       58       ug/Kg       08/23/13 13:40       08/30/13 21:32       1         1,1'-Biphenyl       1200       U       1200       1200       ug/Kg       08/23/13 13:40       08/30/13 21:32       1         2-Chloronaphthalene       550       U       550       58       ug/Kg       08/23/13 13:40       08/30/13 21:32       1         2-Nitroaniline       2800       U       2800       74       ug/Kg       08/23/13 13:40       08/30/13 21:32       1         Dimethyl phthalate       550       U       550       56       ug/Kg       08/23/13 13:40       08/30/13 21:32       1         2,6-Dinitrotoluene       550       U       550       69       ug/Kg       08/23/13 13:40       08/30/13 21:32       1         Acenaphthylene       550       U       550       60       ug/Kg       08/23/13 13:40       08/30/13 21:32       1         3-Nitroaniline       2800       U       2800       76       ug/Kg       08/23/13 13:40       08/30/13 21:32       1         4	Hexachlorocyclopentadiene	550	U	550	68	ug/Kg	₩	08/23/13 13:40	08/30/13 21:32	1
1,1'-Biphenyl 1200 U 1200 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 2-Chloronaphthalene 550 U 550 58 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 2-Nitroaniline 2800 U 2800 74 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 Dimethyl phthalate 550 U 550 56 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 2,6-Dinitrotoluene 550 U 550 69 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 Acenaphthylene 550 U 550 60 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 3-Nitroaniline 2800 U 2800 76 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 Acenaphthene 550 U 550 68 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 Acenaphthene 550 U 550 68 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 Acenaphthene 550 U 550 68 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 Acenaphthene 550 U 550 68 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 Acenaphthene 550 U 550 68 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 Acenaphthene 550 U 550 68 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 Acenaphthene 550 U 550 68 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 Acenaphthonol 2800 U 2800 550 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 Dibenzofuran 550 U 550 55 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 2,4-Dinitrotoluene 550 U 550 81 ug/Kg 08/23/13 13:40 08/30/13 21:32 1	2,4,6-Trichlorophenol	550	U	550	48	ug/Kg	₩	08/23/13 13:40	08/30/13 21:32	1
2-Chloronaphthalene 550 U 550 58 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 2-Nitroaniline 2800 U 5800 74 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 Dimethyl phthalate 550 U 550 56 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 2,6-Dinitrotoluene 550 U 550 69 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 Acenaphthylene 550 U 550 60 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 3-Nitroaniline 2800 U 5800 76 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 Acenaphthene 550 U 550 68 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 2,4-Dinitrophenol 2800 U 2800 76 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 4-Nitrophenol 2800 U 2800 1400 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 Dibenzofuran 550 U 550 55 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 2,4-Dinitrotoluene 550 U 550 55 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 2,4-Dinitrotoluene 550 U 550 81 ug/Kg 08/23/13 13:40 08/30/13 21:32 1	2,4,5-Trichlorophenol	550	U	550	58	ug/Kg	ф	08/23/13 13:40	08/30/13 21:32	1
2-Nitroaniline 2800 U 2800 74 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 Dimethyl phthalate 550 U 550 56 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 2,6-Dinitrotoluene 550 U 550 69 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 Acenaphthylene 550 U 550 60 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 3-Nitroaniline 2800 U 2800 76 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 Acenaphthene 550 U 550 68 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 2,4-Dinitrophenol 2800 U 2800 1400 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 4-Nitrophenol 2800 U 2800 1400 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 Dibenzofuran 550 U 550 55 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 2,4-Dinitrotoluene 550 U 550 81 ug/Kg 08/23/13 13:40 08/30/13 21:32 1	1,1'-Biphenyl	1200	U	1200	1200	ug/Kg	₩	08/23/13 13:40	08/30/13 21:32	1
Dimethyl phthalate 550 U 550 56 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 2,6-Dinitrotoluene 550 U 550 69 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 Acenaphthylene 550 U 550 60 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 3-Nitroaniline 2800 U 2800 76 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 Acenaphthene 550 U 550 68 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 2,4-Dinitrophenol 2800 U 2800 1400 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 4-Nitrophenol 2800 U 2800 550 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 5-Nitrophenol 2800 U 2800 550 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 5-Nitrophenol 2800 U 550 55 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 5-Nitrophenol 2800 U 550 55 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 5-Nitrophenol 2800 U 550 55 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 5-Nitrophenol 550 U 550 55 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 5-Nitrophenol 550 U 550 81 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 5-Nitrophenol 550 U 550 81 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 5-Nitrophenol 550 U 550 81 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 5-Nitrophenol 550 U 550 81 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 5-Nitrophenol 550 U 550 81 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 5-Nitrophenol 550 U 550 81 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 5-Nitrophenol 550 U 550 81 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 5-Nitrophenol 550 U 550 81 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 5-Nitrophenol 550 U 550 81 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 5-Nitrophenol 550 U 550 81 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 5-Nitrophenol 550 U 550 81 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 5-Nitrophenol 550 U 550 81 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 5-Nitrophenol 550 U 550 81 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 5-Nitrophenol 550 U 550 81 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 5-Nitrophenol 550 U 550 81 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 5-Nitrophenol 550 U 550 81 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 5-Nitrophenol 550 U 550 81 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 5-Nitrophenol 550 U 550 81 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 5-Nitrophenol 550 U 550 81 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 5	2-Chloronaphthalene	550	U	550	58	ug/Kg	₩	08/23/13 13:40	08/30/13 21:32	1
2,6-Dinitrotoluene 550 U 550 69 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 Acenaphthylene 550 U 550 60 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 3-Nitroaniline 2800 U 2800 76 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 Acenaphthene 550 U 550 68 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 2,4-Dinitrophenol 2800 U 2800 1400 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 4-Nitrophenol 2800 U 2800 550 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 Dibenzofuran 550 U 550 55 ug/Kg 08/23/13 13:40 08/30/13 21:32 1 2,4-Dinitrotoluene 550 U 550 81 ug/Kg 08/23/13 13:40 08/30/13 21:32 1	2-Nitroaniline	2800	U	2800	74	ug/Kg		08/23/13 13:40	08/30/13 21:32	1
2,6-Dinitrotoluene       550       U       550       69       ug/Kg       ** 08/23/13 13:40       08/30/13 21:32       1         Acenaphthylene       550       U       550       60       ug/Kg       ** 08/23/13 13:40       08/30/13 21:32       1         3-Nitroaniline       2800       U       2800       76       ug/Kg       ** 08/23/13 13:40       08/30/13 21:32       1         Acenaphthene       550       U       550       68       ug/Kg       ** 08/23/13 13:40       08/30/13 21:32       1         2,4-Dinitrophenol       2800       U       2800       1400       ug/Kg       ** 08/23/13 13:40       08/30/13 21:32       1         4-Nitrophenol       2800       U       2800       550       ug/Kg       ** 08/23/13 13:40       08/30/13 21:32       1         Dibenzofuran       550       U       550       55       ug/Kg       ** 08/23/13 13:40       08/30/13 21:32       1         2,4-Dinitrotoluene       550       U       550       81       ug/Kg       ** 08/23/13 13:40       08/30/13 21:32       1	Dimethyl phthalate	550	U	550	56	ug/Kg	₩	08/23/13 13:40	08/30/13 21:32	1
Acenaphthylene         550         U         550         60         ug/Kg         ** 08/23/13 13:40         08/30/13 21:32         1           3-Nitroaniline         2800         U         2800         76         ug/Kg         ** 08/23/13 13:40         08/30/13 21:32         1           Acenaphthene         550         U         550         68         ug/Kg         ** 08/23/13 13:40         08/30/13 21:32         1           2,4-Dinitrophenol         2800         U         2800         1400         ug/Kg         ** 08/23/13 13:40         08/30/13 21:32         1           4-Nitrophenol         2800         U         2800         550         ug/Kg         ** 08/23/13 13:40         08/30/13 21:32         1           Dibenzofuran         550         U         550         55         ug/Kg         ** 08/23/13 13:40         08/30/13 21:32         1           2,4-Dinitrotoluene         550         U         550         81         ug/Kg         ** 08/23/13 13:40         08/30/13 21:32         1	2,6-Dinitrotoluene	550	U	550	69		₩	08/23/13 13:40	08/30/13 21:32	1
3-Nitroaniline 2800 U 2800 76 ug/Kg * 08/23/13 13:40 08/30/13 21:32 1 Acenaphthene 550 U 550 68 ug/Kg * 08/23/13 13:40 08/30/13 21:32 1 2,4-Dinitrophenol 2800 U 2800 1400 ug/Kg * 08/23/13 13:40 08/30/13 21:32 1 4-Nitrophenol 2800 U 2800 550 ug/Kg * 08/23/13 13:40 08/30/13 21:32 1 Dibenzofuran 550 U 550 55 ug/Kg * 08/23/13 13:40 08/30/13 21:32 1 2,4-Dinitrotoluene 550 U 550 81 ug/Kg * 08/23/13 13:40 08/30/13 21:32 1		550		550	60			08/23/13 13:40	08/30/13 21:32	1
Acenaphthene       550       U       550       68       ug/Kg       © 08/23/13 13:40       08/30/13 21:32       1         2,4-Dinitrophenol       2800       U       2800       1400       ug/Kg       © 08/23/13 13:40       08/30/13 21:32       1         4-Nitrophenol       2800       U       2800       550       ug/Kg       © 08/23/13 13:40       08/30/13 21:32       1         Dibenzofuran       550       U       550       55       ug/Kg       © 08/23/13 13:40       08/30/13 21:32       1         2,4-Dinitrotoluene       550       U       550       81       ug/Kg       © 08/23/13 13:40       08/30/13 21:32       1	, ,	2800	U	2800	76		₩	08/23/13 13:40		1
2,4-Dinitrophenol       2800       U       2800       1400       ug/Kg       * 08/23/13 13:40       08/30/13 21:32       1         4-Nitrophenol       2800       U       2800       550       ug/Kg       * 08/23/13 13:40       08/30/13 21:32       1         Dibenzofuran       550       U       550       55       ug/Kg       * 08/23/13 13:40       08/30/13 21:32       1         2,4-Dinitrotoluene       550       U       550       81       ug/Kg       * 08/23/13 13:40       08/30/13 21:32       1							₽			
4-Nitrophenol       2800       U       2800       550       ug/Kg       * 08/23/13 13:40       08/30/13 21:32       1         Dibenzofuran       550       U       550       55       ug/Kg       * 08/23/13 13:40       08/30/13 21:32       1         2,4-Dinitrotoluene       550       U       550       81       ug/Kg       * 08/23/13 13:40       08/30/13 21:32       1							<del>.</del>			
Dibenzofuran       550       U       550       55       ug/Kg       © 08/23/13 13:40       08/30/13 21:32       1         2,4-Dinitrotoluene       550       U       550       81       ug/Kg       © 08/23/13 13:40       08/30/13 21:32       1	•						₩			
2,4-Dinitrotoluene 550 U 550 81 ug/Kg * 08/23/13 13:40 08/30/13 21:32 1	•						₩			
2,1 Dillia del del 10 10 10 10 10 10 10 10 10 10 10 10 10										
	Diethyl phthalate			550			₽	08/23/13 13:40	08/30/13 21:32	1

TestAmerica Savannah

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TestAmerica Job ID: 680-93445-1

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

liant Cample ID: CD02 04 (0.0.4.0)

Lab Sample ID: 680-93445-11

TestAmerica Job ID: 680-93445-1

Matrix: Solid
Percent Solids: 59.7

Client Sample ID: SB02-01 (0.0-1.0)

Date Collected: 08/20/13 11:15 Date Received: 08/21/13 10:07

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluorene	550	U	550	60	ug/Kg	<del>-</del>	08/23/13 13:40	08/30/13 21:32	
4-Chlorophenyl phenyl ether	550	U	550	73	ug/Kg	₽	08/23/13 13:40	08/30/13 21:32	
4-Nitroaniline	2800	U	2800	81	ug/Kg	₩	08/23/13 13:40	08/30/13 21:32	
4,6-Dinitro-2-methylphenol	2800	U	2800	280	ug/Kg	₩	08/23/13 13:40	08/30/13 21:32	
N-Nitrosodiphenylamine	550	U	550	55	ug/Kg	₽	08/23/13 13:40	08/30/13 21:32	1
4-Bromophenyl phenyl ether	550	U	550	60	ug/Kg	₩	08/23/13 13:40	08/30/13 21:32	
Hexachlorobenzene	550	U	550	65	ug/Kg	₩	08/23/13 13:40	08/30/13 21:32	
Atrazine	550	U	550	38	ug/Kg	₽	08/23/13 13:40	08/30/13 21:32	
Pentachlorophenol	2800	U	2800	550	ug/Kg	₩	08/23/13 13:40	08/30/13 21:32	
Phenanthrene	79	J	550	45	ug/Kg	₩	08/23/13 13:40	08/30/13 21:32	1
Anthracene	550	U	550	41	ug/Kg	₽	08/23/13 13:40	08/30/13 21:32	1
Carbazole	550	U	550	50	ug/Kg	₽	08/23/13 13:40	08/30/13 21:32	1
Di-n-butyl phthalate	550	U	550	50	ug/Kg	₽	08/23/13 13:40	08/30/13 21:32	•
Fluoranthene	550	U	550	53	ug/Kg	₽	08/23/13 13:40	08/30/13 21:32	1
Pyrene	550	U	550	45	ug/Kg	₽	08/23/13 13:40	08/30/13 21:32	•
Butyl benzyl phthalate	550	U	550	43	ug/Kg	₽	08/23/13 13:40	08/30/13 21:32	•
3,3'-Dichlorobenzidine	1100	U	1100	46	ug/Kg	₽	08/23/13 13:40	08/30/13 21:32	1
Benzo[a]anthracene	550	U	550	45	ug/Kg	₽	08/23/13 13:40	08/30/13 21:32	1
Chrysene	37	J	550	35	ug/Kg	₽	08/23/13 13:40	08/30/13 21:32	1
Bis(2-ethylhexyl) phthalate	550	U	550	48	ug/Kg	₽	08/23/13 13:40	08/30/13 21:32	1
Di-n-octyl phthalate	550	U	550	48	ug/Kg	₽	08/23/13 13:40	08/30/13 21:32	•
Benzo[b]fluoranthene	550	U	550	63	ug/Kg	₩	08/23/13 13:40	08/30/13 21:32	
Benzo[k]fluoranthene	550	U	550	110	ug/Kg	₽	08/23/13 13:40	08/30/13 21:32	
Benzo[a]pyrene	550	U	550	86	ug/Kg	₽	08/23/13 13:40	08/30/13 21:32	1
Indeno[1,2,3-cd]pyrene	550	U	550	46	ug/Kg	₽	08/23/13 13:40	08/30/13 21:32	1
Dibenz(a,h)anthracene	550	U	550	65	ug/Kg	₽	08/23/13 13:40	08/30/13 21:32	
Benzo[g,h,i]perylene	550	U	550	36	ug/Kg	₽	08/23/13 13:40	08/30/13 21:32	,
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fa
Nitrobenzene-d5 (Surr)	64		46 - 130				08/23/13 13:40	08/30/13 21:32	
2-Fluorobiphenyl	69		58 - 130				08/23/13 13:40	08/30/13 21:32	
Terphenyl-d14 (Surr)	67		60 - 130				08/23/13 13:40	08/30/13 21:32	
Phenol-d5 (Surr)	64		49 - 130				08/23/13 13:40	08/30/13 21:32	
2-Fluorophenol (Surr)	65		40 - 130				08/23/13 13:40	08/30/13 21:32	
2,4,6-Tribromophenol (Surr)	69		58 <sub>-</sub> 130				08/23/13 13:40	08/30/13 21:32	

Method: 8015C - Nonhalogenated Organics using GC/FID -Modified (Gasoline Range Organics)											
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac		
Gasoline Range Organics (GRO) -C6-C10	3400		430	33	ug/Kg	#	08/22/13 10:07	08/24/13 20:16	1		

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene	216	X	70 - 131	08/22/13 10:07	08/24/13 20:16	1

Method: 8015C - Nonhalogenated Organics using GC/FID -Modified (Diesel Range Organics)											
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac		
Diesel Range Organics [C10-C28]	8100	U	8100	2300	ug/Kg	₩	08/28/13 11:44	08/30/13 02:01	1		
ORO C24-C40	2800	JB	8100	2300	ug/Kg	₽	08/28/13 11:44	08/30/13 02:01	1		
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac		
o-Terphenyl (Surr)	72		50 - 150				08/28/13 11:44	08/30/13 02:01	1		

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93445-1

Client Sample ID: SB02-01 (7.0-8.0)

Date Collected: 08/20/13 11:25
Date Received: 08/21/13 10:07

Lab Sample ID: 680-93445-12 Matrix: Solid

Percent Solids: 81.7

Method: 8260B - Volatile Organi	•	•				_			
Analyte		Qualifier	RL	MDL		D	Prepared	Analyzed	Dil F
Acetone	21		21	6.2	ug/Kg	<u> </u>	08/23/13 16:13	08/27/13 21:44	
Benzene	4.2		4.2	0.42	ug/Kg	₩	08/23/13 16:13	08/27/13 21:44	
Bromodichloromethane	4.2		4.2	0.71	ug/Kg	<u>.</u>	08/23/13 16:13	08/27/13 21:44	
Bromoform	4.2		4.2	0.53	ug/Kg	*	08/23/13 16:13	08/27/13 21:44	
Bromomethane	4.2		4.2		ug/Kg	₽	08/23/13 16:13	08/27/13 21:44	
Carbon disulfide	4.2		4.2	1.0	ug/Kg		08/23/13 16:13	08/27/13 21:44	
Carbon tetrachloride	4.2		4.2	1.4	ug/Kg	₽	08/23/13 16:13	08/27/13 21:44	
Chlorobenzene	4.2		4.2	0.44	ug/Kg	₩	08/23/13 16:13	08/27/13 21:44	
Chloroethane	4.2		4.2	1.6	ug/Kg		08/23/13 16:13	08/27/13 21:44	
Chloroform	4.2	U	4.2	0.50	ug/Kg	₩	08/23/13 16:13	08/27/13 21:44	
Chloromethane	4.2	U	4.2	0.85	ug/Kg	₩	08/23/13 16:13	08/27/13 21:44	
cis-1,2-Dichloroethene	4.2	U	4.2	0.64	ug/Kg		08/23/13 16:13	08/27/13 21:44	
cis-1,3-Dichloropropene	4.2	U	4.2	1.0	ug/Kg	₽	08/23/13 16:13	08/27/13 21:44	
Cyclohexane	4.2		4.2	0.80	ug/Kg	₩	08/23/13 16:13	08/27/13 21:44	
Dibromochloromethane	4.2	U	4.2	0.74	ug/Kg	₩	08/23/13 16:13	08/27/13 21:44	
1,2-Dibromo-3-Chloropropane	4.2	U	4.2	2.8	ug/Kg	₩	08/23/13 16:13	08/27/13 21:44	
1,2-Dichlorobenzene	4.2	U	4.2	0.60	ug/Kg	₩	08/23/13 16:13	08/27/13 21:44	
1,3-Dichlorobenzene	4.2	U	4.2	0.81	ug/Kg	₽	08/23/13 16:13	08/27/13 21:44	
1,4-Dichlorobenzene	4.2	U	4.2	0.69	ug/Kg	\$	08/23/13 16:13	08/27/13 21:44	
Dichlorodifluoromethane	4.2	U	4.2	1.1	ug/Kg	₽	08/23/13 16:13	08/27/13 21:44	
1,1-Dichloroethane	4.2	U	4.2	0.70	ug/Kg	₽	08/23/13 16:13	08/27/13 21:44	
1,2-Dichloroethane	4.2	U	4.2	0.69	ug/Kg	₽	08/23/13 16:13	08/27/13 21:44	
1,1-Dichloroethene	4.2	U	4.2	0.64	ug/Kg	₩	08/23/13 16:13	08/27/13 21:44	
1,2-Dichloropropane	4.2	U	4.2	0.63	ug/Kg	₩	08/23/13 16:13	08/27/13 21:44	
Diisopropyl ether	4.2	U	4.2	0.47	ug/Kg		08/23/13 16:13	08/27/13 21:44	
Ethylbenzene	4.2	U	4.2	0.52	ug/Kg	₽	08/23/13 16:13	08/27/13 21:44	
Ethylene Dibromide	4.2	U	4.2	0.41	ug/Kg	₽	08/23/13 16:13	08/27/13 21:44	
Ethyl tert-butyl ether	4.2	U	4.2	0.47	ug/Kg		08/23/13 16:13	08/27/13 21:44	
2-Hexanone	21	U	21	4.2	ug/Kg	₽	08/23/13 16:13	08/27/13 21:44	
Isopropylbenzene	4.2	U	4.2	0.58	ug/Kg	₩	08/23/13 16:13	08/27/13 21:44	
Methyl acetate	4.2	U	4.2	3.9	ug/Kg		08/23/13 16:13	08/27/13 21:44	
Methylcyclohexane	4.2	U	4.2	0.74	ug/Kg	₩	08/23/13 16:13	08/27/13 21:44	
Methylene Chloride	13	U	13		ug/Kg	₽	08/23/13 16:13	08/27/13 21:44	
Methyl Ethyl Ketone	21		21		ug/Kg		08/23/13 16:13	08/27/13 21:44	
methyl isobutyl ketone	21		21		ug/Kg	₽	08/23/13 16:13	08/27/13 21:44	
Methyl tert-butyl ether	4.2		4.2		ug/Kg	₽	08/23/13 16:13	08/27/13 21:44	
Naphthalene	4.2		4.2		ug/Kg		08/23/13 16:13	08/27/13 21:44	
Styrene	4.2		4.2		ug/Kg	₽	08/23/13 16:13	08/27/13 21:44	
Tert-amyl methyl ether	4.2		4.2		ug/Kg ug/Kg	₽	08/23/13 16:13	08/27/13 21:44	
tert-Butyl alcohol	4.2		4.2		ug/Kg		08/23/13 16:13	08/27/13 21:44	
1,1,2,2-Tetrachloroethane	4.2		4.2	0.61	ug/Kg ug/Kg	₩	08/23/13 16:13	08/27/13 21:44	
Tetrachloroethene	4.2		4.2	0.71	ug/Kg	₩	08/23/13 16:13	08/27/13 21:44	
Toluene	4.2		4.2	0.71	ug/Kg ug/Kg		08/23/13 16:13	08/27/13 21:44	
	4.2		4.2		ug/Kg ug/Kg	₩	08/23/13 16:13		
trans-1,2-Dichloroethene						₩		08/27/13 21:44	
trans-1,3-Dichloropropene	4.2		4.2		ug/Kg	<del>.</del> .	08/23/13 16:13	08/27/13 21:44	
1,2,4-Trichlorobenzene	4.2		4.2		ug/Kg		08/23/13 16:13	08/27/13 21:44	
1,1,1-Trichloroethane	4.2		4.2		ug/Kg	<b>#</b>	08/23/13 16:13	08/27/13 21:44	
1,1,2-Trichloroethane Trichloroethene	4.2		4.2		ug/Kg ug/Kg	 	08/23/13 16:13 08/23/13 16:13	08/27/13 21:44 08/27/13 21:44	

TestAmerica Savannah

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB02-01 (7.0-8.0)

Lab Sample ID: 680-93445-12

Date Collected: 08/20/13 11:25

Matrix: Solid

Date Received: 08/21/13 10:07 Percent Solids: 81.7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichlorofluoromethane	4.2	U	4.2	0.81	ug/Kg	₩	08/23/13 16:13	08/27/13 21:44	1
1,1,2-Trichloro-1,2,2-trifluoroethane	4.2	U	4.2	1.7	ug/Kg	₽	08/23/13 16:13	08/27/13 21:44	1
Vinyl chloride	4.2	U	4.2	0.78	ug/Kg	₽	08/23/13 16:13	08/27/13 21:44	1
Xylenes, Total	8.5	U	8.5	1.6	ug/Kg	₩	08/23/13 16:13	08/27/13 21:44	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	101		72 - 122				08/23/13 16:13	08/27/13 21:44	1
Dibromofluoromethane	103		79 - 123				08/23/13 16:13	08/27/13 21:44	1
Toluene-d8 (Surr)	97		80 - 120				08/23/13 16:13	08/27/13 21:44	1

10luene-a8 (Surr) - -	97		80 - 120				08/23/13 16:13	08/21/13 21:44	1
Method: 8270D - Semivolatile O Analyte	•	nds (GC/M	S)	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzaldehyde	400	U	400	71	ug/Kg	<u>~</u>	08/23/13 13:40	08/30/13 21:57	1
Phenol	400	U	400	41	ug/Kg	₩	08/23/13 13:40	08/30/13 21:57	1
Bis(2-chloroethyl)ether	400	U	400	55	ug/Kg	₩	08/23/13 13:40	08/30/13 21:57	1
2-Chlorophenol	400		400	49	ug/Kg		08/23/13 13:40	08/30/13 21:57	1
2-Methylphenol	400	U	400	33	ug/Kg	₩	08/23/13 13:40	08/30/13 21:57	1
bis (2-chloroisopropyl) ether	400	U	400	37	ug/Kg	₩	08/23/13 13:40	08/30/13 21:57	1
Acetophenone	400		400	34	ug/Kg		08/23/13 13:40	08/30/13 21:57	1
3 & 4 Methylphenol	400	U	400	52	ug/Kg	₩	08/23/13 13:40	08/30/13 21:57	1
N-Nitrosodi-n-propylamine	400	U	400	39	ug/Kg	₩	08/23/13 13:40	08/30/13 21:57	1
Hexachloroethane	400		400	34	ug/Kg		08/23/13 13:40	08/30/13 21:57	1
Nitrobenzene	400	U	400	32	ug/Kg	₩	08/23/13 13:40	08/30/13 21:57	1
Isophorone	400	U	400	40	ug/Kg	₽	08/23/13 13:40	08/30/13 21:57	1
2-Nitrophenol	400		400	50	ug/Kg		08/23/13 13:40	08/30/13 21:57	1
2,4-Dimethylphenol	400	U	400	54	ug/Kg	₩	08/23/13 13:40	08/30/13 21:57	1
Bis(2-chloroethoxy)methane	400	U	400	48	ug/Kg	₩	08/23/13 13:40	08/30/13 21:57	1
2,4-Dichlorophenol	400		400	43	ug/Kg		08/23/13 13:40	08/30/13 21:57	1
Naphthalene	400	U	400			₽	08/23/13 13:40	08/30/13 21:57	1
4-Chloroaniline	810	U *	810	63	ug/Kg	₩	08/23/13 13:40	08/30/13 21:57	1
Hexachlorobutadiene	400		400	44	ug/Kg		08/23/13 13:40	08/30/13 21:57	1
Caprolactam	400	U	400	81	ug/Kg	₽	08/23/13 13:40	08/30/13 21:57	1
4-Chloro-3-methylphenol	400	U	400	43	ug/Kg	₽	08/23/13 13:40	08/30/13 21:57	1
2-Methylnaphthalene	400		400		ug/Kg	ф.	08/23/13 13:40	08/30/13 21:57	1
Hexachlorocyclopentadiene	400	U	400	50	ug/Kg	₽	08/23/13 13:40	08/30/13 21:57	1
2,4,6-Trichlorophenol	400	U	400	35	ug/Kg	₽	08/23/13 13:40	08/30/13 21:57	1
2,4,5-Trichlorophenol	400	U	400	43	ug/Kg		08/23/13 13:40	08/30/13 21:57	1
1,1'-Biphenyl	900	U	900	900	ug/Kg	₽	08/23/13 13:40	08/30/13 21:57	1
2-Chloronaphthalene	400	U	400	43	ug/Kg	₩	08/23/13 13:40	08/30/13 21:57	1
2-Nitroaniline	2100	U	2100	55	ug/Kg		08/23/13 13:40	08/30/13 21:57	1
Dimethyl phthalate	400	U	400	41	ug/Kg	₩	08/23/13 13:40	08/30/13 21:57	1
2,6-Dinitrotoluene	400	U	400	51	ug/Kg	₩	08/23/13 13:40	08/30/13 21:57	1
Acenaphthylene	400	U	400	44	ug/Kg		08/23/13 13:40	08/30/13 21:57	1
3-Nitroaniline	2100	U	2100	56	ug/Kg	₩	08/23/13 13:40	08/30/13 21:57	1
Acenaphthene	400	U	400	50	ug/Kg	₽	08/23/13 13:40	08/30/13 21:57	1
2,4-Dinitrophenol	2100	U	2100	1000	ug/Kg		08/23/13 13:40	08/30/13 21:57	1
4-Nitrophenol	2100	U	2100	400	ug/Kg	₩	08/23/13 13:40	08/30/13 21:57	1
Dibenzofuran	400	U	400	40	ug/Kg	₩	08/23/13 13:40	08/30/13 21:57	1
2,4-Dinitrotoluene	400	U	400	60	ug/Kg		08/23/13 13:40	08/30/13 21:57	1
Diethyl phthalate	400	U	400	45	ug/Kg	₩	08/23/13 13:40	08/30/13 21:57	1

TestAmerica Savannah

TestAmerica Job ID: 680-93445-1

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Client: ARCADIS U.S., Inc.

Date Received: 08/21/13 10:07

Project/Site: CSX C&O Canal Brunswick, MD

1 1 0 1 10 000 00445 40

TestAmerica Job ID: 680-93445-1

Client Sample ID: SB02-01 (7.0-8.0)

Date Collected: 08/20/13 11:25

Lab Sample ID: 680-93445-12

Matrix: Solid

Percent Solids: 81.7

Analyte		Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fa
Fluorene	400		400	44	ug/Kg	₩	08/23/13 13:40	08/30/13 21:57	
4-Chlorophenyl phenyl ether	400		400		ug/Kg	*	08/23/13 13:40	08/30/13 21:57	
4-Nitroaniline	2100		2100	60	ug/Kg	**	08/23/13 13:40	08/30/13 21:57	
4,6-Dinitro-2-methylphenol	2100	U	2100	210	ug/Kg		08/23/13 13:40	08/30/13 21:57	
N-Nitrosodiphenylamine	400	U	400	40	0 0	₩	08/23/13 13:40	08/30/13 21:57	
4-Bromophenyl phenyl ether	400	U	400	44	ug/Kg	₩	08/23/13 13:40	08/30/13 21:57	
Hexachlorobenzene	400	U	400	48	ug/Kg		08/23/13 13:40	08/30/13 21:57	
Atrazine	400	U	400	28	ug/Kg	₩	08/23/13 13:40	08/30/13 21:57	
Pentachlorophenol	2100	U	2100	400	ug/Kg	₩	08/23/13 13:40	08/30/13 21:57	
Phenanthrene	400	U	400	33	ug/Kg	₽	08/23/13 13:40	08/30/13 21:57	
Anthracene	400	U	400	31	ug/Kg	₽	08/23/13 13:40	08/30/13 21:57	
Carbazole	400	U	400	37	ug/Kg	₩	08/23/13 13:40	08/30/13 21:57	
Di-n-butyl phthalate	400	U	400	37	ug/Kg	₩	08/23/13 13:40	08/30/13 21:57	
Fluoranthene	400	U	400	39	ug/Kg	₽	08/23/13 13:40	08/30/13 21:57	
Pyrene	400	U	400	33	ug/Kg	₽	08/23/13 13:40	08/30/13 21:57	
Butyl benzyl phthalate	400	U	400	32	ug/Kg	₽	08/23/13 13:40	08/30/13 21:57	
3,3'-Dichlorobenzidine	810	U	810	34	ug/Kg		08/23/13 13:40	08/30/13 21:57	
Benzo[a]anthracene	400	U	400	33	ug/Kg	₩	08/23/13 13:40	08/30/13 21:57	
Chrysene	400	U	400	26	ug/Kg	₩	08/23/13 13:40	08/30/13 21:57	
Bis(2-ethylhexyl) phthalate	400	U	400	35	ug/Kg		08/23/13 13:40	08/30/13 21:57	
Di-n-octyl phthalate	400	U	400	35	ug/Kg	₽	08/23/13 13:40	08/30/13 21:57	
Benzo[b]fluoranthene	400	U	400	46	ug/Kg	₽	08/23/13 13:40	08/30/13 21:57	
Benzo[k]fluoranthene	400	U	400	79	ug/Kg		08/23/13 13:40	08/30/13 21:57	
Benzo[a]pyrene	400	U	400		ug/Kg	₩	08/23/13 13:40	08/30/13 21:57	
Indeno[1,2,3-cd]pyrene	400	U	400	34		₩	08/23/13 13:40	08/30/13 21:57	
Dibenz(a,h)anthracene	400	U	400	48	ug/Kg		08/23/13 13:40	08/30/13 21:57	
Benzo[g,h,i]perylene	400		400		ug/Kg	₽	08/23/13 13:40	08/30/13 21:57	
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fa
Nitrobenzene-d5 (Surr)	71		46 - 130				08/23/13 13:40	08/30/13 21:57	
2-Fluorobiphenyl	80		58 - 130				08/23/13 13:40	08/30/13 21:57	
Terphenyl-d14 (Surr)	86		60 - 130				08/23/13 13:40	08/30/13 21:57	
Phenol-d5 (Surr)	70		49 - 130				08/23/13 13:40	08/30/13 21:57	
2-Fluorophenol (Surr)	72		40 - 130				08/23/13 13:40	08/30/13 21:57	
2,4,6-Tribromophenol (Surr)	89		58 - 130				08/23/13 13:40	08/30/13 21:57	
Method: 8015C - Nonhalogenato	ed Organics usi	na GC/FID -	Modified (Gaso	oline Ran	ge Organ	ics)			
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
Gasoline Range Organics (GRO) -C6-C10	210	U	210	16	ug/Kg	<u> </u>	08/22/13 10:07	08/24/13 20:36	
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fa
a,a,a-Trifluorotoluene	89		70 - 131				08/22/13 10:07	08/24/13 20:36	
Method: 8015C - Nonhalogenat	_	_		_	_	-			
Analyte		Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fa
Diesel Range Organics [C10-C28]	6000	U	6000		ug/Kg	₩	08/28/13 11:44	08/30/13 02:17	
ORO C24-C40	2700	JB	6000	1700	ug/Kg	₩	08/28/13 11:44	08/30/13 02:17	
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fa
o-Terphenyl (Surr)	77		50 <sub>-</sub> 150				08/28/13 11:44	08/30/13 02:17	

TestAmerica Savannah

9/11/2013

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93445-1

Client Sample ID: SB02-02 (0.0-1.0)

Lab Sample ID: 680-93445-13

Date Collected: 08/20/13 11:45

Date Received: 08/21/13 10:07

Matrix: Solid
Percent Solids: 78.5

Method: 8260B - Volatile Organi	c Compounds	GC/MS)							
Analyte		Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
Acetone	26	U	26	7.5	ug/Kg	<u> </u>	08/23/13 16:13	08/27/13 22:10	
Benzene	5.2	U	5.2	0.50	ug/Kg	₽	08/23/13 16:13	08/27/13 22:10	
Bromodichloromethane	5.2	U	5.2	0.87	ug/Kg	₩	08/23/13 16:13	08/27/13 22:10	
Bromoform	5.2	U	5.2	0.65	ug/Kg		08/23/13 16:13	08/27/13 22:10	
Bromomethane	5.2	U	5.2	1.4	ug/Kg	₽	08/23/13 16:13	08/27/13 22:10	
Carbon disulfide	5.2	U	5.2	1.2	ug/Kg	₽	08/23/13 16:13	08/27/13 22:10	
Carbon tetrachloride	5.2	U	5.2	1.8	ug/Kg	φ.	08/23/13 16:13	08/27/13 22:10	
Chlorobenzene	5.2	U	5.2	0.54	ug/Kg	₽	08/23/13 16:13	08/27/13 22:10	
Chloroethane	5.2	U	5.2	2.0	ug/Kg	₽	08/23/13 16:13	08/27/13 22:10	
Chloroform	5.2	U	5.2	0.61	ug/Kg		08/23/13 16:13	08/27/13 22:10	
Chloromethane	5.2	U	5.2	1.0	ug/Kg	₩	08/23/13 16:13	08/27/13 22:10	
cis-1,2-Dichloroethene	5.2	U	5.2	0.78	ug/Kg	₽	08/23/13 16:13	08/27/13 22:10	
cis-1,3-Dichloropropene	5.2		5.2		ug/Kg		08/23/13 16:13	08/27/13 22:10	
Cyclohexane	5.2		5.2	0.97	ug/Kg	₽	08/23/13 16:13	08/27/13 22:10	
Dibromochloromethane	5.2		5.2	0.90	ug/Kg	₽	08/23/13 16:13	08/27/13 22:10	
,2-Dibromo-3-Chloropropane	5.2		5.2	3.4			08/23/13 16:13	08/27/13 22:10	
,2-Dichlorobenzene	5.2		5.2	0.73	ug/Kg	₩	08/23/13 16:13	08/27/13 22:10	
,3-Dichlorobenzene	5.2		5.2	0.98	ug/Kg	₽	08/23/13 16:13	08/27/13 22:10	
.4-Dichlorobenzene	5.2		5.2		ug/Kg		08/23/13 16:13	08/27/13 22:10	
Dichlorodifluoromethane	5.2		5.2	1.3	ug/Kg	*	08/23/13 16:13	08/27/13 22:10	
.1-Dichloroethane	5.2		5.2	0.86	ug/Kg	*	08/23/13 16:13	08/27/13 22:10	
,2-Dichloroethane	5.2		5.2		ug/Kg		08/23/13 16:13	08/27/13 22:10	
,1-Dichloroethene	5.2		5.2	0.77	ug/Kg ug/Kg		08/23/13 16:13	08/27/13 22:10	
	5.2		5.2		ug/Kg ug/Kg		08/23/13 16:13	08/27/13 22:10	
,2-Dichloropropane	5.2						08/23/13 16:13	08/27/13 22:10	
Diisopropyl ether			5.2		ug/Kg	₩			
Ethylbenzene	5.2		5.2	0.63	ug/Kg	₩	08/23/13 16:13	08/27/13 22:10	
Ethylene Dibromide	5.2		5.2	0.49	ug/Kg		08/23/13 16:13	08/27/13 22:10	
Ethyl tert-butyl ether	5.2		5.2	0.58	ug/Kg	<b>‡</b>	08/23/13 16:13	08/27/13 22:10	
-Hexanone	26		26	5.2	ug/Kg	<b>*</b>	08/23/13 16:13	08/27/13 22:10	
sopropylbenzene	5.2		5.2	0.70	ug/Kg	<u></u>	08/23/13 16:13	08/27/13 22:10	
Methyl acetate	5.2		5.2		ug/Kg		08/23/13 16:13	08/27/13 22:10	
Methylcyclohexane	5.2		5.2	0.90	ug/Kg	*	08/23/13 16:13	08/27/13 22:10	
Methylene Chloride	15		15		ug/Kg		08/23/13 16:13	08/27/13 22:10	
Methyl Ethyl Ketone	26		26		ug/Kg	₩	08/23/13 16:13	08/27/13 22:10	
nethyl isobutyl ketone	26		26		ug/Kg	₽.	08/23/13 16:13	08/27/13 22:10	
Methyl tert-butyl ether	5.2		5.2		ug/Kg		08/23/13 16:13	08/27/13 22:10	
laphthalene	5.2		5.2		ug/Kg	₽	08/23/13 16:13	08/27/13 22:10	
Styrene	5.2	U	5.2	0.78	ug/Kg	₽	08/23/13 16:13	08/27/13 22:10	
ert-amyl methyl ether	5.2	U	5.2	0.45	ug/Kg	₩	08/23/13 16:13	08/27/13 22:10	
ert-Butyl alcohol	5.2	U	5.2		ug/Kg	₩	08/23/13 16:13	08/27/13 22:10	
,1,2,2-Tetrachloroethane	5.2	U	5.2	0.74	ug/Kg	₩	08/23/13 16:13	08/27/13 22:10	
etrachloroethene	5.2	U	5.2	0.87	ug/Kg	₽	08/23/13 16:13	08/27/13 22:10	
oluene	5.2	U	5.2	0.72	ug/Kg	₽	08/23/13 16:13	08/27/13 22:10	
rans-1,2-Dichloroethene	5.2	U	5.2	0.78	ug/Kg	₽	08/23/13 16:13	08/27/13 22:10	
rans-1,3-Dichloropropene	5.2	U	5.2	0.95	ug/Kg	₽	08/23/13 16:13	08/27/13 22:10	
,2,4-Trichlorobenzene	5.2	U	5.2	0.75	ug/Kg	<b>*</b>	08/23/13 16:13	08/27/13 22:10	
,1,1-Trichloroethane	5.2	U	5.2	1.1	ug/Kg	₽	08/23/13 16:13	08/27/13 22:10	
,1,2-Trichloroethane	5.2	U	5.2	0.95	ug/Kg	₩	08/23/13 16:13	08/27/13 22:10	
Trichloroethene	5.2	U	5.2	0.49	ug/Kg	<del>-</del>	08/23/13 16:13	08/27/13 22:10	

TestAmerica Savannah

2

4

6

8

46

11

Client: ARCADIS U.S., Inc.

Date Received: 08/21/13 10:07

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93445-1

Client Sample ID: SB02-02 (0.0-1.0) Lab Sample ID: 680-93445-13 Date Collected: 08/20/13 11:45 Matrix: Solid

Percent Solids: 78.5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichlorofluoromethane	5.2	U	5.2	0.98	ug/Kg	<del>-</del>	08/23/13 16:13	08/27/13 22:10	1
1,1,2-Trichloro-1,2,2-trifluoroethane	5.2	U	5.2	2.1	ug/Kg	₽	08/23/13 16:13	08/27/13 22:10	1
Vinyl chloride	5.2	U	5.2	0.95	ug/Kg	₽	08/23/13 16:13	08/27/13 22:10	1
Xylenes, Total	10	U	10	2.0	ug/Kg	₩	08/23/13 16:13	08/27/13 22:10	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	98		72 - 122				08/23/13 16:13	08/27/13 22:10	1
Dibromofluoromethane	102		79 - 123				08/23/13 16:13	08/27/13 22:10	1
Toluene-d8 (Surr)	98		80 - 120				08/23/13 16:13	08/27/13 22:10	1

	30		00 - 120				00/23/13 10.13	00/21/13 22.10	,
Method: 8270D - Semivolatile C	•	•	•						
Analyte		Qualifier	RL	MDL		— <del>D</del>	Prepared	Analyzed	Dil Fac
Benzaldehyde	420		420	73	ug/Kg		08/23/13 13:40	08/30/13 22:22	1
Phenol	420		420	43	ug/Kg	<b>#</b>	08/23/13 13:40	08/30/13 22:22	1
Bis(2-chloroethyl)ether	420		420	57	ug/Kg		08/23/13 13:40	08/30/13 22:22	1
2-Chlorophenol	420		420	50	ug/Kg	₽	08/23/13 13:40	08/30/13 22:22	1
2-Methylphenol	420		420	34	ug/Kg	₩	08/23/13 13:40	08/30/13 22:22	1
bis (2-chloroisopropyl) ether	420	U	420	38	ug/Kg		08/23/13 13:40	08/30/13 22:22	1
Acetophenone	420	U	420	35	ug/Kg	₩	08/23/13 13:40	08/30/13 22:22	1
3 & 4 Methylphenol	420	U	420	54	ug/Kg	₩	08/23/13 13:40	08/30/13 22:22	1
N-Nitrosodi-n-propylamine	420	U	420	40	ug/Kg	₩	08/23/13 13:40	08/30/13 22:22	1
Hexachloroethane	420	U	420	35	ug/Kg	₩	08/23/13 13:40	08/30/13 22:22	1
Nitrobenzene	420	U	420	33	ug/Kg	₽	08/23/13 13:40	08/30/13 22:22	1
Isophorone	420	U	420	42	ug/Kg	₽	08/23/13 13:40	08/30/13 22:22	1
2-Nitrophenol	420	U	420	52	ug/Kg	₽	08/23/13 13:40	08/30/13 22:22	1
2,4-Dimethylphenol	420	U	420	55	ug/Kg	₩	08/23/13 13:40	08/30/13 22:22	1
Bis(2-chloroethoxy)methane	420	U	420	49	ug/Kg	₩	08/23/13 13:40	08/30/13 22:22	1
2,4-Dichlorophenol	420	U	420	44	ug/Kg		08/23/13 13:40	08/30/13 22:22	1
Naphthalene	110	J	420	38	ug/Kg	₩	08/23/13 13:40	08/30/13 22:22	1
4-Chloroaniline	830	U *	830	65	ug/Kg	₽	08/23/13 13:40	08/30/13 22:22	1
Hexachlorobutadiene	420	U	420	45	ug/Kg		08/23/13 13:40	08/30/13 22:22	1
Caprolactam	420	U	420	83	ug/Kg	₽	08/23/13 13:40	08/30/13 22:22	1
4-Chloro-3-methylphenol	420	U	420	44	ug/Kg	₽	08/23/13 13:40	08/30/13 22:22	1
2-Methylnaphthalene	130		420	48	ug/Kg		08/23/13 13:40	08/30/13 22:22	1
Hexachlorocyclopentadiene	420	U	420	52	ug/Kg	₩	08/23/13 13:40	08/30/13 22:22	1
2,4,6-Trichlorophenol	420	U	420	37	ug/Kg	₩	08/23/13 13:40	08/30/13 22:22	1
2,4,5-Trichlorophenol	420	U	420	44	ug/Kg		08/23/13 13:40	08/30/13 22:22	1
1,1'-Biphenyl	930	U	930	930	ug/Kg	₩	08/23/13 13:40	08/30/13 22:22	1
2-Chloronaphthalene	420	U	420	44	ug/Kg	₩	08/23/13 13:40	08/30/13 22:22	1
2-Nitroaniline	2100	U	2100		ug/Kg		08/23/13 13:40	08/30/13 22:22	1
Dimethyl phthalate	420	U	420	43	ug/Kg	₩	08/23/13 13:40	08/30/13 22:22	1
2,6-Dinitrotoluene	420	U	420	53	ug/Kg	₩	08/23/13 13:40	08/30/13 22:22	1
Acenaphthylene	420		420		ug/Kg		08/23/13 13:40	08/30/13 22:22	1
3-Nitroaniline	2100	U	2100	58	ug/Kg	₽	08/23/13 13:40	08/30/13 22:22	1
Acenaphthene	420	U	420		ug/Kg	₽	08/23/13 13:40	08/30/13 22:22	1
2,4-Dinitrophenol	2100		2100	1000	ug/Kg		08/23/13 13:40	08/30/13 22:22	1
4-Nitrophenol	2100		2100	420	ug/Kg	₽	08/23/13 13:40	08/30/13 22:22	1
Dibenzofuran	50	J	420		ug/Kg	₩	08/23/13 13:40	08/30/13 22:22	1
2,4-Dinitrotoluene	420		420		ug/Kg	· · · · · · · · · · · · · · · · · · ·	08/23/13 13:40	08/30/13 22:22	
	420		420				08/23/13 13:40	08/30/13 22:22	1
Diethyl phthalate	420	U	420	47	ug/Kg	**	00/23/13 13:40	00/30/13 22:22	1

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Client: ARCADIS U.S., Inc.

Date Received: 08/21/13 10:07

a,a,a-Trifluorotoluene

ORO C24-C40

o-Terphenyl (Surr)

Surrogate

Diesel Range Organics [C10-C28]

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB02-02 (0.0-1.0)

Date Collected: 08/20/13 11:45

117

Method: 8015C - Nonhalogenated Organics using GC/FID -Modified (Diesel Range Organics) Result Qualifier

4100

7900 B

%Recovery Qualifier

82

Lab Sample ID: 680-93445-13 Matrix: Solid

Percent Solids: 78.5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluorene	420	U	420	45	ug/Kg	<u> </u>	08/23/13 13:40	08/30/13 22:22	1
4-Chlorophenyl phenyl ether	420	U	420	55	ug/Kg		08/23/13 13:40	08/30/13 22:22	1
4-Nitroaniline	2100	U	2100	62	ug/Kg	₽	08/23/13 13:40	08/30/13 22:22	1
4,6-Dinitro-2-methylphenol	2100	U	2100	210	ug/Kg	₽	08/23/13 13:40	08/30/13 22:22	1
N-Nitrosodiphenylamine	420	U	420	42	ug/Kg		08/23/13 13:40	08/30/13 22:22	1
4-Bromophenyl phenyl ether	420	U	420	45	ug/Kg	₽	08/23/13 13:40	08/30/13 22:22	1
Hexachlorobenzene	420	U	420	49	ug/Kg	₽	08/23/13 13:40	08/30/13 22:22	1
Atrazine	420	U	420	29	ug/Kg		08/23/13 13:40	08/30/13 22:22	1
Pentachlorophenol	2100	U	2100	420	ug/Kg	₽	08/23/13 13:40	08/30/13 22:22	1
Phenanthrene	110	J	420	34	ug/Kg	₽	08/23/13 13:40	08/30/13 22:22	1
Anthracene	420	U	420	31	ug/Kg		08/23/13 13:40	08/30/13 22:22	1
Carbazole	420	U	420	38	ug/Kg	₽	08/23/13 13:40	08/30/13 22:22	1
Di-n-butyl phthalate	420	U	420	38	ug/Kg	₽	08/23/13 13:40	08/30/13 22:22	1
Fluoranthene	70		420	40	ug/Kg		08/23/13 13:40	08/30/13 22:22	1
Pyrene	51	J	420	34	ug/Kg	₩	08/23/13 13:40	08/30/13 22:22	1
Butyl benzyl phthalate	420	U	420	33		₽	08/23/13 13:40	08/30/13 22:22	1
3,3'-Dichlorobenzidine	830	U	830	35	ug/Kg	ф	08/23/13 13:40	08/30/13 22:22	1
Benzo[a]anthracene	420	U	420	34	ug/Kg	₽	08/23/13 13:40	08/30/13 22:22	1
Chrysene	47	J	420	26		₽	08/23/13 13:40	08/30/13 22:22	1
Bis(2-ethylhexyl) phthalate	420	U	420	37	ug/Kg	<del>-</del>	08/23/13 13:40	08/30/13 22:22	1
Di-n-octyl phthalate	420	U	420	37	ug/Kg	₽	08/23/13 13:40	08/30/13 22:22	1
Benzo[b]fluoranthene	52	J	420	48	ug/Kg	₽	08/23/13 13:40	08/30/13 22:22	1
Benzo[k]fluoranthene	420	U	420	82	ug/Kg	ф.	08/23/13 13:40	08/30/13 22:22	1
Benzo[a]pyrene	420	U	420	65	ug/Kg	₽	08/23/13 13:40	08/30/13 22:22	1
Indeno[1,2,3-cd]pyrene	420	U	420	35	ug/Kg	₽	08/23/13 13:40	08/30/13 22:22	1
Dibenz(a,h)anthracene	420	U	420	49	ug/Kg		08/23/13 13:40	08/30/13 22:22	1
Benzo[g,h,i]perylene	420	U	420	28	ug/Kg	₩	08/23/13 13:40	08/30/13 22:22	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	75		46 - 130				08/23/13 13:40	08/30/13 22:22	1
2-Fluorobiphenyl	79		58 - 130				08/23/13 13:40	08/30/13 22:22	1
Terphenyl-d14 (Surr)	82		60 - 130				08/23/13 13:40	08/30/13 22:22	1
Phenol-d5 (Surr)	71		49 - 130				08/23/13 13:40	08/30/13 22:22	1
2-Fluorophenol (Surr)	76		40 - 130				08/23/13 13:40	08/30/13 22:22	1
2,4,6-Tribromophenol (Surr)	79		58 - 130				08/23/13 13:40	08/30/13 22:22	1
Method: 8015C - Nonhalogenate									<b></b> -
Analyte		Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO) -C6-C10	240	J	250	19	ug/Kg	<del>-</del>	08/22/13 10:07	08/28/13 21:19	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac

TestAmerica Savannah

08/28/13 21:19

Analyzed

08/31/13 23:02

08/31/13 23:02

Analyzed

08/31/13 23:02

08/22/13 10:07

Prepared

08/31/13 08:51

08/31/13 08:51

Prepared

08/31/13 08:51

D

70 - 131

RL

6300

6300

Limits

50 - 150

MDL Unit

1800 ug/Kg

1800 ug/Kg

Dil Fac

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93445-1

Client Sample ID: SB02-02 (4.5-5.5)

Date Collected: 08/20/13 11:50
Date Received: 08/21/13 10:07

Lab Sample ID: 680-93445-14 Matrix: Solid

Percent Solids: 81.3

Method: 8260B - Volatile Organio Analyte	-	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
Acetone			22	6.6	ug/Kg	<del>\</del>	08/23/13 16:13	08/27/13 22:35	
Benzene	4.5		4.5			₽	08/23/13 16:13	08/27/13 22:35	
Bromodichloromethane	4.5	U	4.5	0.75	ug/Kg	₽	08/23/13 16:13	08/27/13 22:35	
Bromoform	4.5		4.5	0.57			08/23/13 16:13	08/27/13 22:35	
Bromomethane	4.5		4.5	1.3	ug/Kg	₽	08/23/13 16:13	08/27/13 22:35	
Carbon disulfide	4.5		4.5	1.1	ug/Kg	₽	08/23/13 16:13	08/27/13 22:35	
Carbon tetrachloride	4.5		4.5				08/23/13 16:13	08/27/13 22:35	
Chlorobenzene	4.5		4.5	0.47		₽	08/23/13 16:13	08/27/13 22:35	
Chloroethane	4.5		4.5		ug/Kg	₽	08/23/13 16:13	08/27/13 22:35	
Chloroform	4.5		4.5				08/23/13 16:13	08/27/13 22:35	
Chloromethane	4.5		4.5	0.90	ug/Kg	₽	08/23/13 16:13	08/27/13 22:35	
cis-1,2-Dichloroethene	4.5		4.5	0.68	ug/Kg ug/Kg	₩	08/23/13 16:13	08/27/13 22:35	
cis-1,3-Dichloropropene	4.5		4.5	1.1	ug/Kg ug/Kg		08/23/13 16:13	08/27/13 22:35	
	4.5		4.5				08/23/13 16:13	08/27/13 22:35	
Cyclohexane Dibromochloromethane	4.5		4.5 4.5	0.84	ug/Kg ug/Kg	~ ⇔	08/23/13 16:13	08/27/13 22:35	
	4.5			0.78			08/23/13 16:13	08/27/13 22:35	
1,2-Dibromo-3-Chloropropane			4.5	3.0	ug/Kg	₩			
1,2-Dichlorobenzene	4.5		4.5	0.64			08/23/13 16:13	08/27/13 22:35	
1,3-Dichlorobenzene	4.5		4.5				08/23/13 16:13	08/27/13 22:35	
1,4-Dichlorobenzene	4.5		4.5		ug/Kg	*	08/23/13 16:13	08/27/13 22:35	
Dichlorodifluoromethane	4.5		4.5		ug/Kg	*	08/23/13 16:13	08/27/13 22:35	
1,1-Dichloroethane	4.5		4.5		ug/Kg		08/23/13 16:13	08/27/13 22:35	
1,2-Dichloroethane	4.5		4.5		ug/Kg	₩.	08/23/13 16:13	08/27/13 22:35	
1,1-Dichloroethene	4.5		4.5	0.67	0 0	₽	08/23/13 16:13	08/27/13 22:35	
1,2-Dichloropropane	4.5	U	4.5		ug/Kg		08/23/13 16:13	08/27/13 22:35	
Diisopropyl ether	4.5	U	4.5	0.49	ug/Kg	₽	08/23/13 16:13	08/27/13 22:35	
Ethylbenzene	4.5	U	4.5	0.55	ug/Kg	₽	08/23/13 16:13	08/27/13 22:35	
Ethylene Dibromide	4.5	U	4.5	0.43	ug/Kg		08/23/13 16:13	08/27/13 22:35	
Ethyl tert-butyl ether	4.5	U	4.5	0.50	ug/Kg	₽	08/23/13 16:13	08/27/13 22:35	
2-Hexanone	22	U	22	4.5	ug/Kg	₽	08/23/13 16:13	08/27/13 22:35	
Isopropylbenzene	4.5	U	4.5	0.61	ug/Kg	☼	08/23/13 16:13	08/27/13 22:35	
Methyl acetate	4.5	U	4.5	4.1	ug/Kg	*	08/23/13 16:13	08/27/13 22:35	
Methylcyclohexane	4.5	U	4.5	0.78	ug/Kg	₽	08/23/13 16:13	08/27/13 22:35	
Methylene Chloride	13	U	13	9.0	ug/Kg	☼	08/23/13 16:13	08/27/13 22:35	
Methyl Ethyl Ketone	22	U	22	3.7	ug/Kg	₽	08/23/13 16:13	08/27/13 22:35	
methyl isobutyl ketone	22	U	22	3.6	ug/Kg	₽	08/23/13 16:13	08/27/13 22:35	
Methyl tert-butyl ether	4.5	U	4.5	0.90	ug/Kg	₽	08/23/13 16:13	08/27/13 22:35	
Naphthalene	4.5		4.5		ug/Kg		08/23/13 16:13	08/27/13 22:35	
Styrene	4.5	U	4.5		ug/Kg	₽	08/23/13 16:13	08/27/13 22:35	
Tert-amyl methyl ether	4.5	U	4.5		ug/Kg	₽	08/23/13 16:13	08/27/13 22:35	
ert-Butyl alcohol	4.5		4.5		ug/Kg		08/23/13 16:13	08/27/13 22:35	
1,1,2,2-Tetrachloroethane	4.5		4.5		ug/Kg	₽	08/23/13 16:13	08/27/13 22:35	
Tetrachloroethene	4.5		4.5		ug/Kg	₽	08/23/13 16:13	08/27/13 22:35	
Toluene	4.5		4.5		ug/Kg	 \$	08/23/13 16:13	08/27/13 22:35	
rans-1,2-Dichloroethene	4.5		4.5		ug/Kg ug/Kg	₽	08/23/13 16:13	08/27/13 22:35	
trans-1,3-Dichloropropene	4.5		4.5		ug/Kg ug/Kg	₩	08/23/13 16:13	08/27/13 22:35	
1,2,4-Trichlorobenzene	4.5				ug/Kg ug/Kg		08/23/13 16:13	08/27/13 22:35	
	4.5 4.5		4.5 4.5			₩			
1,1,1-Trichloroethane			4.5		ug/Kg		08/23/13 16:13	08/27/13 22:35	
1,1,2-Trichloroethane Trichloroethene	4.5		4.5 4.5		ug/Kg ug/Kg	 	08/23/13 16:13 08/23/13 16:13	08/27/13 22:35 08/27/13 22:35	

TestAmerica Savannah

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB02-02 (4.5-5.5)

Lab Sample ID: 680-93445-14

Date Collected: 08/20/13 11:50

Matrix: Solid
Date Received: 08/21/13 10:07

Matrix: Solid
Percent Solids: 81.3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichlorofluoromethane	4.5	U	4.5	0.85	ug/Kg	₩	08/23/13 16:13	08/27/13 22:35	1
1,1,2-Trichloro-1,2,2-trifluoroethane	4.5	U	4.5	1.8	ug/Kg	₽	08/23/13 16:13	08/27/13 22:35	1
Vinyl chloride	4.5	U	4.5	0.83	ug/Kg	₽	08/23/13 16:13	08/27/13 22:35	1
Xylenes, Total	9.0	U	9.0	1.7	ug/Kg	₩	08/23/13 16:13	08/27/13 22:35	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	99		72 - 122				08/23/13 16:13	08/27/13 22:35	1
Dibromofluoromethane	100		79 - 123				08/23/13 16:13	08/27/13 22:35	1
Toluene-d8 (Surr)	97		80 - 120				08/23/13 16:13	08/27/13 22:35	1

Toluene-d8 (Surr)	97		80 - 120				08/23/13 16:13	08/27/13 22:35	1
- Method: 8270D - Semivolatile (	Organic Compou	nds (GC/M	S)						
Analyte		Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzaldehyde	400	U	400	70	ug/Kg	₩	08/23/13 13:40	09/03/13 15:38	1
Phenol	400		400	41	ug/Kg	₩	08/23/13 13:40	09/03/13 15:38	1
Bis(2-chloroethyl)ether	400	U	400	55	ug/Kg	₽	08/23/13 13:40	09/03/13 15:38	1
2-Chlorophenol	400	U	400	49	ug/Kg	₽	08/23/13 13:40	09/03/13 15:38	1
2-Methylphenol	400	U	400	33	ug/Kg	₽	08/23/13 13:40	09/03/13 15:38	1
bis (2-chloroisopropyl) ether	400	U	400	36	ug/Kg	₽	08/23/13 13:40	09/03/13 15:38	1
Acetophenone	400	U	400	34	ug/Kg	₽	08/23/13 13:40	09/03/13 15:38	1
3 & 4 Methylphenol	400	U	400	52	ug/Kg	₩	08/23/13 13:40	09/03/13 15:38	1
N-Nitrosodi-n-propylamine	400	U	400	39	ug/Kg	₩	08/23/13 13:40	09/03/13 15:38	1
Hexachloroethane	400	U	400	34	ug/Kg	*	08/23/13 13:40	09/03/13 15:38	1
Nitrobenzene	400	U	400	32	ug/Kg	₽	08/23/13 13:40	09/03/13 15:38	1
Isophorone	400	U	400	40	ug/Kg	₽	08/23/13 13:40	09/03/13 15:38	1
2-Nitrophenol	400	U	400	50	ug/Kg	₽	08/23/13 13:40	09/03/13 15:38	1
2,4-Dimethylphenol	400	U	400	53	ug/Kg	₽	08/23/13 13:40	09/03/13 15:38	1
Bis(2-chloroethoxy)methane	400	U	400	47	ug/Kg	₽	08/23/13 13:40	09/03/13 15:38	1
2,4-Dichlorophenol	400	U	400	43	ug/Kg	₩	08/23/13 13:40	09/03/13 15:38	1
Naphthalene	400	U	400	36	ug/Kg	₩	08/23/13 13:40	09/03/13 15:38	1
4-Chloroaniline	800	U *	800	63	ug/Kg	₩	08/23/13 13:40	09/03/13 15:38	1
Hexachlorobutadiene	400	U	400	44	ug/Kg	₩	08/23/13 13:40	09/03/13 15:38	1
Caprolactam	400	U	400	80	ug/Kg	₽	08/23/13 13:40	09/03/13 15:38	1
4-Chloro-3-methylphenol	400	U	400	43	ug/Kg	₩	08/23/13 13:40	09/03/13 15:38	1
2-Methylnaphthalene	400	U	400	46	ug/Kg	Φ	08/23/13 13:40	09/03/13 15:38	1
Hexachlorocyclopentadiene	400	U	400	50	ug/Kg	₩	08/23/13 13:40	09/03/13 15:38	1
2,4,6-Trichlorophenol	400	U	400	35	ug/Kg	₩	08/23/13 13:40	09/03/13 15:38	1
2,4,5-Trichlorophenol	400	U	400	43	ug/Kg	φ.	08/23/13 13:40	09/03/13 15:38	1
1,1'-Biphenyl	900	U	900	900	ug/Kg	₩	08/23/13 13:40	09/03/13 15:38	1
2-Chloronaphthalene	400	U	400	43	ug/Kg	₩	08/23/13 13:40	09/03/13 15:38	1
2-Nitroaniline	2100	U	2100	55	ug/Kg		08/23/13 13:40	09/03/13 15:38	1
Dimethyl phthalate	400	U	400	41	ug/Kg	₽	08/23/13 13:40	09/03/13 15:38	1
2,6-Dinitrotoluene	720		400	51	ug/Kg	₽	08/23/13 13:40	09/03/13 15:38	1
Acenaphthylene	400	U	400	44	ug/Kg		08/23/13 13:40	09/03/13 15:38	1
3-Nitroaniline	2100	U	2100	56	ug/Kg	₽	08/23/13 13:40	09/03/13 15:38	1
Acenaphthene	400	U	400	50	ug/Kg	₩	08/23/13 13:40	09/03/13 15:38	1
2,4-Dinitrophenol	2100		2100	1000	ug/Kg		08/23/13 13:40	09/03/13 15:38	1
4-Nitrophenol	2100		2100	400	ug/Kg	₩	08/23/13 13:40	09/03/13 15:38	1
Dibenzofuran	400		400	40	ug/Kg	₽	08/23/13 13:40	09/03/13 15:38	1
2,4-Dinitrotoluene	400		400	60	ug/Kg	<sub></sub>	08/23/13 13:40	09/03/13 15:38	1
Diethyl phthalate	400		400		ug/Kg	₩	08/23/13 13:40	09/03/13 15:38	1

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TestAmerica Job ID: 680-93445-1

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Client: ARCADIS U.S., Inc.

a,a,a-Trifluorotoluene

ORO C24-C40

o-Terphenyl (Surr)

Surrogate

Diesel Range Organics [C10-C28]

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB02-02 (4.5-5.5)

Date Collected: 08/20/13 11:50 Date Received: 08/21/13 10:07

Lab Sample ID: 680-93445-14

Matrix: Solid

Percent Solids: 81.3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluorene	400	U	400	44	ug/Kg	<del>-</del>	08/23/13 13:40	09/03/13 15:38	1
4-Chlorophenyl phenyl ether	400	U	400	53	ug/Kg		08/23/13 13:40	09/03/13 15:38	1
4-Nitroaniline	2100	U	2100	60	ug/Kg	₩	08/23/13 13:40	09/03/13 15:38	1
4,6-Dinitro-2-methylphenol	2100	U	2100	210	ug/Kg	₩	08/23/13 13:40	09/03/13 15:38	1
N-Nitrosodiphenylamine	400	U	400	40	ug/Kg		08/23/13 13:40	09/03/13 15:38	1
4-Bromophenyl phenyl ether	400	U	400	44	ug/Kg	₩	08/23/13 13:40	09/03/13 15:38	1
Hexachlorobenzene	400	U	400	47	ug/Kg	₩	08/23/13 13:40	09/03/13 15:38	1
Atrazine	400	U	400	28	ug/Kg	₩	08/23/13 13:40	09/03/13 15:38	1
Pentachlorophenol	2100	U	2100	400	ug/Kg	₩	08/23/13 13:40	09/03/13 15:38	1
Phenanthrene	400	U	400	33	ug/Kg	₩	08/23/13 13:40	09/03/13 15:38	1
Anthracene	400	U	400	30	ug/Kg	₩.	08/23/13 13:40	09/03/13 15:38	1
Carbazole	400	U	400	36	ug/Kg	₩	08/23/13 13:40	09/03/13 15:38	1
Di-n-butyl phthalate	400	U	400	36	ug/Kg	₩	08/23/13 13:40	09/03/13 15:38	1
Fluoranthene	400	U	400	39	ug/Kg		08/23/13 13:40	09/03/13 15:38	1
Pyrene	400	U	400	33	ug/Kg	₩	08/23/13 13:40	09/03/13 15:38	1
Butyl benzyl phthalate	400	U	400	32	ug/Kg	₩	08/23/13 13:40	09/03/13 15:38	1
3,3'-Dichlorobenzidine	800	U	800	34	ug/Kg		08/23/13 13:40	09/03/13 15:38	1
Benzo[a]anthracene	400	U	400	33	ug/Kg	₩	08/23/13 13:40	09/03/13 15:38	1
Chrysene	400	U	400	26	ug/Kg	₽	08/23/13 13:40	09/03/13 15:38	1
Bis(2-ethylhexyl) phthalate	45	J	400	35	ug/Kg	₩	08/23/13 13:40	09/03/13 15:38	1
Di-n-octyl phthalate	400	U	400	35	ug/Kg	₩	08/23/13 13:40	09/03/13 15:38	1
Benzo[b]fluoranthene	400	U	400	46	ug/Kg	₽	08/23/13 13:40	09/03/13 15:38	1
Benzo[k]fluoranthene	400	U	400	79	ug/Kg	₩	08/23/13 13:40	09/03/13 15:38	1
Benzo[a]pyrene	400	U	400	63	ug/Kg	₩	08/23/13 13:40	09/03/13 15:38	1
Indeno[1,2,3-cd]pyrene	400	U	400	34	ug/Kg	₩	08/23/13 13:40	09/03/13 15:38	1
Dibenz(a,h)anthracene	400	U	400	47	ug/Kg	₩.	08/23/13 13:40	09/03/13 15:38	1
Benzo[g,h,i]perylene	400	U	400	27	ug/Kg	\$	08/23/13 13:40	09/03/13 15:38	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	68		46 - 130				08/23/13 13:40	09/03/13 15:38	1
2-Fluorobiphenyl	76		58 - 130				08/23/13 13:40	09/03/13 15:38	1
Terphenyl-d14 (Surr)	78		60 - 130				08/23/13 13:40	09/03/13 15:38	1
Phenol-d5 (Surr)	72		49 - 130				08/23/13 13:40	09/03/13 15:38	1
2-Fluorophenol (Surr)	88		40 - 130				08/23/13 13:40	09/03/13 15:38	1
2,4,6-Tribromophenol (Surr)	89		58 - 130				08/23/13 13:40	09/03/13 15:38	1
Method: 8015C - Nonhalogenated	d Organics usi	ng GC/FID	-Modified (Gasol	ine Ran	ge Organ	ics)			
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO) -C6-C10	240	U	240	18	ug/Kg	<del></del>	08/22/13 10:07	08/26/13 12:49	1

TestAmerica Savannah

08/26/13 12:49

Analyzed

08/30/13 02:48

08/30/13 02:48

Analyzed

08/30/13 02:48

08/22/13 10:07

Prepared

08/28/13 11:44

08/28/13 11:44

Prepared

08/28/13 11:44

D

70 - 131

RL

6000

6000

Limits

50 - 150

MDL Unit

1700 ug/Kg

1700 ug/Kg

92

Method: 8015C - Nonhalogenated Organics using GC/FID -Modified (Diesel Range Organics) Result Qualifier

6000 U

2500 JB

%Recovery Qualifier

69

Dil Fac

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB02-03 (0.5-1.5)

Lab Sample ID: 680-93445-15 Matrix: Solid

TestAmerica Job ID: 680-93445-1

Date Collected: 08/20/13 14:10 Date Received: 08/21/13 10:07

Percent Solids: 79.6

Method: 8260B - Volatile Organio Analyte	•	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil F
Acetone			33	9.5	ug/Kg	— <del>-</del>	08/23/13 16:13	08/27/13 23:01	
Benzene	6.5		6.5	0.64	ug/Kg ug/Kg	₽	08/23/13 16:13	08/27/13 23:01	
Bromodichloromethane	6.5		6.5	1.1	ug/Kg		08/23/13 16:13	08/27/13 23:01	
Bromoform	6.5		6.5		ug/Kg		08/23/13 16:13	08/27/13 23:01	
Bromomethane	6.5		6.5	1.8	ug/Kg ug/Kg		08/23/13 16:13	08/27/13 23:01	
Carbon disulfide	6.5		6.5		ug/Kg ug/Kg		08/23/13 16:13	08/27/13 23:01	
Carbon tetrachloride	6.5		6.5		ug/Kg ug/Kg	· · · · · · · · · · · · · · · · · · ·	08/23/13 16:13	08/27/13 23:01	
	6.5						08/23/13 16:13	08/27/13 23:01	
Chloroptene			6.5	0.68	ug/Kg	~ ☆			
Chloroethane	6.5		6.5		ug/Kg		08/23/13 16:13 08/23/13 16:13	08/27/13 23:01	
Chloroform	6.5		6.5	0.77	0 0			08/27/13 23:01	
Chloromethane	6.5		6.5	1.3	ug/Kg	Ψ.	08/23/13 16:13	08/27/13 23:01	
cis-1,2-Dichloroethene	6.5		6.5	0.99	ug/Kg	· · · · · T.	08/23/13 16:13	08/27/13 23:01	
cis-1,3-Dichloropropene	6.5		6.5	1.6	ug/Kg	₩.	08/23/13 16:13	08/27/13 23:01	
Cyclohexane	6.5		6.5	1.2	ug/Kg	₩.	08/23/13 16:13	08/27/13 23:01	
Dibromochloromethane	6.5		6.5	1.1	ug/Kg	<u>.</u>	08/23/13 16:13	08/27/13 23:01	
1,2-Dibromo-3-Chloropropane	6.5		6.5		ug/Kg	₩	08/23/13 16:13	08/27/13 23:01	
1,2-Dichlorobenzene	6.5	U	6.5	0.93	ug/Kg	₽	08/23/13 16:13	08/27/13 23:01	
1,3-Dichlorobenzene	6.5	U	6.5	1.2	ug/Kg		08/23/13 16:13	08/27/13 23:01	
1,4-Dichlorobenzene	6.5	U	6.5	1.1	ug/Kg	₽	08/23/13 16:13	08/27/13 23:01	
Dichlorodifluoromethane	6.5	U	6.5	1.7	ug/Kg	₽	08/23/13 16:13	08/27/13 23:01	
1,1-Dichloroethane	6.5	U	6.5	1.1	ug/Kg	₽	08/23/13 16:13	08/27/13 23:01	
1,2-Dichloroethane	6.5	U	6.5	1.1	ug/Kg	*	08/23/13 16:13	08/27/13 23:01	
1,1-Dichloroethene	6.5	U	6.5	0.98	ug/Kg	₩	08/23/13 16:13	08/27/13 23:01	
1,2-Dichloropropane	6.5	U	6.5	0.97	ug/Kg	₩	08/23/13 16:13	08/27/13 23:01	
Diisopropyl ether	6.5	U	6.5	0.72	ug/Kg	₽	08/23/13 16:13	08/27/13 23:01	
Ethylbenzene	6.5	U	6.5	0.80	ug/Kg	₽	08/23/13 16:13	08/27/13 23:01	
Ethylene Dibromide	6.5	U	6.5	0.63	ug/Kg	₽	08/23/13 16:13	08/27/13 23:01	
Ethyl tert-butyl ether	6.5	U	6.5	0.73	ug/Kg		08/23/13 16:13	08/27/13 23:01	
2-Hexanone	33	U	33	6.5	ug/Kg	₩	08/23/13 16:13	08/27/13 23:01	
sopropylbenzene	6.5	U	6.5	0.89	ug/Kg	₽	08/23/13 16:13	08/27/13 23:01	
Methyl acetate	6.5	U	6.5	6.0	ug/Kg		08/23/13 16:13	08/27/13 23:01	
Methylcyclohexane	6.5	U	6.5	1.1	ug/Kg	₽	08/23/13 16:13	08/27/13 23:01	
Methylene Chloride	20	U	20	13	ug/Kg	₽	08/23/13 16:13	08/27/13 23:01	
Methyl Ethyl Ketone	33		33		ug/Kg		08/23/13 16:13	08/27/13 23:01	
methyl isobutyl ketone	33		33		ug/Kg	₽	08/23/13 16:13	08/27/13 23:01	
Methyl tert-butyl ether	6.5		6.5		ug/Kg	₽	08/23/13 16:13	08/27/13 23:01	
Naphthalene	6.5		6.5		ug/Kg		08/23/13 16:13	08/27/13 23:01	
Styrene	6.5		6.5	0.99	ug/Kg ug/Kg	₽	08/23/13 16:13	08/27/13 23:01	
Tert-amyl methyl ether	6.5		6.5		ug/Kg ug/Kg	₽	08/23/13 16:13	08/27/13 23:01	
ert-Butyl alcohol	6.5				ug/Kg		08/23/13 16:13	08/27/13 23:01	
•			6.5			т Ф			
1,1,2,2-Tetrachloroethane	6.5		6.5	0.94	ug/Kg		08/23/13 16:13	08/27/13 23:01	
Tetrachloroethene	6.5		6.5	1.1	ug/Kg	<del>,</del> .	08/23/13 16:13	08/27/13 23:01	
Toluene	6.5		6.5		ug/Kg	<b>‡</b>	08/23/13 16:13	08/27/13 23:01	
rans-1,2-Dichloroethene	6.5		6.5		ug/Kg	<b>‡</b>	08/23/13 16:13	08/27/13 23:01	
rans-1,3-Dichloropropene	6.5		6.5		ug/Kg	· · · · ·	08/23/13 16:13	08/27/13 23:01	
1,2,4-Trichlorobenzene	6.5		6.5		ug/Kg	φ.	08/23/13 16:13	08/27/13 23:01	
1,1,1-Trichloroethane	6.5		6.5		ug/Kg	<b>‡</b>	08/23/13 16:13	08/27/13 23:01	
1,1,2-Trichloroethane	6.5	U	6.5	1.2	ug/Kg	₩	08/23/13 16:13	08/27/13 23:01	

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

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Lab Sample ID: 680-93445-15

TestAmerica Job ID: 680-93445-1

Matrix: Solid Percent Solids: 79.6

Client Sample ID: SB02-03 (0.5-1.5)

Date Collected: 08/20/13 14:10
Date Received: 08/21/13 10:07

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichlorofluoromethane	3.4	J	6.5	1.2	ug/Kg	₽	08/23/13 16:13	08/27/13 23:01	1
1,1,2-Trichloro-1,2,2-trifluoroethane	6.5	U	6.5	2.6	ug/Kg	₽	08/23/13 16:13	08/27/13 23:01	1
Vinyl chloride	6.5	U	6.5	1.2	ug/Kg	\$	08/23/13 16:13	08/27/13 23:01	1
Xylenes, Total	13	U	13	2.5	ug/Kg	₽	08/23/13 16:13	08/27/13 23:01	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	97		72 - 122				08/23/13 16:13	08/27/13 23:01	1
Dibromofluoromethane	101		79 - 123				08/23/13 16:13	08/27/13 23:01	1
Toluene-d8 (Surr)	96		80 - 120				08/23/13 16:13	08/27/13 23:01	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzaldehyde	410	U	410	72	ug/Kg	<del>*</del>	08/23/13 13:40	08/30/13 23:12	1
Phenol	410	U	410	42	ug/Kg	₩	08/23/13 13:40	08/30/13 23:12	1
Bis(2-chloroethyl)ether	410	U	410	56	ug/Kg	₽	08/23/13 13:40	08/30/13 23:12	1
2-Chlorophenol	410	U	410	49	ug/Kg	₽	08/23/13 13:40	08/30/13 23:12	1
2-Methylphenol	410	U	410	33	ug/Kg	₩	08/23/13 13:40	08/30/13 23:12	1
bis (2-chloroisopropyl) ether	410	U	410	37	ug/Kg	₩	08/23/13 13:40	08/30/13 23:12	1
Acetophenone	410	U	410	35	ug/Kg	₩	08/23/13 13:40	08/30/13 23:12	1
3 & 4 Methylphenol	410	U	410	53	ug/Kg	₩	08/23/13 13:40	08/30/13 23:12	1
N-Nitrosodi-n-propylamine	410	U	410	40	ug/Kg	₩	08/23/13 13:40	08/30/13 23:12	1
Hexachloroethane	410	U	410	35	ug/Kg	₽	08/23/13 13:40	08/30/13 23:12	1
Nitrobenzene	410	U	410	32	ug/Kg	₩	08/23/13 13:40	08/30/13 23:12	1
Isophorone	410	U	410	41	ug/Kg	₩	08/23/13 13:40	08/30/13 23:12	1
2-Nitrophenol	410	U	410	51	ug/Kg	₽	08/23/13 13:40	08/30/13 23:12	1
2,4-Dimethylphenol	410	U	410	54	ug/Kg	₩	08/23/13 13:40	08/30/13 23:12	1
Bis(2-chloroethoxy)methane	410	U	410	48	ug/Kg	₩	08/23/13 13:40	08/30/13 23:12	1
2,4-Dichlorophenol	410	U	410	43	ug/Kg	₽	08/23/13 13:40	08/30/13 23:12	1
Naphthalene	410	U	410	37	ug/Kg	₽	08/23/13 13:40	08/30/13 23:12	1
4-Chloroaniline	820	U *	820	64	ug/Kg	₽	08/23/13 13:40	08/30/13 23:12	1
Hexachlorobutadiene	410	U	410	44	ug/Kg	₽	08/23/13 13:40	08/30/13 23:12	1
Caprolactam	410	U	410	82	ug/Kg	₩	08/23/13 13:40	08/30/13 23:12	1
4-Chloro-3-methylphenol	410	U	410	43	ug/Kg	₽	08/23/13 13:40	08/30/13 23:12	1
2-Methylnaphthalene	410	U	410	47	ug/Kg	\$	08/23/13 13:40	08/30/13 23:12	1
Hexachlorocyclopentadiene	410	U	410	51	ug/Kg	₽	08/23/13 13:40	08/30/13 23:12	1
2,4,6-Trichlorophenol	410	U	410	36	ug/Kg	₩	08/23/13 13:40	08/30/13 23:12	1
2,4,5-Trichlorophenol	410	U	410	43	ug/Kg	*	08/23/13 13:40	08/30/13 23:12	1
1,1'-Biphenyl	910	U	910	910	ug/Kg	₽	08/23/13 13:40	08/30/13 23:12	1
2-Chloronaphthalene	410	U	410	43	ug/Kg	₩	08/23/13 13:40	08/30/13 23:12	1
2-Nitroaniline	2100	U	2100	56	ug/Kg	\$	08/23/13 13:40	08/30/13 23:12	1
Dimethyl phthalate	410	U	410	42	ug/Kg	₩	08/23/13 13:40	08/30/13 23:12	1
2,6-Dinitrotoluene	410	U	410	52	ug/Kg	₩	08/23/13 13:40	08/30/13 23:12	1
Acenaphthylene	410	U	410	44	ug/Kg	₽	08/23/13 13:40	08/30/13 23:12	1
3-Nitroaniline	2100	U	2100	57	ug/Kg	₽	08/23/13 13:40	08/30/13 23:12	1
Acenaphthene	410	U	410	51	ug/Kg	₽	08/23/13 13:40	08/30/13 23:12	1
2,4-Dinitrophenol	2100	U	2100	1000	ug/Kg	₽	08/23/13 13:40	08/30/13 23:12	1
4-Nitrophenol	2100	U	2100	410	ug/Kg	₽	08/23/13 13:40	08/30/13 23:12	1
Dibenzofuran	410	U	410	41	ug/Kg	☼	08/23/13 13:40	08/30/13 23:12	1
2,4-Dinitrotoluene	410	U	410	61	ug/Kg		08/23/13 13:40	08/30/13 23:12	1
Diethyl phthalate	410	U	410		ug/Kg	₩	08/23/13 13:40	08/30/13 23:12	1

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9

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB02-03 (0.5-1.5)

Date Collected: 08/20/13 14:10 Date Received: 08/21/13 10:07

Diesel Range Organics [C10-C28]

ORO C24-C40

o-Terphenyl (Surr)

Surrogate

Lab Sample ID: 680-93445-15

Matrix: Solid Percent Solids: 79.6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluorene	410	U	410	44	ug/Kg	<del></del>	08/23/13 13:40	08/30/13 23:12	1
4-Chlorophenyl phenyl ether	410	U	410	54	ug/Kg		08/23/13 13:40	08/30/13 23:12	1
4-Nitroaniline	2100	U	2100	61	ug/Kg	₩	08/23/13 13:40	08/30/13 23:12	1
4,6-Dinitro-2-methylphenol	2100	U	2100	210	ug/Kg	₽	08/23/13 13:40	08/30/13 23:12	1
N-Nitrosodiphenylamine	410	U	410	41	ug/Kg	₽	08/23/13 13:40	08/30/13 23:12	1
4-Bromophenyl phenyl ether	410	U	410	44	ug/Kg	₽	08/23/13 13:40	08/30/13 23:12	1
Hexachlorobenzene	410	U	410	48	ug/Kg	₽	08/23/13 13:40	08/30/13 23:12	1
Atrazine	410	U	410	28	ug/Kg	₽	08/23/13 13:40	08/30/13 23:12	1
Pentachlorophenol	2100	U	2100	410	ug/Kg	₽	08/23/13 13:40	08/30/13 23:12	1
Phenanthrene	410	U	410	33	ug/Kg	₩	08/23/13 13:40	08/30/13 23:12	1
Anthracene	410	U	410	31	ug/Kg	₽	08/23/13 13:40	08/30/13 23:12	1
Carbazole	410	U	410	37	ug/Kg	₽	08/23/13 13:40	08/30/13 23:12	1
Di-n-butyl phthalate	410	U	410	37	ug/Kg	₩	08/23/13 13:40	08/30/13 23:12	1
Fluoranthene	410	U	410	40	ug/Kg	<b>\$</b>	08/23/13 13:40	08/30/13 23:12	1
Pyrene	410	U	410	33	ug/Kg	₽	08/23/13 13:40	08/30/13 23:12	1
Butyl benzyl phthalate	410	U	410	32	ug/Kg	₽	08/23/13 13:40	08/30/13 23:12	1
3,3'-Dichlorobenzidine	820	U	820	35	ug/Kg	<b>\$</b>	08/23/13 13:40	08/30/13 23:12	1
Benzo[a]anthracene	410	U	410	33	ug/Kg	₽	08/23/13 13:40	08/30/13 23:12	1
Chrysene	410	U	410	26	ug/Kg	₽	08/23/13 13:40	08/30/13 23:12	1
Bis(2-ethylhexyl) phthalate	410	U	410	36	ug/Kg	₽	08/23/13 13:40	08/30/13 23:12	1
Di-n-octyl phthalate	410	U	410	36	ug/Kg	₽	08/23/13 13:40	08/30/13 23:12	1
Benzo[b]fluoranthene	410	U	410	47	ug/Kg	₽	08/23/13 13:40	08/30/13 23:12	1
Benzo[k]fluoranthene	410	U	410	80	ug/Kg	₽	08/23/13 13:40	08/30/13 23:12	1
Benzo[a]pyrene	410	U	410	64	ug/Kg	₽	08/23/13 13:40	08/30/13 23:12	1
Indeno[1,2,3-cd]pyrene	410	U	410	35	ug/Kg	₽	08/23/13 13:40	08/30/13 23:12	1
Dibenz(a,h)anthracene	410	U	410	48	ug/Kg	₽	08/23/13 13:40	08/30/13 23:12	1
Benzo[g,h,i]perylene	410	U	410	27	ug/Kg	₩	08/23/13 13:40	08/30/13 23:12	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	79		46 - 130				08/23/13 13:40	08/30/13 23:12	1
2-Fluorobiphenyl	82		58 - 130				08/23/13 13:40	08/30/13 23:12	1
Terphenyl-d14 (Surr)	87		60 - 130				08/23/13 13:40	08/30/13 23:12	1
Phenol-d5 (Surr)	75		49 - 130				08/23/13 13:40	08/30/13 23:12	1
2-Fluorophenol (Surr)	76		40 - 130				08/23/13 13:40	08/30/13 23:12	1
2,4,6-Tribromophenol (Surr)	87		58 - 130				08/23/13 13:40	08/30/13 23:12	1
- Method: 8015C - Nonhalogenate	d Organics usi	ng GC/FID	-Modified (Gasol	ine Ran	ge Organi	ics)			
Analyte		Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO) -C6-C10	580		360	27	ug/Kg	<del></del>	08/22/13 11:07	08/26/13 13:09	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene	152	<u></u>	70 - 131				08/22/13 11:07	08/26/13 13:09	

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Analyzed

08/30/13 03:04

08/30/13 03:04

Analyzed

08/30/13 03:04

RL

6100

6100

Limits

50 - 150

MDL Unit

1700 ug/Kg

1700 ug/Kg

D

Prepared

08/28/13 11:44

08/28/13 11:44

Prepared

08/28/13 11:44

Method: 8015C - Nonhalogenated Organics using GC/FID -Modified (Diesel Range Organics)

6100 U

2000 JB

%Recovery Qualifier

77

Result Qualifier

Dil Fac

Client: ARCADIS U.S., Inc.

Date Collected: 08/20/13 14:15

Trichloroethene

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB02-03 (5.0-6.0)

TestAmerica Job ID: 680-93445-1

Lab Sample ID: 680-93445-16

Matrix: Solid

eate Received: 08/21/13 10:07								Percent Soli	ds: 81.5
Method: 8260B - Volatile Organi	c Compounds	(GC/MS)							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	22	U	22	6.5	ug/Kg	<u> </u>	08/23/13 16:13	08/27/13 23:27	1
Benzene	4.4	U	4.4	0.43	ug/Kg	₩	08/23/13 16:13	08/27/13 23:27	1
Bromodichloromethane	4.4	U	4.4	0.74	ug/Kg	≎	08/23/13 16:13	08/27/13 23:27	1
Bromoform	4.4	U	4.4	0.56	ug/Kg	₽	08/23/13 16:13	08/27/13 23:27	1
Bromomethane	4.4	U	4.4	1.2	ug/Kg	≎	08/23/13 16:13	08/27/13 23:27	1
Carbon disulfide	4.4	U	4.4	1.1	ug/Kg	☼	08/23/13 16:13	08/27/13 23:27	1
Carbon tetrachloride	4.4	U	4.4	1.5	ug/Kg	₩	08/23/13 16:13	08/27/13 23:27	
Chlorobenzene	4.4	U	4.4	0.46	ug/Kg	≎	08/23/13 16:13	08/27/13 23:27	
Chloroethane	4.4	U	4.4	1.7	ug/Kg	☼	08/23/13 16:13	08/27/13 23:27	
Chloroform	4.4	U	4.4	0.52	ug/Kg	₽	08/23/13 16:13	08/27/13 23:27	
Chloromethane	4.4	U	4.4	0.89	ug/Kg	≎	08/23/13 16:13	08/27/13 23:27	
cis-1,2-Dichloroethene	4.4	U	4.4	0.67	ug/Kg	≎	08/23/13 16:13	08/27/13 23:27	
cis-1,3-Dichloropropene	4.4	U	4.4	1.1	ug/Kg	₽	08/23/13 16:13	08/27/13 23:27	
Cyclohexane	4.4	U	4.4	0.83	ug/Kg	≎	08/23/13 16:13	08/27/13 23:27	
Dibromochloromethane	4.4	U	4.4	0.77	ug/Kg	₽	08/23/13 16:13	08/27/13 23:27	
1,2-Dibromo-3-Chloropropane	4.4	U	4.4	2.9	ug/Kg	₽	08/23/13 16:13	08/27/13 23:27	
1,2-Dichlorobenzene	4.4	U	4.4	0.63	ug/Kg	₽	08/23/13 16:13	08/27/13 23:27	
1,3-Dichlorobenzene	4.4	U	4.4	0.84	ug/Kg	₽	08/23/13 16:13	08/27/13 23:27	
1,4-Dichlorobenzene	4.4	U	4.4	0.73	ug/Kg	\$	08/23/13 16:13	08/27/13 23:27	
Dichlorodifluoromethane	4.4	U	4.4	1.2	ug/Kg	₩	08/23/13 16:13	08/27/13 23:27	
1,1-Dichloroethane	4.4	U	4.4	0.74	ug/Kg	₩	08/23/13 16:13	08/27/13 23:27	

4.4 U 4.4 1,2-Dichloroethane 0.73 ug/Kg 08/23/13 16:13 08/27/13 23:27 1,1-Dichloroethene 4.4 U 4.4 0.66 ug/Kg 08/23/13 16:13 08/27/13 23:27 ₩ 1,2-Dichloropropane 4.4 U 4.4 0.66 ug/Kg 08/23/13 16:13 08/27/13 23:27 Diisopropyl ether 4.4 U 4.4 0.49 ug/Kg 08/23/13 16:13 08/27/13 23:27 4.4 U Ethylbenzene 4.4 0.54 08/23/13 16:13 08/27/13 23:27 ug/Kg Ethylene Dibromide 4.4 U 4.4 08/23/13 16:13 08/27/13 23:27 0.43 ug/Kg Ethyl tert-butyl ether 44 11 4.4 0.50 ug/Kg 08/23/13 16:13 08/27/13 23:27 ₩ 2-Hexanone 22 U 22 4.4 ug/Kg 08/23/13 16:13 08/27/13 23:27 4.4 U 4.4 08/23/13 16:13 Isopropylbenzene 0.60 ug/Kg 08/27/13 23:27 ₩ Methyl acetate 4.4 U 4.4 4.1 ug/Kg 08/23/13 16:13 08/27/13 23:27 Methylcyclohexane 4.4 U 4.4 0.77 ug/Kg 08/23/13 16:13 08/27/13 23:27 ₩ Methylene Chloride 13 U 13 8.9 ug/Kg 08/23/13 16:13 08/27/13 23:27 Methyl Ethyl Ketone 22 U 22 3.6 08/23/13 16:13 08/27/13 23:27 ug/Kg methyl isobutyl ketone 22 U 22 3.5 ug/Kg 08/23/13 16:13 08/27/13 23:27 Methyl tert-butyl ether 4.4 U 4.4 0.89 ug/Kg 08/23/13 16:13 08/27/13 23:27 ₽ 4.4 U Naphthalene 4.4 0.89 08/23/13 16:13 ug/Kg 08/27/13 23:27 08/23/13 16:13 Styrene 4.4 U 4.4 0.67 ug/Kg 08/27/13 23:27 Tert-amyl methyl ether 4.4 U 4.4 0.39 ug/Kg 08/23/13 16:13 08/27/13 23:27 tert-Butyl alcohol 4.4 U ₩ 08/23/13 16:13 08/27/13 23:27 4.4 3.0 ug/Kg 1,1,2,2-Tetrachloroethane 4.4 U 4.4 0.64 ug/Kg 08/23/13 16:13 08/27/13 23:27 ₽ Tetrachloroethene 4.4 U 4.4 0.74 ug/Kg 08/23/13 16:13 08/27/13 23:27 4.4 U Toluene 44 0.62 ug/Kg 08/23/13 16:13 08/27/13 23:27 trans-1,2-Dichloroethene 4.4 U 4.4 0.67 ug/Kg 08/23/13 16:13 08/27/13 23:27 4.4 U 4.4 trans-1,3-Dichloropropene 0.82 ug/Kg 08/23/13 16:13 08/27/13 23:27 ₽ 1,2,4-Trichlorobenzene 4.4 U 4.4 0.65 ug/Kg 08/23/13 16:13 08/27/13 23:27 1,1,1-Trichloroethane 4.4 U 4.4 0.98 ug/Kg 08/23/13 16:13 08/27/13 23:27 4.4 U 4.4 1,1,2-Trichloroethane 0.82 ug/Kg 08/23/13 16:13 08/27/13 23:27 08/23/13 16:13 08/27/13 23:27

TestAmerica Savannah

4.4

0.43 ug/Kg

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB02-03 (5.0-6.0)

Lab Sample ID: 680-93445-16 Matrix: Solid

TestAmerica Job ID: 680-93445-1

Date Collected: 08/20/13 14:15 Date Received: 08/21/13 10:07

Percent Solids: 81.5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichlorofluoromethane	4.4	U	4.4	0.84	ug/Kg	₽	08/23/13 16:13	08/27/13 23:27	1
1,1,2-Trichloro-1,2,2-trifluoroethane	4.4	U	4.4	1.8	ug/Kg	₽	08/23/13 16:13	08/27/13 23:27	1
Vinyl chloride	4.4	U	4.4	0.82	ug/Kg	\$	08/23/13 16:13	08/27/13 23:27	1
Xylenes, Total	8.9	U	8.9	1.7	ug/Kg	₽	08/23/13 16:13	08/27/13 23:27	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	99		72 - 122				08/23/13 16:13	08/27/13 23:27	1
Dibromofluoromethane	101		79 - 123				08/23/13 16:13	08/27/13 23:27	1
Toluene-d8 (Surr)	96		80 - 120				08/23/13 16:13	08/27/13 23:27	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzaldehyde	400	U	400	70	ug/Kg	₩	08/23/13 13:40	08/30/13 23:37	1
Phenol	400	U	400	41	ug/Kg	₩	08/23/13 13:40	08/30/13 23:37	1
Bis(2-chloroethyl)ether	400	U	400	54	ug/Kg	₽	08/23/13 13:40	08/30/13 23:37	1
2-Chlorophenol	400	U	400	48	ug/Kg	\$	08/23/13 13:40	08/30/13 23:37	1
2-Methylphenol	400	U	400	33	ug/Kg	₽	08/23/13 13:40	08/30/13 23:37	1
bis (2-chloroisopropyl) ether	400	U	400	36	ug/Kg	₽	08/23/13 13:40	08/30/13 23:37	1
Acetophenone	400	U	400	34	ug/Kg	<b>\$</b>	08/23/13 13:40	08/30/13 23:37	1
3 & 4 Methylphenol	400	U	400	52	ug/Kg	₽	08/23/13 13:40	08/30/13 23:37	1
N-Nitrosodi-n-propylamine	400	U	400	39	ug/Kg	₽	08/23/13 13:40	08/30/13 23:37	1
Hexachloroethane	400	U	400	34	ug/Kg	<b>\$</b>	08/23/13 13:40	08/30/13 23:37	1
Nitrobenzene	400	U	400	31	ug/Kg	₩	08/23/13 13:40	08/30/13 23:37	1
Isophorone	400	U	400	40	ug/Kg	₩	08/23/13 13:40	08/30/13 23:37	1
2-Nitrophenol	400	U	400	50	ug/Kg		08/23/13 13:40	08/30/13 23:37	1
2,4-Dimethylphenol	400	U	400	53	ug/Kg	₩	08/23/13 13:40	08/30/13 23:37	1
Bis(2-chloroethoxy)methane	400	U	400	47	ug/Kg	₩	08/23/13 13:40	08/30/13 23:37	1
2,4-Dichlorophenol	400	U	400	42	ug/Kg		08/23/13 13:40	08/30/13 23:37	1
Naphthalene	400	U	400	36	ug/Kg	₩	08/23/13 13:40	08/30/13 23:37	1
4-Chloroaniline	800	U *	800	63	ug/Kg	₽	08/23/13 13:40	08/30/13 23:37	1
Hexachlorobutadiene	400	U	400	43	ug/Kg		08/23/13 13:40	08/30/13 23:37	1
Caprolactam	400	U	400	80	ug/Kg	₩	08/23/13 13:40	08/30/13 23:37	1
4-Chloro-3-methylphenol	400	U	400	42	ug/Kg	₽	08/23/13 13:40	08/30/13 23:37	1
2-Methylnaphthalene	400	U	400	46	ug/Kg		08/23/13 13:40	08/30/13 23:37	1
Hexachlorocyclopentadiene	400	U	400	50	ug/Kg	₽	08/23/13 13:40	08/30/13 23:37	1
2,4,6-Trichlorophenol	400	U	400	35	ug/Kg	₽	08/23/13 13:40	08/30/13 23:37	1
2,4,5-Trichlorophenol	400	U	400	42	ug/Kg		08/23/13 13:40	08/30/13 23:37	1
1,1'-Biphenyl	890	U	890	890	ug/Kg	₽	08/23/13 13:40	08/30/13 23:37	1
2-Chloronaphthalene	400	U	400	42	ug/Kg	₩	08/23/13 13:40	08/30/13 23:37	1
2-Nitroaniline	2100	U	2100	54	ug/Kg		08/23/13 13:40	08/30/13 23:37	1
Dimethyl phthalate	400	U	400	41	ug/Kg	₽	08/23/13 13:40	08/30/13 23:37	1
2,6-Dinitrotoluene	400	U	400	51	ug/Kg	₽	08/23/13 13:40	08/30/13 23:37	1
Acenaphthylene	400	U	400	43	ug/Kg		08/23/13 13:40	08/30/13 23:37	1
3-Nitroaniline	2100	U	2100	56	ug/Kg	₽	08/23/13 13:40	08/30/13 23:37	1
Acenaphthene	400	U	400	50	ug/Kg	₽	08/23/13 13:40	08/30/13 23:37	1
2,4-Dinitrophenol	2100	U	2100	1000	ug/Kg		08/23/13 13:40	08/30/13 23:37	1
4-Nitrophenol	2100	U	2100	400	ug/Kg	₽	08/23/13 13:40	08/30/13 23:37	1
Dibenzofuran	400	U	400	40	ug/Kg	₩	08/23/13 13:40	08/30/13 23:37	1
2,4-Dinitrotoluene	400	U	400	59	ug/Kg		08/23/13 13:40	08/30/13 23:37	1
Diethyl phthalate	400		400		ug/Kg	₩	08/23/13 13:40	08/30/13 23:37	1

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2

5

6

8

9

11

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB02-03 (5.0-6.0)

Date Collected: 08/20/13 14:15 Date Received: 08/21/13 10:07

Diesel Range Organics [C10-C28]

ORO C24-C40

o-Terphenyl (Surr)

Surrogate

Lab Sample ID: 680-93445-16

Matrix: Solid

Percent Solids: 81.5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluorene	400	U	400	43	ug/Kg	<del></del>	08/23/13 13:40	08/30/13 23:37	1
4-Chlorophenyl phenyl ether	400	U	400	53	ug/Kg	*	08/23/13 13:40	08/30/13 23:37	
4-Nitroaniline	2100	U	2100	59	ug/Kg	₽	08/23/13 13:40	08/30/13 23:37	•
4,6-Dinitro-2-methylphenol	2100	U	2100	210	ug/Kg	₽	08/23/13 13:40	08/30/13 23:37	1
N-Nitrosodiphenylamine	400	U	400	40	ug/Kg	₽	08/23/13 13:40	08/30/13 23:37	1
4-Bromophenyl phenyl ether	400	U	400	43	ug/Kg	₽	08/23/13 13:40	08/30/13 23:37	1
Hexachlorobenzene	400	U	400	47	ug/Kg	₽	08/23/13 13:40	08/30/13 23:37	•
Atrazine	400	U	400	28	ug/Kg	₩	08/23/13 13:40	08/30/13 23:37	
Pentachlorophenol	2100	U	2100	400	ug/Kg	₩	08/23/13 13:40	08/30/13 23:37	
Phenanthrene	400	U	400	33	ug/Kg	₽	08/23/13 13:40	08/30/13 23:37	
Anthracene	400	U	400	30	ug/Kg		08/23/13 13:40	08/30/13 23:37	
Carbazole	400	U	400	36	ug/Kg	₽	08/23/13 13:40	08/30/13 23:37	
Di-n-butyl phthalate	400	U	400	36	ug/Kg	₽	08/23/13 13:40	08/30/13 23:37	
Fluoranthene	400	U	400	39	ug/Kg		08/23/13 13:40	08/30/13 23:37	
Pyrene	400	U	400	33	ug/Kg	₽	08/23/13 13:40	08/30/13 23:37	
Butyl benzyl phthalate	400	U	400	31	ug/Kg	₽	08/23/13 13:40	08/30/13 23:37	
3,3'-Dichlorobenzidine	800	U	800	34	ug/Kg	φ.	08/23/13 13:40	08/30/13 23:37	• • • • • • • •
Benzo[a]anthracene	400	U	400	33	ug/Kg	₽	08/23/13 13:40	08/30/13 23:37	
Chrysene	400	U	400	25	ug/Kg	₽	08/23/13 13:40	08/30/13 23:37	
Bis(2-ethylhexyl) phthalate	400	U	400	35	ug/Kg	<b>\$</b>	08/23/13 13:40	08/30/13 23:37	• • • • • • • •
Di-n-octyl phthalate	400	U	400	35	ug/Kg	₽	08/23/13 13:40	08/30/13 23:37	
Benzo[b]fluoranthene	400	U	400	46	ug/Kg	₽	08/23/13 13:40	08/30/13 23:37	
Benzo[k]fluoranthene	400	U	400	79	ug/Kg		08/23/13 13:40	08/30/13 23:37	• • • • • • •
Benzo[a]pyrene	400	U	400	63	ug/Kg	₽	08/23/13 13:40	08/30/13 23:37	
Indeno[1,2,3-cd]pyrene	400	U	400	34	ug/Kg	₽	08/23/13 13:40	08/30/13 23:37	
Dibenz(a,h)anthracene	400	U	400	47	ug/Kg		08/23/13 13:40	08/30/13 23:37	
Benzo[g,h,i]perylene	400	U	400	27	ug/Kg	₽	08/23/13 13:40	08/30/13 23:37	
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fa
Nitrobenzene-d5 (Surr)	66		46 - 130				08/23/13 13:40	08/30/13 23:37	
2-Fluorobiphenyl	69		58 - 130				08/23/13 13:40	08/30/13 23:37	
Terphenyl-d14 (Surr)	77		60 - 130				08/23/13 13:40	08/30/13 23:37	
Phenol-d5 (Surr)	64		49 - 130				08/23/13 13:40	08/30/13 23:37	
2-Fluorophenol (Surr)	65		40 - 130				08/23/13 13:40	08/30/13 23:37	
2,4,6-Tribromophenol (Surr)	76		58 - 130				08/23/13 13:40	08/30/13 23:37	
Method: 8015C - Nonhalogenat	_	_	-Modified (Gasol			ics)			
Analyte		Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fa
Gasoline Range Organics (GRO) -C6-C10	230	U	230	18	ug/Kg	**	08/22/13 11:07	08/26/13 13:28	
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fa
a,a,a-Trifluorotoluene			70 - 131				08/22/13 11:07	08/26/13 13:28	

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Analyzed

08/30/13 03:20

08/30/13 03:20

Analyzed

08/30/13 03:20

RL

6100

6100

Limits

50 - 150

MDL Unit

1700 ug/Kg

1700 ug/Kg

D

Prepared

08/28/13 11:44

08/28/13 11:44

Prepared

08/28/13 11:44

Method: 8015C - Nonhalogenated Organics using GC/FID -Modified (Diesel Range Organics)

6100 U

3300 JB

%Recovery Qualifier

80

Result Qualifier

Dil Fac

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

Lab Sample ID: 680-93445-17

Client Sample ID: SB02-04 (0.5-1.5) Date Collected: 08/20/13 14:25 Matrix: Solid Date Received: 08/21/13 10:07 Percent Solids: 57.9

Method: 8260B - Volatile Organionalyte		Qualifier	RL	MDi	Unit	D	Prepared	Analyzed	Dil F
<u> </u>	14				ug/Kg	— <del>¤</del>	08/23/13 16:13	08/27/13 23:52	- DII F
cetone enzene	8.4		8.4		ug/Kg ug/Kg		08/23/13 16:13	08/27/13 23:52	
romodichloromethane	8.4		8.4		ug/Kg ug/Kg		08/23/13 16:13	08/27/13 23:52	
romoform	8.4		8.4		ug/Kg ug/Kg		08/23/13 16:13	08/27/13 23:52	
romomethane	8.4		8.4		ug/Kg ug/Kg		08/23/13 16:13	08/27/13 23:52	
arbon disulfide	8.4		8.4						
					ug/Kg	<del>*</del>	08/23/13 16:13	08/27/13 23:52	
arbon tetrachloride	8.4		8.4		ug/Kg	₩	08/23/13 16:13	08/27/13 23:52	
hlorobenzene	8.4		8.4		ug/Kg		08/23/13 16:13	08/27/13 23:52	
hloroethane	8.4		8.4		ug/Kg	<u></u>	08/23/13 16:13	08/27/13 23:52	
hloroform	8.4		8.4		ug/Kg	<b>*</b>	08/23/13 16:13	08/27/13 23:52	
hloromethane	8.4		8.4		ug/Kg		08/23/13 16:13	08/27/13 23:52	
s-1,2-Dichloroethene	8.4		8.4		ug/Kg	<u></u>	08/23/13 16:13	08/27/13 23:52	
s-1,3-Dichloropropene	8.4		8.4	2.0	0 0	*	08/23/13 16:13	08/27/13 23:52	
yclohexane	8.4		8.4		ug/Kg	₩.	08/23/13 16:13	08/27/13 23:52	
ibromochloromethane	8.4		8.4		ug/Kg	<u></u>	08/23/13 16:13	08/27/13 23:52	
2-Dibromo-3-Chloropropane	8.4		8.4		ug/Kg	<b>#</b>	08/23/13 16:13	08/27/13 23:52	
2-Dichlorobenzene	8.4		8.4	1.2	ug/Kg	#	08/23/13 16:13	08/27/13 23:52	
3-Dichlorobenzene	8.4	U	8.4	1.6	ug/Kg		08/23/13 16:13	08/27/13 23:52	
4-Dichlorobenzene	8.4	U	8.4	1.4	ug/Kg	₩	08/23/13 16:13	08/27/13 23:52	
chlorodifluoromethane	8.4	U	8.4	2.2	ug/Kg	₩	08/23/13 16:13	08/27/13 23:52	
1-Dichloroethane	8.4	U	8.4	1.4	ug/Kg	₩	08/23/13 16:13	08/27/13 23:52	
2-Dichloroethane	8.4	U	8.4	1.4	ug/Kg	₽	08/23/13 16:13	08/27/13 23:52	
1-Dichloroethene	8.4	U	8.4	1.3	ug/Kg	₽	08/23/13 16:13	08/27/13 23:52	
2-Dichloropropane	8.4	U	8.4	1.2	ug/Kg	₽	08/23/13 16:13	08/27/13 23:52	
isopropyl ether	8.4	U	8.4	0.93	ug/Kg	₩	08/23/13 16:13	08/27/13 23:52	
hylbenzene	8.4	U	8.4	1.0	ug/Kg	₩	08/23/13 16:13	08/27/13 23:52	
hylene Dibromide	8.4	U	8.4	0.81	ug/Kg	₩	08/23/13 16:13	08/27/13 23:52	
hyl tert-butyl ether	8.4	U	8.4	0.94	ug/Kg	*	08/23/13 16:13	08/27/13 23:52	
Hexanone	42	U	42	8.4	ug/Kg	₽	08/23/13 16:13	08/27/13 23:52	
ppropylbenzene	8.4	U	8.4	1.1	ug/Kg	₩	08/23/13 16:13	08/27/13 23:52	
ethyl acetate	8.4	U	8.4	7.7	ug/Kg	₽	08/23/13 16:13	08/27/13 23:52	
ethylcyclohexane	8.4	U	8.4	1.5	ug/Kg	₩	08/23/13 16:13	08/27/13 23:52	
ethylene Chloride	25	U	25	17	ug/Kg	₽	08/23/13 16:13	08/27/13 23:52	
ethyl Ethyl Ketone	42	U	42	6.9	ug/Kg		08/23/13 16:13	08/27/13 23:52	
ethyl isobutyl ketone	42	U	42	6.7	ug/Kg	₽	08/23/13 16:13	08/27/13 23:52	
ethyl tert-butyl ether	8.4	U	8.4	1.7	ug/Kg	₽	08/23/13 16:13	08/27/13 23:52	
aphthalene	8.4	U	8.4		ug/Kg		08/23/13 16:13	08/27/13 23:52	
yrene	8.4		8.4		ug/Kg	₽	08/23/13 16:13	08/27/13 23:52	
ert-amyl methyl ether	8.4		8.4		ug/Kg	₽	08/23/13 16:13	08/27/13 23:52	
t-Butyl alcohol	8.4		8.4		ug/Kg	<del>-</del>	08/23/13 16:13	08/27/13 23:52	
1,2,2-Tetrachloroethane	8.4		8.4		ug/Kg	₽	08/23/13 16:13	08/27/13 23:52	
trachloroethene	8.4		8.4		ug/Kg	₽	08/23/13 16:13	08/27/13 23:52	
luene	8.4		8.4		ug/Kg		08/23/13 16:13	08/27/13 23:52	
ns-1,2-Dichloroethene	8.4		8.4		ug/Kg ug/Kg	₽	08/23/13 16:13	08/27/13 23:52	
ns-1,3-Dichloropropene	8.4		8.4		ug/Kg ug/Kg	₽	08/23/13 16:13	08/27/13 23:52	
2,4-Trichlorobenzene	8.4		8.4		ug/Kg ug/Kg		08/23/13 16:13	08/27/13 23:52	
1,1-Trichloroethane	8.4		8.4		ug/Kg ug/Kg	₩	08/23/13 16:13	08/27/13 23:52	
1,2-Trichloroethane ichloroethene	8.4		8.4 8.4		ug/Kg ug/Kg	<del>.</del>	08/23/13 16:13 08/23/13 16:13	08/27/13 23:52 08/27/13 23:52	

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9/11/2013

TestAmerica Job ID: 680-93445-1

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93445-1

Client Sample ID: SB02-04 (0.5-1.5) Lab Sample ID: 680-93445-17 Date Collected: 08/20/13 14:25 Matrix: Solid

Percent Solids: 57.9

Date Received: 08/21/13 10:07 Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued) Analyte Result Qualifier MDL Unit D Prepared Analyzed Dil Fac ₩ Trichlorofluoromethane 8.4 U 8.4 1.6 ug/Kg 08/23/13 16:13 08/27/13 23:52 1,1,2-Trichloro-1,2,2-trifluoroethane 8.4 U 8.4 08/23/13 16:13 08/27/13 23:52 3.4 ug/Kg ₩ Vinyl chloride 8.4 U 8.4 1.5 ug/Kg 08/23/13 16:13 08/27/13 23:52 Xylenes, Total 17 U 17 3.2 ug/Kg 08/23/13 16:13 08/27/13 23:52

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	100		72 - 122	08/23/13 16:13	08/27/13 23:52	1
Dibromofluoromethane	98		79 - 123	08/23/13 16:13	08/27/13 23:52	1
Toluene-d8 (Surr)	95		80 - 120	08/23/13 16:13	08/27/13 23:52	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzaldehyde	560	U	560	99	ug/Kg	<u></u>	08/23/13 13:40	08/31/13 00:02	1
Phenol	560	U	560	58	ug/Kg	₽	08/23/13 13:40	08/31/13 00:02	1
Bis(2-chloroethyl)ether	560	U	560	77	ug/Kg	₩	08/23/13 13:40	08/31/13 00:02	1
2-Chlorophenol	560	U	560	68	ug/Kg	₩.	08/23/13 13:40	08/31/13 00:02	1
2-Methylphenol	560	U	560	46	ug/Kg	₩	08/23/13 13:40	08/31/13 00:02	1
bis (2-chloroisopropyl) ether	560	U	560	51	ug/Kg	₩	08/23/13 13:40	08/31/13 00:02	1
Acetophenone	560	U	560	48	ug/Kg	₩.	08/23/13 13:40	08/31/13 00:02	1
3 & 4 Methylphenol	560	U	560	73	ug/Kg	₽	08/23/13 13:40	08/31/13 00:02	1
N-Nitrosodi-n-propylamine	560	U	560	55	ug/Kg	₩	08/23/13 13:40	08/31/13 00:02	1
Hexachloroethane	560	U	560	48	ug/Kg		08/23/13 13:40	08/31/13 00:02	1
Nitrobenzene	560	U	560	44	ug/Kg	₽	08/23/13 13:40	08/31/13 00:02	1
Isophorone	560	U	560	56	ug/Kg	₩	08/23/13 13:40	08/31/13 00:02	1
2-Nitrophenol	560	U	560	70	ug/Kg	₽	08/23/13 13:40	08/31/13 00:02	1
2,4-Dimethylphenol	560	U	560	75	ug/Kg	₽	08/23/13 13:40	08/31/13 00:02	1
Bis(2-chloroethoxy)methane	560	U	560	66	ug/Kg	₩	08/23/13 13:40	08/31/13 00:02	1
2,4-Dichlorophenol	560	U	560	60	ug/Kg		08/23/13 13:40	08/31/13 00:02	1
Naphthalene	81	J	560	51	ug/Kg	₽	08/23/13 13:40	08/31/13 00:02	1
4-Chloroaniline	1100	U *	1100	89	ug/Kg	₩	08/23/13 13:40	08/31/13 00:02	1
Hexachlorobutadiene	560	U	560	61	ug/Kg		08/23/13 13:40	08/31/13 00:02	1
Caprolactam	560	U	560	110	ug/Kg	₩	08/23/13 13:40	08/31/13 00:02	1
4-Chloro-3-methylphenol	560	U	560	60	ug/Kg	₽	08/23/13 13:40	08/31/13 00:02	1
2-Methylnaphthalene	76	J	560	65	ug/Kg	₩.	08/23/13 13:40	08/31/13 00:02	1
Hexachlorocyclopentadiene	560	U	560	70	ug/Kg	₽	08/23/13 13:40	08/31/13 00:02	1
2,4,6-Trichlorophenol	560	U	560	49	ug/Kg	₩	08/23/13 13:40	08/31/13 00:02	1
2,4,5-Trichlorophenol	560	U	560	60	ug/Kg	φ.	08/23/13 13:40	08/31/13 00:02	1
1,1'-Biphenyl	1300	U	1300	1300	ug/Kg	₩	08/23/13 13:40	08/31/13 00:02	1
2-Chloronaphthalene	560	U	560	60	ug/Kg	₽	08/23/13 13:40	08/31/13 00:02	1
2-Nitroaniline	2900	U	2900	77	ug/Kg	₩	08/23/13 13:40	08/31/13 00:02	1
Dimethyl phthalate	560	U	560	58	ug/Kg	₩	08/23/13 13:40	08/31/13 00:02	1
2,6-Dinitrotoluene	560	U	560	72	ug/Kg	₩	08/23/13 13:40	08/31/13 00:02	1
Acenaphthylene	560	U	560	61	ug/Kg		08/23/13 13:40	08/31/13 00:02	1
3-Nitroaniline	2900	U	2900	78	ug/Kg	₩	08/23/13 13:40	08/31/13 00:02	1
Acenaphthene	560	U	560	70	ug/Kg	₽	08/23/13 13:40	08/31/13 00:02	1
2,4-Dinitrophenol	2900	U	2900	1400	ug/Kg		08/23/13 13:40	08/31/13 00:02	1
4-Nitrophenol	2900	U	2900	560	ug/Kg	₩	08/23/13 13:40	08/31/13 00:02	1
Dibenzofuran	560	U	560	56	ug/Kg	₽	08/23/13 13:40	08/31/13 00:02	1
2,4-Dinitrotoluene	560	U	560	83	ug/Kg	φ.	08/23/13 13:40	08/31/13 00:02	1
Diethyl phthalate	560	U	560		ug/Kg	₩	08/23/13 13:40	08/31/13 00:02	1

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB02-04 (0.5-1.5)

Lab Sample ID: 680-93445-17

Date Collected: 08/20/13 14:25

Matrix: Solid

Date Received: 08/21/13 10:07

Percent Solids: 57.9

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued) Result Qualifier MDL Unit D Dil Fac Analyte Prepared Analyzed 560 Ū 560 08/23/13 13:40 08/31/13 00:02 Fluorene 61 ug/Kg φ 560 U 560 08/31/13 00:02 4-Chlorophenyl phenyl ether 08/23/13 13:40 75 ug/Kg ä 4-Nitroaniline 2900 U 2900 83 ug/Kg 08/23/13 13:40 08/31/13 00:02 # 4,6-Dinitro-2-methylphenol 2900 U 2900 08/23/13 13:40 08/31/13 00:02 290 ug/Kg à N-Nitrosodiphenylamine 560 U 560 ug/Kg 08/23/13 13:40 08/31/13 00:02 560 U 560 ug/Kg 08/23/13 13:40 4-Bromophenyl phenyl ether 61 08/31/13 00:02 ₩ Hexachlorobenzene 560 U 560 66 ug/Kg 08/23/13 13:40 08/31/13 00:02 560 U 560 08/23/13 13:40 08/31/13 00:02 Atrazine 39 ug/Kg ₩ Pentachlorophenol 2900 U 2900 560 ug/Kg 08/23/13 13:40 08/31/13 00:02 **Phenanthrene** 85 560 46 ug/Kg 08/23/13 13:40 08/31/13 00:02 Anthracene 560 U 560 43 ug/Kg 08/23/13 13:40 08/31/13 00:02 ä 08/23/13 13:40 Carbazole 560 U 560 51 ug/Kg 08/31/13 00:02 ₩ Di-n-butyl phthalate 560 U 560 51 ug/Kg 08/23/13 13:40 08/31/13 00:02 ġ 560 55 ug/Kg 08/23/13 13:40 08/31/13 00:02 **Fluoranthene** 59 560 U 560 08/23/13 13:40 08/31/13 00:02 Pyrene 46 ug/Kg ä 560 U 560 08/23/13 13:40 08/31/13 00:02 Butyl benzyl phthalate ug/Kg 1100 08/23/13 13:40 3.3'-Dichlorobenzidine 1100 U 48 ug/Kg 08/31/13 00:02 Benzo[a]anthracene 560 560 08/23/13 13:40 08/31/13 00:02 U ug/Kg 560 08/23/13 13:40 08/31/13 00:02 36 ug/Kg Chrysene 45 φ Bis(2-ethylhexyl) phthalate 560 U 560 49 ug/Kg 08/23/13 13:40 08/31/13 00:02 \$ Di-n-octyl phthalate 560 U 560 49 ua/Ka 08/23/13 13:40 08/31/13 00:02 ₩ 560 U 560 Benzo[b]fluoranthene 65 ug/Kg 08/23/13 13:40 08/31/13 00:02 ug/Kg ġ Benzo[k]fluoranthene 560 560 08/23/13 13:40 08/31/13 00:02 110 ġ Benzo[a]pyrene 560 U 560 89 ug/Kg 08/23/13 13:40 08/31/13 00:02 Indeno[1,2,3-cd]pyrene 560 U 560 ug/Kg 08/23/13 13:40 08/31/13 00:02 560 Ü 560 Dibenz(a,h)anthracene 08/23/13 13:40 08/31/13 00:02 66 ug/Kg 560 560 08/23/13 13:40 08/31/13 00:02 Benzo[g,h,i]perylene ug/Kg Surrogate %Recovery Qualifier Limits Prepared Analyzed Dil Fac Nitrobenzene-d5 (Surr) 63 46 - 130 08/23/13 13:40 08/31/13 00:02 2-Fluorobiphenyl 68 58 - 130 08/23/13 13:40 08/31/13 00:02 Terphenyl-d14 (Surr) 70 60 - 130 08/23/13 13:40 08/31/13 00:02 59 49 - 130 08/23/13 13:40 Phenol-d5 (Surr) 08/31/13 00:02 58 2-Fluorophenol (Surr) 40 - 130 08/23/13 13:40 08/31/13 00:02 70 58 - 130 08/23/13 13:40 08/31/13 00:02 2,4,6-Tribromophenol (Surr) Method: 8015C - Nonhalogenated Organics using GC/FID -Modified (Gasoline Range Organics) Analyte Result Qualifier MDL Unit D Prepared Analyzed Dil Fac RL 500 08/22/13 11:07 7600 38 ug/Kg 08/26/13 13:48 **Gasoline Range Organics (GRO)** -C6-C10 %Recovery Qualifier Surrogate Limits Prepared Analyzed Dil Fac

a,a,a-Trifluorotoluene	128		70 - 131				08/22/13 11:07	08/26/13 13:48	1
Method: 8015C - Nonhalogenate	d Organics usi	ing GC/FID	-Modified (Dies	el Range	Organics	)			
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	3900	JB	8500	2400	ug/Kg	<del>-</del>	08/28/13 11:44	08/30/13 03:35	1
ORO C24-C40	6500	JB	8500	2400	ug/Kg	₩	08/28/13 11:44	08/30/13 03:35	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
o-Terphenyl (Surr)	71		50 - 150				08/28/13 11:44	08/30/13 03:35	1

TestAmerica Savannah

9/11/2013

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TestAmerica Job ID: 680-93445-1

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11

Client: ARCADIS U.S., Inc.

Date Collected: 08/20/13 14:30

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB02-04 (7.0-8.0)

TestAmerica Job ID: 680-93445-1

Lab Sample ID: 680-93445-18

Matrix: Solid

Pate Received: 08/21/13 10:07								Percent Soli	ds: 78.8
Method: 8260B - Volatile Organi	c Compounds	(GC/MS)							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	24	U	24	7.1	ug/Kg	<del>\</del>	08/23/13 16:13	08/28/13 00:18	1
Benzene	4.8	U	4.8	0.47	ug/Kg	₽	08/23/13 16:13	08/28/13 00:18	1
Bromodichloromethane	4.8	U	4.8	0.81	ug/Kg	₽	08/23/13 16:13	08/28/13 00:18	1
Bromoform	4.8	U	4.8	0.61	ug/Kg	<b>\$</b>	08/23/13 16:13	08/28/13 00:18	1
Bromomethane	4.8	U	4.8	1.4	ug/Kg	₩	08/23/13 16:13	08/28/13 00:18	1
Carbon disulfide	4.8	U	4.8	1.2	ug/Kg	₩	08/23/13 16:13	08/28/13 00:18	1
Carbon tetrachloride	4.8	U	4.8	1.6	ug/Kg		08/23/13 16:13	08/28/13 00:18	1
Chlorobenzene	4.8	U	4.8	0.50	ug/Kg	₩	08/23/13 16:13	08/28/13 00:18	1
Chloroethane	4.8	U	4.8	1.8	ug/Kg	₩	08/23/13 16:13	08/28/13 00:18	1
Chloroform	4.8	U	4.8	0.57	ug/Kg		08/23/13 16:13	08/28/13 00:18	1
Chloromethane	4.8	U	4.8	0.97	ug/Kg	₩	08/23/13 16:13	08/28/13 00:18	1
cis-1,2-Dichloroethene	4.8	U	4.8	0.74	ug/Kg	₩	08/23/13 16:13	08/28/13 00:18	1
cis-1,3-Dichloropropene	4.8	U	4.8	1.2	ug/Kg		08/23/13 16:13	08/28/13 00:18	1
Cyclohexane	4.8	U	4.8	0.91	ug/Kg	₽	08/23/13 16:13	08/28/13 00:18	1
Dibromochloromethane	4.8	U	4.8	0.84	ug/Kg	₽	08/23/13 16:13	08/28/13 00:18	1
1,2-Dibromo-3-Chloropropane	4.8	U	4.8	3.2	ug/Kg		08/23/13 16:13	08/28/13 00:18	1
1,2-Dichlorobenzene	4.8	U	4.8	0.69	ug/Kg	₽	08/23/13 16:13	08/28/13 00:18	1
1,3-Dichlorobenzene	4.8	U	4.8		ug/Kg	₽	08/23/13 16:13	08/28/13 00:18	1
1,4-Dichlorobenzene	4.8	U	4.8	0.79	ug/Kg		08/23/13 16:13	08/28/13 00:18	1
Diables difference the second	4.0	11	4.0			**	00/00/40 40:40	00/00/40 00:40	

Benzene	4.8 U	4.8	0.47 ug/Kg	₽	08/23/13 16:13	08/28/13 00:18	1
Bromodichloromethane	4.8 U	4.8	0.81 ug/Kg	☼	08/23/13 16:13	08/28/13 00:18	1
Bromoform	4.8 U	4.8	0.61 ug/Kg	₩	08/23/13 16:13	08/28/13 00:18	1
Bromomethane	4.8 U	4.8	1.4 ug/Kg	₩	08/23/13 16:13	08/28/13 00:18	1
Carbon disulfide	4.8 U	4.8	1.2 ug/Kg	₩	08/23/13 16:13	08/28/13 00:18	1
Carbon tetrachloride	4.8 U	4.8	1.6 ug/Kg		08/23/13 16:13	08/28/13 00:18	1
Chlorobenzene	4.8 U	4.8	0.50 ug/Kg	₩	08/23/13 16:13	08/28/13 00:18	1
Chloroethane	4.8 U	4.8	1.8 ug/Kg	₩	08/23/13 16:13	08/28/13 00:18	1
Chloroform	4.8 U	4.8	0.57 ug/Kg	₩	08/23/13 16:13	08/28/13 00:18	1
Chloromethane	4.8 U	4.8	0.97 ug/Kg	₩	08/23/13 16:13	08/28/13 00:18	1
cis-1,2-Dichloroethene	4.8 U	4.8	0.74 ug/Kg	₩	08/23/13 16:13	08/28/13 00:18	1
cis-1,3-Dichloropropene	4.8 U	4.8	1.2 ug/Kg	₩	08/23/13 16:13	08/28/13 00:18	1
Cyclohexane	4.8 U	4.8	0.91 ug/Kg	₩	08/23/13 16:13	08/28/13 00:18	1
Dibromochloromethane	4.8 U	4.8	0.84 ug/Kg	₩	08/23/13 16:13	08/28/13 00:18	1
1,2-Dibromo-3-Chloropropane	4.8 U	4.8	3.2 ug/Kg	₩	08/23/13 16:13	08/28/13 00:18	1
1,2-Dichlorobenzene	4.8 U	4.8	0.69 ug/Kg	₽	08/23/13 16:13	08/28/13 00:18	1
1,3-Dichlorobenzene	4.8 U	4.8	0.92 ug/Kg	₩	08/23/13 16:13	08/28/13 00:18	1
1,4-Dichlorobenzene	4.8 U	4.8	0.79 ug/Kg	₽	08/23/13 16:13	08/28/13 00:18	1
Dichlorodifluoromethane	4.8 U	4.8	1.3 ug/Kg	₽	08/23/13 16:13	08/28/13 00:18	1
1,1-Dichloroethane	4.8 U	4.8	0.80 ug/Kg		08/23/13 16:13	08/28/13 00:18	1
1,2-Dichloroethane	4.8 U	4.8	0.79 ug/Kg	₽	08/23/13 16:13	08/28/13 00:18	1
1,1-Dichloroethene	4.8 U	4.8	0.73 ug/Kg	*	08/23/13 16:13	08/28/13 00:18	1
1,2-Dichloropropane	4.8 U	4.8	0.72 ug/Kg		08/23/13 16:13	08/28/13 00:18	1
Diisopropyl ether	4.8 U	4.8	0.53 ug/Kg	*	08/23/13 16:13	08/28/13 00:18	1
Ethylbenzene	4.8 U	4.8	0.59 ug/Kg		08/23/13 16:13	08/28/13 00:18	1
Ethylene Dibromide	4.8 U	4.8	0.46 ug/Kg		08/23/13 16:13	08/28/13 00:18	1
Ethyl tert-butyl ether	4.8 U	4.8	0.54 ug/Kg	₩	08/23/13 16:13	08/28/13 00:18	1
2-Hexanone	24 U	24	4.8 ug/Kg	₩.	08/23/13 16:13	08/28/13 00:18	1
Isopropylbenzene	4.8 U	4.8	0.66 ug/Kg	T	08/23/13 16:13	08/28/13 00:18	1
Methyl acetate	4.8 U	4.8	4.5 ug/Kg	<b>\$</b>	08/23/13 16:13	08/28/13 00:18	1
Methylcyclohexane	4.8 U	4.8	0.84 ug/Kg	<b>‡</b>	08/23/13 16:13	08/28/13 00:18	1
Methylene Chloride	15 U	15	9.7 ug/Kg	<u></u>	08/23/13 16:13	08/28/13 00:18	1
Methyl Ethyl Ketone	24 U	24	4.0 ug/Kg	*	08/23/13 16:13	08/28/13 00:18	1
methyl isobutyl ketone	24 U	24	3.9 ug/Kg	<b>‡</b>	08/23/13 16:13	08/28/13 00:18	1
Methyl tert-butyl ether	4.8 U	4.8	0.97 ug/Kg	<u></u>	08/23/13 16:13	08/28/13 00:18	1
Naphthalene	4.8 U	4.8	0.97 ug/Kg	*	08/23/13 16:13	08/28/13 00:18	1
Styrene Text and realty death are	4.8 U	4.8	0.74 ug/Kg	‡ n	08/23/13 16:13	08/28/13 00:18	1
Tert-amyl methyl ether	4.8 U	4.8	0.43 ug/Kg		08/23/13 16:13	08/28/13 00:18	1
tert-Butyl alcohol	4.8 U	4.8	3.3 ug/Kg	ф Ф	08/23/13 16:13	08/28/13 00:18	1
1,1,2,2-Tetrachloroethane	4.8 U	4.8	0.70 ug/Kg	₩	08/23/13 16:13	08/28/13 00:18	1
Tetrachloroethene	4.8 U	4.8	0.81 ug/Kg	¥	08/23/13 16:13	08/28/13 00:18	1
Toluene trans-1,2-Dichloroethene	4.8 U	4.8	0.68 ug/Kg	₩	08/23/13 16:13	08/28/13 00:18	1
<u>'</u>	4.8 U	4.8	0.74 ug/Kg	₩	08/23/13 16:13	08/28/13 00:18	1
trans-1,3-Dichloropropene	4.8 U	4.8	0.89 ug/Kg	¥	08/23/13 16:13	08/28/13 00:18	1
1,2,4-Trichlorobenzene	4.8 U	4.8	0.71 ug/Kg	₩	08/23/13 16:13	08/28/13 00:18	1
1,1,1-Trichloroethane	4.8 U	4.8	1.1 ug/Kg	₩	08/23/13 16:13	08/28/13 00:18	•
1,1,2-Trichloroethane	4.8 U	4.8	0.89 ug/Kg	¥	08/23/13 16:13	08/28/13 00:18	1
Trichloroethene	4.8 U	4.8	0.46 ug/Kg	**	08/23/13 16:13	08/28/13 00:18	1

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB02-04 (7.0-8.0)

Lab Sample ID: 680-93445-18

Date Collected: 08/20/13 14:30

Lab Sample ID: 680-93445-18

Matrix: Solid

Date Received: 08/21/13 10:07 Percent Solids: 78.8

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichlorofluoromethane	4.8	U	4.8	0.92	ug/Kg	₽	08/23/13 16:13	08/28/13 00:18	1
1,1,2-Trichloro-1,2,2-trifluoroethane	4.8	U	4.8	1.9	ug/Kg	₽	08/23/13 16:13	08/28/13 00:18	1
Vinyl chloride	4.8	U	4.8	0.89	ug/Kg	₽	08/23/13 16:13	08/28/13 00:18	1
Xylenes, Total	9.7	U	9.7	1.8	ug/Kg	₽	08/23/13 16:13	08/28/13 00:18	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	97		72 - 122				08/23/13 16:13	08/28/13 00:18	1
Dibromofluoromethane	101		79 - 123				08/23/13 16:13	08/28/13 00:18	1
Toluene-d8 (Surr)	97		80 - 120				08/23/13 16:13	08/28/13 00:18	1

Toluene-d8 (Surr) -	97		80 - 120				08/23/13 16:13	08/28/13 00:18	1
Method: 8270D - Semivolatile C	•	•	•						
Analyte		Qualifier	RL	MDL		D	Prepared	Analyzed	Dil Fac
Benzaldehyde	420		420	73	ug/Kg	₩	08/23/13 13:40	08/31/13 00:28	1
Phenol	420		420	43	ug/Kg	<b>\$</b>	08/23/13 13:40	08/31/13 00:28	1
Bis(2-chloroethyl)ether	420		420	57	ug/Kg		08/23/13 13:40	08/31/13 00:28	
2-Chlorophenol	420		420	50	ug/Kg	₩	08/23/13 13:40	08/31/13 00:28	1
2-Methylphenol	420	U	420	34	ug/Kg	₽	08/23/13 13:40	08/31/13 00:28	1
bis (2-chloroisopropyl) ether	420	U	420	38	ug/Kg		08/23/13 13:40	08/31/13 00:28	1
Acetophenone	420	U	420	35	ug/Kg	₽	08/23/13 13:40	08/31/13 00:28	1
3 & 4 Methylphenol	420	U	420	54	ug/Kg	₽	08/23/13 13:40	08/31/13 00:28	1
N-Nitrosodi-n-propylamine	420	U	420	40	ug/Kg	₽	08/23/13 13:40	08/31/13 00:28	1
Hexachloroethane	420	U	420	35	ug/Kg	₽	08/23/13 13:40	08/31/13 00:28	1
Nitrobenzene	420	U	420	33	ug/Kg	₽	08/23/13 13:40	08/31/13 00:28	1
Isophorone	420	U	420	42	ug/Kg	₽	08/23/13 13:40	08/31/13 00:28	1
2-Nitrophenol	420	U	420	52	ug/Kg	\$	08/23/13 13:40	08/31/13 00:28	1
2,4-Dimethylphenol	420	U	420	55	ug/Kg	₽	08/23/13 13:40	08/31/13 00:28	1
Bis(2-chloroethoxy)methane	420	U	420	49	ug/Kg	₽	08/23/13 13:40	08/31/13 00:28	1
2,4-Dichlorophenol	420	U	420	44	ug/Kg	₽	08/23/13 13:40	08/31/13 00:28	1
Naphthalene	420	U	420	38	ug/Kg	₽	08/23/13 13:40	08/31/13 00:28	1
4-Chloroaniline	830	U *	830	66	ug/Kg	☼	08/23/13 13:40	08/31/13 00:28	1
Hexachlorobutadiene	420	U	420	45	ug/Kg		08/23/13 13:40	08/31/13 00:28	1
Caprolactam	420	U	420	83	ug/Kg	☼	08/23/13 13:40	08/31/13 00:28	1
4-Chloro-3-methylphenol	420	U	420	44	ug/Kg	₩	08/23/13 13:40	08/31/13 00:28	1
2-Methylnaphthalene	420	U	420	48	ug/Kg	φ.	08/23/13 13:40	08/31/13 00:28	1
Hexachlorocyclopentadiene	420	U	420	52	ug/Kg	₽	08/23/13 13:40	08/31/13 00:28	1
2,4,6-Trichlorophenol	420	U	420	37	ug/Kg	₩	08/23/13 13:40	08/31/13 00:28	1
2,4,5-Trichlorophenol	420	U	420	44	ug/Kg	φ	08/23/13 13:40	08/31/13 00:28	1
1,1'-Biphenyl	930	U	930	930	ug/Kg	₽	08/23/13 13:40	08/31/13 00:28	1
2-Chloronaphthalene	420	U	420	44	ug/Kg	₽	08/23/13 13:40	08/31/13 00:28	1
2-Nitroaniline	2100	U	2100	57	ug/Kg	φ.	08/23/13 13:40	08/31/13 00:28	1
Dimethyl phthalate	420	U	420	43	ug/Kg	₽	08/23/13 13:40	08/31/13 00:28	1
2,6-Dinitrotoluene	420	U	420	53	ug/Kg	₽	08/23/13 13:40	08/31/13 00:28	1
Acenaphthylene	420		420	45	ug/Kg		08/23/13 13:40	08/31/13 00:28	1
3-Nitroaniline	2100		2100	58	ug/Kg	₩	08/23/13 13:40	08/31/13 00:28	1
Acenaphthene	420		420		ug/Kg	₽	08/23/13 13:40	08/31/13 00:28	1
2,4-Dinitrophenol	2100		2100	1000	ug/Kg		08/23/13 13:40	08/31/13 00:28	1
4-Nitrophenol	2100		2100	420	ug/Kg	₩	08/23/13 13:40	08/31/13 00:28	1
Dibenzofuran	420		420		ug/Kg	₩	08/23/13 13:40	08/31/13 00:28	1
2,4-Dinitrotoluene	420		420		ug/Kg	· · · · · · · · · · · · · · · · · · ·	08/23/13 13:40	08/31/13 00:28	· · · · · · · · · · · · · · · · · · ·
Diethyl phthalate	420		420		ug/Kg		08/23/13 13:40	08/31/13 00:28	1
Dietriyi pritrialate	420	U	420	47	ug/Ng	~	00/23/13 13.40	00/31/13 00.20	1

TestAmerica Savannah

TestAmerica Job ID: 680-93445-1

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TestAmerica Job ID: 680-93445-1

Client: ARCADIS U.S., Inc.

a,a,a-Trifluorotoluene

ORO C24-C40

o-Terphenyl (Surr)

Surrogate

Diesel Range Organics [C10-C28]

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB02-04 (7.0-8.0)

Date Collected: 08/20/13 14:30 Date Received: 08/21/13 10:07

Lab Sample ID: 680-93445-18

Matrix: Solid Percent Solids: 78.8

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
Fluorene	420	U	420	45	ug/Kg	<del>\</del>	08/23/13 13:40	08/31/13 00:28	
4-Chlorophenyl phenyl ether	420	U	420	55	ug/Kg	ф.	08/23/13 13:40	08/31/13 00:28	
4-Nitroaniline	2100	U	2100	62	ug/Kg	₩	08/23/13 13:40	08/31/13 00:28	
4,6-Dinitro-2-methylphenol	2100	U	2100	210	ug/Kg	₩	08/23/13 13:40	08/31/13 00:28	
N-Nitrosodiphenylamine	420	U	420	42	ug/Kg		08/23/13 13:40	08/31/13 00:28	
4-Bromophenyl phenyl ether	420	U	420	45	ug/Kg	₩	08/23/13 13:40	08/31/13 00:28	
Hexachlorobenzene	420	U	420	49	ug/Kg	₩	08/23/13 13:40	08/31/13 00:28	
Atrazine	420	U	420	29	ug/Kg		08/23/13 13:40	08/31/13 00:28	
Pentachlorophenol	2100	U	2100	420	ug/Kg	₩	08/23/13 13:40	08/31/13 00:28	
Phenanthrene	420	U	420	34	ug/Kg	₩	08/23/13 13:40	08/31/13 00:28	
Anthracene	420	U	420	32	ug/Kg	φ.	08/23/13 13:40	08/31/13 00:28	
Carbazole	420	U	420		ug/Kg	₩	08/23/13 13:40	08/31/13 00:28	
Di-n-butyl phthalate	420	U	420	38	ug/Kg	₩	08/23/13 13:40	08/31/13 00:28	
Fluoranthene	420	U	420	40	ug/Kg		08/23/13 13:40	08/31/13 00:28	
Pyrene	420	U	420	34	ug/Kg	₽	08/23/13 13:40	08/31/13 00:28	
Butyl benzyl phthalate	420	U	420	33	ug/Kg	₽	08/23/13 13:40	08/31/13 00:28	
3,3'-Dichlorobenzidine	830	U	830	35	ug/Kg	ф	08/23/13 13:40	08/31/13 00:28	
Benzo[a]anthracene	420	U	420	34	ug/Kg	₩	08/23/13 13:40	08/31/13 00:28	
Chrysene	420	U	420	26	ug/Kg	₩	08/23/13 13:40	08/31/13 00:28	
Bis(2-ethylhexyl) phthalate	420	U	420	37	ug/Kg		08/23/13 13:40	08/31/13 00:28	
Di-n-octyl phthalate	420	U	420	37	ug/Kg	₩	08/23/13 13:40	08/31/13 00:28	
Benzo[b]fluoranthene	420	U	420	48	ug/Kg	₽	08/23/13 13:40	08/31/13 00:28	
Benzo[k]fluoranthene	420	U	420	82	ug/Kg		08/23/13 13:40	08/31/13 00:28	
Benzo[a]pyrene	420	U	420	66	ug/Kg	₩	08/23/13 13:40	08/31/13 00:28	
Indeno[1,2,3-cd]pyrene	420	U	420	35	ug/Kg	₩	08/23/13 13:40	08/31/13 00:28	
Dibenz(a,h)anthracene	420	U	420	49	ug/Kg		08/23/13 13:40	08/31/13 00:28	
Benzo[g,h,i]perylene	420	U	420		ug/Kg	₽	08/23/13 13:40	08/31/13 00:28	
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fa
Nitrobenzene-d5 (Surr)	- <del>78Necovery</del> - 67	Qualifier	46 - 130				08/23/13 13:40	08/31/13 00:28	- DII I di
2-Fluorobiphenyl	73		58 - 130				08/23/13 13:40	08/31/13 00:28	
Terphenyl-d14 (Surr)	84		60 <sub>-</sub> 130				08/23/13 13:40	08/31/13 00:28	
Phenol-d5 (Surr)	65		49 - 130				08/23/13 13:40	08/31/13 00:28	
2-Fluorophenol (Surr)	67		40 - 130				08/23/13 13:40	08/31/13 00:28	
2,4,6-Tribromophenol (Surr)	84		58 <sub>-</sub> 130				08/23/13 13:40	08/31/13 00:28	
2,4,0-11ibioinophenoi (3un)	04		30 - 730				00/23/13 13.40	00/31/13 00.20	
Method: 8015C - Nonhalogenate Analyte	•	ng GC/FID - Qualifier	-Modified (Gaso		ge Organ Unit	ics) D	Prepared	Analyzod	Dil Fac
•		- Qualifier	250		ug/Kg	— <del>¤</del>	08/22/13 11:07	Analyzed 08/26/13 14:08	DII Fac
Gasoline Range Organics (GRO) -C6-C10	340		200	19	ug/ <b>n</b> g	**	00/22/13 11:07	00/20/13 14.08	

08/28/13 11:44 08/30/13 03:51

TestAmerica Savannah

08/26/13 14:08

Analyzed

08/30/13 03:51

08/30/13 03:51

Analyzed

08/22/13 11:07

Prepared

08/28/13 11:44

08/28/13 11:44

Prepared

D

70 - 131

RL

6200

6200

Limits

50 - 150

MDL Unit

1700 ug/Kg

1700 ug/Kg

131

Method: 8015C - Nonhalogenated Organics using GC/FID -Modified (Diesel Range Organics) Result Qualifier

6200 U

3500 JB

%Recovery Qualifier

78

Dil Fac

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93445-1

Client Sample ID: SB02-05 (0.5-1.5)

Lab Sample ID: 680-93445-19

Date Collected: 08/20/13 14:50

Date Received: 08/21/13 10:07

Matrix: Solid
Percent Solids: 58.7

Analyte Acetone Benzene Bromodichloromethane	38	Qualifier	RL	MDL	J	D	Prepared	Analyzed	Dil Fa
Benzene	00	U	38	11	ug/Kg	≎	08/23/13 16:13	08/28/13 00:44	
	7.6		7.6		ug/Kg	₩	08/23/13 16:13	08/28/13 00:44	
3101110dictiloroffictilatic	7.6		7.6		ug/Kg	₽	08/23/13 16:13	08/28/13 00:44	
Bromoform	7.6		7.6	0.95	ug/Kg		08/23/13 16:13	08/28/13 00:44	
Bromomethane	7.6		7.6	2.1	ug/Kg ug/Kg		08/23/13 16:13	08/28/13 00:44	
Carbon disulfide	7.6		7.6	1.8	ug/Kg ug/Kg		08/23/13 16:13	08/28/13 00:44	
Carbon tetrachloride	7.6		7.6	2.6			08/23/13 16:13	08/28/13 00:44	
					ug/Kg				
Chlorobenzene	7.6		7.6	0.79	ug/Kg	₩	08/23/13 16:13	08/28/13 00:44	
Chloroethane	7.6		7.6	2.9	ug/Kg		08/23/13 16:13	08/28/13 00:44	
Chloroform	7.6		7.6	0.89	ug/Kg		08/23/13 16:13	08/28/13 00:44	
Chloromethane	7.6		7.6	1.5	ug/Kg	<u>*</u>	08/23/13 16:13	08/28/13 00:44	
cis-1,2-Dichloroethene	7.6		7.6	1.1	ug/Kg	<u>.</u>	08/23/13 16:13	08/28/13 00:44	
cis-1,3-Dichloropropene	7.6		7.6		ug/Kg	<b>*</b>	08/23/13 16:13	08/28/13 00:44	
Cyclohexane	7.6		7.6	1.4	ug/Kg	<b>*</b>	08/23/13 16:13	08/28/13 00:44	
Dibromochloromethane	7.6		7.6	1.3	ug/Kg	<u>.</u> .	08/23/13 16:13	08/28/13 00:44	
1,2-Dibromo-3-Chloropropane	7.6		7.6	5.0	ug/Kg	₽	08/23/13 16:13	08/28/13 00:44	
1,2-Dichlorobenzene	7.6	U	7.6	1.1	ug/Kg	₩	08/23/13 16:13	08/28/13 00:44	
1,3-Dichlorobenzene	7.6	U	7.6	1.4	ug/Kg	₽	08/23/13 16:13	08/28/13 00:44	
1,4-Dichlorobenzene	7.6	U	7.6	1.2	ug/Kg	₽	08/23/13 16:13	08/28/13 00:44	
Dichlorodifluoromethane	7.6	U	7.6	2.0	ug/Kg	₽	08/23/13 16:13	08/28/13 00:44	
1,1-Dichloroethane	7.6	U	7.6	1.3	ug/Kg	₽	08/23/13 16:13	08/28/13 00:44	
1,2-Dichloroethane	7.6	U	7.6	1.2	ug/Kg	₽	08/23/13 16:13	08/28/13 00:44	
I,1-Dichloroethene	7.6	U	7.6	1.1	ug/Kg	₽	08/23/13 16:13	08/28/13 00:44	
1,2-Dichloropropane	7.6	U	7.6	1.1	ug/Kg	₽	08/23/13 16:13	08/28/13 00:44	
Diisopropyl ether	7.6	U	7.6	0.83	ug/Kg		08/23/13 16:13	08/28/13 00:44	
Ethylbenzene	7.6	U	7.6	0.92	ug/Kg	₽	08/23/13 16:13	08/28/13 00:44	
Ethylene Dibromide	7.6	U	7.6	0.73	ug/Kg	₽	08/23/13 16:13	08/28/13 00:44	
Ethyl tert-butyl ether	7.6	U	7.6	0.85	ug/Kg		08/23/13 16:13	08/28/13 00:44	
2-Hexanone	38	U	38	7.6	ug/Kg	₩	08/23/13 16:13	08/28/13 00:44	
sopropylbenzene	7.6	U	7.6	1.0	ug/Kg	₽	08/23/13 16:13	08/28/13 00:44	
Methyl acetate	7.6	Ü	7.6	7.0	ug/Kg	 \$	08/23/13 16:13	08/28/13 00:44	
Methylcyclohexane	7.6		7.6	1.3	ug/Kg	₽	08/23/13 16:13	08/28/13 00:44	
Methylene Chloride	23		23		ug/Kg	₽	08/23/13 16:13	08/28/13 00:44	
Methyl Ethyl Ketone	38		38		ug/Kg		08/23/13 16:13	08/28/13 00:44	
methyl isobutyl ketone	38		38	6.1	ug/Kg	₽	08/23/13 16:13	08/28/13 00:44	
Methyl tert-butyl ether	7.6		7.6		ug/Kg	₽	08/23/13 16:13	08/28/13 00:44	
Naphthalene	7.6		7.6		ug/Kg		08/23/13 16:13	08/28/13 00:44	
Styrene	7.6		7.6	1.1	ug/Kg ug/Kg	<b>#</b>	08/23/13 16:13	08/28/13 00:44	
•	7.6		7.6		ug/Kg ug/Kg	<b>#</b>	08/23/13 16:13	08/28/13 00:44	
Fert-amyl methyl ether									
ert-Butyl alcohol	7.6		7.6	5.1	ug/Kg	₩	08/23/13 16:13	08/28/13 00:44	
I,1,2,2-Tetrachloroethane	7.6		7.6	1.1	ug/Kg		08/23/13 16:13	08/28/13 00:44	
Fetrachloroethene	7.6		7.6		ug/Kg	<del></del> .	08/23/13 16:13	08/28/13 00:44	
Toluene	7.6		7.6		ug/Kg	<b>\$</b>	08/23/13 16:13	08/28/13 00:44	
rans-1,2-Dichloroethene	7.6		7.6		ug/Kg	Ψ.	08/23/13 16:13	08/28/13 00:44	
rans-1,3-Dichloropropene	7.6		7.6		ug/Kg	<u>.</u>	08/23/13 16:13	08/28/13 00:44	
,2,4-Trichlorobenzene	7.6		7.6	1.1	ug/Kg	\$	08/23/13 16:13	08/28/13 00:44	
I,1,1-Trichloroethane	7.6	U	7.6	1.7	ug/Kg	₩	08/23/13 16:13	08/28/13 00:44	
1,1,2-Trichloroethane	7.6	U	7.6	1.4	ug/Kg	₽	08/23/13 16:13	08/28/13 00:44	

TestAmerica Savannah

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4

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8

10

11

Client: ARCADIS U.S., Inc.

Date Received: 08/21/13 10:07

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93445-1

Client Sample ID: SB02-05 (0.5-1.5) Lab Sample ID: 680-93445-19 Date Collected: 08/20/13 14:50 Matrix: Solid

Percent Solids: 58.7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichlorofluoromethane	7.6	U	7.6	1.4	ug/Kg	₩	08/23/13 16:13	08/28/13 00:44	1
1,1,2-Trichloro-1,2,2-trifluoroethane	7.6	U	7.6	3.0	ug/Kg	₽	08/23/13 16:13	08/28/13 00:44	1
Vinyl chloride	7.6	U	7.6	1.4	ug/Kg	₽	08/23/13 16:13	08/28/13 00:44	1
Xylenes, Total	15	U	15	2.9	ug/Kg	₩	08/23/13 16:13	08/28/13 00:44	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	98		72 - 122				08/23/13 16:13	08/28/13 00:44	1
Dibromofluoromethane	101		79 - 123				08/23/13 16:13	08/28/13 00:44	1
Toluene-d8 (Surr)	98		80 - 120				08/23/13 16:13	08/28/13 00:44	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzaldehyde	220	J	550	97	ug/Kg	<del></del>	08/23/13 13:40	08/31/13 00:53	1
Phenol	550	U	550	57	ug/Kg	₩	08/23/13 13:40	08/31/13 00:53	1
Bis(2-chloroethyl)ether	550	U	550	76	ug/Kg	₽	08/23/13 13:40	08/31/13 00:53	1
2-Chlorophenol	550	U	550	67	ug/Kg	₽	08/23/13 13:40	08/31/13 00:53	1
2-Methylphenol	550	U	550	45	ug/Kg	₩	08/23/13 13:40	08/31/13 00:53	1
bis (2-chloroisopropyl) ether	550	U	550	50	ug/Kg	₩	08/23/13 13:40	08/31/13 00:53	1
Acetophenone	550	U	550	47	ug/Kg	₽	08/23/13 13:40	08/31/13 00:53	1
3 & 4 Methylphenol	550	U	550	72	ug/Kg	₽	08/23/13 13:40	08/31/13 00:53	1
N-Nitrosodi-n-propylamine	550	U	550	54	ug/Kg	₽	08/23/13 13:40	08/31/13 00:53	1
Hexachloroethane	550	U	550	47	ug/Kg	₽	08/23/13 13:40	08/31/13 00:53	1
Nitrobenzene	550	U	550	44	ug/Kg	₽	08/23/13 13:40	08/31/13 00:53	1
Isophorone	550	U	550	55	ug/Kg	₽	08/23/13 13:40	08/31/13 00:53	1
2-Nitrophenol	550	U	550	69	ug/Kg	₽	08/23/13 13:40	08/31/13 00:53	1
2,4-Dimethylphenol	550	U	550	74	ug/Kg	₽	08/23/13 13:40	08/31/13 00:53	1
Bis(2-chloroethoxy)methane	550	U	550	66	ug/Kg	₽	08/23/13 13:40	08/31/13 00:53	1
2,4-Dichlorophenol	550	U	550	59	ug/Kg	₽	08/23/13 13:40	08/31/13 00:53	1
Naphthalene	1100		550	50	ug/Kg	₽	08/23/13 13:40	08/31/13 00:53	1
4-Chloroaniline	1100	U *	1100	87	ug/Kg	₽	08/23/13 13:40	08/31/13 00:53	1
Hexachlorobutadiene	550	U	550	60	ug/Kg	₽	08/23/13 13:40	08/31/13 00:53	1
Caprolactam	550	U	550	110	ug/Kg	₽	08/23/13 13:40	08/31/13 00:53	1
4-Chloro-3-methylphenol	550	U	550	59	ug/Kg	₽	08/23/13 13:40	08/31/13 00:53	1
2-Methylnaphthalene	1400		550	64	ug/Kg	₽	08/23/13 13:40	08/31/13 00:53	1
Hexachlorocyclopentadiene	550	U	550	69	ug/Kg	₽	08/23/13 13:40	08/31/13 00:53	1
2,4,6-Trichlorophenol	550	U	550	49	ug/Kg	₽	08/23/13 13:40	08/31/13 00:53	1
2,4,5-Trichlorophenol	550	U	550	59	ug/Kg	₽	08/23/13 13:40	08/31/13 00:53	1
1,1'-Biphenyl	1200	U	1200	1200	ug/Kg	₽	08/23/13 13:40	08/31/13 00:53	1
2-Chloronaphthalene	550	U	550	59	ug/Kg	₽	08/23/13 13:40	08/31/13 00:53	1
2-Nitroaniline	2900	U	2900	76	ug/Kg	₩	08/23/13 13:40	08/31/13 00:53	1
Dimethyl phthalate	550	U	550	57	ug/Kg	₽	08/23/13 13:40	08/31/13 00:53	1
2,6-Dinitrotoluene	550	U	550	71	ug/Kg	₽	08/23/13 13:40	08/31/13 00:53	1
Acenaphthylene	550	U	550	60	ug/Kg	₩	08/23/13 13:40	08/31/13 00:53	1
3-Nitroaniline	2900	U	2900	77	ug/Kg	₩	08/23/13 13:40	08/31/13 00:53	1
Acenaphthene	550	U	550	69	ug/Kg	₽	08/23/13 13:40	08/31/13 00:53	1
2,4-Dinitrophenol	2900	U	2900	1400	ug/Kg		08/23/13 13:40	08/31/13 00:53	1
4-Nitrophenol	2900	U	2900	550	ug/Kg	₩	08/23/13 13:40	08/31/13 00:53	1
Dibenzofuran	420	J	550	55	ug/Kg	₩	08/23/13 13:40	08/31/13 00:53	1
2,4-Dinitrotoluene	550	U	550		ug/Kg	φ.	08/23/13 13:40	08/31/13 00:53	1
Diethyl phthalate	550	U	550		ug/Kg	₽	08/23/13 13:40	08/31/13 00:53	1

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB02-05 (0.5-1.5)

Date Collected: 08/20/13 14:50 Date Received: 08/21/13 10:07

Diesel Range Organics [C10-C28]

ORO C24-C40

o-Terphenyl (Surr)

Surrogate

Lab Sample ID: 680-93445-19

Matrix: Solid

Percent Solids: 58.7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluorene	550	U	550	60	ug/Kg	<del></del>	08/23/13 13:40	08/31/13 00:53	1
4-Chlorophenyl phenyl ether	550	U	550	74	ug/Kg		08/23/13 13:40	08/31/13 00:53	1
4-Nitroaniline	2900	U	2900	82	ug/Kg	₩	08/23/13 13:40	08/31/13 00:53	1
4,6-Dinitro-2-methylphenol	2900	U	2900	290	ug/Kg	₩	08/23/13 13:40	08/31/13 00:53	1
N-Nitrosodiphenylamine	550	U	550	55	ug/Kg		08/23/13 13:40	08/31/13 00:53	1
4-Bromophenyl phenyl ether	550	U	550	60	ug/Kg	₩	08/23/13 13:40	08/31/13 00:53	1
Hexachlorobenzene	550	U	550	66	ug/Kg	₩	08/23/13 13:40	08/31/13 00:53	1
Atrazine	550	U	550	39	ug/Kg		08/23/13 13:40	08/31/13 00:53	
Pentachlorophenol	2900	U	2900	550	ug/Kg	₩	08/23/13 13:40	08/31/13 00:53	1
Phenanthrene	920		550	45	ug/Kg	₩	08/23/13 13:40	08/31/13 00:53	1
Anthracene	92	J	550	42	ug/Kg		08/23/13 13:40	08/31/13 00:53	1
Carbazole	57	J	550	50	ug/Kg	₩	08/23/13 13:40	08/31/13 00:53	1
Di-n-butyl phthalate	550	U	550	50	ug/Kg	₩	08/23/13 13:40	08/31/13 00:53	1
Fluoranthene	540	J	550	54	ug/Kg		08/23/13 13:40	08/31/13 00:53	1
Pyrene	330	J	550	45	ug/Kg	₩	08/23/13 13:40	08/31/13 00:53	1
Butyl benzyl phthalate	550	U	550	44	ug/Kg	₩	08/23/13 13:40	08/31/13 00:53	1
3,3'-Dichlorobenzidine	1100	U	1100	47	ug/Kg		08/23/13 13:40	08/31/13 00:53	1
Benzo[a]anthracene	550	U	550	45	ug/Kg	₩	08/23/13 13:40	08/31/13 00:53	1
Chrysene	390	J	550	35	ug/Kg	₩	08/23/13 13:40	08/31/13 00:53	1
Bis(2-ethylhexyl) phthalate	550	U	550	49	ug/Kg		08/23/13 13:40	08/31/13 00:53	1
Di-n-octyl phthalate	550	U	550	49	ug/Kg	₩	08/23/13 13:40	08/31/13 00:53	1
Benzo[b]fluoranthene	380	J	550	64	ug/Kg	₩	08/23/13 13:40	08/31/13 00:53	1
Benzo[k]fluoranthene	120	J	550	110	ug/Kg	₩.	08/23/13 13:40	08/31/13 00:53	1
Benzo[a]pyrene	130	J	550	87	ug/Kg	₩	08/23/13 13:40	08/31/13 00:53	1
Indeno[1,2,3-cd]pyrene	120	JB	550	47	ug/Kg	₩	08/23/13 13:40	08/31/13 00:53	1
Dibenz(a,h)anthracene	550	U	550	66	ug/Kg		08/23/13 13:40	08/31/13 00:53	1
Benzo[g,h,i]perylene	110	JB	550	37	ug/Kg	\$	08/23/13 13:40	08/31/13 00:53	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	70		46 - 130				08/23/13 13:40	08/31/13 00:53	1
2-Fluorobiphenyl	77		58 - 130				08/23/13 13:40	08/31/13 00:53	1
Terphenyl-d14 (Surr)	76		60 - 130				08/23/13 13:40	08/31/13 00:53	1
Phenol-d5 (Surr)	52		49 - 130				08/23/13 13:40	08/31/13 00:53	1
2-Fluorophenol (Surr)	48		40 - 130				08/23/13 13:40	08/31/13 00:53	1
2,4,6-Tribromophenol (Surr)	62		58 - 130				08/23/13 13:40	08/31/13 00:53	1
Method: 8015C - Nonhalogenate	ed Organics usi	ng GC/FID	-Modified (Gasol	ine Ran	ge Organi	ics)			
Analyte		Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO) -C6-C10	1500		430	33	ug/Kg	<del></del>	08/22/13 11:07	08/26/13 14:30	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene	211	X	70 - 131				08/22/13 11:07	08/26/13 14:30	

TestAmerica Savannah

Analyzed

08/31/13 23:18

08/31/13 23:18

Analyzed

08/31/13 23:18

RL

8400

8400

Limits

50 - 150

MDL Unit

2400 ug/Kg

2400 ug/Kg

D

₩

Prepared

08/31/13 08:51

08/31/13 08:51

Prepared

08/31/13 08:51

Method: 8015C - Nonhalogenated Organics using GC/FID -Modified (Diesel Range Organics) Result Qualifier

8400 U

7200 JB

%Recovery Qualifier

81

Dil Fac

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93445-1

Client Sample ID: SB02-05 (7.0-8.0)

Lab Sample ID: 680-93445-20

Date Collected: 08/20/13 15:00 Matrix: Solid
Date Received: 08/21/13 10:07 Percent Solids: 82.8

Analyte	c Compounds Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil F
Acetone				6.3	ug/Kg	— <del>-</del>	08/23/13 16:13	08/28/13 01:09	
Benzene	4.3		4.3	0.42	ug/Kg	₽	08/23/13 16:13	08/28/13 01:09	
Bromodichloromethane	4.3		4.3	0.73	ug/Kg	₽	08/23/13 16:13	08/28/13 01:09	
Bromoform	4.3		4.3	0.54	ug/Kg		08/23/13 16:13	08/28/13 01:09	
Bromomethane	4.3		4.3				08/23/13 16:13	08/28/13 01:09	
Carbon disulfide	4.3		4.3	1.0	ug/Kg ug/Kg		08/23/13 16:13	08/28/13 01:09	
Carbon tetrachloride	4.3		4.3		ug/Kg	· · · · · · · · · · · · · · · · · · ·	08/23/13 16:13	08/28/13 01:09	
Chlorobenzene	4.3		4.3	0.45	ug/Kg ug/Kg		08/23/13 16:13	08/28/13 01:09	
Chloroethane	4.3		4.3		ug/Kg ug/Kg		08/23/13 16:13	08/28/13 01:09	
Chloroform	4.3		4.3	0.51	ug/Kg ug/Kg		08/23/13 16:13	08/28/13 01:09	
	4.3					₩	08/23/13 16:13	08/28/13 01:09	
Chloromethane			4.3	0.86	ug/Kg	₩			
cis-1,2-Dichloroethene	4.3		4.3	0.66	ug/Kg		08/23/13 16:13	08/28/13 01:09	
cis-1,3-Dichloropropene	4.3		4.3	1.0	ug/Kg		08/23/13 16:13	08/28/13 01:09	
Cyclohexane	4.3		4.3	0.81	ug/Kg	<b>‡</b>	08/23/13 16:13	08/28/13 01:09	
Dibromochloromethane	4.3		4.3	0.75	ug/Kg	<del>.</del> .	08/23/13 16:13	08/28/13 01:09	
1,2-Dibromo-3-Chloropropane	4.3		4.3	2.9	ug/Kg	Ψ.	08/23/13 16:13	08/28/13 01:09	
1,2-Dichlorobenzene	4.3		4.3	0.61	ug/Kg	*	08/23/13 16:13	08/28/13 01:09	
1,3-Dichlorobenzene	4.3		4.3	0.82	ug/Kg		08/23/13 16:13	08/28/13 01:09	
1,4-Dichlorobenzene	4.3		4.3	0.71	ug/Kg	₽	08/23/13 16:13	08/28/13 01:09	
Dichlorodifluoromethane	4.3	U	4.3	1.1	ug/Kg	₽	08/23/13 16:13	08/28/13 01:09	
,1-Dichloroethane	4.3	U	4.3	0.72	ug/Kg		08/23/13 16:13	08/28/13 01:09	
1,2-Dichloroethane	4.3	U	4.3	0.71	ug/Kg	₽	08/23/13 16:13	08/28/13 01:09	
1,1-Dichloroethene	4.3	U	4.3	0.65	ug/Kg	₽	08/23/13 16:13	08/28/13 01:09	
1,2-Dichloropropane	4.3	U	4.3	0.64	ug/Kg	₽	08/23/13 16:13	08/28/13 01:09	
Diisopropyl ether	4.3	U	4.3	0.48	ug/Kg	₽	08/23/13 16:13	08/28/13 01:09	
Ethylbenzene	4.3	U	4.3	0.53	ug/Kg	₽	08/23/13 16:13	08/28/13 01:09	
Ethylene Dibromide	4.3	U	4.3	0.42	ug/Kg	₽	08/23/13 16:13	08/28/13 01:09	
Ethyl tert-butyl ether	4.3	U	4.3	0.48	ug/Kg	₽	08/23/13 16:13	08/28/13 01:09	
2-Hexanone	22	U	22	4.3	ug/Kg	₩	08/23/13 16:13	08/28/13 01:09	
sopropylbenzene	4.3	U	4.3	0.59	ug/Kg	₽	08/23/13 16:13	08/28/13 01:09	
Methyl acetate	4.3	U	4.3	4.0	ug/Kg	₽	08/23/13 16:13	08/28/13 01:09	
Methylcyclohexane	4.3	U	4.3	0.75	ug/Kg	₽	08/23/13 16:13	08/28/13 01:09	
Methylene Chloride	13	U	13	8.6	ug/Kg	☼	08/23/13 16:13	08/28/13 01:09	
Methyl Ethyl Ketone	22	U	22	3.5	ug/Kg		08/23/13 16:13	08/28/13 01:09	
methyl isobutyl ketone	22	U	22	3.5	ug/Kg	₽	08/23/13 16:13	08/28/13 01:09	
Methyl tert-butyl ether	4.3	U	4.3	0.86	ug/Kg	₽	08/23/13 16:13	08/28/13 01:09	
laphthalene	4.3	U	4.3		ug/Kg		08/23/13 16:13	08/28/13 01:09	
Styrene	4.3		4.3		ug/Kg	₽	08/23/13 16:13	08/28/13 01:09	
ert-amyl methyl ether	4.3		4.3			₽	08/23/13 16:13	08/28/13 01:09	
ert-Butyl alcohol	4.3		4.3		ug/Kg	 ф	08/23/13 16:13	08/28/13 01:09	
,1,2,2-Tetrachloroethane	4.3		4.3		ug/Kg	₩	08/23/13 16:13	08/28/13 01:09	
etrachloroethene	4.3		4.3		ug/Kg ug/Kg	₩	08/23/13 16:13	08/28/13 01:09	
oluene	4.3		4.3		ug/Kg		08/23/13 16:13	08/28/13 01:09	
rans-1,2-Dichloroethene	4.3		4.3		ug/Kg ug/Kg	т Ф	08/23/13 16:13	08/28/13 01:09	
	4.3				ug/Kg ug/Kg	т Ф			
rans-1,3-Dichloropropene			4.3			· · · · · · · · · · · · · · · · · · ·	08/23/13 16:13	08/28/13 01:09 08/28/13 01:09	
,2,4-Trichlorobenzene	4.3		4.3		ug/Kg		08/23/13 16:13		
,1,1-Trichloroethane	4.3		4.3		ug/Kg	<b>‡</b>	08/23/13 16:13	08/28/13 01:09	
I,1,2-Trichloroethane Frichloroethene	4.3		4.3		ug/Kg ug/Kg	 	08/23/13 16:13 08/23/13 16:13	08/28/13 01:09 08/28/13 01:09	

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB02-05 (7.0-8.0)

Lab Sample ID: 680-93445-20

Date Collected: 08/20/13 15:00 Matrix: Solid
Date Received: 08/21/13 10:07 Percent Solids: 82.8

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichlorofluoromethane	4.3	U	4.3	0.82	ug/Kg	₩	08/23/13 16:13	08/28/13 01:09	1
1,1,2-Trichloro-1,2,2-trifluoroethane	4.3	U	4.3	1.7	ug/Kg	₩	08/23/13 16:13	08/28/13 01:09	1
Vinyl chloride	4.3	U	4.3	0.80	ug/Kg	₽	08/23/13 16:13	08/28/13 01:09	1
Xylenes, Total	8.6	U	8.6	1.6	ug/Kg	₽	08/23/13 16:13	08/28/13 01:09	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	98		72 - 122				08/23/13 16:13	08/28/13 01:09	1
Dibromofluoromethane	100		79 - 123				08/23/13 16:13	08/28/13 01:09	1
Toluene-d8 (Surr)	96		80 - 120				08/23/13 16:13	08/28/13 01:09	

Toluene-d8 (Surr)	96		80 - 120				08/23/13 16:13	08/28/13 01:09	1
Method: 8270D - Semivolatile (	Organic Compou	nds (GC/M	S)						
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzaldehyde	390	U	390	69	ug/Kg	₽	08/23/13 13:40	09/03/13 16:04	1
Phenol	390	U	390	40	ug/Kg	₩	08/23/13 13:40	09/03/13 16:04	1
Bis(2-chloroethyl)ether	390	U	390	53	ug/Kg	₽	08/23/13 13:40	09/03/13 16:04	1
2-Chlorophenol	390	U	390	47	ug/Kg	₽	08/23/13 13:40	09/03/13 16:04	1
2-Methylphenol	390	U	390	32	ug/Kg	₽	08/23/13 13:40	09/03/13 16:04	1
bis (2-chloroisopropyl) ether	390	U	390	36	ug/Kg	₩	08/23/13 13:40	09/03/13 16:04	1
Acetophenone	390	U	390	33	ug/Kg	₽	08/23/13 13:40	09/03/13 16:04	1
3 & 4 Methylphenol	390	U	390	51	ug/Kg	₩	08/23/13 13:40	09/03/13 16:04	1
N-Nitrosodi-n-propylamine	390	U	390	38	ug/Kg	₩	08/23/13 13:40	09/03/13 16:04	1
Hexachloroethane	390	U	390	33	ug/Kg	*	08/23/13 13:40	09/03/13 16:04	1
Nitrobenzene	390	U	390	31	ug/Kg	₽	08/23/13 13:40	09/03/13 16:04	1
Isophorone	390	U	390	39	ug/Kg	₽	08/23/13 13:40	09/03/13 16:04	1
2-Nitrophenol	390	U	390	49	ug/Kg	₽	08/23/13 13:40	09/03/13 16:04	1
2,4-Dimethylphenol	390	U	390	52	ug/Kg	₽	08/23/13 13:40	09/03/13 16:04	1
Bis(2-chloroethoxy)methane	390	U	390	46	ug/Kg	₽	08/23/13 13:40	09/03/13 16:04	1
2,4-Dichlorophenol	390	U	390	42	ug/Kg	\$	08/23/13 13:40	09/03/13 16:04	1
Naphthalene	390	U	390	36	ug/Kg	₽	08/23/13 13:40	09/03/13 16:04	1
4-Chloroaniline	780	U *	780	62	ug/Kg	₩	08/23/13 13:40	09/03/13 16:04	1
Hexachlorobutadiene	390	U	390	43	ug/Kg	\$	08/23/13 13:40	09/03/13 16:04	1
Caprolactam	390	U	390	78	ug/Kg	₩	08/23/13 13:40	09/03/13 16:04	1
4-Chloro-3-methylphenol	390	U	390	42	ug/Kg	₩	08/23/13 13:40	09/03/13 16:04	1
2-Methylnaphthalene	390	U	390	45	ug/Kg	φ	08/23/13 13:40	09/03/13 16:04	1
Hexachlorocyclopentadiene	390	U	390	49	ug/Kg	₩	08/23/13 13:40	09/03/13 16:04	1
2,4,6-Trichlorophenol	390	U	390	34	ug/Kg	₩	08/23/13 13:40	09/03/13 16:04	1
2,4,5-Trichlorophenol	390	U	390	42	ug/Kg	φ.	08/23/13 13:40	09/03/13 16:04	1
1,1'-Biphenyl	880	U	880	880	ug/Kg	₩	08/23/13 13:40	09/03/13 16:04	1
2-Chloronaphthalene	390	U	390	42	ug/Kg	₩	08/23/13 13:40	09/03/13 16:04	1
2-Nitroaniline	2000	U	2000	53	ug/Kg		08/23/13 13:40	09/03/13 16:04	1
Dimethyl phthalate	390	U	390	40	ug/Kg	₽	08/23/13 13:40	09/03/13 16:04	1
2,6-Dinitrotoluene	390	U	390	50	ug/Kg	₽	08/23/13 13:40	09/03/13 16:04	1
Acenaphthylene	390	U	390	43	ug/Kg		08/23/13 13:40	09/03/13 16:04	1
3-Nitroaniline	2000	U	2000	55	ug/Kg	₽	08/23/13 13:40	09/03/13 16:04	1
Acenaphthene	390	U	390	49	ug/Kg	₽	08/23/13 13:40	09/03/13 16:04	1
2,4-Dinitrophenol	2000		2000	990	ug/Kg		08/23/13 13:40	09/03/13 16:04	1
4-Nitrophenol	2000		2000	390	ug/Kg	₩	08/23/13 13:40	09/03/13 16:04	1
Dibenzofuran	390		390	39	ug/Kg	₽	08/23/13 13:40	09/03/13 16:04	1
2,4-Dinitrotoluene	390		390	58	ug/Kg	<sub></sub>	08/23/13 13:40	09/03/13 16:04	1
Diethyl phthalate	390		390		ug/Kg	₩	08/23/13 13:40	09/03/13 16:04	1

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TestAmerica Job ID: 680-93445-1

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB02-05 (7.0-8.0)

Date Collected: 08/20/13 15:00 Date Received: 08/21/13 10:07

Diesel Range Organics [C10-C28]

ORO C24-C40

o-Terphenyl (Surr)

Surrogate

Lab Sample ID: 680-93445-20

Matrix: Solid

Percent Solids: 82.8

4.6-Dinitro-2-methylphenol 2000 U 2000 ug/Kg 0 808/23/13 13:40 09/03/13 16:04 N-Nitrosodiphenylamine 390 U 390 43 ug/Kg 0 808/23/13 13:40 09/03/13 16:04 - Hexanchiorobenzene 390 U 390 46 ug/Kg 0 808/23/13 13:40 09/03/13 16:04 - Hexanchiorobenzene 390 U 390 46 ug/Kg 0 808/23/13 13:40 09/03/13 16:04 - Pentachiorophenol 2000 U 2000 390 ug/Kg 0 808/23/13 13:40 09/03/13 16:04 - Pentachiorophenol 2000 U 2000 390 ug/Kg 0 808/23/13 13:40 09/03/13 16:04 - Pentachiorophenol 390 U 390 32 ug/Kg 0 808/23/13 13:40 09/03/13 16:04 - Pentachiorophenol 390 U 390 32 ug/Kg 0 808/23/13 13:40 09/03/13 16:04 - Pentachiorophenol 390 U 390 30 ug/Kg 0 808/23/13 13:40 09/03/13 16:04 - Pentachiorophenol 390 U 390 30 ug/Kg 0 808/23/13 13:40 09/03/13 16:04 - Pentachiorophenol 390 U 390 36 ug/Kg 0 808/23/13 13:40 09/03/13 16:04 - Dir-butyl pithhalate 390 U 390 36 ug/Kg 0 808/23/13 13:40 09/03/13 16:04 - Dir-butyl pithhalate 390 U 390 38 ug/Kg 0 808/23/13 13:40 09/03/13 16:04 - Pyrene 390 U 390 38 ug/Kg 0 808/23/13 13:40 09/03/13 16:04 - Pyrene 390 U 390 31 ug/Kg 0 808/23/13 13:40 09/03/13 16:04 - Subyl benzyl pithhalate 390 U 390 32 ug/Kg 0 808/23/13 13:40 09/03/13 16:04 - Subyl benzyl pithhalate 390 U 390 32 ug/Kg 0 808/23/13 13:40 09/03/13 16:04 - Subyl benzyl pithhalate 390 U 390 32 ug/Kg 0 808/23/13 13:40 09/03/13 16:04 - Subyl benzyl pithhalate 390 U 390 32 ug/Kg 0 808/23/13 13:40 09/03/13 16:04 - Dir-butyl pithhalate 390 U 390 45 ug/Kg 0 808/23/13 13:40 09/03/13 16:04 - Dir-butyl pithhalate 390 U 390 45 ug/Kg 0 808/23/13 13:40 09/03/13 16:04 - Dir-butyl pithhalate 390 U 390 45 ug/Kg 0 808/23/13 13:40 09/03/13 16:04 - Dir-butyl pithhalate 390 U 390 45 ug/Kg 0 808/23/13 13:40 09/03/13 16:04 - Dir-butyl pithhalate 390 U 390 45 ug/Kg 0 808/23/13 13:40 09/03/13 16:04 - Dir-butyl pithhalate 390 U 390 45 ug/Kg 0 808/23/13 13:40 09/03/13 16:04 - Dir-butyl pithhalate 390 U 390 45 ug/Kg 0 808/23/13 13:40 09/03/13 16:04 - Dir-butyl pithhalate 390 U 390 45 ug/Kg 0 808/23/13 13:40 09/03/13 16:04 - Dir-butyl pithhalate 390 U 390 45 ug/Kg 0 808/23/13	4-Chlorophenyl phenyl ether	300								
4-Nitroaniline 2000 U 2000 58 ug/Kg 0 08/23/13 13:40 08/03/13 16:04 4.6-Dininc-Z-methylphenol 2000 U 2000 200 ug/Kg 0 08/23/13 13:40 09/03/13 16:04 04.6-Dininc-Z-methylphenol 300 U 300 39 ug/Kg 0 08/23/13 13:40 09/03/13 16:04 04-Romophenyl phenyl ether 300 U 300 43 ug/Kg 0 08/23/13 13:40 09/03/13 16:04 04-Romophenyl phenyl ether 300 U 300 U 300 ug/Kg 0 08/23/13 13:40 09/03/13 16:04 04-Romophenyl phenyl ether 300 U 300 U 300 ug/Kg 0 08/23/13 13:40 09/03/13 16:04 04-Romophenyl phenyl ether 300 U 300 U 300 ug/Kg 0 08/23/13 13:40 09/03/13 16:04 04-Romophenyl phenyl ether 300 U 300 ug/Kg 0 08/23/13 13:40 09/03/13 16:04 04-Romophenyl phenyl ether 300 U 300 ug/Kg 0 08/23/13 13:40 09/03/13 16:04 04-Romophenyl phenyl ether 300 U 300 ug/Kg 0 08/23/13 13:40 09/03/13 16:04 04-Romophenyl phenaphrene 300 U 300 ug/Kg 0 08/23/13 13:40 09/03/13 16:04 04-Romophenyl phenaphrene 300 U 300 36 ug/Kg 0 08/23/13 13:40 09/03/13 16:04 04-Romophenyl phenaphrene 300 U 300 36 ug/Kg 0 08/23/13 13:40 09/03/13 16:04 04-Romophenyl phenaphrene 300 U 300 32 ug/Kg 0 08/23/13 13:40 09/03/13 16:04 04-Romophenyl phenaphrene 300 U 300 32 ug/Kg 0 08/23/13 13:40 09/03/13 16:04 04-Romophenyl phenaphrene 300 U 300 32 ug/Kg 0 08/23/13 13:40 09/03/13 16:04 09/13		390	U	390	43	ug/Kg	₩	08/23/13 13:40	09/03/13 16:04	
4.6-Dinitro 2-methylphenol 2000 U 2000 ugikg 0 08/23/13 13:40 09/03/13 16:04 N-Nitrosodiphenylamine 390 U 390 39 ugikg 0 08/23/13 13:40 09/03/13 16:04 A-Bromophenyl phenyl ether 390 U 390 43 ugikg 0 08/23/13 13:40 09/03/13 16:04 Hexachicrobenzene 390 U 390 46 ugikg 0 08/23/13 13:40 09/03/13 16:04 Pentachicrobenzene 390 U 390 ugikg 0 08/23/13 13:40 09/03/13 16:04 Pentachicrophenol 2000 U 2000 390 ugikg 0 08/23/13 13:40 09/03/13 16:04 Pentachicrophenol 390 U 390 32 ugikg 0 08/23/13 13:40 09/03/13 16:04 Pentachicrophenol 390 U 390 32 ugikg 0 08/23/13 13:40 09/03/13 16:04 Pentachicrophenol 390 U 390 30 ugikg 0 08/23/13 13:40 09/03/13 16:04 Pentachicrophenol 390 U 390 30 ugikg 0 08/23/13 13:40 09/03/13 16:04 Pentachicrophenol 390 U 390 36 ugikg 0 08/23/13 13:40 09/03/13 16:04 Di-h-butyl phthalate 390 U 390 36 ugikg 0 08/23/13 13:40 09/03/13 16:04 Di-h-butyl phthalate 390 U 390 38 ugikg 0 08/23/13 13:40 09/03/13 16:04 Di-h-butyl phthalate 390 U 390 31 ugikg 0 08/23/13 13:40 09/03/13 16:04 Di-h-butyl phthalate 390 U 390 31 ugikg 0 08/23/13 13:40 09/03/13 16:04 3.3-Dichiorobenzidine 760 U 760 33 ugikg 0 08/23/13 13:40 09/03/13 16:04 3.3-Dichiorobenzidine 760 U 390 32 ugikg 0 08/23/13 13:40 09/03/13 16:04 Benzo(alganthracene 390 U 390 32 ugikg 0 08/23/13 13:40 09/03/13 16:04 Di-h-otyl phthalate 390 U 390 32 ugikg 0 08/23/13 13:40 09/03/13 16:04 Di-h-otyl phthalate 390 U 390 32 ugikg 0 08/23/13 13:40 09/03/13 16:04 Di-h-otyl phthalate 390 U 390 32 ugikg 0 08/23/13 13:40 09/03/13 16:04 Di-h-otyl phthalate 390 U 390 32 ugikg 0 08/23/13 13:40 09/03/13 16:04 Di-h-otyl phthalate 390 U 390 45 ugikg 0 08/23/13 13:40 09/03/13 16:04 Di-h-otyl phthalate 390 U 390 45 ugikg 0 08/23/13 13:40 09/03/13 16:04 Di-h-otyl phthalate 390 U 390 45 ugikg 0 08/23/13 13:40 09/03/13 16:04 Di-h-otyl phthalate 390 U 390 45 ugikg 0 08/23/13 13:40 09/03/13 16:04 Di-h-otyl phthalate 390 U 390 45 ugikg 0 08/23/13 13:40 09/03/13 16:04 Di-h-otyl phthalate 390 U 390 390 45 ugikg 0 08/23/13 13:40 09/03/13 16:04 Di-h-otyl phthalate 390 U 390 390 45 ugikg 0		390	U	390	52	ug/Kg	\$	08/23/13 13:40	09/03/13 16:04	1
N-Nitrosodiphenylamine 390 U 390 39 ug/Kg 0 08/23/13 13.40 09/03/13 16.04 4-Bromophenyl phenyl ether 390 U 390 43 ug/Kg 0 08/23/13 13.40 09/03/13 16.04 4-Bromophenyl phenyl ether 390 U 390 46 ug/Kg 0 08/23/13 13.40 09/03/13 16.04 Alrazine 390 U 390 27 ug/Kg 0 08/23/13 13.40 09/03/13 16.04 Pentachiorophenol 2000 U 2000 390 ug/Kg 0 08/23/13 13.40 09/03/13 16.04 Pentachiorophenol 2000 U 390 ug/Kg 0 08/23/13 13.40 09/03/13 16.04 Pentachiorophenol 2000 U 390 ug/Kg 0 08/23/13 13.40 09/03/13 16.04 Alrazine 390 U 390 32 ug/Kg 0 08/23/13 13.40 09/03/13 16.04 Carbazole 390 U 390 30 ug/Kg 0 08/23/13 13.40 09/03/13 16.04 Carbazole 390 U 390 36 ug/Kg 0 08/23/13 13.40 09/03/13 16.04 Din-butyl phthalate 390 U 390 36 ug/Kg 0 08/23/13 13.40 09/03/13 16.04 Din-butyl phthalate 390 U 390 38 ug/Kg 0 08/23/13 13.40 09/03/13 16.04 Din-butyl phthalate 390 U 390 32 ug/Kg 0 08/23/13 13.40 09/03/13 16.04 Din-butyl phthalate 390 U 390 31 ug/Kg 0 08/23/13 13.40 09/03/13 16.04 Din-butyl phthalate 390 U 390 31 ug/Kg 0 08/23/13 13.40 09/03/13 16.04 Din-butyl phthalate 390 U 390 31 ug/Kg 0 08/23/13 13.40 09/03/13 16.04 Din-butyl phthalate 390 U 390 31 ug/Kg 0 08/23/13 13.40 09/03/13 16.04 Din-butyl phthalate 390 U 390 31 ug/Kg 0 08/23/13 13.40 09/03/13 16.04 Din-butyl phthalate 390 U 390 32 ug/Kg 0 08/23/13 13.40 09/03/13 16.04 Din-butyl phthalate 390 U 390 32 ug/Kg 0 08/23/13 13.40 09/03/13 16.04 Din-butyl phthalate 390 U 390 34 ug/Kg 0 08/23/13 13.40 09/03/13 16.04 Din-butyl phthalate 390 U 390 34 ug/Kg 0 08/23/13 13.40 09/03/13 16.04 Din-butyl phthalate 390 U 390 30 34 ug/Kg 0 08/23/13 13.40 09/03/13 16.04 Din-butyl phthalate 390 U 390 30 34 ug/Kg 0 08/23/13 13.40 09/03/13 16.04 Din-butyl phthalate 390 U 390 30 34 ug/Kg 0 08/23/13 13.40 09/03/13 16.04 Din-butyl phthalate 390 U 390 30 34 ug/Kg 0 08/23/13 13.40 09/03/13 16.04 Din-butyl phthalate 390 U 390 30 34 ug/Kg 0 08/23/13 13.40 09/03/13 16.04 Din-butyl phthalate 390 U 390 30 30 ug/Kg 0 08/23/13 13.40 09/03/13 16.04 Din-butyl phthalate 390 U 390 30 30 ug/Kg 0 08/23/13 13.40 09/03/13 16.0	4-Nitroaniline	2000	U	2000	58	ug/Kg	₽	08/23/13 13:40	09/03/13 16:04	1
4-Bromophenyl phenyl ether         390         U         390         43         ug/kg         □         08/23/13 13:40         09/03/13 16:04           Hexachiorobenzene         390         U         390         27         ug/kg         □         08/23/13 13:40         09/03/13 16:04           Pentachiorophenol         2000         U         390         27         ug/kg         □         08/23/13 13:40         09/03/13 16:04           Phenanthrene         390         U         390         32         ug/kg         □         08/23/13 13:40         09/03/13 16:04           Anthracene         390         U         390         36         ug/kg         □         08/23/13 13:40         09/03/13 16:04           Carbazole         390         U         390         36         ug/kg         □         08/23/13 13:40         09/03/13 16:04           Di-horbyl phthalate         390         U         390         38         ug/kg         □         08/23/13 13:40         09/03/13 16:04           Benzolajanthracene         390         U         390         31         ug/kg         □         08/23/13 13:40         09/03/13 16:04           Benzolajanthracene         390         U         390         31 </td <td>4,6-Dinitro-2-methylphenol</td> <td>2000</td> <td>U</td> <td>2000</td> <td>200</td> <td>ug/Kg</td> <td>₽</td> <td>08/23/13 13:40</td> <td>09/03/13 16:04</td> <td>1</td>	4,6-Dinitro-2-methylphenol	2000	U	2000	200	ug/Kg	₽	08/23/13 13:40	09/03/13 16:04	1
Hexachlorobenzene   390   U   390   46   ug/Kg   0   08/23/13 13:40   09/03/13 16:04	N-Nitrosodiphenylamine	390	U	390	39	ug/Kg	₽	08/23/13 13:40	09/03/13 16:04	1
Arrazine   390   U   390   27   ug/kg   0   08/23/13 13.40   09/03/13 16.04   Pentachirociphenol   2000   U   2000   390   ug/kg   0   08/23/13 13.40   09/03/13 16.04   Pentachirociphenol   2000   U   390   30   ug/kg   0   08/23/13 13.40   09/03/13 16.04   Pentachirociphenol   390   U   390   30   ug/kg   0   08/23/13 13.40   09/03/13 16.04   Pentachirociphenol   390   U   390   36   ug/kg   0   08/23/13 13.40   09/03/13 16.04   Pentachirociphenol   390   U   390   38   ug/kg   0   08/23/13 13.40   09/03/13 16.04   Pertachirociphenol   390   U   390   32   ug/kg   0   08/23/13 13.40   09/03/13 16.04   Pertachirociphenol   390   U   390   32   ug/kg   0   08/23/13 13.40   09/03/13 16.04   Pertachirociphenol   390   U   390   32   ug/kg   0   08/23/13 13.40   09/03/13 16.04   Pentachirociphenol   390   U   390   32   ug/kg   0   08/23/13 13.40   09/03/13 16.04   Pentachirociphenol   390   U   390   32   ug/kg   0   08/23/13 13.40   09/03/13 16.04   Pentachirociphenol   390   U   390   32   ug/kg   0   08/23/13 13.40   09/03/13 16.04   Pentachirociphenol   390   U   390   32   ug/kg   0   08/23/13 13.40   09/03/13 16.04   Pentachirociphenol   390   U   390   34   ug/kg   0   08/23/13 13.40   09/03/13 16.04   Pentachirociphenol   390   U   390   34   ug/kg   0   08/23/13 13.40   09/03/13 16.04   Pentachirociphenol   390   U   390   34   ug/kg   0   08/23/13 13.40   09/03/13 16.04   Pentachirociphenol   390   U   390   390   390   390/23/13 13.40   09/03/13 16.04   Pentachirociphenol   390   U   390   390   390/23   ug/kg   0   08/23/13 13.40   09/03/13 16.04   Pentachirociphenol   390   U   390   390   390/23   ug/kg   0   08/23/13 13.40   09/03/13 16.04   Pentachirociphenol   390   U   390   390/23   ug/kg   0   08/23/13 13.40   09/03/13 16.04   Pentachirociphenol   390   U   390   390/23   ug/kg   0   08/23/13 13.40   09/03/13 16.04   Pentachirociphenol   390   U   390   390/23   ug/kg   0   08/23/13 13.40   09/03/13 16.04   Pentachirociphenol   390   U   390   390/23   ug/kg   0   08/23/13 13.40   09/03/13 16	4-Bromophenyl phenyl ether	390	U	390	43	ug/Kg	₽	08/23/13 13:40	09/03/13 16:04	1
Pentachtorophenol   2000   U   2000   390   ug/Kg   0   08/23/13 13:40   09/03/13 16:04	Hexachlorobenzene	390	U	390	46	ug/Kg	₽	08/23/13 13:40	09/03/13 16:04	1
Phenanthrene   390   U   390   32   ug/Kg   0   08/23/13 13:40   09/03/13 16:04   Anthracene   390   U   390   30   ug/Kg   0   08/23/13 13:40   09/03/13 16:04   Carbazole   390   U   390   36   ug/Kg   0   08/23/13 13:40   09/03/13 16:04   Phenbutyl phthalate   390   U   390   36   ug/Kg   0   08/23/13 13:40   09/03/13 16:04   Phenbutyl phthalate   390   U   390   38   ug/Kg   0   08/23/13 13:40   09/03/13 16:04   Phenbutyl phthalate   390   U   390   31   ug/Kg   0   08/23/13 13:40   09/03/13 16:04   Phenbutyl phthalate   390   U   390   31   ug/Kg   0   08/23/13 13:40   09/03/13 16:04   Phenbutyl phthalate   390   U   390   31   ug/Kg   0   08/23/13 13:40   09/03/13 16:04   Phenbutyl phthalate   390   U   390   32   ug/Kg   0   08/23/13 13:40   09/03/13 16:04   Phenbutyl phthalate   390   U   390   32   ug/Kg   0   08/23/13 13:40   09/03/13 16:04   Phenbutyl phthalate   390   U   390   34   ug/Kg   0   08/23/13 13:40   09/03/13 16:04   Phenbutyl phthalate   390   U   390   34   ug/Kg   0   08/23/13 13:40   09/03/13 16:04   Phenbutyl phthalate   390   U   390   34   ug/Kg   0   08/23/13 13:40   09/03/13 16:04   Phenbutyl phthalate   390   U   390   45   ug/Kg   0   08/23/13 13:40   09/03/13 16:04   Phenbutyl phthalate   390   U   390   45   ug/Kg   0   08/23/13 13:40   09/03/13 16:04   Phenbutyl phthalate   390   U   390   45   ug/Kg   0   08/23/13 13:40   09/03/13 16:04   Phenbutyl phthalate   390   U   390   45   ug/Kg   0   08/23/13 13:40   09/03/13 16:04   Phenbutyl phthalate   390   U   390   45   ug/Kg   0   08/23/13 13:40   09/03/13 16:04   Phenbutyl phthalate   390   U   390   45   ug/Kg   0   08/23/13 13:40   09/03/13 16:04   Phenbutyl   09/03/13 16:04   Ph	Atrazine	390	U	390	27	ug/Kg	₽	08/23/13 13:40	09/03/13 16:04	1
Anthracene 390 U 390 36 ug/Kg 0 88/23/13 13:40 09/03/13 16:04   Property phthalate 390 U 390 36 ug/Kg 0 88/23/13 13:40 09/03/13 16:04   Property phthalate 390 U 390 36 ug/Kg 0 88/23/13 13:40 09/03/13 16:04   Propere 390 U 390 36 ug/Kg 0 88/23/13 13:40 09/03/13 16:04   Propere 390 U 390 36 ug/Kg 0 88/23/13 13:40 09/03/13 16:04   Propere 390 U 390 31 ug/Kg 0 88/23/13 13:40 09/03/13 16:04   Butyl benzyl phthalate 390 U 390 31 ug/Kg 0 88/23/13 13:40 09/03/13 16:04   Butyl benzyl phthalate 390 U 390 32 ug/Kg 0 88/23/13 13:40 09/03/13 16:04   Benzo[a]anthracene 390 U 390 32 ug/Kg 0 88/23/13 13:40 09/03/13 16:04   Benzo[a]anthracene 390 U 390 32 ug/Kg 0 88/23/13 13:40 09/03/13 16:04   Benzo[a]anthracene 390 U 390 32 ug/Kg 0 88/23/13 13:40 09/03/13 16:04   Benzo[a]inthracene 390 U 390 34 ug/Kg 0 88/23/13 13:40 09/03/13 16:04   Di-n-octyl phthalate 390 U 390 34 ug/Kg 0 88/23/13 13:40 09/03/13 16:04   Benzo[a]inthracene 390 U 390 45 ug/Kg 0 88/23/13 13:40 09/03/13 16:04   Benzo[a]inthracene 390 U 390 45 ug/Kg 0 88/23/13 13:40 09/03/13 16:04   Benzo[a]inthracene 390 U 390 62 ug/Kg 0 88/23/13 13:40 09/03/13 16:04   Benzo[a]inthracene 390 U 390 62 ug/Kg 0 88/23/13 13:40 09/03/13 16:04   Benzo[a]inthracene 390 U 390 86 ug/Kg 0 88/23/13 13:40 09/03/13 16:04   Benzo[a]inthracene 390 U 390 86 ug/Kg 0 88/23/13 13:40 09/03/13 16:04   Benzo[a]inthracene 390 U 390 86 ug/Kg 0 88/23/13 13:40 09/03/13 16:04   Benzo[a]inthracene 390 U 390 86 ug/Kg 0 88/23/13 13:40 09/03/13 16:04   Benzo[a]inthracene 390 U 390 86 ug/Kg 0 88/23/13 13:40 09/03/13 16:04   Benzo[a]inthracene 390 U 390 86 ug/Kg 0 88/23/13 13:40 09/03/13 16:04   Benzo[a]inthracene 390 U 390 86 ug/Kg 0 88/23/13 13:40 09/03/13 16:04   Benzo[a]inthracene 390 U 390 86 ug/Kg 0 88/23/13 13:40 09/03/13 16:04   Benzo[a]inthracene 390 U 390 86 ug/Kg 0 88/23/13 13:40 09/03/13 16:04   Benzo[a]inthracene 390 U 390 86 ug/Kg 0 88/23/13 13:40 09/03/13 16:04   Benzo[a]inthracene 390 U 390 86 ug/Kg 0 88/23/13 13:40 09/03/13 16:04   Benzo[a]inthracene 390 U 390 86 ug/Kg 0 88/23/13 13:40 09/03/	Pentachlorophenol	2000	U	2000	390	ug/Kg	₽	08/23/13 13:40	09/03/13 16:04	1
Carbazole   390 U   390 36 Ug/Kg   08/23/13 13:40   09/03/13 16:04	Phenanthrene	390	U	390	32	ug/Kg	₽	08/23/13 13:40	09/03/13 16:04	1
Di-n-butyl phthalate   390   U   390   36   ug/kg   0   08/23/13 13:40   09/03/13 16:04	Anthracene	390	U	390	30	ug/Kg	₽	08/23/13 13:40	09/03/13 16:04	1
Plucianthene   390   U 390   38   ug/Kg   0   08/23/13 13:40   09/03/13 16:04	Carbazole	390	U	390	36	ug/Kg	₽	08/23/13 13:40	09/03/13 16:04	1
Pyrene   390   U   390   32   Ug/Kg   0   08/23/13 13:40   09/03/13 16:04	Di-n-butyl phthalate	390	U	390	36	ug/Kg	₽	08/23/13 13:40	09/03/13 16:04	1
Butyl benzyl phthalate   390   U   390   31   ug/Kg   0   08/23/13 13:40   09/03/13 16:04	Fluoranthene	390	U	390	38	ug/Kg	₩	08/23/13 13:40	09/03/13 16:04	1
33-Dichlorobenzidine   780 U   780   33 ug/Kg   0 08/23/13 13:40   09/03/13 16:04	Pyrene	390	U	390	32	ug/Kg	₩	08/23/13 13:40	09/03/13 16:04	1
Benzo[a]anthracene   390 U   390   32   ug/Kg   08/23/13 13:40   09/03/13 16:04	Butyl benzyl phthalate	390	U	390	31	ug/Kg	₽	08/23/13 13:40	09/03/13 16:04	1
Chrysene   390   U 390   25   ug/Kg   0   08/23/13 13:40   09/03/13 16:04	3,3'-Dichlorobenzidine	780	U	780	33	ug/Kg	\$	08/23/13 13:40	09/03/13 16:04	1
Bis(2-ethylhexyl) phthalate   390   U   390   34   ug/Kg   0   08/23/13 13:40   09/03/13 16:04	Benzo[a]anthracene	390	U	390	32	ug/Kg	☼	08/23/13 13:40	09/03/13 16:04	1
Din-octyl phthalate   390   U   390   34   ug/Kg   08/23/13 13:40   09/03/13 16:04	Chrysene	390	U	390	25	ug/Kg	₽	08/23/13 13:40	09/03/13 16:04	1
Benzo[b]fluoranthene   390 U 390 45 ug/Kg	Bis(2-ethylhexyl) phthalate	390	U	390	34	ug/Kg		08/23/13 13:40	09/03/13 16:04	1
Benzo[k]filoranthene   390 U   390 77 ug/kg   08/23/13 13:40 09/03/13 16:04     Benzo[a]pyrene   390 U   390 62 ug/kg   08/23/13 13:40 09/03/13 16:04     Indeno[1,2,3-cd]pyrene   390 U   390 33 ug/kg   08/23/13 13:40 09/03/13 16:04     Dibenz(a,h)anthracene   390 U   390 46 ug/kg   08/23/13 13:40 09/03/13 16:04     Benzo[g,h,i]perylene   390 U   390 46 ug/kg   08/23/13 13:40 09/03/13 16:04     Benzo[g,h,i]perylene   390 U   390 26 ug/kg   08/23/13 13:40 09/03/13 16:04     Benzo[g,h,i]perylene   390 U   390 26 ug/kg   08/23/13 13:40 09/03/13 16:04     Surrogate   %Recovery   Qualifier   Limits   Prepared   Analyzed   Dilution     Nitrobenzene-d5 (Surr)   76 46-130   08/23/13 13:40 09/03/13 16:04     2-Fluorobiphenyl   80 58-130   08/23/13 13:40 09/03/13 16:04     Terphenyl-d14 (Surr)   77 60-130   08/23/13 13:40 09/03/13 16:04     Phenol-d5 (Surr)   74 49-130   08/23/13 13:40 09/03/13 16:04     2-Fluorophenol (Surr)   91 40-130   08/23/13 13:40 09/03/13 16:04     2-Fluorophenol (Surr)   91 40-130   08/23/13 13:40 09/03/13 16:04     2-Fluorophenol (Surr)   86 58-130   08/23/13 13:40 09/03/13 16:04     Method: 8015C - Nonhalogenated Organics using GC/FID -Modified (Gasoline Range Organics)     Analyte   Result   Qualifier   RL   MDL   Unit   D   Prepared   Analyzed   Dilution     Gasoline Range Organics (GRO)   270 U 270 21 ug/kg   08/22/13 11:07     Surrogate   %Recovery   Qualifier   Limits   Limits   Prepared   Analyzed   Dilution   Dilution   Dilution   D   Prepared   Analyzed   Dilution   D   Prepar	Di-n-octyl phthalate	390	U	390	34	ug/Kg	₽	08/23/13 13:40	09/03/13 16:04	1
Benzo[a]pyrene   390   U   390   62   ug/Kg   08/23/13 13:40   09/03/13 16:04     Indeno[1,2,3-cd]pyrene   390   U   390   33   ug/Kg   08/23/13 13:40   09/03/13 16:04     Dibenzo[a,h,inthracene   390   U   390   46   ug/Kg   08/23/13 13:40   09/03/13 16:04     Benzo[g,h,inthracene   390   U   390   26   ug/Kg   08/23/13 13:40   09/03/13 16:04     Benzo[g,h,inthracene   390   U   390   26   ug/Kg   08/23/13 13:40   09/03/13 16:04     Benzo[g,h,interpolene   390   U   390   26   ug/Kg   08/23/13 13:40   09/03/13 16:04     Benzo[g,h,interpolene   390   U   390   26   ug/Kg   08/23/13 13:40   09/03/13 16:04     Benzo[g,h,interpolene   390   U   390   26   ug/Kg   08/23/13 13:40   09/03/13 16:04     Benzo[g,h,interpolene   390   U   390   26   ug/Kg   08/23/13 13:40   09/03/13 16:04     Benzo[g,h,interpolene   390   U   390   26   ug/Kg   08/23/13 13:40   09/03/13 16:04     Benzo[g,h,interpolene   390   U   390   26   ug/Kg   08/23/13 13:40   09/03/13 16:04     Benzo[g,h,interpolene   390   U   390   26   ug/Kg   08/23/13 13:40   09/03/13 16:04     Benzo[g,h,interpolene   390   U   390   26   ug/Kg   08/23/13 13:40   09/03/13 16:04     Benzo[g,h,interpolene   390   U   390   26   ug/Kg   08/23/13 13:40   09/03/13 16:04     Benzo[g,h,interpolene   390   U   390   26   ug/Kg   08/23/13 13:40   09/03/13 16:04     Benzo[g,h,interpolene   390   U   390   26   ug/Kg   08/23/13 13:40   09/03/13 16:04     Benzo[g,h,interpolene   390   U   390   26   ug/Kg   08/23/13 13:40   09/03/13 16:04     Benzo[g,h,interpolene   390   U   390   26   ug/Kg   08/23/13 13:40   09/03/13 16:04     Benzo[g,h,interpolene   390   U   390   390   26   ug/Kg   08/23/13 13:40   09/03/13 16:04     Benzo[g,h,interpolene   390   U   390   39	Benzo[b]fluoranthene	390	U	390	45	ug/Kg	₽	08/23/13 13:40	09/03/13 16:04	1
Dibenz(a,h)anthracene   390 U   390   33 ug/Kg   608/23/13 13:40   09/03/13 16:04	Benzo[k]fluoranthene	390	U	390	77	ug/Kg		08/23/13 13:40	09/03/13 16:04	1
Dibenz(a,h)anthracene   390   U   390   46   ug/Kg   26   ug/Kg   27   08/23/13   13:40   09/03/13   16:04	Benzo[a]pyrene	390	U	390	62	ug/Kg	₽	08/23/13 13:40	09/03/13 16:04	1
Surrogate   %Recovery   Qualifier   Limits   Prepared   Analyzed   Dil I	Indeno[1,2,3-cd]pyrene	390	U	390	33	ug/Kg	☼	08/23/13 13:40	09/03/13 16:04	1
Surrogate   %Recovery   Qualifier   Limits   Prepared   Analyzed   Dil II	Dibenz(a,h)anthracene	390	U	390	46	ug/Kg	\$	08/23/13 13:40	09/03/13 16:04	1
Nitrobenzene-d5 (Surr)   76	Benzo[g,h,i]perylene	390	U	390	26	ug/Kg	\$	08/23/13 13:40	09/03/13 16:04	1
2-Fluorobiphenyl 80 58 - 130 08/23/13 13:40 09/03/13 16:04 Terphenyl-d14 (Surr) 77 60 - 130 08/23/13 13:40 09/03/13 16:04 Phenol-d5 (Surr) 74 49 - 130 08/23/13 13:40 09/03/13 16:04 2-Fluorophenol (Surr) 91 40 - 130 08/23/13 13:40 09/03/13 16:04 2,4,6-Tribromophenol (Surr) 86 58 - 130 08/23/13 13:40 09/03/13 16:04  Method: 8015C - Nonhalogenated Organics using GC/FID -Modified (Gasoline Range Organics) Analyte Result Qualifier RL MDL Unit D Prepared Analyzed Dil I Gasoline Range Organics (GRO) 270 U 270 21 ug/Kg 08/22/13 11:07 08/26/13 14:50 -C6-C10  Surrogate %Recovery Qualifier Limits Prepared Analyzed Dil I	Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Terphenyl-d14 (Surr)	Nitrobenzene-d5 (Surr)	76		46 - 130				08/23/13 13:40	09/03/13 16:04	1
Phenol-d5 (Surr)         74         49 - 130         08/23/13 13:40         09/03/13 16:04           2-Fluorophenol (Surr)         91         40 - 130         08/23/13 13:40         09/03/13 16:04           2,4,6-Tribromophenol (Surr)         86         58 - 130         08/23/13 13:40         09/03/13 16:04           Method: 8015C - Nonhalogenated Organics using GC/FID -Modified (Gasoline Range Organics)         Name of the control of the contr	2-Fluorobiphenyl	80		58 - 130				08/23/13 13:40	09/03/13 16:04	1
2-Fluorophenol (Surr) 91 40 - 130 08/23/13 13:40 09/03/13 16:04 2,4,6-Tribromophenol (Surr) 86 58 - 130 08/23/13 13:40 09/03/13 16:04  Method: 8015C - Nonhalogenated Organics using GC/FID -Modified (Gasoline Range Organics) Analyte Result Qualifier RL MDL Unit D Prepared Analyzed Dil II Gasoline Range Organics (GRO) 270 U 270 21 ug/Kg 08/22/13 11:07 08/26/13 14:50 -C6-C10  Surrogate %Recovery Qualifier Limits Prepared Analyzed Dil II	Terphenyl-d14 (Surr)	77		60 - 130				08/23/13 13:40	09/03/13 16:04	1
2,4,6-Tribromophenol (Surr)       86       58 - 130       08/23/13 13:40       09/03/13 16:04         Method: 8015C - Nonhalogenated Organics using GC/FID -Modified (Gasoline Range Organics)         Analyte       Result       Qualifier       RL       MDL       Unit       D       Prepared       Analyzed       Dil I         Gasoline Range Organics (GRO)       270       270       21       ug/Kg       08/22/13 11:07       08/26/13 14:50         -C6-C10       -C6-C10       WRecovery       Qualifier       Limits       Prepared       Analyzed       Dil I	Phenol-d5 (Surr)	74		49 - 130				08/23/13 13:40	09/03/13 16:04	1
Method: 8015C - Nonhalogenated Organics using GC/FID -Modified (Gasoline Range Organics)         Analyte       Result       Qualifier       RL       MDL Unit       D       Prepared       Analyzed       Dil I         Gasoline Range Organics (GRO) -C6-C10       270       U       270       21       ug/Kg       08/22/13 11:07       08/26/13 14:50         Surrogate       %Recovery       Qualifier       Limits       Prepared       Analyzed       Dil I	2-Fluorophenol (Surr)	91		40 - 130				08/23/13 13:40	09/03/13 16:04	1
Analyte Result Qualifier RL MDL Unit D Prepared Analyzed Dil I Gasoline Range Organics (GRO) 270 U 270 21 ug/Kg 08/22/13 11:07 08/26/13 14:50 -C6-C10  Surrogate %Recovery Qualifier Limits Prepared Analyzed Dil I	2,4,6-Tribromophenol (Surr)	86		58 - 130				08/23/13 13:40	09/03/13 16:04	1
Analyte Result Qualifier RL MDL Unit D Prepared Analyzed Dil I Gasoline Range Organics (GRO) 270 U 270 21 ug/Kg © 08/22/13 11:07 08/26/13 14:50 -C6-C10  Surrogate %Recovery Qualifier Limits Prepared Analyzed Dil I	Method: 8015C - Nonhalogena	ted Organics usi	ng GC/FID	-Modified (Gaso	line Ran	ge Organ	ics)			
-C6-C10  Surrogate		Result	Qualifier	RL	MDL	Unit	D	-		Dil Fac
		270	U	270	21	ug/Kg	₽	08/22/13 11:07	08/26/13 14:50	1
	Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
	a,a,a-Trifluorotoluene			70 - 131					08/26/13 14:50	
Method: 8015C - Nonhalogenated Organics using GC/FID -Modified (Diesel Range Organics)	Analyte	Pacult	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil F

TestAmerica Savannah

08/30/13 04:54

08/30/13 04:54

Analyzed

08/30/13 04:54

08/28/13 11:44

08/28/13 11:44

Prepared

08/28/13 11:44

5900

5900

Limits

50 - 150

1700 ug/Kg

1700 ug/Kg

5900 U

3000 JB

%Recovery Qualifier

67

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB02-06 (0.5-1.5) Lab Sample ID: 680-93445-21

Date Collected: 08/20/13 15:25 Matrix: Solid Date Received: 08/21/13 10:07

Percent Solids: 62.3

TestAmerica Job ID: 680-93445-1

Analyte	•	(GC/MS) Qualifier	RL	MDI	Unit	D	Prepared	Analyzed	Dil Fa
Acetone	- <del>Result</del> 27	U	27	8.0	ug/Kg	— <del>¤</del>	08/23/13 16:13	08/28/13 01:35	
Benzene	5.5	U	5.5				08/23/13 16:13	08/28/13 01:35	
Bromodichloromethane	5.5		5.5		ug/Kg	₽	08/23/13 16:13	08/28/13 01:35	
Bromoform	5.5		5.5		ug/Kg	· · · · · · · · · · · · · · · ·	08/23/13 16:13	08/28/13 01:35	
Bromomethane	5.5		5.5		ug/Kg ug/Kg		08/23/13 16:13	08/28/13 01:35	
Carbon disulfide	5.5		5.5		ug/Kg ug/Kg	₩	08/23/13 16:13	08/28/13 01:35	
Carbon tetrachloride	5.5		5.5		ug/Kg ug/Kg	· · · · · · · · · · · · · · · ·	08/23/13 16:13	08/28/13 01:35	
Chlorobenzene	5.5		5.5			₩	08/23/13 16:13	08/28/13 01:35	
Chloroethane	5.5		5.5	0.57 2.1			08/23/13 16:13		
Chloroform	5.5		5.5		ug/Kg ug/Kg		08/23/13 16:13	08/28/13 01:35 08/28/13 01:35	
						<b>₩</b>			
Chloromethane	5.5		5.5	1.1	0 0		08/23/13 16:13	08/28/13 01:35	
cis-1,2-Dichloroethene	5.5		5.5	0.83		<u></u> .	08/23/13 16:13	08/28/13 01:35	
cis-1,3-Dichloropropene	5.5		5.5		ug/Kg	<b>\$</b>	08/23/13 16:13	08/28/13 01:35	
Cyclohexane	5.5		5.5	1.0	ug/Kg	<b>‡</b>	08/23/13 16:13	08/28/13 01:35	
Dibromochloromethane	5.5		5.5		ug/Kg	J	08/23/13 16:13	08/28/13 01:35	
1,2-Dibromo-3-Chloropropane	5.5		5.5		ug/Kg	₩	08/23/13 16:13	08/28/13 01:35	
1,2-Dichlorobenzene	5.5		5.5	0.78	ug/Kg	₩.	08/23/13 16:13	08/28/13 01:35	
1,3-Dichlorobenzene	5.5	U	5.5	1.0	ug/Kg		08/23/13 16:13	08/28/13 01:35	
1,4-Dichlorobenzene	5.5	U	5.5	0.90	ug/Kg	₽	08/23/13 16:13	08/28/13 01:35	
Dichlorodifluoromethane	5.5	U	5.5	1.4	ug/Kg	₩	08/23/13 16:13	08/28/13 01:35	
1,1-Dichloroethane	5.5	U	5.5	0.91	ug/Kg	₽	08/23/13 16:13	08/28/13 01:35	
1,2-Dichloroethane	5.5	U	5.5	0.90	ug/Kg	₽	08/23/13 16:13	08/28/13 01:35	
1,1-Dichloroethene	5.5	U	5.5	0.82	ug/Kg	₽	08/23/13 16:13	08/28/13 01:35	
1,2-Dichloropropane	5.5	U	5.5	0.81	ug/Kg	₽	08/23/13 16:13	08/28/13 01:35	
Diisopropyl ether	5.5	U	5.5	0.60	ug/Kg	₽	08/23/13 16:13	08/28/13 01:35	
Ethylbenzene	5.5	U	5.5	0.67	ug/Kg	₩	08/23/13 16:13	08/28/13 01:35	
Ethylene Dibromide	5.5	U	5.5	0.52	ug/Kg	₽	08/23/13 16:13	08/28/13 01:35	
Ethyl tert-butyl ether	5.5	U	5.5	0.61	ug/Kg	₽	08/23/13 16:13	08/28/13 01:35	
2-Hexanone	27	U	27	5.5	ug/Kg	₽	08/23/13 16:13	08/28/13 01:35	
Isopropylbenzene	5.5	U	5.5	0.74	ug/Kg	₽	08/23/13 16:13	08/28/13 01:35	
Methyl acetate	5.5	U	5.5	5.0	ug/Kg		08/23/13 16:13	08/28/13 01:35	
Methylcyclohexane	5.5	U	5.5	0.95	ug/Kg	₽	08/23/13 16:13	08/28/13 01:35	
Methylene Chloride	16	U	16	11	ug/Kg	₽	08/23/13 16:13	08/28/13 01:35	
Methyl Ethyl Ketone	27	U	27	4.5	ug/Kg	ф.	08/23/13 16:13	08/28/13 01:35	
methyl isobutyl ketone	27	U	27	4.4	ug/Kg	₽	08/23/13 16:13	08/28/13 01:35	
Methyl tert-butyl ether	5.5	U	5.5		ug/Kg	₽	08/23/13 16:13	08/28/13 01:35	
Naphthalene	5.5		5.5		ug/Kg	ф	08/23/13 16:13	08/28/13 01:35	
Styrene	5.5		5.5		ug/Kg	₽	08/23/13 16:13	08/28/13 01:35	
Tert-amyl methyl ether	5.5		5.5		ug/Kg	₩	08/23/13 16:13	08/28/13 01:35	
tert-Butyl alcohol	5.5		5.5		ug/Kg		08/23/13 16:13	08/28/13 01:35	
1,1,2,2-Tetrachloroethane	5.5		5.5		ug/Kg ug/Kg	₽	08/23/13 16:13	08/28/13 01:35	
Tetrachloroethene	5.5		5.5		ug/Kg ug/Kg	т Ф	08/23/13 16:13	08/28/13 01:35	
Toluene	5.5		5.5		ug/Kg ug/Kg		08/23/13 16:13	08/28/13 01:35	
	5.5		5.5 5.5		ug/Kg ug/Kg	~ Ф			
trans-1,2-Dichloroethene						₩	08/23/13 16:13	08/28/13 01:35	
trans-1,3-Dichloropropene	5.5		5.5		ug/Kg		08/23/13 16:13	08/28/13 01:35	
1,2,4-Trichlorobenzene	5.5		5.5		ug/Kg	<b>‡</b>	08/23/13 16:13	08/28/13 01:35	
1,1,1-Trichloroethane	5.5		5.5		ug/Kg		08/23/13 16:13	08/28/13 01:35	
1,1,2-Trichloroethane		U	5.5	1 0	ug/Kg	₽	08/23/13 16:13	08/28/13 01:35	

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

Lab Sample ID: 680-93445-21

Client Sample ID: SB02-06 (0.5-1.5) Date Collected: 08/20/13 15:25 Matrix: Solid Date Received: 08/21/13 10:07 Percent Solids: 62.3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichlorofluoromethane	5.5	U	5.5	1.0	ug/Kg	₩	08/23/13 16:13	08/28/13 01:35	1
1,1,2-Trichloro-1,2,2-trifluoroethane	5.5	U	5.5	2.2	ug/Kg	₩	08/23/13 16:13	08/28/13 01:35	1
Vinyl chloride	5.5	U	5.5	1.0	ug/Kg	₽	08/23/13 16:13	08/28/13 01:35	1
Xylenes, Total	11	U	11	2.1	ug/Kg	₩	08/23/13 16:13	08/28/13 01:35	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	98		72 - 122				08/23/13 16:13	08/28/13 01:35	1
Dibromofluoromethane	102		79 - 123				08/23/13 16:13	08/28/13 01:35	1
Toluene-d8 (Surr)	97		80 - 120				08/23/13 16:13	08/28/13 01:35	

10luene-a8 (Surr) - -	97		80 - 120				08/23/13 16:13	08/28/13 01:35	7
Method: 8270D - Semivolatile C Analyte	•	nds (GC/M	S) RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzaldehyde	530	U	530	93	ug/Kg	<u>~</u>	08/23/13 13:40	08/31/13 01:43	1
Phenol	530	U	530	54	ug/Kg	₩	08/23/13 13:40	08/31/13 01:43	1
Bis(2-chloroethyl)ether	530	U	530	72		₩	08/23/13 13:40	08/31/13 01:43	1
2-Chlorophenol	530		530	64	ug/Kg		08/23/13 13:40	08/31/13 01:43	1
2-Methylphenol	530	U	530	43	ug/Kg	₩	08/23/13 13:40	08/31/13 01:43	1
bis (2-chloroisopropyl) ether	530	U	530	48	ug/Kg	₩	08/23/13 13:40	08/31/13 01:43	1
Acetophenone	530		530		ug/Kg		08/23/13 13:40	08/31/13 01:43	1
3 & 4 Methylphenol	530	U	530	69	ug/Kg	₩	08/23/13 13:40	08/31/13 01:43	1
N-Nitrosodi-n-propylamine	530	U	530	51	ug/Kg	₩	08/23/13 13:40	08/31/13 01:43	1
Hexachloroethane	530		530	45	ug/Kg		08/23/13 13:40	08/31/13 01:43	1
Nitrobenzene	530	U	530	42	ug/Kg	₩	08/23/13 13:40	08/31/13 01:43	1
Isophorone	530	U	530			₽	08/23/13 13:40	08/31/13 01:43	1
2-Nitrophenol	530	U	530	66	ug/Kg		08/23/13 13:40	08/31/13 01:43	1
2,4-Dimethylphenol	530	U	530	70	ug/Kg	₩	08/23/13 13:40	08/31/13 01:43	1
Bis(2-chloroethoxy)methane	530	U	530	62		₩	08/23/13 13:40	08/31/13 01:43	1
2,4-Dichlorophenol	530	U	530	56	ug/Kg		08/23/13 13:40	08/31/13 01:43	1
Naphthalene	530	U	530	48	ug/Kg	₽	08/23/13 13:40	08/31/13 01:43	1
4-Chloroaniline	1100	U *	1100	83	ug/Kg	₽	08/23/13 13:40	08/31/13 01:43	1
Hexachlorobutadiene	530		530	58	ug/Kg		08/23/13 13:40	08/31/13 01:43	1
Caprolactam	530	U	530	110	ug/Kg	₽	08/23/13 13:40	08/31/13 01:43	1
4-Chloro-3-methylphenol	530	U	530	56	ug/Kg	₽	08/23/13 13:40	08/31/13 01:43	1
2-Methylnaphthalene	530	U	530	61	ug/Kg	ф.	08/23/13 13:40	08/31/13 01:43	1
Hexachlorocyclopentadiene	530	U	530	66	ug/Kg	₽	08/23/13 13:40	08/31/13 01:43	1
2,4,6-Trichlorophenol	530	U	530	46	ug/Kg	₽	08/23/13 13:40	08/31/13 01:43	1
2,4,5-Trichlorophenol	530	U	530	56	ug/Kg		08/23/13 13:40	08/31/13 01:43	1
1,1'-Biphenyl	1200	U	1200	1200	ug/Kg	₽	08/23/13 13:40	08/31/13 01:43	1
2-Chloronaphthalene	530	U	530	56	ug/Kg	₽	08/23/13 13:40	08/31/13 01:43	1
2-Nitroaniline	2700	U	2700		ug/Kg		08/23/13 13:40	08/31/13 01:43	1
Dimethyl phthalate	530	U	530	54	ug/Kg	₽	08/23/13 13:40	08/31/13 01:43	1
2,6-Dinitrotoluene	530	U	530	67	ug/Kg	₩	08/23/13 13:40	08/31/13 01:43	1
Acenaphthylene	530	U	530	58	ug/Kg		08/23/13 13:40	08/31/13 01:43	1
3-Nitroaniline	2700	U	2700	74	ug/Kg	₽	08/23/13 13:40	08/31/13 01:43	1
Acenaphthene	530	U	530	66	ug/Kg	₽	08/23/13 13:40	08/31/13 01:43	1
2,4-Dinitrophenol	2700	U	2700	1300	ug/Kg		08/23/13 13:40	08/31/13 01:43	1
4-Nitrophenol	2700	U	2700	530	ug/Kg	₩	08/23/13 13:40	08/31/13 01:43	1
Dibenzofuran	530	U	530	53	ug/Kg	₽	08/23/13 13:40	08/31/13 01:43	1
2,4-Dinitrotoluene	530		530	79	ug/Kg		08/23/13 13:40	08/31/13 01:43	1
Diethyl phthalate	530	U	530	59	ug/Kg	₽	08/23/13 13:40	08/31/13 01:43	1

TestAmerica Savannah

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TestAmerica Job ID: 680-93445-1

Client: ARCADIS U.S., Inc.

Date Collected: 08/20/13 15:25

Date Received: 08/21/13 10:07

Diesel Range Organics [C10-C28]

ORO C24-C40

o-Terphenyl (Surr)

Surrogate

Project/Site: CSX C&O Canal Brunswick, MD Client Sample ID: SB02-06 (0.5-1.5)

TestAmerica Job ID: 680-93445-1

Lab Sample ID: 680-93445-21

Matrix: Solid Percent Solids: 62.3

С	5
1	
1	6
1	
1	
1	

Analyte		Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
Fluorene	530	U	530	58	ug/Kg	<del></del>	08/23/13 13:40	08/31/13 01:43	
4-Chlorophenyl phenyl ether	530	U	530	70	ug/Kg	₩	08/23/13 13:40	08/31/13 01:43	
4-Nitroaniline	2700	U	2700	79	ug/Kg	₩	08/23/13 13:40	08/31/13 01:43	
4,6-Dinitro-2-methylphenol	2700	U	2700	270	ug/Kg	₩	08/23/13 13:40	08/31/13 01:43	
N-Nitrosodiphenylamine	530	U	530	53	ug/Kg	₽	08/23/13 13:40	08/31/13 01:43	
4-Bromophenyl phenyl ether	530	U	530	58	ug/Kg	₩	08/23/13 13:40	08/31/13 01:43	
Hexachlorobenzene	530	U	530	62	ug/Kg	₩	08/23/13 13:40	08/31/13 01:43	
Atrazine	530	U	530	37	ug/Kg	₩	08/23/13 13:40	08/31/13 01:43	
Pentachlorophenol	2700	U	2700	530	ug/Kg	₩	08/23/13 13:40	08/31/13 01:43	
Phenanthrene	530	U	530	43	ug/Kg	₩	08/23/13 13:40	08/31/13 01:43	
Anthracene	530	U	530	40	ug/Kg	₩	08/23/13 13:40	08/31/13 01:43	
Carbazole	530	U	530	48	ug/Kg	₩	08/23/13 13:40	08/31/13 01:43	
Di-n-butyl phthalate	530	U	530	48	ug/Kg	₩	08/23/13 13:40	08/31/13 01:43	
Fluoranthene	530	U	530	51	ug/Kg		08/23/13 13:40	08/31/13 01:43	
Pyrene	530	U	530	43	ug/Kg	₩	08/23/13 13:40	08/31/13 01:43	
Butyl benzyl phthalate	530	U	530	42	ug/Kg	₩	08/23/13 13:40	08/31/13 01:43	
3,3'-Dichlorobenzidine	1100	U	1100	45	ug/Kg		08/23/13 13:40	08/31/13 01:43	
Benzo[a]anthracene	530	U	530	43	ug/Kg	₩	08/23/13 13:40	08/31/13 01:43	
Chrysene	530	U	530		ug/Kg	₩	08/23/13 13:40	08/31/13 01:43	
Bis(2-ethylhexyl) phthalate	530		530	46	ug/Kg		08/23/13 13:40	08/31/13 01:43	· · · · · · .
Di-n-octyl phthalate	530	U	530	46	ug/Kg	₩	08/23/13 13:40	08/31/13 01:43	
Benzo[b]fluoranthene	530	U	530	61	ug/Kg	₩	08/23/13 13:40	08/31/13 01:43	
Benzo[k]fluoranthene	530		530	100	ug/Kg		08/23/13 13:40	08/31/13 01:43	
Benzo[a]pyrene	530	U	530	83	ug/Kg	₩	08/23/13 13:40	08/31/13 01:43	
Indeno[1,2,3-cd]pyrene	530	U	530	45	ug/Kg	₩	08/23/13 13:40	08/31/13 01:43	
Dibenz(a,h)anthracene	530		530		ug/Kg		08/23/13 13:40	08/31/13 01:43	
Benzo[g,h,i]perylene	530		530		ug/Kg	₽	08/23/13 13:40	08/31/13 01:43	•
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fa
Nitrobenzene-d5 (Surr)	60		46 - 130				08/23/13 13:40	08/31/13 01:43	-
2-Fluorobiphenyl	62		58 - 130				08/23/13 13:40	08/31/13 01:43	
Terphenyl-d14 (Surr)	63		60 - 130				08/23/13 13:40	08/31/13 01:43	
Phenol-d5 (Surr)	57		49 - 130				08/23/13 13:40	08/31/13 01:43	
2-Fluorophenol (Surr)	59		40 - 130				08/23/13 13:40	08/31/13 01:43	
2,4,6-Tribromophenol (Surr)	65		58 - 130				08/23/13 13:40	08/31/13 01:43	
Method: 8015C - Nonhalogenate	d Organics usi	ng GC/FID	-Modified (Gaso						
Analyte		Qualifier	RL	MDL		D	Prepared	Analyzed	Dil Fa
Gasoline Range Organics (GRO) -C6-C10	520		290	22	ug/Kg	#	08/22/13 11:07	08/28/13 21:58	
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fa
a,a,a-Trifluorotoluene	105		70 - 131				08/22/13 11:07	08/28/13 21:58	

TestAmerica Savannah

Analyzed

08/30/13 05:09

08/30/13 05:09

Analyzed

08/30/13 05:09

RL

8000

8000

Limits

50 - 150

MDL Unit

2200 ug/Kg

2200 ug/Kg

D

Prepared

08/28/13 11:44

08/28/13 11:44

Prepared

08/28/13 11:44

Method: 8015C - Nonhalogenated Organics using GC/FID -Modified (Diesel Range Organics)

4600 JB

%Recovery Qualifier

69

2300 JΒ

Result Qualifier

Dil Fac

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB02-06 (6.5-7.5)

Lab Sample ID: 680-93445-22

Date Collected: 08/20/13 15:35

Matrix: Solid

Date Received: 08/21/13 10:07

Percent Solids: 83.2

Method: 8260B - Volatile Organi	c Compounds	(GC/MS)							
Analyte		Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
Acetone	24	U	24	6.9	ug/Kg	₩	08/23/13 16:13	08/28/13 02:01	
Benzene	4.7	U	4.7	0.46	ug/Kg	₽	08/23/13 16:13	08/28/13 02:01	
Bromodichloromethane	4.7	U	4.7	0.79	ug/Kg	₩	08/23/13 16:13	08/28/13 02:01	
Bromoform	4.7	U	4.7	0.59	ug/Kg		08/23/13 16:13	08/28/13 02:01	
Bromomethane	4.7	U	4.7	1.3	ug/Kg	₽	08/23/13 16:13	08/28/13 02:01	
Carbon disulfide	4.7	U	4.7	1.1	ug/Kg	₽	08/23/13 16:13	08/28/13 02:01	
Carbon tetrachloride	4.7	U	4.7	1.6	ug/Kg	φ.	08/23/13 16:13	08/28/13 02:01	
Chlorobenzene	4.7	U	4.7	0.49	ug/Kg	₽	08/23/13 16:13	08/28/13 02:01	
Chloroethane	4.7	U	4.7	1.8	ug/Kg	₽	08/23/13 16:13	08/28/13 02:01	
Chloroform	4.7	U	4.7	0.55	ug/Kg	<del>-</del>	08/23/13 16:13	08/28/13 02:01	
Chloromethane	4.7	U	4.7	0.94	ug/Kg	₩	08/23/13 16:13	08/28/13 02:01	
cis-1,2-Dichloroethene	4.7	U	4.7	0.71	ug/Kg	₩	08/23/13 16:13	08/28/13 02:01	
cis-1,3-Dichloropropene	4.7		4.7	1.1	ug/Kg	<del>-</del>	08/23/13 16:13	08/28/13 02:01	
Cyclohexane	4.7		4.7	0.88	ug/Kg	☼	08/23/13 16:13	08/28/13 02:01	
Dibromochloromethane	4.7		4.7		ug/Kg	₩	08/23/13 16:13	08/28/13 02:01	
,2-Dibromo-3-Chloropropane	4.7		4.7	3.1	ug/Kg		08/23/13 16:13	08/28/13 02:01	
,2-Dichlorobenzene	4.7		4.7	0.67	ug/Kg	₩	08/23/13 16:13	08/28/13 02:01	
,3-Dichlorobenzene	4.7		4.7	0.89	ug/Kg	₽	08/23/13 16:13	08/28/13 02:01	
.4-Dichlorobenzene	4.7		4.7	0.77	ug/Kg		08/23/13 16:13	08/28/13 02:01	
Dichlorodifluoromethane	4.7		4.7		ug/Kg ug/Kg	*	08/23/13 16:13	08/28/13 02:01	
.1-Dichloroethane	4.7		4.7		ug/Kg	*	08/23/13 16:13	08/28/13 02:01	
,2-Dichloroethane	4.7		4.7		ug/Kg		08/23/13 16:13	08/28/13 02:01	
,1-Dichloroethene	4.7		4.7	0.71	ug/Kg ug/Kg		08/23/13 16:13	08/28/13 02:01	
	4.7		4.7	0.71	ug/Kg ug/Kg		08/23/13 16:13	08/28/13 02:01	
,2-Dichloropropane	4.7						08/23/13 16:13	08/28/13 02:01	
Diisopropyl ether			4.7		ug/Kg	₩			
Ethylbenzene	4.7		4.7	0.57	ug/Kg	₩	08/23/13 16:13	08/28/13 02:01	
thylene Dibromide	4.7		4.7	0.45	ug/Kg		08/23/13 16:13	08/28/13 02:01	
thyl tert-butyl ether	4.7		4.7	0.53	ug/Kg		08/23/13 16:13	08/28/13 02:01	
-Hexanone	24		24	4.7	ug/Kg	<b>‡</b>	08/23/13 16:13	08/28/13 02:01	
sopropylbenzene	4.7		4.7	0.64	ug/Kg	<u></u>	08/23/13 16:13	08/28/13 02:01	
Methyl acetate	4.7		4.7		ug/Kg	<u>*</u>	08/23/13 16:13	08/28/13 02:01	
Methylcyclohexane	4.7		4.7		ug/Kg	₩	08/23/13 16:13	08/28/13 02:01	
Methylene Chloride	14		14		ug/Kg	<u></u> .	08/23/13 16:13	08/28/13 02:01	
Methyl Ethyl Ketone	24		24	3.9	ug/Kg	₩	08/23/13 16:13	08/28/13 02:01	
nethyl isobutyl ketone	24		24		ug/Kg	<b>#</b>	08/23/13 16:13	08/28/13 02:01	
Methyl tert-butyl ether	4.7	U	4.7	0.94	ug/Kg		08/23/13 16:13	08/28/13 02:01	
laphthalene	4.7	U	4.7	0.94	ug/Kg	₩	08/23/13 16:13	08/28/13 02:01	
Styrene	4.7	U	4.7	0.71	ug/Kg	₩	08/23/13 16:13	08/28/13 02:01	
ert-amyl methyl ether	4.7	U	4.7	0.41	ug/Kg		08/23/13 16:13	08/28/13 02:01	
ert-Butyl alcohol	4.7	U	4.7	3.2	ug/Kg	₩	08/23/13 16:13	08/28/13 02:01	
,1,2,2-Tetrachloroethane	4.7	U	4.7	0.68	ug/Kg	₩	08/23/13 16:13	08/28/13 02:01	
etrachloroethene	4.7	U	4.7	0.79	ug/Kg	₩	08/23/13 16:13	08/28/13 02:01	
oluene	4.7	U	4.7	0.66	ug/Kg	₽	08/23/13 16:13	08/28/13 02:01	
rans-1,2-Dichloroethene	4.7	U	4.7	0.71	ug/Kg	₽	08/23/13 16:13	08/28/13 02:01	
rans-1,3-Dichloropropene	4.7	U	4.7	0.87	ug/Kg	₩	08/23/13 16:13	08/28/13 02:01	
,2,4-Trichlorobenzene	4.7	U	4.7	0.69	ug/Kg	₽	08/23/13 16:13	08/28/13 02:01	
,1,1-Trichloroethane	4.7	U	4.7	1.0	ug/Kg	☼	08/23/13 16:13	08/28/13 02:01	
I,1,2-Trichloroethane	4.7	U	4.7	0.87	ug/Kg	₩	08/23/13 16:13	08/28/13 02:01	
Trichloroethene	4.7	U	4.7	0.45	ug/Kg		08/23/13 16:13	08/28/13 02:01	

TestAmerica Savannah

TestAmerica Job ID: 680-93445-1

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11

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

Lab Cample ID: 000 00445 00

TestAmerica Job ID: 680-93445-1

Client Sample ID: SB02-06 (6.5-7.5)

Lab Sample ID: 680-93445-22 Matrix: Solid

Date Collected: 08/20/13 15:35 Date Received: 08/21/13 10:07

Percent Solids: 83.2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichlorofluoromethane	4.7	U	4.7	0.89	ug/Kg	\$	08/23/13 16:13	08/28/13 02:01	1
1,1,2-Trichloro-1,2,2-trifluoroethane	4.7	U	4.7	1.9	ug/Kg	₽	08/23/13 16:13	08/28/13 02:01	1
Vinyl chloride	4.7	U	4.7	0.87	ug/Kg	₽	08/23/13 16:13	08/28/13 02:01	1
Xylenes, Total	9.4	U	9.4	1.8	ug/Kg	₽	08/23/13 16:13	08/28/13 02:01	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	97		72 - 122				08/23/13 16:13	08/28/13 02:01	1
Dibromofluoromethane	102		79 - 123				08/23/13 16:13	08/28/13 02:01	1
Toluene-d8 (Surr)	95		80 - 120				08/23/13 16:13	08/28/13 02:01	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzaldehyde	400	U	400	69	ug/Kg	₩	08/23/13 13:40	08/30/13 18:17	1
Phenol	400	U	400	41	ug/Kg	₽	08/23/13 13:40	08/30/13 18:17	1
Bis(2-chloroethyl)ether	400	U	400	54	ug/Kg	₽	08/23/13 13:40	08/30/13 18:17	1
2-Chlorophenol	400	U	400	48	ug/Kg	\$	08/23/13 13:40	08/30/13 18:17	1
2-Methylphenol	400	U	400	32	ug/Kg	₩	08/23/13 13:40	08/30/13 18:17	1
bis (2-chloroisopropyl) ether	400	U	400	36	ug/Kg	₽	08/23/13 13:40	08/30/13 18:17	1
Acetophenone	400	U	400	34	ug/Kg	\$	08/23/13 13:40	08/30/13 18:17	1
3 & 4 Methylphenol	400	U	400	51	ug/Kg	₽	08/23/13 13:40	08/30/13 18:17	1
N-Nitrosodi-n-propylamine	400	U	400	38	ug/Kg	₽	08/23/13 13:40	08/30/13 18:17	1
Hexachloroethane	400	U	400	34	ug/Kg	φ.	08/23/13 13:40	08/30/13 18:17	1
Nitrobenzene	400	U	400	31	ug/Kg	₽	08/23/13 13:40	08/30/13 18:17	1
Isophorone	400	U	400	40	ug/Kg	₽	08/23/13 13:40	08/30/13 18:17	1
2-Nitrophenol	400	U	400	49	ug/Kg	₽	08/23/13 13:40	08/30/13 18:17	1
2,4-Dimethylphenol	400	U	400	53	ug/Kg	₩	08/23/13 13:40	08/30/13 18:17	1
Bis(2-chloroethoxy)methane	400	U	400	47	ug/Kg	₽	08/23/13 13:40	08/30/13 18:17	1
2,4-Dichlorophenol	400	U	400	42	ug/Kg	₩	08/23/13 13:40	08/30/13 18:17	1
Naphthalene	400	U	400	36	ug/Kg	₩	08/23/13 13:40	08/30/13 18:17	1
4-Chloroaniline	790	U *	790	62	ug/Kg	₩	08/23/13 13:40	08/30/13 18:17	1
Hexachlorobutadiene	400	U	400	43	ug/Kg	₩.	08/23/13 13:40	08/30/13 18:17	1
Caprolactam	400	U	400	79	ug/Kg	₩	08/23/13 13:40	08/30/13 18:17	1
4-Chloro-3-methylphenol	400	U	400	42	ug/Kg	₩	08/23/13 13:40	08/30/13 18:17	1
2-Methylnaphthalene	400	U	400	45	ug/Kg		08/23/13 13:40	08/30/13 18:17	1
Hexachlorocyclopentadiene	400	U	400	49	ug/Kg	₩	08/23/13 13:40	08/30/13 18:17	1
2,4,6-Trichlorophenol	400	U	400	35	ug/Kg	₩	08/23/13 13:40	08/30/13 18:17	1
2,4,5-Trichlorophenol	400	U	400	42	ug/Kg		08/23/13 13:40	08/30/13 18:17	1
1,1'-Biphenyl	890	U	890	890	ug/Kg	₩	08/23/13 13:40	08/30/13 18:17	1
2-Chloronaphthalene	400	U	400	42	ug/Kg	₩	08/23/13 13:40	08/30/13 18:17	1
2-Nitroaniline	2000	U	2000	54	ug/Kg		08/23/13 13:40	08/30/13 18:17	1
Dimethyl phthalate	400	U	400	41	ug/Kg	₩	08/23/13 13:40	08/30/13 18:17	1
2,6-Dinitrotoluene	400	U	400	50	ug/Kg	₩	08/23/13 13:40	08/30/13 18:17	1
Acenaphthylene	400	U	400	43	ug/Kg		08/23/13 13:40	08/30/13 18:17	1
3-Nitroaniline	2000	U	2000	55	ug/Kg	₩	08/23/13 13:40	08/30/13 18:17	1
Acenaphthene	400	U	400	49	ug/Kg	₽	08/23/13 13:40	08/30/13 18:17	1
2,4-Dinitrophenol	2000	U	2000	990	ug/Kg		08/23/13 13:40	08/30/13 18:17	1
4-Nitrophenol	2000	U	2000	400	ug/Kg	₽	08/23/13 13:40	08/30/13 18:17	1
Dibenzofuran	400	U	400	40	ug/Kg	₽	08/23/13 13:40	08/30/13 18:17	1
2,4-Dinitrotoluene	400	U	400	59	ug/Kg		08/23/13 13:40	08/30/13 18:17	1
Diethyl phthalate	400	U	400	44	ug/Kg	₽	08/23/13 13:40	08/30/13 18:17	1

TestAmerica Savannah

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TestAmerica Job ID: 680-93445-1

Client Sample ID: SB02-06 (6.5-7.5)

Lab Sample ID: 680-93445-22 Date Collected: 08/20/13 15:35 Date Received: 08/21/13 10:07

Matrix: Solid Percent Solids: 83.2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
Fluorene	400	U	400	43	ug/Kg	<u></u>	08/23/13 13:40	08/30/13 18:17	
4-Chlorophenyl phenyl ether	400		400	53	ug/Kg		08/23/13 13:40	08/30/13 18:17	
4-Nitroaniline	2000		2000	59	ug/Kg	₽	08/23/13 13:40	08/30/13 18:17	
4,6-Dinitro-2-methylphenol	2000		2000	200	ug/Kg	₽	08/23/13 13:40	08/30/13 18:17	
N-Nitrosodiphenylamine	400		400	40	ug/Kg		08/23/13 13:40	08/30/13 18:17	
4-Bromophenyl phenyl ether	400		400	43	ug/Kg	₩	08/23/13 13:40	08/30/13 18:17	
Hexachlorobenzene	400		400		ug/Kg	₩	08/23/13 13:40	08/30/13 18:17	
Atrazine	400		400	28	ug/Kg		08/23/13 13:40	08/30/13 18:17	
Pentachlorophenol	2000		2000	400	ug/Kg	₩	08/23/13 13:40	08/30/13 18:17	
Phenanthrene	400		400		ug/Kg	₩	08/23/13 13:40	08/30/13 18:17	
Anthracene	400		400		ug/Kg	φ.	08/23/13 13:40	08/30/13 18:17	
Carbazole	400		400	36	ug/Kg	₽	08/23/13 13:40	08/30/13 18:17	
Di-n-butyl phthalate	400		400	36	ug/Kg	₽	08/23/13 13:40	08/30/13 18:17	
Fluoranthene	400		400	38	ug/Kg		08/23/13 13:40	08/30/13 18:17	
Pyrene	400		400	32	ug/Kg ug/Kg		08/23/13 13:40	08/30/13 18:17	
Butyl benzyl phthalate	400		400	31	ug/Kg ug/Kg	₩	08/23/13 13:40	08/30/13 18:17	
3,3'-Dichlorobenzidine	790		790		ug/Kg ug/Kg		08/23/13 13:40	08/30/13 18:17	
Benzo[a]anthracene	400		400	32	ug/Kg ug/Kg		08/23/13 13:40	08/30/13 18:17	
• •	400		400		ug/Kg ug/Kg				
Chrysene				25			08/23/13 13:40	08/30/13 18:17	
Bis(2-ethylhexyl) phthalate	400		400		ug/Kg	₩	08/23/13 13:40	08/30/13 18:17	
Di-n-octyl phthalate	400		400	35	ug/Kg	₩	08/23/13 13:40	08/30/13 18:17	
Benzo[b]fluoranthene	400		400		ug/Kg		08/23/13 13:40	08/30/13 18:17	
Benzo[k]fluoranthene	400		400		ug/Kg		08/23/13 13:40	08/30/13 18:17	
Benzo[a]pyrene	400		400		ug/Kg	₩	08/23/13 13:40	08/30/13 18:17	
Indeno[1,2,3-cd]pyrene	400		400		ug/Kg	· · · · · ·	08/23/13 13:40	08/30/13 18:17	
Dibenz(a,h)anthracene	400		400		ug/Kg	*	08/23/13 13:40	08/30/13 18:17	
Benzo[g,h,i]perylene	400	U	400	26	ug/Kg	₩	08/23/13 13:40	08/30/13 18:17	
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil F
Nitrobenzene-d5 (Surr)	67		46 - 130				08/23/13 13:40	08/30/13 18:17	
2-Fluorobiphenyl	78		58 - 130				08/23/13 13:40	08/30/13 18:17	
Terphenyl-d14 (Surr)	62		60 - 130				08/23/13 13:40	08/30/13 18:17	
Phenol-d5 (Surr)	55		49 - 130				08/23/13 13:40	08/30/13 18:17	
2-Fluorophenol (Surr)	58		40 - 130				08/23/13 13:40	08/30/13 18:17	
2,4,6-Tribromophenol (Surr)	76		58 - 130				08/23/13 13:40	08/30/13 18:17	
Method: 8015C - Nonhalogenat	ad Organias usi	na CC/EID	Modified (Cook	ina Dan	as Orașni	ioo\			
Analyte	_	Qualifier	RL	MDL		D D	Prepared	Analyzed	Dil Fa
Gasoline Range Organics (GRO) -C6-C10	590	U	590	45	ug/Kg	<del></del>	08/22/13 11:07	08/29/13 12:48	
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil F
a,a,a-Trifluorotoluene	92		70 - 131				08/22/13 11:07	08/29/13 12:48	
Method: 8015C - Nonhalogenat	_	•	•	•	_	•	Bd	A a b a .d	D:: F
Analyte		Qualifier	RL	MDL		D	Prepared	Analyzed	Dil F
Diesel Range Organics [C10-C28]	5900		5900	1700	ug/Kg	<del>-</del> <del>-</del>	08/31/13 08:51	08/31/13 23:33	
ORO C24-C40	4700	JB	5900	1700	ug/Kg	₩	08/31/13 08:51	08/31/13 23:33	
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil F

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93445-1

Lab Sample ID: 680-93445-23

Lab Sample ID: 680-93445-24

Matrix: Water

**Matrix: Water** 

Client Sample ID: PZ01-04 (DRO-SGT) Date Collected: 08/20/13 15:40

Date Received: 08/21/13 10:07

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	1300		100	28	ug/L		08/31/13 08:40	08/31/13 19:52	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
o-Terphenyl (Surr)	95		<u>50 - 150</u>				08/31/13 08:40	08/31/13 19:52	1

Client Sample ID: PZ01-09 (DRO-SGT)

Date Collected: 08/20/13 16:10

Date Received: 08/21/13 10:07

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	130		95	27	ug/L		08/31/13 08:40	08/31/13 20:08	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
o-Terphenyl (Surr)	78		50 - 150				08/31/13 08:40	08/31/13 20:08	1

Client Sample ID: TB 130820-1 Lab Sample ID: 680-93445-25 **Matrix: Water** 

Date Collected: 08/20/13 00:00 Date Received: 08/21/13 10:07

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	25	U	25	3.5	ug/L			08/28/13 23:41	1
Benzene	1.0	U	1.0	0.34	ug/L			08/28/13 23:41	1
Bromodichloromethane	1.0	U	1.0	0.50	ug/L			08/28/13 23:41	1
Bromoform	5.0	U	5.0	0.71	ug/L			08/28/13 23:41	1
Carbon disulfide	1.0	U	1.0	0.50	ug/L			08/28/13 23:41	1
Carbon tetrachloride	1.0	U	1.0	0.50	ug/L			08/28/13 23:41	1
Chlorobenzene	1.0	U	1.0	0.50	ug/L			08/28/13 23:41	1
Chloroethane	1.0	U	1.0	0.76	ug/L			08/28/13 23:41	1
Chloroform	1.0	U	1.0	0.60	ug/L			08/28/13 23:41	1
Chloromethane	1.0	U	1.0	0.83	ug/L			08/28/13 23:41	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.50	ug/L			08/28/13 23:41	1
cis-1,3-Dichloropropene	5.0	U	5.0	0.50	ug/L			08/28/13 23:41	1
Cyclohexane	1.0	U	1.0	0.50	ug/L			08/28/13 23:41	1
Dibromochloromethane	1.0	U	1.0	0.50	ug/L			08/28/13 23:41	1
1,2-Dibromo-3-Chloropropane	5.0	U	5.0	0.78	ug/L			08/28/13 23:41	1
1,2-Dichlorobenzene	1.0	U	1.0	0.50	ug/L			08/28/13 23:41	1
1,3-Dichlorobenzene	1.0	U	1.0	0.54	ug/L			08/28/13 23:41	1
1,4-Dichlorobenzene	1.0	U	1.0	0.64	ug/L			08/28/13 23:41	1
Dichlorodifluoromethane	1.0	U	1.0	0.85	ug/L			08/28/13 23:41	1
1,1-Dichloroethane	1.0	U	1.0	0.50	ug/L			08/28/13 23:41	1
1,2-Dichloroethane	1.0	U	1.0	0.50	ug/L			08/28/13 23:41	1
1,1-Dichloroethene	1.0	U	1.0	0.50	ug/L			08/28/13 23:41	1
1,2-Dichloropropane	1.0	U	1.0	0.50	ug/L			08/28/13 23:41	1
Diisopropyl ether	1.0	U	1.0	0.50	ug/L			08/28/13 23:41	1
Ethylbenzene	1.0	U	1.0	0.50	ug/L			08/28/13 23:41	1
Ethylene Dibromide	1.0	U	1.0	0.50	ug/L			08/28/13 23:41	1
Ethyl tert-butyl ether	1.0	U	1.0	0.68	ug/L			08/28/13 23:41	1
2-Hexanone	25	U	25	3.1	ug/L			08/28/13 23:41	1

TestAmerica Job ID: 680-93445-1 Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: TB 130820-1

Lab Sample ID: 680-93445-25

Date Collected: 08/20/13 00:00 Matrix: Water Date Received: 08/21/13 10:07

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Isopropylbenzene	1.0	U	1.0	0.53	ug/L			08/28/13 23:41	1
Methyl acetate	5.0	U	5.0	2.1	ug/L			08/28/13 23:41	1
Methylcyclohexane	1.0	U	1.0	0.50	ug/L			08/28/13 23:41	1
Methylene Chloride	5.0	U	5.0	3.0	ug/L			08/28/13 23:41	1
Methyl Ethyl Ketone	25	U	25	2.6	ug/L			08/28/13 23:41	1
methyl isobutyl ketone	25	U	25	1.8	ug/L			08/28/13 23:41	1
Methyl tert-butyl ether	1.0	U	1.0	0.74	ug/L			08/28/13 23:41	1
Naphthalene	1.0	U	1.0	1.0	ug/L			08/28/13 23:41	1
Styrene	1.0	U	1.0	1.0	ug/L			08/28/13 23:41	1
Tert-amyl methyl ether	1.0	U	1.0	0.60	ug/L			08/28/13 23:41	1
tert-Butyl alcohol	5.0	U	5.0	4.9	ug/L			08/28/13 23:41	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.50	ug/L			08/28/13 23:41	1
Tetrachloroethene	1.0	U	1.0	0.58	ug/L			08/28/13 23:41	1
Toluene	1.0	U	1.0	0.70	ug/L			08/28/13 23:41	•
trans-1,2-Dichloroethene	1.0	U	1.0	0.50	ug/L			08/28/13 23:41	1
trans-1,3-Dichloropropene	5.0	U	5.0	0.50	ug/L			08/28/13 23:41	
1,2,4-Trichlorobenzene	1.0	U	1.0	0.82	ug/L			08/28/13 23:41	1
1,1,1-Trichloroethane	1.0	U	1.0	0.50	ug/L			08/28/13 23:41	1
1,1,2-Trichloroethane	5.0	U	5.0	0.50	ug/L			08/28/13 23:41	
Trichloroethene	1.0	U	1.0	0.50	ug/L			08/28/13 23:41	1
Trichlorofluoromethane	1.0	U	1.0	0.52	ug/L			08/28/13 23:41	1
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	1.0	0.50	ug/L			08/28/13 23:41	1
Vinyl chloride	1.0	U	1.0	0.50	ug/L			08/28/13 23:41	1
Xylenes, Total	10		10	1.6	ug/L			08/28/13 23:41	· · · · · · · · · · ·

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	96		78 - 118		08/28/13 23:41	1
Dibromofluoromethane	102		81 - 121		08/28/13 23:41	1
Toluene-d8 (Surr)	98		80 - 120		08/28/13 23:41	1

Client Sample ID: TB 130820-2 Lab Sample ID: 680-93445-26

Date Collected: 08/20/13 00:00 Matrix: Water Date Received: 08/21/13 10:07

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	25	U	25	3.5	ug/L			08/29/13 00:07	1
Benzene	1.0	U	1.0	0.34	ug/L			08/29/13 00:07	1
Bromodichloromethane	1.0	U	1.0	0.50	ug/L			08/29/13 00:07	1
Bromoform	5.0	U	5.0	0.71	ug/L			08/29/13 00:07	1
Carbon disulfide	1.0	U	1.0	0.50	ug/L			08/29/13 00:07	1
Carbon tetrachloride	1.0	U	1.0	0.50	ug/L			08/29/13 00:07	1
Chlorobenzene	1.0	U	1.0	0.50	ug/L			08/29/13 00:07	1
Chloroethane	1.0	U	1.0	0.76	ug/L			08/29/13 00:07	1
Chloroform	1.0	U	1.0	0.60	ug/L			08/29/13 00:07	1
Chloromethane	1.0	U	1.0	0.83	ug/L			08/29/13 00:07	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.50	ug/L			08/29/13 00:07	1
cis-1,3-Dichloropropene	5.0	U	5.0	0.50	ug/L			08/29/13 00:07	1
Cyclohexane	1.0	U	1.0	0.50	ug/L			08/29/13 00:07	1
Dibromochloromethane	1.0	U	1.0	0.50	ug/L			08/29/13 00:07	1

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93445-1

Lab Sample ID: 680-93445-26

Matrix: Water

Client Sample ID: TB 130820-2

Date Collected: 08/20/13 00:00 Date Received: 08/21/13 10:07

Dibromofluoromethane

Toluene-d8 (Surr)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dibromo-3-Chloropropane	5.0	U	5.0	0.78	ug/L			08/29/13 00:07	1
1,2-Dichlorobenzene	1.0	U	1.0	0.50	ug/L			08/29/13 00:07	1
1,3-Dichlorobenzene	1.0	U	1.0	0.54	ug/L			08/29/13 00:07	1
1,4-Dichlorobenzene	1.0	U	1.0	0.64	ug/L			08/29/13 00:07	1
Dichlorodifluoromethane	1.0	U	1.0	0.85	ug/L			08/29/13 00:07	1
1,1-Dichloroethane	1.0	U	1.0	0.50	ug/L			08/29/13 00:07	1
1,2-Dichloroethane	1.0	U	1.0	0.50	ug/L			08/29/13 00:07	1
1,1-Dichloroethene	1.0	U	1.0	0.50	ug/L			08/29/13 00:07	1
1,2-Dichloropropane	1.0	U	1.0	0.50	ug/L			08/29/13 00:07	1
Diisopropyl ether	1.0	U	1.0	0.50	ug/L			08/29/13 00:07	1
Ethylbenzene	1.0	U	1.0	0.50	ug/L			08/29/13 00:07	1
Ethylene Dibromide	1.0	U	1.0	0.50	ug/L			08/29/13 00:07	1
Ethyl tert-butyl ether	1.0	U	1.0	0.68	ug/L			08/29/13 00:07	1
2-Hexanone	25	U	25	3.1	ug/L			08/29/13 00:07	1
Isopropylbenzene	1.0	U	1.0	0.53	ug/L			08/29/13 00:07	1
Methyl acetate	5.0	U	5.0	2.1	ug/L			08/29/13 00:07	1
Methylcyclohexane	1.0	U	1.0	0.50	ug/L			08/29/13 00:07	1
Methylene Chloride	5.0	U	5.0	3.0	ug/L			08/29/13 00:07	1
Methyl Ethyl Ketone	25	U	25	2.6	ug/L			08/29/13 00:07	1
methyl isobutyl ketone	25	U	25	1.8	ug/L			08/29/13 00:07	1
Methyl tert-butyl ether	1.0	U	1.0	0.74	ug/L			08/29/13 00:07	1
Naphthalene	1.0	U	1.0	1.0	ug/L			08/29/13 00:07	1
Styrene	1.0	U	1.0	1.0	ug/L			08/29/13 00:07	1
Tert-amyl methyl ether	1.0	U	1.0	0.60	ug/L			08/29/13 00:07	1
tert-Butyl alcohol	5.0	U	5.0	4.9	ug/L			08/29/13 00:07	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.50	ug/L			08/29/13 00:07	1
Tetrachloroethene	1.0	U	1.0	0.58	ug/L			08/29/13 00:07	1
Toluene	1.0	U	1.0		ug/L			08/29/13 00:07	1
trans-1,2-Dichloroethene	1.0		1.0		ug/L			08/29/13 00:07	1
trans-1,3-Dichloropropene	5.0	U	5.0	0.50	ug/L			08/29/13 00:07	1
1,2,4-Trichlorobenzene	1.0	U	1.0		ug/L			08/29/13 00:07	1
1,1,1-Trichloroethane	1.0	U	1.0	0.50				08/29/13 00:07	1
1,1,2-Trichloroethane	5.0	U	5.0	0.50	ug/L			08/29/13 00:07	1
Trichloroethene	1.0	U	1.0	0.50	ug/L			08/29/13 00:07	1
Trichlorofluoromethane	1.0		1.0	0.52				08/29/13 00:07	1
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0		1.0		ug/L			08/29/13 00:07	1
Vinyl chloride	1.0		1.0		ug/L			08/29/13 00:07	1
Xylenes, Total	10	U	10		ug/L			08/29/13 00:07	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	97		78 - 118			-		08/29/13 00:07	1

TestAmerica Savannah

08/29/13 00:07

08/29/13 00:07

81 - 121

80 - 120

101

99

2

6

8

10

11

#### **QC Sample Results**

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93445-1

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

Lab Sample ID: MB 400-189967/4

Matrix: Solid

Analysis Batch: 189967

Client Sample ID: Method Blank

**Prep Type: Total/NA** 

Result 25	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
25								
	U	25	7.3	ug/Kg			08/27/13 16:46	1
5.0	U	5.0	0.49	ug/Kg			08/27/13 16:46	1
5.0	U	5.0	0.84	ug/Kg			08/27/13 16:46	1
5.0	U	5.0	0.63	ug/Kg			08/27/13 16:46	1
5.0	U	5.0	1.4	ug/Kg			08/27/13 16:46	1
5.0	U	5.0	1.2	ug/Kg			08/27/13 16:46	1
5.0	U	5.0	1.7	ug/Kg			08/27/13 16:46	1
5.0	U	5.0					08/27/13 16:46	1
5.0	U	5.0	1.9	ug/Kg			08/27/13 16:46	1
5.0	U	5.0	0.59	ug/Kg			08/27/13 16:46	1
5.0	U	5.0	1.0	ug/Kg			08/27/13 16:46	1
5.0	U	5.0	0.76	ug/Kg			08/27/13 16:46	1
5.0	U	5.0	1.2	ug/Kg			08/27/13 16:46	1
5.0	U	5.0	0.94	ug/Kg			08/27/13 16:46	1
5.0	U	5.0					08/27/13 16:46	1
5.0	U	5.0					08/27/13 16:46	1
5.0	U	5.0					08/27/13 16:46	1
5.0	U	5.0					08/27/13 16:46	1
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	5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0	5.0 U 5.0 U	5.0 U 5.0 5.0 U 5.0	5.0       U       5.0       1.2         5.0       U       5.0       1.7         5.0       U       5.0       0.52         5.0       U       5.0       0.52         5.0       U       5.0       0.59         5.0       U       5.0       0.59         5.0       U       5.0       0.76         5.0       U       5.0       0.76         5.0       U       5.0       0.76         5.0       U       5.0       0.74         5.0       U       5.0       0.87         5.0       U       5.0       0.82         5.0       U       5.0       0.82         5.0       U       5.0       0.83         5.0       U       5.0       0.82         5.0       U       5.0       0.82         5.0       U       5.0       0.74         5.0       U       5.0 <td>5.0         U         5.0         1.4         ug/Kg           5.0         U         5.0         1.2         ug/Kg           5.0         U         5.0         1.7         ug/Kg           5.0         U         5.0         0.52         ug/Kg           5.0         U         5.0         0.59         ug/Kg           5.0         U         5.0         0.59         ug/Kg           5.0         U         5.0         1.0         ug/Kg           5.0         U         5.0         1.0         ug/Kg           5.0         U         5.0         0.76         ug/Kg           5.0         U         5.0         0.76         ug/Kg           5.0         U         5.0         0.87         ug/Kg           5.0         U         5.0         0.87         ug/Kg           5.0         U         5.0         0.87         ug/Kg           5.0         U         5.0         0.82         ug/Kg           5.0         U         5.0         0.82         ug/Kg           5.0         U         5.0         0.82         ug/Kg           5.0         U</td> <td>5.0       U       5.0       1.4       ug/Kg         5.0       U       5.0       1.7       ug/Kg         5.0       U       5.0       0.72       ug/Kg         5.0       U       5.0       0.52       ug/Kg         5.0       U       5.0       0.59       ug/Kg         5.0       U       5.0       1.0       ug/Kg         5.0       U       5.0       0.76       ug/Kg         5.0       U       5.0       0.87       ug/Kg         5.0       U       5.0       0.87       ug/Kg         5.0       U       5.0       0.81       ug/Kg         5.0       U       5.0       0.71       ug/Kg         5.0       U       5.0       0.82       ug/Kg         5.0       U       5.0       0.82       ug/Kg         5.0       U       5.0       0.75       ug/Kg         5.0       U       5.0       0.75<td>5.0 U 5.0 1.4 ug/Kg 5.0 U 5.0 1.2 ug/Kg 5.0 U 5.0 1.7 ug/Kg 5.0 U 5.0 1.7 ug/Kg 5.0 U 5.0 0.52 ug/Kg 5.0 U 5.0 0.52 ug/Kg 5.0 U 5.0 0.59 ug/Kg 5.0 U 5.0 0.59 ug/Kg 5.0 U 5.0 0.64 ug/Kg 5.0 U 5.0 0.76 ug/Kg 5.0 U 5.0 0.87 ug/Kg 5.0 U 5.0 0.87 ug/Kg 5.0 U 5.0 0.87 ug/Kg 5.0 U 5.0 0.87 ug/Kg 5.0 U 5.0 0.88 ug/Kg 5.0 U 5.0 0.89 ug/Kg 5.0 U 5.0 0.81 ug/Kg 5.0 U 5.0 0.81 ug/Kg 5.0 U 5.0 0.82 ug/Kg 5.0 U 5.0 0.82 ug/Kg 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U         5.0         1.0         ug/Kg           5.0         U         5.0         0.76         ug/Kg           5.0         U         5.0         0.76         ug/Kg           5.0         U         5.0         0.87         ug/Kg           5.0         U         5.0         0.87         ug/Kg           5.0         U         5.0         0.87         ug/Kg           5.0         U         5.0         0.82         ug/Kg           5.0         U         5.0         0.82         ug/Kg           5.0         U         5.0         0.82         ug/Kg           5.0         U	5.0       U       5.0       1.4       ug/Kg         5.0       U       5.0       1.7       ug/Kg         5.0       U       5.0       0.72       ug/Kg         5.0       U       5.0       0.52       ug/Kg         5.0       U       5.0       0.59       ug/Kg         5.0       U       5.0       1.0       ug/Kg         5.0       U       5.0       0.76       ug/Kg         5.0       U       5.0       0.87       ug/Kg         5.0       U       5.0       0.87       ug/Kg         5.0       U       5.0       0.81       ug/Kg         5.0       U       5.0       0.71       ug/Kg         5.0       U       5.0       0.82       ug/Kg         5.0       U       5.0       0.82       ug/Kg         5.0       U       5.0       0.75       ug/Kg         5.0       U       5.0       0.75 <td>5.0 U 5.0 1.4 ug/Kg 5.0 U 5.0 1.2 ug/Kg 5.0 U 5.0 1.7 ug/Kg 5.0 U 5.0 1.7 ug/Kg 5.0 U 5.0 0.52 ug/Kg 5.0 U 5.0 0.52 ug/Kg 5.0 U 5.0 0.59 ug/Kg 5.0 U 5.0 0.59 ug/Kg 5.0 U 5.0 0.64 ug/Kg 5.0 U 5.0 0.76 ug/Kg 5.0 U 5.0 0.87 ug/Kg 5.0 U 5.0 0.87 ug/Kg 5.0 U 5.0 0.87 ug/Kg 5.0 U 5.0 0.87 ug/Kg 5.0 U 5.0 0.88 ug/Kg 5.0 U 5.0 0.89 ug/Kg 5.0 U 5.0 0.81 ug/Kg 5.0 U 5.0 0.81 ug/Kg 5.0 U 5.0 0.82 ug/Kg 5.0 U 5.0 0.82 ug/Kg 5.0 U 5.0 0.83 ug/Kg 5.0 U 5.0 0.82 ug/Kg 5.0 U 5.0 0.84 ug/Kg 5.0 U 5.0 0.85 ug/Kg 5.0 U 5.0 0.82 ug/Kg 5.0 U 5.0 0.83 ug/Kg 5.0 U 5.0 0.84 ug/Kg 5.0 U 5.0 0.85 ug/Kg 5.0 U 5.0 0.86 ug/Kg 5.0 U 5.0 0.87 ug/Kg 5.0 U 5.0 0.89 ug/Kg 5.0 U 5.0 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TestAmerica Savannah

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

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

Lab Sample ID: MB 400-189967/4

**Matrix: Solid** 

Analysis Batch: 189967

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

MB MB Analyte Result Qualifier RL MDL Unit D Prepared Analyzed Dil Fac 5.0 U Trichloroethene 5.0 08/27/13 16:46 0.48 ug/Kg Trichlorofluoromethane 5.0 U 5.0 0.95 ug/Kg 08/27/13 16:46 1,1,2-Trichloro-1,2,2-trifluoroethane 5.0 U 5.0 2.0 ug/Kg 08/27/13 16:46 Vinyl chloride 5.0 U 5.0 0.92 ug/Kg 08/27/13 16:46 Xylenes, Total 10 U 10 1.9 ug/Kg 08/27/13 16:46

ı							
	Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
	4-Bromofluorobenzene	99		72 - 122		08/27/13 16:46	1
ı	Dibromofluoromethane	102		79 - 123		08/27/13 16:46	1
	Toluene-d8 (Surr)	97		80 - 120		08/27/13 16:46	1

Lab Sample ID: LCS 400-189967/1000

**Matrix: Solid** 

Analysis Batch: 189967

**Client Sample ID: Lab Control Sample** 

Prep Type: Total/NA

Analysis Batch: 189967	Spike	1.00	LCS				%Rec.	
Analyte	Added		Qualifier	Unit	D	%Rec	%Rec.	
Acetone		287	- Quanner	ug/Kg		143	43 - 150	
Benzene	50.0	52.2		ug/Kg		104	74 - 119	
Bromodichloromethane	50.0	54.2		ug/Kg		108	68 - 128	
Bromoform	50.0	52.9		ug/Kg		106	54 - 125	
Bromomethane	50.0	45.9		ug/Kg		92	25 - 150	
Carbon disulfide	50.0	53.6		ug/Kg		107	26 - 150	
Carbon tetrachloride	50.0	53.4		ug/Kg		107	70 - 128	
Chlorobenzene	50.0	50.8		ug/Kg		102	80 - 116	
Chloroethane	50.0	50.9		ug/Kg		102	22 _ 150	
Chloroform	50.0	52.3		ug/Kg		105	74 - 119	
Chloromethane	50.0	51.2		ug/Kg		102	36 - 147	
cis-1,2-Dichloroethene	50.0	53.1		ug/Kg		106	68 - 126	
cis-1,3-Dichloropropene	50.0	55.0		ug/Kg		110	68 - 125	
Cyclohexane	50.0	50.8		ug/Kg		102	62 - 126	
Dibromochloromethane	50.0	54.3		ug/Kg		109	65 <sub>-</sub> 131	
1,2-Dibromo-3-Chloropropane	50.0	51.5		ug/Kg		103	57 <sub>-</sub> 123	
1,2-Dichlorobenzene	50.0	50.3		ug/Kg		101	76 - 120	
1,3-Dichlorobenzene	50.0	50.5		ug/Kg		101	78 <sub>-</sub> 118	
1,4-Dichlorobenzene	50.0	50.6		ug/Kg		101	77 - 118	
Dichlorodifluoromethane	50.0	46.9		ug/Kg		94	44 - 145	
1,1-Dichloroethane	50.0	53.8		ug/Kg		108	61 - 128	
1,2-Dichloroethane	50.0	54.3		ug/Kg		109	70 - 125	
1,1-Dichloroethene	50.0	57.5		ug/Kg		115	62 - 130	
1,2-Dichloropropane	50.0	53.1		ug/Kg		106	64 - 129	
Diisopropyl ether	50.0	53.8		ug/Kg		108	46 - 144	
Ethylbenzene	50.0	52.0		ug/Kg		104	78 <sub>-</sub> 120	
Ethylene Dibromide	50.0	52.8		ug/Kg		106	78 <sub>-</sub> 119	
Ethyl tert-butyl ether	50.0	54.0		ug/Kg		108	60 - 128	
2-Hexanone	200	222		ug/Kg		111	54 - 140	
Isopropylbenzene	50.0	52.6		ug/Kg		105	78 <sub>-</sub> 119	
Methyl acetate	250	286		ug/Kg		114	52 _ 139	
Methylcyclohexane	50.0	52.6		ug/Kg		105	65 - 126	

TestAmerica Savannah

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9/11/2013

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

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

Lab Sample ID: LCS 400-189967/1000

**Matrix: Solid** 

Analysis Batch: 189967

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

	Spike	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Methylene Chloride	50.0	54.6		ug/Kg		109	45 - 150	
Methyl Ethyl Ketone	200	231		ug/Kg		115	62 - 126	
methyl isobutyl ketone	200	228		ug/Kg		114	56 - 137	
Methyl tert-butyl ether	50.0	53.1		ug/Kg		106	69 - 124	
Naphthalene	50.0	52.4		ug/Kg		105	64 - 126	
Styrene	50.0	53.1		ug/Kg		106	66 - 132	
Tert-amyl methyl ether	50.0	54.3		ug/Kg		109	65 - 124	
tert-Butyl alcohol	500	468		ug/Kg		94	12 - 150	
1,1,2,2-Tetrachloroethane	50.0	51.7		ug/Kg		103	67 - 120	
Tetrachloroethene	50.0	51.3		ug/Kg		103	74 - 126	
Toluene	50.0	49.6		ug/Kg		99	76 - 120	
trans-1,2-Dichloroethene	50.0	52.8		ug/Kg		106	65 - 130	
trans-1,3-Dichloropropene	50.0	53.7		ug/Kg		107	65 - 126	
1,2,4-Trichlorobenzene	50.0	51.0		ug/Kg		102	72 - 126	
1,1,1-Trichloroethane	50.0	53.4		ug/Kg		107	72 - 121	
1,1,2-Trichloroethane	50.0	52.8		ug/Kg		106	75 - 118	
Trichloroethene	50.0	54.1		ug/Kg		108	76 - 122	
Trichlorofluoromethane	50.0	55.2		ug/Kg		110	65 - 132	
1,1,2-Trichloro-1,2,2-trifluoroetha	50.0	57.1		ug/Kg		114	74 - 123	
ne								
Vinyl chloride	50.0	52.5		ug/Kg		105	52 - 134	
Xylenes, Total	100	105		ug/Kg		105	70 - 120	

LCS LCS

Surrogate	%Recovery	Qualifier	Limits
4-Bromofluorobenzene	101		72 - 122
Dibromofluoromethane	103		79 - 123
Toluene-d8 (Surr)	98		80 - 120

Lab Sample ID: LCSD 400-189967/5

Matrix: Solid

Analysis Batch: 189967

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

	Spike	LCSD	LCSD				%Rec.		RPD
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Acetone	200	239		ug/Kg		120	43 - 150	18	30
Benzene	50.0	48.1		ug/Kg		96	74 - 119	8	30
Bromodichloromethane	50.0	50.1		ug/Kg		100	68 - 128	8	30
Bromoform	50.0	46.4		ug/Kg		93	54 - 125	13	30
Bromomethane	50.0	39.7		ug/Kg		79	25 - 150	15	30
Carbon disulfide	50.0	49.7		ug/Kg		99	26 - 150	7	30
Carbon tetrachloride	50.0	48.8		ug/Kg		98	70 - 128	9	30
Chlorobenzene	50.0	46.2		ug/Kg		92	80 - 116	9	30
Chloroethane	50.0	47.4		ug/Kg		95	22 - 150	7	30
Chloroform	50.0	48.2		ug/Kg		96	74 - 119	8	30
Chloromethane	50.0	50.9		ug/Kg		102	36 - 147	1	30
cis-1,2-Dichloroethene	50.0	48.4		ug/Kg		97	68 - 126	9	30
cis-1,3-Dichloropropene	50.0	50.2		ug/Kg		100	68 - 125	9	30
Cyclohexane	50.0	48.9		ug/Kg		98	62 - 126	4	30
Dibromochloromethane	50.0	48.2		ug/Kg		96	65 - 131	12	30

TestAmerica Savannah

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93445-1

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

Lab Sample ID: LCSD 400-189967/5

**Matrix: Solid** 

Methylene Chloride

Methyl Ethyl Ketone

methyl isobutyl ketone

Methyl tert-butyl ether

Vinyl chloride

Xylenes, Total

Analysis Batch: 189967

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

99

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95

104

52 - 134

70 - 120

45 - 150

62 - 126

56 - 137

69 - 124

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	Spike	LCSD	LCSD				%Rec.		RPD	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit	
1,2-Dibromo-3-Chloropropane	50.0	46.9		ug/Kg		94	57 - 123	10	30	
1,2-Dichlorobenzene	50.0	46.4		ug/Kg		93	76 - 120	8	30	ī
1,3-Dichlorobenzene	50.0	47.4		ug/Kg		95	78 <sub>-</sub> 118	6	30	
1,4-Dichlorobenzene	50.0	46.9		ug/Kg		94	77 - 118	8	30	i
Dichlorodifluoromethane	50.0	46.4		ug/Kg		93	44 - 145	1	30	
1,1-Dichloroethane	50.0	49.5		ug/Kg		99	61 - 128	8	30	ı
1,2-Dichloroethane	50.0	49.6		ug/Kg		99	70 - 125	9	30	
1,1-Dichloroethene	50.0	53.3		ug/Kg		107	62 - 130	8	30	ı
1,2-Dichloropropane	50.0	48.6		ug/Kg		97	64 - 129	9	30	
Diisopropyl ether	50.0	49.3		ug/Kg		99	46 - 144	9	30	
Ethylbenzene	50.0	47.4		ug/Kg		95	78 - 120	9	30	
Ethylene Dibromide	50.0	47.4		ug/Kg		95	78 <sub>-</sub> 119	11	30	
Ethyl tert-butyl ether	50.0	50.0		ug/Kg		100	60 - 128	8	30	
2-Hexanone	200	190		ug/Kg		95	54 - 140	16	30	
Isopropylbenzene	50.0	48.1		ug/Kg		96	78 <sub>-</sub> 119	9	30	
Methyl acetate	250	249		ug/Kg		99	52 - 139	14	30	
Methylcyclohexane	50.0	49.0		ug/Kg		98	65 - 126	7	30	

Naphthalene	50.0	47.3	ug/Kg	95	64 - 126	10	30
Styrene	50.0	49.0	ug/Kg	98	66 - 132	8	30
Tert-amyl methyl ether	50.0	49.2	ug/Kg	98	65 - 124	10	30
tert-Butyl alcohol	500	549	ug/Kg	110	12 _ 150	16	30
1,1,2,2-Tetrachloroethane	50.0	45.5	ug/Kg	91	67 - 120	13	30
Tetrachloroethene	50.0	47.4	ug/Kg	95	74 - 126	8	30
Toluene	50.0	45.9	ug/Kg	92	76 - 120	8	30
trans-1,2-Dichloroethene	50.0	48.9	ug/Kg	98	65 - 130	8	30
trans-1,3-Dichloropropene	50.0	48.1	ug/Kg	96	65 - 126	11	30
1,2,4-Trichlorobenzene	50.0	46.7	ug/Kg	93	72 - 126	9	30
1,1,1-Trichloroethane	50.0	49.3	ug/Kg	99	72 _ 121	8	30
1,1,2-Trichloroethane	50.0	47.4	ug/Kg	95	75 - 118	11	30
Trichloroethene	50.0	49.8	ug/Kg	100	76 <sub>-</sub> 122	8	30
Trichlorofluoromethane	50.0	54.2	ug/Kg	108	65 - 132	2	30
1,1,2-Trichloro-1,2,2-trifluoroetha	50.0	52.5	ug/Kg	105	74 - 123	8	30

50.0

100

50.0

200

200

50.0

49.7

198

197

47.3

52.0

95.5

ug/Kg

ug/Kg

ug/Kg

ug/Kg

ug/Kg

ug/Kg

LCSD LC	SD
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Surrogate	%Recovery Qualifier	Limits
4-Bromofluorobenzene	98	72 - 122
Dibromofluoromethane	101	79 - 123
Toluene-d8 (Surr)	98	80 - 120

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93445-1

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

Lab Sample ID: MB 400-190083/4

Matrix: Water

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

	MB	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
Acetone	25	U –	25	3.5	ug/L			08/28/13 16:58	
Benzene	1.0	U	1.0	0.34	ug/L			08/28/13 16:58	
Bromodichloromethane	1.0	U	1.0	0.50	ug/L			08/28/13 16:58	
Bromoform	5.0	U	5.0	0.71	ug/L			08/28/13 16:58	
Carbon disulfide	1.0	U	1.0	0.50	ug/L			08/28/13 16:58	
Carbon tetrachloride	1.0	U	1.0	0.50	ug/L			08/28/13 16:58	
Chlorobenzene	1.0	U	1.0	0.50	ug/L			08/28/13 16:58	
Chloroethane	1.0	U	1.0	0.76	ug/L			08/28/13 16:58	
Chloroform	1.0	U	1.0	0.60	ug/L			08/28/13 16:58	
Chloromethane	1.0	U	1.0	0.83	ug/L			08/28/13 16:58	
cis-1,2-Dichloroethene	1.0	U	1.0		ug/L			08/28/13 16:58	
cis-1,3-Dichloropropene	5.0	U	5.0		ug/L			08/28/13 16:58	
Cyclohexane	1.0	U	1.0	0.50	ug/L			08/28/13 16:58	
Dibromochloromethane	1.0		1.0		ug/L			08/28/13 16:58	
1,2-Dibromo-3-Chloropropane	5.0		5.0		ug/L			08/28/13 16:58	
1,2-Dichlorobenzene	1.0		1.0	0.50				08/28/13 16:58	
1,3-Dichlorobenzene	1.0		1.0		ug/L			08/28/13 16:58	
1.4-Dichlorobenzene	1.0		1.0		ug/L			08/28/13 16:58	
Dichlorodifluoromethane	1.0		1.0		ug/L			08/28/13 16:58	
,1-Dichloroethane	1.0		1.0		ug/L			08/28/13 16:58	
,2-Dichloroethane	1.0		1.0		ug/L			08/28/13 16:58	
,1-Dichloroethene	1.0		1.0		ug/L			08/28/13 16:58	
,2-Dichloropropane	1.0		1.0		ug/L			08/28/13 16:58	
Diisopropyl ether	1.0		1.0		ug/L			08/28/13 16:58	
Ethylbenzene	1.0		1.0		ug/L			08/28/13 16:58	
Ethylene Dibromide	1.0		1.0		ug/L			08/28/13 16:58	
Ethyl tert-butyl ether	1.0		1.0		ug/L			08/28/13 16:58	
2-Hexanone	25		25		ug/L ug/L			08/28/13 16:58	
sopropylbenzene	1.0		1.0		ug/L ug/L			08/28/13 16:58	
	5.0		5.0		ug/L ug/L			08/28/13 16:58	
Methyl acetate	1.0		1.0		ug/L ug/L			08/28/13 16:58	
Methylcyclohexane	5.0				_				
Methylene Chloride			5.0		ug/L			08/28/13 16:58	
Methyl Ethyl Ketone	25		25		ug/L			08/28/13 16:58	
nethyl isobutyl ketone	25		25		ug/L			08/28/13 16:58	
Methyl tert-butyl ether	1.0		1.0		ug/L			08/28/13 16:58	
Naphthalene	1.0		1.0		ug/L			08/28/13 16:58	
Styrene	1.0		1.0		ug/L			08/28/13 16:58	
ert-amyl methyl ether	1.0		1.0		ug/L			08/28/13 16:58	
ert-Butyl alcohol	5.0		5.0		ug/L			08/28/13 16:58	
,1,2,2-Tetrachloroethane	1.0		1.0		ug/L			08/28/13 16:58	
etrachloroethene	1.0		1.0		ug/L			08/28/13 16:58	
oluene	1.0		1.0		ug/L			08/28/13 16:58	
rans-1,2-Dichloroethene	1.0		1.0		ug/L			08/28/13 16:58	
rans-1,3-Dichloropropene	5.0		5.0		ug/L			08/28/13 16:58	
I,2,4-Trichlorobenzene	1.0		1.0		ug/L			08/28/13 16:58	
,1,1-Trichloroethane	1.0		1.0		ug/L			08/28/13 16:58	
1,1,2-Trichloroethane	5.0	U	5.0	0.50	ug/L			08/28/13 16:58	

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93445-1

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

Lab Sample ID: MB 400-190083/4

**Matrix: Water** 

Analysis Batch: 190083

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

	MB	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichlorofluoromethane	1.0	U	1.0	0.52	ug/L			08/28/13 16:58	1
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	1.0	0.50	ug/L			08/28/13 16:58	1
Vinyl chloride	1.0	U	1.0	0.50	ug/L			08/28/13 16:58	1
Xylenes, Total	10	U	10	1.6	ug/L			08/28/13 16:58	1

MB MB %Recovery Qualifier Surrogate Limits Prepared Analyzed Dil Fac 4-Bromofluorobenzene 78 - 118 08/28/13 16:58 96 Dibromofluoromethane 102 81 - 121 08/28/13 16:58 Toluene-d8 (Surr) 98 80 - 120 08/28/13 16:58

Lab Sample ID: LCS 400-190083/1000

**Matrix: Water** 

Analysis Batch: 190083

**Client Sample ID: Lab Control Sample** 

Prep Type: Total/NA

Analysis Batch: 190083	Spike	LCS	LCS				%Rec.
Analyte	Added		Qualifier	Unit	D	%Rec	Limits
Acetone		273		ug/L	— <u>-</u>	136	24 - 150
Benzene	50.0	50.0		ug/L		100	79 <sub>-</sub> 120
Bromodichloromethane	50.0	51.1		ug/L		102	75 - 127
Bromoform	50.0	51.1		ug/L		102	65 - 121
Carbon disulfide	50.0	50.1		ug/L		100	41 - 140
Carbon tetrachloride	50.0	50.6		ug/L		101	46 - 141
Chlorobenzene	50.0	49.3		ug/L		99	85 - 120
Chloroethane	50.0	37.6		ug/L		75	37 - 150
Chloroform	50.0	50.5		ug/L		101	73 - 122
Chloromethane	50.0	50.2		ug/L		100	49 - 141
cis-1,2-Dichloroethene	50.0	51.7		ug/L		103	78 - 122
cis-1,3-Dichloropropene	50.0	52.1		ug/L		104	70 - 122
Cyclohexane	50.0	49.6		ug/L		99	69 - 123
Dibromochloromethane	50.0	51.0		ug/L		102	63 _ 125
1,2-Dibromo-3-Chloropropane	50.0	50.6		ug/L		101	52 _ 124
1,2-Dichlorobenzene	50.0	49.8		ug/L		100	80 - 121
1,3-Dichlorobenzene	50.0	50.2		ug/L		100	77 - 124
1,4-Dichlorobenzene	50.0	50.7		ug/L		101	79 - 119
Dichlorodifluoromethane	50.0	44.8		ug/L		90	27 - 144
1,1-Dichloroethane	50.0	51.5		ug/L		103	75 - 126
1,2-Dichloroethane	50.0	53.0		ug/L		106	69 - 128
1,1-Dichloroethene	50.0	47.9		ug/L		96	50 - 134
1,2-Dichloropropane	50.0	50.8		ug/L		102	77 - 126
Diisopropyl ether	50.0	51.7		ug/L		103	69 - 143
Ethylbenzene	50.0	49.5		ug/L		99	82 - 120
Ethylene Dibromide	50.0	52.9		ug/L		106	82 _ 119
Ethyl tert-butyl ether	50.0	51.6		ug/L		103	58 - 142
2-Hexanone	200	224		ug/L		112	60 - 150
Isopropylbenzene	50.0	50.8		ug/L		102	76 <sub>-</sub> 118
Methyl acetate	250	286		ug/L		114	58 <sub>-</sub> 150
Methylcyclohexane	50.0	50.3		ug/L		101	72 _ 121
Methylene Chloride	50.0	52.0		ug/L		104	70 - 130
Methyl Ethyl Ketone	200	229		ug/L		114	62 - 137

TestAmerica Savannah

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

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

Lab Sample ID: LCS 400-190083/1000

**Matrix: Water** 

Analysis Batch: 190083

**Client Sample ID: Lab Control Sample** 

Prep Type: Total/NA

•	Spike	LCS	LCS				%Rec.
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits
methyl isobutyl ketone	200	227		ug/L		114	63 - 150
Methyl tert-butyl ether	50.0	51.0		ug/L		102	70 - 124
Naphthalene	50.0	53.6		ug/L		107	45 - 131
Styrene	50.0	51.8		ug/L		104	79 - 124
Tert-amyl methyl ether	50.0	50.9		ug/L		102	65 _ 125
tert-Butyl alcohol	500	580		ug/L		116	44 - 150
1,1,2,2-Tetrachloroethane	50.0	51.4		ug/L		103	68 - 132
Tetrachloroethene	50.0	49.5		ug/L		99	76 - 124
Toluene	50.0	48.5		ug/L		97	81 - 120
trans-1,2-Dichloroethene	50.0	50.9		ug/L		102	70 - 126
trans-1,3-Dichloropropene	50.0	50.6		ug/L		101	64 - 120
1,2,4-Trichlorobenzene	50.0	51.4		ug/L		103	69 - 128
1,1,1-Trichloroethane	50.0	51.0		ug/L		102	66 - 130
1,1,2-Trichloroethane	50.0	51.3		ug/L		103	81 _ 117
Trichloroethene	50.0	51.8		ug/L		104	77 _ 119
Trichlorofluoromethane	50.0	53.5		ug/L		107	26 - 150
1,1,2-Trichloro-1,2,2-trifluoroetha	50.0	49.3		ug/L		99	45 - 138
ne Vinyl chloride	50.0	50.7		ug/L		101	60 - 128
Xylenes, Total	100	102		ug/L		102	70 - 130

LCS LCS Limits %Recovery Qualifier Surrogate 78 - 118 4-Bromofluorobenzene 103 101 81 - 121 Dibromofluoromethane Toluene-d8 (Surr) 80 - 120 98

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

Lab Sample ID: MB 680-290348/3-A Client Sample ID: Method Blank **Matrix: Water** Prep Type: Total/NA

Analysis Batch: 290916

	MB	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzaldehyde		U	10	1.1	ug/L		08/22/13 14:46	08/26/13 21:05	1
Acetophenone	10	U	10	0.57	ug/L		08/22/13 14:46	08/26/13 21:05	1
Bis(2-chloroethyl)ether	10	U	10	1.1	ug/L		08/22/13 14:46	08/26/13 21:05	1
bis (2-chloroisopropyl) ether	10	U	10	0.78	ug/L		08/22/13 14:46	08/26/13 21:05	1
Bis(2-chloroethoxy)methane	10	U	10	0.94	ug/L		08/22/13 14:46	08/26/13 21:05	1
Caprolactam	10	U	10	0.79	ug/L		08/22/13 14:46	08/26/13 21:05	1
4-Chloroaniline	20	U	20	2.2	ug/L		08/22/13 14:46	08/26/13 21:05	1
4-Chloro-3-methylphenol	10	U	10	1.0	ug/L		08/22/13 14:46	08/26/13 21:05	1
2-Chlorophenol	10	U	10	0.87	ug/L		08/22/13 14:46	08/26/13 21:05	1
1,1'-Biphenyl	10	U	10	0.58	ug/L		08/22/13 14:46	08/26/13 21:05	1
2-Chloronaphthalene	10	U	10	0.80	ug/L		08/22/13 14:46	08/26/13 21:05	1
2,4-Dichlorophenol	10	U	10	1.1	ug/L		08/22/13 14:46	08/26/13 21:05	1
Acenaphthylene	10	U	10	0.85	ug/L		08/22/13 14:46	08/26/13 21:05	1
2,4-Dimethylphenol	10	U	10	4.0	ug/L		08/22/13 14:46	08/26/13 21:05	1
Acenaphthene	10	U	10	0.76	ug/L		08/22/13 14:46	08/26/13 21:05	1

TestAmerica Savannah

Prep Batch: 290348

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RL

MDL Unit

D

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93445-1

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

MB MB Result Qualifier

Lab Sample ID: MB 680-290348/3-A

**Matrix: Water** 

Analyte

**Analysis Batch: 290916** 

Client Sample ID: Method Blank Prep Type: Total/NA Prep Batch: 290348

Dil Fac Prepared Analyzed 08/22/13 14:46 08/26/13 21:05

10 10 Dimethyl phthalate U 0.99 ug/L 2,4-Dinitrophenol 50 Ü 50 10 ug/L 08/22/13 14:46 08/26/13 21:05 Dibenzofuran 10 U 10 0.79 ug/L 08/22/13 14:46 08/26/13 21:05 2,4-Dinitrotoluene 10 10 1.2 ug/L 08/22/13 14:46 08/26/13 21:05 10 U 10 2.6-Dinitrotoluene 08/22/13 14:46 08/26/13 21:05 1.1 ug/L 10 10 08/22/13 14:46 Diethyl phthalate U 88.0 ug/L 08/26/13 21:05 08/22/13 14:46 10 U 10 0.84 08/26/13 21:05 4-Chlorophenyl phenyl ether ug/L Fluorene 10 U 10 0.96 ug/L 08/22/13 14:46 08/26/13 21:05 4,6-Dinitro-2-methylphenol 50 U 50 10 ug/L 08/22/13 14:46 08/26/13 21:05 4-Bromophenyl phenyl ether 10 U 10 0.77 ug/L 08/22/13 14:46 08/26/13 21:05 Hexachlorobenzene 10 U 10 0.79 ug/L 08/22/13 14:46 08/26/13 21:05 Hexachlorobutadiene 10 U 10 0.62 ug/L 08/22/13 14:46 08/26/13 21:05 Atrazine 10 U 10 1.2 ug/L 08/22/13 14:46 08/26/13 21:05 Hexachlorocyclopentadiene 10 U 10 2.5 ug/L 08/22/13 14:46 08/26/13 21:05 Hexachloroethane 10 10 0.76 ug/L 08/22/13 14:46 08/26/13 21:05 10 Anthracene 10 U 0.69 ug/L 08/22/13 14:46 08/26/13 21:05 Isophorone 10 U 10 0.90 ug/L 08/22/13 14:46 08/26/13 21:05 2-Methylnaphthalene 10 U 10 0.78 ug/L 08/22/13 14:46 08/26/13 21:05 10 U 10 08/22/13 14:46 08/26/13 21:05 Carbazole 0.71 ug/L 10 U 10 08/26/13 21:05 2-Methylphenol 0.89 ug/L 08/22/13 14:46 Di-n-butyl phthalate 10 U 10 08/22/13 14:46 0.83 ug/L 08/26/13 21:05 10 U 10 3 & 4 Methylphenol 1.3 ug/L 08/22/13 14:46 08/26/13 21:05 Fluoranthene 10 U 10 0.74 ug/L 08/22/13 14:46 08/26/13 21:05 Naphthalene 10 U 10 08/22/13 14:46 0.70 ug/L 08/26/13 21:05 2-Nitroaniline 50 U 50 1.3 ug/L 08/22/13 14:46 08/26/13 21:05 Butyl benzyl phthalate 10 U 10 08/22/13 14:46 08/26/13 21:05 1.2 ua/L 60 U 3,3'-Dichlorobenzidine 60 30 ug/L 08/22/13 14:46 08/26/13 21:05 50 50 3-Nitroaniline U 5.0 ug/L 08/22/13 14:46 08/26/13 21:05 4-Nitroaniline 50 U 50 5.0 ug/L 08/22/13 14:46 08/26/13 21:05 Benzo[a]anthracene 10 10 0.55 ug/L 08/22/13 14:46 08/26/13 21:05 10 U Chrysene 10 0.51 ug/L 08/22/13 14:46 08/26/13 21:05 Nitrobenzene 10 U 10 0.73 ug/L 08/22/13 14:46 08/26/13 21:05 Bis(2-ethylhexyl) phthalate 10 U 10 08/22/13 14:46 08/26/13 21:05 1.6 ug/L 2-Nitrophenol 10 U 10 08/22/13 14:46 08/26/13 21:05 ug/L 10 U 10 08/22/13 14:46 08/26/13 21:05 Di-n-octyl phthalate ua/L 1.4 4-Nitrophenol 50 U 50 1.9 ua/L 08/22/13 14:46 08/26/13 21:05 Benzo[b]fluoranthene 10 10 2.6 ug/L 08/22/13 14:46 08/26/13 21:05 Benzo[k]fluoranthene 10 U 10 1.2 ug/L 08/22/13 14:46 08/26/13 21:05 N-Nitrosodi-n-propylamine 10 U 10 0.72 ug/L 08/22/13 14:46 08/26/13 21:05 10 U 10 0.71 Benzo[a]pyrene ug/L 08/22/13 14:46 08/26/13 21:05 N-Nitrosodiphenylamine 10 10 0.92 08/22/13 14:46 08/26/13 21:05 ug/L 08/22/13 14:46 10 U 10 08/26/13 21:05 Indeno[1,2,3-cd]pyrene 1.0 ug/L Pentachlorophenol 50 U 50 2.0 ug/L 08/22/13 14:46 08/26/13 21:05 Dibenz(a,h)anthracene 10 U 10 08/22/13 14:46 08/26/13 21:05 1.0 ug/L Phenanthrene 10 U 10 0.77 08/22/13 14:46 08/26/13 21:05 ug/L 10 Benzo[g,h,i]perylene 10 Ü 0.87 ug/L 08/22/13 14:46 08/26/13 21:05 Phenol 10 U 10 0.83 ug/L 08/22/13 14:46 08/26/13 21:05 Pyrene 10 U 10 0.63 ug/L 08/22/13 14:46 08/26/13 21:05

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

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

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Lab Sample ID: MB 680-290348/3-A

**Matrix: Water** 

Surrogate

Analysis Batch: 290916

2,4,6-Tribromophenol (Surr)

Analysis Batch: 290916

**Matrix: Water** 

Lab Sample ID: LCS 680-290348/4-A

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

Prep Batch: 290348

MB MB Dil Fac Analyte Result Qualifier RL MDL Unit Prepared Analyzed 10 08/26/13 21:05 2,4,5-Trichlorophenol 10 U 1.2 ug/L 08/22/13 14:46 2,4,6-Trichlorophenol 10 U 10 0.85 ug/L 08/22/13 14:46 08/26/13 21:05

31 - 141

MB MB Qualifier Limits %Recovery Prepared Dil Fac Analyzed Nitrobenzene-d5 (Surr) 77 39 - 130 08/22/13 14:46 08/26/13 21:05 78 2-Fluorobiphenyl 38 - 130 08/22/13 14:46 08/26/13 21:05 Terphenyl-d14 (Surr) 94 10 - 143 08/22/13 14:46 08/26/13 21:05 Phenol-d5 (Surr) 71 25 - 130 08/22/13 14:46 08/26/13 21:05 2-Fluorophenol (Surr) 73 25 - 130 08/22/13 14:46 08/26/13 21:05

**Client Sample ID: Lab Control Sample** 

08/26/13 21:05

08/22/13 14:46

Prep Type: Total/NA **Prep Batch: 290348** 

Analysis Datch. 290910	Spike	LCS	LCS				%Rec.	/340
Analyte	Added		Qualifier	Unit	D	%Rec	Limits	
Benzaldehyde		102		ug/L		102	59 - 142	
Acetophenone	100	84.5		ug/L		84	54 - 130	
Bis(2-chloroethyl)ether	100	77.3		ug/L		77	56 <sub>-</sub> 130	
bis (2-chloroisopropyl) ether	100	75.4		ug/L		75	55 - 130	
Bis(2-chloroethoxy)methane	100	88.7		ug/L		89	64 - 130	
Caprolactam	100	88.5		ug/L		89	34 - 130	
4-Chloroaniline	100	48.0		ug/L		48	42 - 130	
4-Chloro-3-methylphenol	100	90.8		ug/L		91	60 _ 130	
2-Chlorophenol	100	80.8		ug/L		81	57 <sub>-</sub> 130	
1,1'-Biphenyl	100	80.6		ug/L		81	54 <sub>-</sub> 130	
2-Chloronaphthalene	100	78.7		ug/L		79	53 - 130	
2,4-Dichlorophenol	100	92.5		ug/L		93	54 - 130	
Acenaphthylene	100	88.2		ug/L		88	60 _ 130	
2,4-Dimethylphenol	100	70.4		ug/L		70	40 _ 130	
Acenaphthene	100	76.9		ug/L		77	55 <sub>-</sub> 130	
Dimethyl phthalate	100	91.3		ug/L		91	69 _ 130	
2,4-Dinitrophenol	100	99.6		ug/L		100	20 - 165	
Dibenzofuran	100	85.1		ug/L		85	58 - 130	
2,4-Dinitrotoluene	100	87.4		ug/L		87	63 - 130	
2,6-Dinitrotoluene	100	86.2		ug/L		86	65 - 130	
Diethyl phthalate	100	91.0		ug/L		91	70 - 130	
4-Chlorophenyl phenyl ether	100	90.1		ug/L		90	57 - 130	
Fluorene	100	88.4		ug/L		88	61 <sub>-</sub> 130	
4,6-Dinitro-2-methylphenol	100	96.0		ug/L		96	45 - 134	
4-Bromophenyl phenyl ether	100	88.6		ug/L		89	61 - 130	
Hexachlorobenzene	100	85.2		ug/L		85	52 - 130	
Hexachlorobutadiene	100	80.7		ug/L		81	36 - 130	
Atrazine	100	89.2		ug/L		89	66 - 130	
Hexachlorocyclopentadiene	100	14.7		ug/L		15	10 - 130	
Hexachloroethane	100	66.4		ug/L		66	39 _ 130	
Anthracene	100	77.9		ug/L		78	61 _ 130	
Isophorone	100	80.7		ug/L		81	59 - 130	

TestAmerica Savannah

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

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

Lab Sample ID: LCS 680-290348/4-A **Client Sample ID: Lab Control Sample Matrix: Water Prep Type: Total/NA Prep Batch: 290348** Analysis Batch: 290916

	Spike	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
2-Methylnaphthalene	100	76.6		ug/L		77	52 - 130	
Carbazole	100	85.0		ug/L		85	67 - 130	
2-Methylphenol	100	83.0		ug/L		83	55 <sub>-</sub> 130	
Di-n-butyl phthalate	100	85.9		ug/L		86	66 - 130	
3 & 4 Methylphenol	100	89.3		ug/L		89	35 _ 130	
Fluoranthene	100	83.4		ug/L		83	56 - 130	
Naphthalene	100	78.9		ug/L		79	50 _ 130	
2-Nitroaniline	100	87.8		ug/L		88	60 _ 130	
Butyl benzyl phthalate	100	87.6		ug/L		88	66 - 130	
3,3'-Dichlorobenzidine	100	39.1	J	ug/L		39	27 _ 130	
3-Nitroaniline	100	66.6		ug/L		67	54 - 130	
4-Nitroaniline	100	83.4		ug/L		83	54 - 130	
Benzo[a]anthracene	100	82.6		ug/L		83	58 <sub>-</sub> 130	
Chrysene	100	87.7		ug/L		88	59 <sub>-</sub> 130	
Nitrobenzene	100	80.3		ug/L		80	56 <sub>-</sub> 130	
Bis(2-ethylhexyl) phthalate	100	85.3		ug/L		85	62 - 130	
2-Nitrophenol	100	90.5		ug/L		91	54 - 130	
Di-n-octyl phthalate	100	88.5		ug/L		88	64 - 130	
4-Nitrophenol	100	76.8		ug/L		77	38 - 130	
Benzo[b]fluoranthene	100	81.0		ug/L		81	51 <sub>-</sub> 130	
Benzo[k]fluoranthene	100	89.3		ug/L		89	53 - 130	
N-Nitrosodi-n-propylamine	100	89.4		ug/L		89	64 - 130	
Benzo[a]pyrene	100	79.7		ug/L		80	61 - 130	
N-Nitrosodiphenylamine	100	89.1		ug/L		89	68 _ 130	
Indeno[1,2,3-cd]pyrene	100	72.2		ug/L		72	47 - 130	
Pentachlorophenol	100	99.8		ug/L		100	42 - 138	
Dibenz(a,h)anthracene	100	76.0		ug/L		76	55 <sub>-</sub> 130	
Phenanthrene	100	82.6		ug/L		83	62 _ 130	
Benzo[g,h,i]perylene	100	73.8		ug/L		74	54 - 130	
Phenol	100	76.6		ug/L		77	29 _ 130	
Pyrene	100	83.6		ug/L		84	60 - 130	
2,4,5-Trichlorophenol	100	96.0		ug/L		96	61 _ 130	
2,4,6-Trichlorophenol	100	95.5		ug/L		95	57 <sub>-</sub> 130	

	LCS	LCS	
Surrogate	%Recovery	Qualifier	Limits
Nitrobenzene-d5 (Surr)	86		39 - 130
2-Fluorobiphenyl	85		38 - 130
Terphenyl-d14 (Surr)	87		10 - 143
Phenol-d5 (Surr)	78		25 - 130
2-Fluorophenol (Surr)	78		25 - 130
2,4,6-Tribromophenol (Surr)	96		31 - 141

Lab Sample ID: 680-93445-D-1-A MS

Matrix: Water									Prep 1	ype: Total/NA
Analysis Batch: 290916									Prep	Batch: 290348
	Sample	Sample	Spike	MS	MS				%Rec.	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Benzaldehyde	9.5		99.1	43.5	F	ug/L		44	59 - 142	

TestAmerica Savannah

Client Sample ID: 680-93445-D-1-A MS

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93445-1

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

Lab Sample ID: 680-93445-D-1-A MS

**Matrix: Water** 

Analysis Batch: 290916

<b>Client Sample ID:</b>	680-93445-D-1-A MS
	<b>Prep Type: Total/NA</b>
	D 0 1 1 000010

Analysis Batch: 290916	01-	0	0					Prep Bat	ch: 29034
Ameliate	•	Sample	Spike		MS	l lmi4	D 0/ Do	%Rec.	
Analyte Acetophenone	9.5	Qualifier	99.1 —	50.3	Qualifier	Unit ug/L	<u>D</u> %Red		
•	9.5		99.1	46.5			47		
Bis(2-chloroethyl)ether	9.5		99.1	44.8		ug/L	45		
bis (2-chloroisopropyl) ether						ug/L			
Bis(2-chloroethoxy)methane	9.5		99.1	49.6	г	ug/L	50		
Caprolactam	9.5		99.1	64.3		ug/L	65		
4-Chloroaniline	19		99.1 99.1	3.86		ug/L	- 4		
4-Chloro-3-methylphenol	9.5			57.7		ug/L	58		
2-Chlorophenol	9.5		99.1	51.2		ug/L	52		
1,1'-Biphenyl	9.5		99.1	52.0		ug/L	52		
2-Chloronaphthalene	9.5		99.1	51.3	F	ug/L	52		
2,4-Dichlorophenol	9.5		99.1	56.5	. <u>.</u>	ug/L	57		
Acenaphthylene	9.5		99.1	57.7	F	ug/L	58		
2,4-Dimethylphenol	9.5		99.1	55.9	_	ug/L	56		
Acenaphthene	2.0		99.1	52.4		ug/L	51		
Dimethyl phthalate	9.5		99.1	63.0	F	ug/L	64		
2,4-Dinitrophenol	48		99.1	73.0		ug/L	74		
Dibenzofuran	9.5		99.1	57.6		ug/L	58		
2,4-Dinitrotoluene	9.5		99.1	62.7		ug/L	63		
2,6-Dinitrotoluene	9.5		99.1	61.0		ug/L	62		
Diethyl phthalate	9.5		99.1	65.0	F	ug/L	66	70 - 130	
4-Chlorophenyl phenyl ether	9.5		99.1	59.0		ug/L	60	57 - 130	
Fluorene	3.7		99.1	59.9	F	ug/L	57	61 - 130	
4,6-Dinitro-2-methylphenol	48		99.1	69.8		ug/L	70	45 - 134	
4-Bromophenyl phenyl ether	9.5		99.1	58.6	F	ug/L	59	61 - 130	
Hexachlorobenzene	9.5		99.1	48.0	F	ug/L	48	52 - 130	
Hexachlorobutadiene	9.5		99.1	48.0		ug/L	48	36 - 130	
Atrazine	9.5		99.1	18.5	F	ug/L	19	66 - 130	
Hexachlorocyclopentadiene	9.5		99.1	15.6		ug/L	16	10 - 130	
Hexachloroethane	9.5		99.1	40.6		ug/L	41	39 - 130	
Anthracene	9.5		99.1	52.2	F	ug/L	53	61 - 130	
Isophorone	9.5		99.1	48.4	F	ug/L	49	59 - 130	
2-Methylnaphthalene	9.5		99.1	47.5	F	ug/L	48	52 - 130	
Carbazole	9.5		99.1	52.5	F	ug/L	53	67 - 130	
2-Methylphenol	9.5		99.1	51.4	F	ug/L	52	55 - 130	
Di-n-butyl phthalate	9.5		99.1	58.4	F	ug/L	59	66 - 130	
3 & 4 Methylphenol	9.5		99.1	53.7		ug/L	54	35 - 130	
Fluoranthene	9.5		99.1	56.0		ug/L	57	56 - 130	
Naphthalene	9.5		99.1	47.1	F	ug/L	48	50 - 130	
2-Nitroaniline	48		99.1	58.3	F	ug/L	59	60 - 130	
Butyl benzyl phthalate	9.5		99.1	58.3	F	ug/L	59	66 - 130	
3,3'-Dichlorobenzidine	57		99.1	59	UF	ug/L	C	27 - 130	
3-Nitroaniline	48		99.1	6.39	JF	ug/L	6	54 - 130	
4-Nitroaniline	48		99.1	20.4	JF	ug/L	21		
Benzo[a]anthracene	9.5		99.1	49.1	F	ug/L	50	58 - 130	
Chrysene	9.5		99.1	50.3		ug/L	51		
Nitrobenzene	9.5		99.1	50.3		ug/L	51		
Bis(2-ethylhexyl) phthalate	9.5		99.1	47.6		ug/L	48		
2-Nitrophenol	9.5		99.1	52.6		ug/L	53		

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

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

Lab Sample ID: 680-93445-D-1-A MS

**Matrix: Water** 

Analysis Batch: 290916

Client Sample ID: 680-93445-D-1-A MS Prep Type: Total/NA

Prep Batch: 290348

	Sample	Sample	Spike	MS	MS				%Rec.	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Di-n-octyl phthalate	9.5		99.1	49.1	F	ug/L		50	64 - 130	
4-Nitrophenol	48		99.1	60.8		ug/L		61	38 _ 130	
Benzo[b]fluoranthene	9.5		99.1	56.5		ug/L		57	51 - 130	
Benzo[k]fluoranthene	9.5		99.1	63.4		ug/L		62	53 - 130	
N-Nitrosodi-n-propylamine	9.5		99.1	52.4	F	ug/L		53	64 - 130	
Benzo[a]pyrene	9.5		99.1	50.2	F	ug/L		47	61 - 130	
N-Nitrosodiphenylamine	9.5		99.1	26.0	F	ug/L		26	68 _ 130	
Indeno[1,2,3-cd]pyrene	9.5		99.1	38.2	F	ug/L		37	47 - 130	
Pentachlorophenol	48		99.1	75.4		ug/L		76	42 - 138	
Dibenz(a,h)anthracene	9.5		99.1	53.6	F	ug/L		44	55 <sub>-</sub> 130	
Phenanthrene	9.5		99.1	58.4	F	ug/L		59	62 _ 130	
Benzo[g,h,i]perylene	9.5		99.1	45.1	F	ug/L		34	54 - 130	
Phenol	9.5		99.1	43.1		ug/L		43	29 _ 130	
Pyrene	9.5		99.1	53.8	F	ug/L		54	60 - 130	
2,4,5-Trichlorophenol	9.5		99.1	64.3		ug/L		65	61 _ 130	
2,4,6-Trichlorophenol	9.5		99.1	63.8		ug/L		64	57 - 130	

MS MS

Sample

9.5

9.5

Sample

Surrogate	%Recovery	Qualifier	Limits
Nitrobenzene-d5 (Surr)	48	-	39 - 130
2-Fluorobiphenyl	48		38 - 130
Terphenyl-d14 (Surr)	30		10 - 143
Phenol-d5 (Surr)	40		25 - 130
2-Fluorophenol (Surr)	41		25 - 130
2,4,6-Tribromophenol (Surr)	62		31 - 141

Lab Sample ID: 680-93445-D-1-B MSD

**Matrix: Water** 

2-Chlorophenol

Analysis Batch: 290916

Client Sample ID: 680-93445-D-1-B MSD

%Rec.

57 - 130

58 - 130

45

47

53

Prep Type: Total/NA Prep Batch: 290348

**RPD** 

50

50

50

50

50

50

50

50

Analyte Result Qualifier Added Result Qualifier Limits RPD Limit Unit D %Rec 98.5 35.4 F Benzaldehyde 9.5 59 - 142 ug/L 36 20 50 Acetophenone 9.5 98.5 44.7 F 45 54 - 130 12 ug/L 50 Bis(2-chloroethyl)ether 9.5 98.5 40.1 F ug/L 41 56 - 130 15 50 bis (2-chloroisopropyl) ether 9.5 98.5 39.9 F ug/L 41 55 - 130 12 50 Bis(2-chloroethoxy)methane 9.5 98.5 32 7 F 33 64 - 130 41 50 ug/L Caprolactam 9.5 98.5 72.4 ug/L 74 34 - 130 12 50 98.5 ug/L 4-Chloroaniline 19 20 UF 0 42 - 130 NC 50 4-Chloro-3-methylphenol 9.5 98.5 51.7 F ug/L 52 60 - 130 11 50

MSD MSD

44.1 F

52.2 F

ug/L

ug/L

Spike

98.5

1,1'-Biphenyl 9.5 98.5 46.1 F ug/L 54 - 130 2-Chloronaphthalene 9.5 98.5 46.0 F ug/L 47 53 - 130 11 50 98.5 48.6 F 54 - 130 2,4-Dichlorophenol 9.5 ug/L 49 15 ug/L Acenaphthylene 9.5 98.5 46.2 F 47 60 - 130 22 2,4-Dimethylphenol 9.5 98.5 49 40 - 130 48.7 ug/L 14 50 Acenaphthene 2.0 98.5 47.5 F 46 55 - 130 10 ug/L 9.5 60 Dimethyl phthalate 98.5 58.9 F ug/L 69 - 130 2,4-Dinitrophenol 48 98.5 72.5 ug/L 74 20 - 165 Dibenzofuran 98.5

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15

Client: ARCADIS U.S., Inc.

**Matrix: Water** 

Phenol

Pyrene

2,4,5-Trichlorophenol

2,4,6-Trichlorophenol

Project/Site: CSX C&O Canal Brunswick, MD

Lab Sample ID: 680-93445-D-1-B MSD

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

9.5

9.5

9.5

9.5

TestAmerica Job ID: 680-93445-1

Client Sample ID: 680-93445-D-1-B MSD

Prep Type: Total/NA **Prep Batch: 290348** 

Analysis Batch: 290916										Batch: 2	
	•	Sample	Spike		MSD				%Rec.		RPD
Analyte		Qualifier	Added		Qualifier	Unit	D	%Rec	Limits	RPD	Limit
2,4-Dinitrotoluene	9.5		98.5	62.6	. <u>.</u>	ug/L		64	63 - 130	0	50
2,6-Dinitrotoluene	9.5		98.5	56.3		ug/L		57	65 - 130	8	50
Diethyl phthalate	9.5		98.5	62.2		ug/L		63	70 - 130	4	50
4-Chlorophenyl phenyl ether	9.5		98.5	54.7		ug/L		56	57 <sub>-</sub> 130	8	50
Fluorene	3.7		98.5	55.6	F	ug/L		53	61 - 130	7	50
4,6-Dinitro-2-methylphenol	48		98.5	70.7		ug/L		72	45 - 134	1	50
4-Bromophenyl phenyl ether	9.5		98.5	58.1	F	ug/L		59	61 - 130	1	50
Hexachlorobenzene	9.5		98.5	56.0		ug/L		57	52 <sub>-</sub> 130	15	50
Hexachlorobutadiene	9.5		98.5	43.9		ug/L		45	36 - 130	9	50
Atrazine	9.5		98.5	6.40	JF	ug/L		7	66 - 130	97	50
Hexachlorocyclopentadiene	9.5		98.5	12.6		ug/L		13	10 - 130	21	50
Hexachloroethane	9.5		98.5	37.5	F	ug/L		38	39 - 130	8	50
Anthracene	9.5		98.5	54.4	F	ug/L		55	61 - 130	4	50
Isophorone	9.5		98.5	44.7	F	ug/L		45	59 - 130	8	50
2-Methylnaphthalene	9.5		98.5	42.1	F	ug/L		43	52 - 130	12	50
Carbazole	9.5		98.5	40.8	F	ug/L		41	67 - 130	25	50
2-Methylphenol	9.5		98.5	44.6	F	ug/L		45	55 <sub>-</sub> 130	14	50
Di-n-butyl phthalate	9.5		98.5	64.6		ug/L		66	66 - 130	10	50
3 & 4 Methylphenol	9.5		98.5	47.3		ug/L		48	35 _ 130	13	50
Fluoranthene	9.5		98.5	63.1		ug/L		64	56 <sub>-</sub> 130	12	50
Naphthalene	9.5		98.5	43.3	F	ug/L		44	50 - 130	8	50
2-Nitroaniline	48		98.5	54.4	F	ug/L		55	60 - 130	7	50
Butyl benzyl phthalate	9.5		98.5	67.8		ug/L		69	66 - 130	15	50
3,3'-Dichlorobenzidine	57		98.5	59	UF	ug/L		0	27 - 130	NC	50
3-Nitroaniline	48		98.5	49	UF	ug/L		0	54 <sub>-</sub> 130	NC	50
4-Nitroaniline	48		98.5	10.7		ug/L		11	54 - 130	62	50
Benzo[a]anthracene	9.5		98.5	62.6		ug/L		64	58 <sub>-</sub> 130	24	50
Chrysene	9.5		98.5	67.0		ug/L		68	59 <sub>-</sub> 130	28	50
Nitrobenzene	9.5		98.5	42.6	F	ug/L		43	56 - 130	16	50
Bis(2-ethylhexyl) phthalate	9.5		98.5	67.3		ug/L		68	62 - 130	34	50
2-Nitrophenol	9.5		98.5	47.6	F	ug/L		48	54 - 130	10	50
Di-n-octyl phthalate	9.5		98.5	69.2	•	ug/L		70	64 - 130	34	50
4-Nitrophenol	48		98.5	62.1		ug/L		63	38 - 130	2	50
Benzo[b]fluoranthene	9.5		98.5	85.0				86	51 - 130	40	50
	9.5		98.5	83.0		ug/L ug/L		82	53 - 130	27	50
Benzo[k]fluoranthene					_	•					
N-Nitrosodi-n-propylamine	9.5		98.5	47.4	F	ug/L		48	64 - 130	10	50
Benzo[a]pyrene	9.5		98.5	70.9	_	ug/L		69 34	61 <sub>-</sub> 130	34	50
N-Nitrosodiphenylamine	9.5		98.5	20.8	Г	ug/L		21	68 <sub>-</sub> 130	22	50
Indeno[1,2,3-cd]pyrene	9.5		98.5	54.7		ug/L		54	47 - 130	36	50
Pentachlorophenol	48		98.5	76.5		ug/L		78	42 - 138	1	50
Dibenz(a,h)anthracene	9.5		98.5	77.7		ug/L		69	55 - 130	37	50
Phenanthrene	9.5		98.5	58.8	F	ug/L		60	62 _ 130	1	50
Benzo[g,h,i]perylene	9.5		98.5	69.3		ug/L		59	54 - 130	42	50
Discouri			00.5	0		. //		00	00 400		

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98.5

98.5

98.5

98.5

37.5

62.1

60.3

57.1

ug/L

ug/L

ug/L

ug/L

38

63

61

58

29 \_ 130

60 - 130

61 - 130

57 \_ 130

14

14

7

50

50

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

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

MSD MSD

%Recovery Qualifier

Lab Sample ID: 680-93445-D-1-B MSD

**Matrix: Water** 

Surrogate

Analysis Batch: 290916

Client Sample ID: 680-93445-D-1-B MSD

**Prep Batch: 290348** 

Prep Type: Total/NA

Nitrobenzene-d5 (Surr) 47 39 - 130 2-Fluorobiphenyl 50 38 - 130 10 - 143 Terphenyl-d14 (Surr) 42 Phenol-d5 (Surr) 41 25 - 130 2-Fluorophenol (Surr) 25 - 130 41 2,4,6-Tribromophenol (Surr) 71 31 - 141

Limits

Lab Sample ID: MB 680-290598/21-A

**Matrix: Solid** 

Analysis Batch: 291413

Client Sample ID: Method Blank

Prep Type: Total/NA

**Prep Batch: 290598** 

Analysis Batch. 291413	MB	MB						Frep Batch.	
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzaldehyde	330	U	330	58	ug/Kg		08/23/13 13:40	08/30/13 00:17	1
Acetophenone	330	U	330	28	ug/Kg		08/23/13 13:40	08/30/13 00:17	1
Bis(2-chloroethyl)ether	330	U	330	45	ug/Kg		08/23/13 13:40	08/30/13 00:17	1
bis (2-chloroisopropyl) ether	330	U	330	30	ug/Kg		08/23/13 13:40	08/30/13 00:17	1
Bis(2-chloroethoxy)methane	330	U	330	39	ug/Kg		08/23/13 13:40	08/30/13 00:17	1
Caprolactam	330	U	330	66	ug/Kg		08/23/13 13:40	08/30/13 00:17	1
4-Chloroaniline	660	U	660	52	ug/Kg		08/23/13 13:40	08/30/13 00:17	1
4-Chloro-3-methylphenol	330	U	330	35	ug/Kg		08/23/13 13:40	08/30/13 00:17	1
2-Chlorophenol	330	U	330	40	ug/Kg		08/23/13 13:40	08/30/13 00:17	1
1,1'-Biphenyl	740	U	740	740	ug/Kg		08/23/13 13:40	08/30/13 00:17	1
2-Chloronaphthalene	330	U	330	35	ug/Kg		08/23/13 13:40	08/30/13 00:17	1
2,4-Dichlorophenol	330	U	330	35	ug/Kg		08/23/13 13:40	08/30/13 00:17	1
Acenaphthylene	330	U	330	36	ug/Kg		08/23/13 13:40	08/30/13 00:17	1
2,4-Dimethylphenol	330	U	330	44	ug/Kg		08/23/13 13:40	08/30/13 00:17	1
Acenaphthene	330	U	330	41	ug/Kg		08/23/13 13:40	08/30/13 00:17	1
Dimethyl phthalate	330	U	330	34	ug/Kg		08/23/13 13:40	08/30/13 00:17	1
2,4-Dinitrophenol	1700	U	1700	830	ug/Kg		08/23/13 13:40	08/30/13 00:17	1
Dibenzofuran	330	U	330	33	ug/Kg		08/23/13 13:40	08/30/13 00:17	1
2,4-Dinitrotoluene	330	U	330	49	ug/Kg		08/23/13 13:40	08/30/13 00:17	1
2,6-Dinitrotoluene	330	U	330	42	ug/Kg		08/23/13 13:40	08/30/13 00:17	1
Diethyl phthalate	330	U	330	37	ug/Kg		08/23/13 13:40	08/30/13 00:17	1
4-Chlorophenyl phenyl ether	330	U	330	44	ug/Kg		08/23/13 13:40	08/30/13 00:17	1
Fluorene	330	U	330	36	ug/Kg		08/23/13 13:40	08/30/13 00:17	1
4,6-Dinitro-2-methylphenol	1700	U	1700	170	ug/Kg		08/23/13 13:40	08/30/13 00:17	1
4-Bromophenyl phenyl ether	330	U	330	36	ug/Kg		08/23/13 13:40	08/30/13 00:17	1
Hexachlorobenzene	330	U	330	39	ug/Kg		08/23/13 13:40	08/30/13 00:17	1
Hexachlorobutadiene	330	U	330	36	ug/Kg		08/23/13 13:40	08/30/13 00:17	1
Atrazine	330	U	330	23	ug/Kg		08/23/13 13:40	08/30/13 00:17	1
Hexachlorocyclopentadiene	330	U	330	41	ug/Kg		08/23/13 13:40	08/30/13 00:17	1
Hexachloroethane	330	U	330	28	ug/Kg		08/23/13 13:40	08/30/13 00:17	1
Anthracene	330	U	330	25	ug/Kg		08/23/13 13:40	08/30/13 00:17	1
Isophorone	330	U	330	33	ug/Kg		08/23/13 13:40	08/30/13 00:17	1
2-Methylnaphthalene	330	U	330	38	ug/Kg		08/23/13 13:40	08/30/13 00:17	1
Carbazole	330	U	330	30	ug/Kg		08/23/13 13:40	08/30/13 00:17	1
2-Methylphenol	330	U	330	27	ug/Kg		08/23/13 13:40	08/30/13 00:17	1
Di-n-butyl phthalate	330	U	330	30	ug/Kg		08/23/13 13:40	08/30/13 00:17	1

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RL

MDL Unit

D

Prepared

08/23/13 13:40

08/23/13 13:40

08/23/13 13:40

08/23/13 13:40

08/23/13 13:40

08/23/13 13:40

TestAmerica Job ID: 680-93445-1

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

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

MB MB Result Qualifier

Lab Sample ID: MB 680-290598/21-A

**Matrix: Solid** 

Analyte

Analysis Batch: 291413

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

Analyzed

**Prep Batch: 290598** 

Dil Fac

3 & 4 Methylphenol	330	U	330 4	3	ug/Kg	08/23/13 13:40	08/30/13 00:17	1
Fluoranthene	330	U	330 3	2	ug/Kg	08/23/13 13:40	08/30/13 00:17	1
Naphthalene	330	U	330 3	0	ug/Kg	08/23/13 13:40	08/30/13 00:17	1
2-Nitroaniline	1700	U	1700 4	5	ug/Kg	08/23/13 13:40	08/30/13 00:17	1
Butyl benzyl phthalate	330	U	330 2	6	ug/Kg	08/23/13 13:40	08/30/13 00:17	1
3,3'-Dichlorobenzidine	660	U	660 2	8	ug/Kg	08/23/13 13:40	08/30/13 00:17	1
3-Nitroaniline	1700	U	1700 4	6	ug/Kg	08/23/13 13:40	08/30/13 00:17	1
4-Nitroaniline	1700	U	1700 4	9	ug/Kg	08/23/13 13:40	08/30/13 00:17	1
Benzo[a]anthracene	330	U	330 2	7	ug/Kg	08/23/13 13:40	08/30/13 00:17	1
Chrysene	330	U	330 2	1	ug/Kg	08/23/13 13:40	08/30/13 00:17	1
Nitrobenzene	330	U	330 2	6	ug/Kg	08/23/13 13:40	08/30/13 00:17	1
Bis(2-ethylhexyl) phthalate	330	U	330 2	9	ug/Kg	08/23/13 13:40	08/30/13 00:17	1
2-Nitrophenol	330	U	330 4	1	ug/Kg	08/23/13 13:40	08/30/13 00:17	1
Di-n-octyl phthalate	330	U	330 2	9	ug/Kg	08/23/13 13:40	08/30/13 00:17	1
4-Nitrophenol	1700	U	1700 33	0	ug/Kg	08/23/13 13:40	08/30/13 00:17	1
Benzo[b]fluoranthene	330	U	330 3	8	ug/Kg	08/23/13 13:40	08/30/13 00:17	1
Benzo[k]fluoranthene	330	U	330 6	5	ug/Kg	08/23/13 13:40	08/30/13 00:17	1
N-Nitrosodi-n-propylamine	330	U	330 3	2	ug/Kg	08/23/13 13:40	08/30/13 00:17	1
Benzo[a]pyrene	330	U	330 5	2	ug/Kg	08/23/13 13:40	08/30/13 00:17	1
N-Nitrosodiphenylamine	330	U	330 3	3	ug/Kg	08/23/13 13:40	08/30/13 00:17	1
Indeno[1,2,3-cd]pyrene	65.0	J	330 2	8	ug/Kg	08/23/13 13:40	08/30/13 00:17	1
Pentachlorophenol	1700	U	1700 33	0	ug/Kg	08/23/13 13:40	08/30/13 00:17	1
Dibenz(a,h)anthracene	63.0	J	330 3	9	ug/Kg	08/23/13 13:40	08/30/13 00:17	1

MB MB

330 U

69.4 J

330 U

330 U

330 U

330 U

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	68		46 - 130	08/23/13 13:40	08/30/13 00:17	1
2-Fluorobiphenyl	77		58 - 130	08/23/13 13:40	08/30/13 00:17	1
Terphenyl-d14 (Surr)	95		60 - 130	08/23/13 13:40	08/30/13 00:17	1
Phenol-d5 (Surr)	62		49 - 130	08/23/13 13:40	08/30/13 00:17	1
2-Fluorophenol (Surr)	66		40 - 130	08/23/13 13:40	08/30/13 00:17	1
2,4,6-Tribromophenol (Surr)	73		58 - 130	08/23/13 13:40	08/30/13 00:17	1

330

330

330

330

330

330

27 ug/Kg

22 ug/Kg

34 ug/Kg

27 ug/Kg

35 ug/Kg

29 ug/Kg

Lab Sample ID: LCS 680-290598/22-A

**Matrix: Solid** 

Phenanthrene

Phenol

Pyrene

Benzo[g,h,i]perylene

2,4,5-Trichlorophenol

2,4,6-Trichlorophenol

Analysis Batch: 291413

**Client Sample ID: Lab Control Sample** Prep Type: Total/NA **Prep Batch: 290598** 

08/30/13 00:17

08/30/13 00:17

08/30/13 00:17

08/30/13 00:17

08/30/13 00:17

08/30/13 00:17

•	Spike	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Benzaldehyde	3290	418		ug/Kg		13	10 - 130	
Acetophenone	3290	2110		ug/Kg		64	42 - 130	
Bis(2-chloroethyl)ether	3290	2050		ug/Kg		62	42 - 130	
bis (2-chloroisopropyl) ether	3290	2000		ug/Kg		61	44 - 130	
Bis(2-chloroethoxy)methane	3290	2280		ug/Kg		69	56 - 130	

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93445-1

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

Lab Sample ID: LCS 680-290598/22-A

**Matrix: Solid** 

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 290598

Analysis Batch: 291413	0						Prep Batc	h: 29059
Analyte	Spike		LCS Qualifier	Unit	D	9/ Boo	%Rec.	
Analyte Caprolactam	Added 3290	2510	Quaimer	Unit ug/Kg		<b>%Rec</b> 76	Limits 52 _ 130	
4-Chloroaniline	3290	779	*			24	36 - 130	
				ug/Kg		2 <del>4</del> 77	52 <sub>-</sub> 130	
4-Chloro-3-methylphenol	3290	2530		ug/Kg				
2-Chlorophenol	3290	2270		ug/Kg		69	51 - 130	
1,1'-Biphenyl	3290	2480		ug/Kg		75 	57 _ 130	
2-Chloronaphthalene	3290	2400		ug/Kg		73	55 - 130	
2,4-Dichlorophenol	3290	2530		ug/Kg		77	53 - 130	
Acenaphthylene	3290	2620		ug/Kg		79	58 - 130	
2,4-Dimethylphenol	3290	2390		ug/Kg		73	47 - 130	
Acenaphthene	3290	2250		ug/Kg		68	58 - 130	
Dimethyl phthalate	3290	2510		ug/Kg		76	63 - 130	
2,4-Dinitrophenol	3290	1740		ug/Kg		53	10 - 154	
Dibenzofuran	3290	2590		ug/Kg		79	56 - 130	
2,4-Dinitrotoluene	3290	2590		ug/Kg		79	55 - 130	
2,6-Dinitrotoluene	3290	2460		ug/Kg		75	57 - 130	
Diethyl phthalate	3290	2640		ug/Kg		80	62 - 130	
4-Chlorophenyl phenyl ether	3290	2780		ug/Kg		84	61 - 130	
Fluorene	3290	2560		ug/Kg		78	58 - 130	
4,6-Dinitro-2-methylphenol	3290	2340		ug/Kg		71	14 - 137	
4-Bromophenyl phenyl ether	3290	2790		ug/Kg		85	65 - 130	
Hexachlorobenzene	3290	2680		ug/Kg		81	59 - 130	
Hexachlorobutadiene	3290	2940		ug/Kg		89	47 - 130	
Atrazine	3290	2310		ug/Kg		70	54 - 141	
Hexachlorocyclopentadiene	3290	2680		ug/Kg		82	35 - 130	
Hexachloroethane	3290	2100		ug/Kg ug/Kg		64	44 - 130	
Anthracene	3290	2420		ug/Kg		73	60 - 130	
	3290	2140		ug/Kg ug/Kg		75 65	48 - 130	
Isophorone  2 Methylpophthologo	3290					74	55 <sub>-</sub> 130	
2-Methylnaphthalene		2440		ug/Kg				
Carbazole	3290	2580		ug/Kg		78	60 - 130	
2-Methylphenol	3290	2290		ug/Kg		69	49 - 130	
Di-n-butyl phthalate	3290	2640		ug/Kg		80	65 - 130	
3 & 4 Methylphenol	3290	2300		ug/Kg		70	50 - 130	
Fluoranthene	3290	2690		ug/Kg		82	62 _ 130	
Naphthalene	3290	2480		ug/Kg		75	54 - 130	
2-Nitroaniline	3290	2320		ug/Kg		70	52 - 130	
Butyl benzyl phthalate	3290	2480		ug/Kg		75	65 - 134	
3,3'-Dichlorobenzidine	3290	1800		ug/Kg		55	45 - 130	
3-Nitroaniline	3290	1910		ug/Kg		58	42 - 130	
4-Nitroaniline	3290	2230		ug/Kg		68	49 - 130	
Benzo[a]anthracene	3290	2600		ug/Kg		79	62 - 130	
Chrysene	3290	2660		ug/Kg		81	62 - 130	
Nitrobenzene	3290	2310		ug/Kg		70	43 - 130	
Bis(2-ethylhexyl) phthalate	3290	2510		ug/Kg		76	62 - 132	
2-Nitrophenol	3290	2510		ug/Kg		76	45 - 130	
Di-n-octyl phthalate	3290	2670		ug/Kg		81	59 - 146	
4-Nitrophenol	3290	2410		ug/Kg		73	30 - 130	
Benzo[b]fluoranthene	3290	2580		ug/Kg		78	53 - 130	
	3290	2500		ug/Kg ug/Kg		76 76	57 <sub>-</sub> 130	

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10

11

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

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

Lab Sample ID: LCS 680-290598/22-A

Matrix: Solid

Analysis Batch: 291413

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 290598

	Spike	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
N-Nitrosodi-n-propylamine	3290	2160		ug/Kg		66	48 - 130	
Benzo[a]pyrene	3290	2410		ug/Kg		73	68 _ 131	
N-Nitrosodiphenylamine	3290	2580		ug/Kg		78	62 _ 130	
Indeno[1,2,3-cd]pyrene	3290	2170		ug/Kg		66	52 - 130	
Pentachlorophenol	3290	2570		ug/Kg		78	38 _ 131	
Dibenz(a,h)anthracene	3290	2240		ug/Kg		68	56 - 130	
Phenanthrene	3290	2540		ug/Kg		77	61 _ 130	
Benzo[g,h,i]perylene	3290	2170		ug/Kg		66	54 - 130	
Phenol	3290	2160		ug/Kg		66	46 - 130	
Pyrene	3290	2450		ug/Kg		74	59 <sub>-</sub> 130	
2,4,5-Trichlorophenol	3290	2750		ug/Kg		84	60 - 130	
2,4,6-Trichlorophenol	3290	2660		ug/Kg		81	53 - 130	

LCS LCS

Surrogate	%Recovery	Qualifier	Limits
Nitrobenzene-d5 (Surr)	70		46 - 130
2-Fluorobiphenyl	77		58 - 130
Terphenyl-d14 (Surr)	82		60 - 130
Phenol-d5 (Surr)	65		49 - 130
2-Fluorophenol (Surr)	68		40 - 130
2,4,6-Tribromophenol (Surr)	84		58 - 130

Lab Sample ID: 680-93445-5 MSD

Matrix: Solid

Analysis Batch: 291673

Prep Type: Total/NA

Prep Batch: 290598

Alialysis Dalcil. 231013									riepi	Jaicii. 2	90390
	Sample	Sample	Spike	MSD	MSD				%Rec.		RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Benzaldehyde	420		4200	1570		ug/Kg	₩	37	10 - 130	5	50
Acetophenone	420		4200	1870		ug/Kg	₩	45	42 - 130	9	50
Bis(2-chloroethyl)ether	420		4200	1930		ug/Kg	₩	46	42 - 130	2	50
bis (2-chloroisopropyl) ether	420		4200	1920		ug/Kg	₽	46	44 - 130	6	50
Bis(2-chloroethoxy)methane	420		4200	1990	F	ug/Kg	₩	47	56 - 130	11	50
Caprolactam	420		4200	1580	F	ug/Kg	₩	38	52 - 130	6	50
4-Chloroaniline	830		4200	746	JF	ug/Kg	₩	18	36 - 130	8	50
4-Chloro-3-methylphenol	420		4200	1750	F	ug/Kg	₩	42	52 - 130	17	50
2-Chlorophenol	420		4200	1560	F	ug/Kg	₩	37	51 - 130	1	50
1,1'-Biphenyl	930		4200	1950	F	ug/Kg	₩	46	57 - 130	5	50
2-Chloronaphthalene	420		4200	1830	F	ug/Kg	₩	44	55 - 130	7	50
2,4-Dichlorophenol	420		4200	1710	F	ug/Kg	₩	41	53 - 130	3	50
Acenaphthylene	420		4200	1730	F	ug/Kg	₩	41	58 - 130	2	50
2,4-Dimethylphenol	420		4200	417	JF	ug/Kg	₩	10	47 - 130	12	50
Acenaphthene	420		4200	1760	F	ug/Kg	₩	42	58 - 130	4	50
Dimethyl phthalate	420		4200	2110	F	ug/Kg	₩.	50	63 - 130	5	50
2,4-Dinitrophenol	2100		4200	2100	UF	ug/Kg	₩	0	10 - 154	NC	50
Dibenzofuran	420		4200	1930	F	ug/Kg	₩	46	56 - 130	3	50
2,4-Dinitrotoluene	420		4200	1740	F	ug/Kg	₩	42	55 - 130	11	50
2,6-Dinitrotoluene	420		4200	1890	F	ug/Kg	₩	45	57 - 130	5	50
Diethyl phthalate	420		4200	2170	F	ug/Kg	₩	52	62 - 130	1	50
4-Chlorophenyl phenyl ether	420		4200	2180	F	ug/Kg	₩.	52	61 - 130	3	50

TestAmerica Savannah

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6

3

5

7

10

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1/2

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

Lab Sample ID: 680-93445-5 MSD

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

Client Sample ID: SB01-08 (1.5-2.5)

Matrix: Solid										ype: To	
Analysis Batch: 291673										Batch: 2	
	•	Sample	Spike	MSD			_	0/ 5	%Rec.		RPD
Analyte Fluorene	420	Qualifier	Added 4200	1960	Qualifier F	Unit ug/Kg	— <del>D</del>	%Rec 47	Limits 58 - 130	<b>RPD</b> 1	Limit 50
	2100		4200	1210			₩	29	14 - 137	25	50
4,6-Dinitro-2-methylphenol						ug/Kg				7	
4-Bromophenyl phenyl ether	420		4200	2130		ug/Kg	₩	51	65 - 130		50
Hexachlorobenzene	420		4200	2120	F	ug/Kg	₩	51	59 <sub>-</sub> 130	2	50
Hexachlorobutadiene	420		4200	2440	<u></u>	ug/Kg		58	47 - 130	1	50
Atrazine	420		4200	1700		ug/Kg	₩	41	54 - 141	3	50
Hexachlorocyclopentadiene	420		4200	400	JF	ug/Kg	*	10	35 - 130	43	50
Hexachloroethane	420		4200	1840	. <u>.</u>	ug/Kg		44	44 - 130	2	50
Anthracene	420		4200	1730		ug/Kg	₩	41	60 - 130	1	50
Isophorone	420		4200	1940		ug/Kg	₩	46	48 - 130	4	50
2-Methylnaphthalene	420		4200	2130		ug/Kg		51	55 - 130	14	50
Carbazole	420		4200	1850		ug/Kg	*	44	60 - 130	5	50
2-Methylphenol	420		4200	917		ug/Kg	*	22	49 - 130	2	50
Di-n-butyl phthalate	420		4200			ug/Kg		54	65 - 130	10	50
3 & 4 Methylphenol	420		4200	934	F	ug/Kg	₽	22	50 - 130	4	50
Fluoranthene	420		4200	2120	F	ug/Kg	₽	51	62 - 130	5	50
Naphthalene	420		4200	2130	F	ug/Kg	<b>#</b>	51	54 - 130	2	50
2-Nitroaniline	2100		4200	1750	JF	ug/Kg	☼	42	52 - 130	1	50
Butyl benzyl phthalate	420		4200	1980	F	ug/Kg	₩	47	65 - 134	8	50
3,3'-Dichlorobenzidine	830		4200	830	UF	ug/Kg	₩	0	45 - 130	NC	50
3-Nitroaniline	2100		4200	1250	JF	ug/Kg	₽	30	42 - 130	10	50
4-Nitroaniline	2100		4200	1270	JF	ug/Kg	₽	30	49 - 130	9	50
Benzo[a]anthracene	420		4200	1710	F	ug/Kg	₽	41	62 - 130	1	50
Chrysene	420		4200	1750	F	ug/Kg	₽	42	62 - 130	1	50
Nitrobenzene	420		4200	1840		ug/Kg	☼	44	43 - 130	13	50
Bis(2-ethylhexyl) phthalate	420		4200	2140	F	ug/Kg	₽	51	62 - 132	13	50
2-Nitrophenol	420		4200	1870		ug/Kg	₩	45	45 - 130	5	50
Di-n-octyl phthalate	420		4200	2340	F	ug/Kg	₽	56	59 - 146	13	50
4-Nitrophenol	2100		4200	1890	J	ug/Kg	₽	45	30 - 130	5	50
Benzo[b]fluoranthene	420		4200	1680	F	ug/Kg	₽	40	53 - 130	3	50
Benzo[k]fluoranthene	420		4200	1520	F	ug/Kg	☼	36	57 - 130	4	50
N-Nitrosodi-n-propylamine	420		4200	1990	F	ug/Kg	☼	47	48 - 130	2	50
Benzo[a]pyrene	420		4200	1350	F	ug/Kg	\$	32	68 - 131	0	50
N-Nitrosodiphenylamine	420		4200	1420	F	ug/Kg	≎	34	62 - 130	3	50
Indeno[1,2,3-cd]pyrene	420		4200	1360	F	ug/Kg	≎	32	52 - 130	4	50
Pentachlorophenol	2100		4200	1910	J	ug/Kg	Φ.	46	38 - 131	6	50
Dibenz(a,h)anthracene	420		4200	1430	F	ug/Kg	₽	34	56 - 130	8	50
Phenanthrene	420		4200	2070	F	ug/Kg	₽	49	61 - 130	3	50
Benzo[g,h,i]perylene	420		4200	1290	F	ug/Kg		31	54 - 130	6	50
Phenol	420		4200	1440	F	ug/Kg	₽	34	46 - 130	4	50
Pyrene	420		4200	1680	F	ug/Kg	☼	40	59 - 130	1	50
2,4,5-Trichlorophenol	420		4200	1980		ug/Kg		47	60 - 130	5	50
2,4,6-Trichlorophenol	420		4200	1560		ug/Kg	₩	37	53 _ 130	7	50
•						5 0					
		MSD									
Surrogato	%Pacayary	Qualifier	l imite								

Surrogate %Recovery Qualifier Limits 44 X 46 - 130

Nitrobenzene-d5 (Surr) 2-Fluorobiphenyl 47 X 58 - 130 Terphenyl-d14 (Surr) 43 X 60 - 130

Project/Site: CSX C&O Canal Brunswick, MD

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

MSD MSD

Lab Sample ID: 680-93445-5 MSD

**Matrix: Solid** 

**Analysis Batch: 291673** 

Client Sample ID: SB01-08 (1.5-2.5)

Prep Type: Total/NA

**Prep Batch: 290598** 

Surrogate	%Recovery	Qualifier	Limits
Phenol-d5 (Surr)	30	X	49 - 130
2-Fluorophenol (Surr)	28	X	40 - 130
2,4,6-Tribromophenol (Surr)	20	X	58 - 130

Method: 8015C - Nonhalogenated Organics using GC/FID -Modified (Gasoline Range Organics)

MB MB

Qualifier

%Recovery

Lab Sample ID: MB 680-290726/5

**Matrix: Solid** 

Analysis Batch: 290726

Client Sample ID: Method Blank

Analyzed

08/24/13 13:39

Prep Type: Total/NA

мв мв MDL Unit Analyte Result Qualifier RL D Prepared Analyzed Dil Fac 250 Ū 250 08/24/13 13:39 Gasoline Range Organics (GRO) 19 ug/Kg -C6-C10

Limits

a,a,a-Trifluorotoluene

Lab Sample ID: LCS 680-290726/6

**Matrix: Solid** 

Surrogate

90 70 - 131

Client Sample ID: Lab Control Sample

Prepared

Prep Type: Total/NA

Dil Fac

Analysis Batch: 290726

Spike LCS LCS %Rec. Added Result Qualifier Unit %Rec Limits 1000 905 ug/Kg 64 - 133 Gasoline Range Organics (GRO)

-C6-C10

LCS LCS Surrogate %Recovery Qualifier Limits a,a,a-Trifluorotoluene 91 70 - 131

Lab Sample ID: LCSD 680-290726/7

**Matrix: Solid** 

Analysis Batch: 290726

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

	Spike	LCSD	LCSD				%Rec.		RPD
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Gasoline Range Organics (GRO)	 1000	1290		ug/Kg		129	64 - 133	35	50

-C6-C10

LCSD LCSD

%Recovery Surrogate Qualifier Limits a,a,a-Trifluorotoluene 87 70 - 131

Lab Sample ID: MB 680-290745/6

Analysis Batch: 290745

**Matrix: Solid** 

MR MR

Analyte Result Qualifier RL MDL Unit D Prepared Analyzed Dil Fac 250 U 250 19 08/26/13 11:49 ug/Kg Gasoline Range Organics (GRO)

-C6-C10

TestAmerica Savannah

Prep Type: Total/NA

Client Sample ID: Method Blank

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Type: Total/NA

RPD

Prep Type: Total/NA

RPD

Limit

50

Dil Fac

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

Method: 8015C - Nonhalogenated Organics using GC/FID -Modified (Gasoline Range Organics)

(Continued)

Lab Sample ID: MB 680-290745/6

**Matrix: Solid** 

Analysis Batch: 290745

MR MR

Surrogate

%Recovery Qualifier 85

Limits 70 - 131

Spike

Added

1000

Prepared Analyzed 08/26/13 11:49

%Rec.

Limits

64 \_ 133

%Rec.

Limits

64 - 133

Lab Sample ID: LCS 680-290745/7 Client Sample ID: Lab Control Sample Prep Type: Total/NA

**Matrix: Solid** 

a,a,a-Trifluorotoluene

Analysis Batch: 290745

Analyte

Gasoline Range Organics (GRO)

-C6-C10

Surrogate a,a,a-Trifluorotoluene

LCS LCS %Recovery Qualifier

83

Limits 70 - 131

Spike

Added

1000

Limits

70 - 131

LCS LCS

LCSD LCSD

927

Result Qualifier

934

Result Qualifier

Unit

ug/Kg

Unit

ug/Kg

Client Sample ID: Lab Control Sample Dup

%Rec

93

%Rec

93

D

Lab Sample ID: LCSD 680-290745/8

**Matrix: Solid** 

Analysis Batch: 290745

Analyte

Gasoline Range Organics (GRO) -C6-C10

LCSD LCSD

a,a,a-Trifluorotoluene

%Recovery Qualifier Surrogate 89

Lab Sample ID: MB 680-290971/9

**Matrix: Solid** 

Analysis Batch: 290971

MB MB Result Qualifier

MB MB

5000 Ū

Analyte Gasoline Range Organics (GRO)

-C6-C10

Surrogate

a,a,a-Trifluorotoluene

%Recovery 104

Qualifier

Limits 70 - 131

RL

5000

LCS LCS

38900

Result Qualifier

MDL Unit

380 ug/Kg

Prepared

Unit

ug/Kg

D

%Rec

97

Prepared

Analyzed 08/27/13 11:40

Client Sample ID: Method Blank

Analyzed

08/27/13 11:40

Dil Fac

Dil Fac

Lab Sample ID: LCS 680-290971/8 **Matrix: Solid** 

Analysis Batch: 290971

Analyte Gasoline Range Organics (GRO)

-C6-C10

Surrogate a,a,a-Trifluorotoluene

95

LCS LCS %Recovery Qualifier

Limits 70 - 131

Spike

Added

40000

Client Sample ID: Lab Control Sample

%Rec.

Limits

64 - 133

Prep Type: Total/NA

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93445-1

Method: 8015C - Nonhalogenated Organics using GC/FID -Modified (Gasoline Range Organics) (Continued)

Lab Sample ID: LCSD 680-290971/11

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

Matrix: Solid

Analysis Batch: 290971

	Spike	LCSD	LCSD				%Rec.		RPD
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Gasoline Range Organics (GRO)	40000	39900		ug/Kg		100	64 - 133	3	50

-C6-C10

LCSD LCSD

 Surrogate
 %Recovery
 Qualifier
 Limits

 a,a,a-Trifluorotoluene
 105
 70 - 131

Lab Sample ID: MB 680-291184/5

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

**Matrix: Water** 

Analysis Batch: 291184

MB MB

Analyte	Result Qualifier	RL	MDL Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)	12.8 J	50	11 ug/L			08/28/13 10:51	1

-C6-C10

MB MB

Surrogate	%Recovery Q	Qualifier	Limits	Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene	92		70 - 130		08/28/13 10:51	1

Lab Sample ID: LCS 680-291184/6

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Matrix: Water

Analysis Batch: 291184

	Spike	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Gasoline Range Organics (GRO)	 200	156		ug/L		78	70 _ 148	 

-C6-C10

LCS LCS
Surrogate %Recovery Qualifier Limits
a,a,a-Trifluorotoluene 87 70 - 130

Lab Sample ID: LCSD 680-291184/7

Client Sample ID: Lab Control Sample Dup

**Prep Type: Total/NA** 

Matrix: Water Analysis Batch: 291184

Spike LCSD LCSD %Rec. RPD Analyte Added Result Qualifier Limit Unit %Rec Limits RPD 200 Gasoline Range Organics (GRO) 156 ug/L 78 70 - 148 50

-C6-C10

LCSD LCSD

 Surrogate
 %Recovery
 Qualifier
 Limits

 a,a,a-Trifluorotoluene
 88
 70 - 130

Lab Sample ID: MB 680-291258/7

Client Sample ID: Method Blank

Prep Type: Total/NA

Matrix: Solid

Analysis Batch: 291258

	MB	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)	250	U	250	19	ug/Kg			08/28/13 16:41	1

-C6-C10

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

Method: 8015C - Nonhalogenated Organics using GC/FID -Modified (Gasoline Range Organics)

MR MR

(Continued)

Lab Sample ID: MB 680-291258/7

**Matrix: Solid** 

Analysis Batch: 291258

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

Client Sample ID: Lab Control Sample Dup

Surrogate %Recovery Qualifier Limits Prepared Analyzed Dil Fac a,a,a-Trifluorotoluene 99 70 - 131 08/28/13 16:41

Lab Sample ID: LCS 680-291258/6 Client Sample ID: Lab Control Sample Prep Type: Total/NA

**Matrix: Solid** 

Analysis Batch: 291258

Spike LCS LCS %Rec. Result Qualifier Analyte Added Unit D %Rec Limits 1000 995 ug/Kg aa 64 \_ 133 Gasoline Range Organics (GRO)

-C6-C10

LCS LCS Surrogate %Recovery Qualifier Limits 70 - 131 a,a,a-Trifluorotoluene 90

Lab Sample ID: LCSD 680-291258/8

**Matrix: Solid** 

Analysis Batch: 291258

Spike LCSD LCSD %Rec. RPD Added Analyte Result Qualifier Unit %Rec Limits RPD Limit 1000 954 ug/Kg 95 64 - 13350 Gasoline Range Organics (GRO)

-C6-C10

LCSD LCSD

%Recovery Qualifier Limits Surrogate 70 - 131 a,a,a-Trifluorotoluene 86

Lab Sample ID: MB 680-291393/7

**Matrix: Solid** 

Analysis Batch: 291393

MB MB

RL Analyte Result Qualifier MDL Unit D Analyzed Dil Fac Prepared 250 Gasoline Range Organics (GRO) 250 Ū 19 ug/Kg 08/29/13 11:46

-C6-C10

MB MB Dil Fac Qualifier Limits Surrogate %Recovery Prepared Analyzed 70 - 131 a,a,a-Trifluorotoluene 90 08/29/13 11:46

Lab Sample ID: LCS 680-291393/8

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

**Matrix: Solid** 

Analysis Batch: 291393

Spike LCS LCS %Rec. Analyte Added Result Qualifier Unit D %Rec Limits 1000 878 88 64 - 133 Gasoline Range Organics (GRO) ug/Kg

-C6-C10

LCS LCS

%Recovery Qualifier Surrogate Limits a,a,a-Trifluorotoluene 89 70 - 131

TestAmerica Savannah

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Type: Total/NA

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93445-1

Method: 8015C - Nonhalogenated Organics using GC/FID -Modified (Gasoline Range Organics) (Continued)

Lab Sample ID: LCSD 680-291393/9

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analysis Batch: 291393

**Matrix: Solid** 

LCSD LCSD RPD Spike %Rec. Analyte Added Result Qualifier Unit %Rec Limits RPD Limit 1000 1020 ug/Kg 102 64 - 133 15 50 Gasoline Range Organics (GRO)

-C6-C10

LCSD LCSD

Limits Surrogate %Recovery Qualifier

a,a,a-Trifluorotoluene 89 70 - 131

Method: 8015C - Nonhalogenated Organics using GC/FID -Modified (Diesel Range Organics)

Lab Sample ID: MB 490-103240/1-A

**Matrix: Solid** 

Analysis Batch: 103532

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

ug/Kg

Prep Batch: 103240

мв мв

Analyte Result Qualifier RL MDL Unit D Prepared Analyzed Dil Fac Diesel Range Organics [C10-C28] 5240 5000 08/28/13 11:44 08/29/13 22:51 1400 ug/Kg ORO C24-C40 7350 5000 1400 ug/Kg 08/28/13 11:44 08/29/13 22:51

MB MB

Qualifier Limits Dil Fac Surrogate %Recovery Prepared Analyzed 50 - 150 08/28/13 11:44 08/29/13 22:51 o-Terphenyl (Surr) 84

Lab Sample ID: LCS 490-103240/2-A

**Matrix: Solid** 

Analysis Batch: 103532

Prep Type: Total/NA Prep Batch: 103240

35700

LCS LCS Spike %Rec. Added Result Qualifier Analyte Unit %Rec Limits

40000

Diesel Range Organics

[C10-C28]

LCS LCS

%Recovery Qualifier Limits Surrogate 50 - 150 o-Terphenyl (Surr) 98

Lab Sample ID: MB 490-104093/1-A

**Matrix: Water** 

**Analysis Batch: 104122** 

Client Sample ID: Method Blank

Client Sample ID: Lab Control Sample

54 - 130

89

Prep Type: Total/NA

Prep Batch: 104093

мв мв

Result Qualifier RLMDL Unit Prepared Analyzed Dil Fac Diesel Range Organics [C10-C28] 100 Ū 100 28 ug/L 08/31/13 08:40 08/31/13 18:48

MB MB

Surrogate %Recovery Qualifier Limits Prepared Analyzed Dil Fac o-Terphenyl (Surr) 50 - 150 08/31/13 08:40 08/31/13 18:48 84

Project/Site: CSX C&O Canal Brunswick, MD

Method: 8015C - Nonhalogenated Organics using GC/FID -Modified (Diesel Range Organics)

(Continued)

Lab Sample ID: LCS 490-104093/2-A

**Matrix: Water** 

[C10-C28]

Surrogate

Surrogate

o-Terphenyl (Surr)

o-Terphenyl (Surr)

**Matrix: Solid** 

Analysis Batch: 104122

**Analysis Batch: 104122** 

Analyte **Diesel Range Organics** 

Spike Added 1000

Limits

50 - 150

LCS LCS Result Qualifier 841

LCS LCS

MS MS

38700

Result Qualifier

33600

Result Qualifier

Unit

ug/Kg

Unit

ug/Kg

Unit ug/L

%Rec 84

Prepared

08/31/13 08:51

%Rec

84

D

D

₩

%Rec

75

46 - 132

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 104093

Dil Fac

Client Sample ID: Method Blank

Prep Type: Total/NA Prep Batch: 104094

Analyzed

08/31/13 20:24

Client Sample ID: Lab Control Sample

%Rec.

Limits

54 - 130

Client Sample ID: SB01-08 (9.0-10.0)

%Rec.

Limits

10 - 142

Client Sample ID: SB01-08 (9.0-10.0)

Prep Type: Total/NA

Prep Batch: 104094

Prep Type: Total/NA

Prep Batch: 104094

Analyte Result Qualifier RL MDL Unit Prepared Analyzed Dil Fac Diesel Range Organics [C10-C28] 5000 U 5000 ug/Ka 08/31/13 08:51 08/31/13 20:24 1400 ORO C24-C40 3660 J 5000 08/31/13 08:51 08/31/13 20:24 1400 ug/Kg MB MB

Limits

Spike

Added

40000

Spike

Added

49300

Limits

50 - 150

50 - 150

Lab Sample ID: LCS 490-104094/2-A

Lab Sample ID: MB 490-104094/1-A

**Matrix: Solid** 

**Analysis Batch: 104122** 

Analyte

**Diesel Range Organics** [C10-C28]

Surrogate o-Terphenyl (Surr) LCS LCS

Sample Sample

MS MS

85

1800 J

%Recovery

Result Qualifier

%Recovery

78

LCS LCS

93

Qualifier

MB MB

Qualifier

%Recovery

%Recovery Qualifier Limits 50 - 150 92

Lab Sample ID: 680-93445-6 MS

**Matrix: Solid** 

Analysis Batch: 104122

Analyte

Surrogate o-Terphenyl (Surr)

[C10-C28]

[C10-C28]

Diesel Range Organics

Lab Sample ID: 680-93445-6 MSD

**Matrix: Solid** 

**Analysis Batch: 104122** 

Diesel Range Organics

Sample Sample Result Qualifier 1800

Qualifier

Spike Added 48800

Result 36100

MSD MSD Qualifier

Unit ug/Kg

D

%Rec 70

Limits 10 - 142

%Rec. **RPD** Limit

Prep Type: Total/NA

Prep Batch: 104094

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93445-1

Method: 8015C - Nonhalogenated Organics using GC/FID -Modified (Diesel Range Organics)

(Continued)

Lab Sample ID: 680-93445-6 MSD

Matrix: Solid

Analysis Batch: 104122

Client Sample ID: SB01-08 (9.0-10.0)
Prep Type: Total/NA

Prep Type: Total/NA
Prep Batch: 104094

MSD MSD

10

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93445-1

### **GC/MS VOA**

### **Prep Batch: 189677**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93445-3	SB01-07 (0.5-1.5)	Total/NA	Solid	5035	
680-93445-4	SB01-07 (9.0-10.0)	Total/NA	Solid	5035	
680-93445-5	SB01-08 (1.5-2.5)	Total/NA	Solid	5035	
680-93445-6	SB01-08 (9.0-10.0)	Total/NA	Solid	5035	
680-93445-7	SB01-09 (0.0-1.0)	Total/NA	Solid	5035	
680-93445-8	SB01-09 (4.0-5.0)	Total/NA	Solid	5035	
680-93445-9	SB01-10 (0.0-1.0)	Total/NA	Solid	5035	
680-93445-10	SB01-10 (4.0-5.0)	Total/NA	Solid	5035	
680-93445-11	SB02-01 (0.0-1.0)	Total/NA	Solid	5035	
680-93445-12	SB02-01 (7.0-8.0)	Total/NA	Solid	5035	
680-93445-13	SB02-02 (0.0-1.0)	Total/NA	Solid	5035	
680-93445-14	SB02-02 (4.5-5.5)	Total/NA	Solid	5035	
680-93445-15	SB02-03 (0.5-1.5)	Total/NA	Solid	5035	
680-93445-16	SB02-03 (5.0-6.0)	Total/NA	Solid	5035	
680-93445-17	SB02-04 (0.5-1.5)	Total/NA	Solid	5035	
680-93445-18	SB02-04 (7.0-8.0)	Total/NA	Solid	5035	
680-93445-19	SB02-05 (0.5-1.5)	Total/NA	Solid	5035	
680-93445-20	SB02-05 (7.0-8.0)	Total/NA	Solid	5035	
680-93445-21	SB02-06 (0.5-1.5)	Total/NA	Solid	5035	
680-93445-22	SB02-06 (6.5-7.5)	Total/NA	Solid	5035	

### Analysis Batch: 189967

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93445-3	SB01-07 (0.5-1.5)	Total/NA	Solid	8260B	189677
680-93445-4	SB01-07 (9.0-10.0)	Total/NA	Solid	8260B	189677
680-93445-5	SB01-08 (1.5-2.5)	Total/NA	Solid	8260B	189677
680-93445-6	SB01-08 (9.0-10.0)	Total/NA	Solid	8260B	189677
680-93445-7	SB01-09 (0.0-1.0)	Total/NA	Solid	8260B	189677
680-93445-8	SB01-09 (4.0-5.0)	Total/NA	Solid	8260B	189677
680-93445-9	SB01-10 (0.0-1.0)	Total/NA	Solid	8260B	189677
680-93445-10	SB01-10 (4.0-5.0)	Total/NA	Solid	8260B	189677
680-93445-11	SB02-01 (0.0-1.0)	Total/NA	Solid	8260B	189677
680-93445-12	SB02-01 (7.0-8.0)	Total/NA	Solid	8260B	189677
680-93445-13	SB02-02 (0.0-1.0)	Total/NA	Solid	8260B	189677
680-93445-14	SB02-02 (4.5-5.5)	Total/NA	Solid	8260B	189677
680-93445-15	SB02-03 (0.5-1.5)	Total/NA	Solid	8260B	189677
680-93445-16	SB02-03 (5.0-6.0)	Total/NA	Solid	8260B	189677
680-93445-17	SB02-04 (0.5-1.5)	Total/NA	Solid	8260B	189677
680-93445-18	SB02-04 (7.0-8.0)	Total/NA	Solid	8260B	189677
680-93445-19	SB02-05 (0.5-1.5)	Total/NA	Solid	8260B	189677
680-93445-20	SB02-05 (7.0-8.0)	Total/NA	Solid	8260B	189677
680-93445-21	SB02-06 (0.5-1.5)	Total/NA	Solid	8260B	189677
680-93445-22	SB02-06 (6.5-7.5)	Total/NA	Solid	8260B	189677
LCS 400-189967/1000	Lab Control Sample	Total/NA	Solid	8260B	
LCSD 400-189967/5	Lab Control Sample Dup	Total/NA	Solid	8260B	
MB 400-189967/4	Method Blank	Total/NA	Solid	8260B	

### Analysis Batch: 190083

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93445-1	PZ01-04	Total/NA	Water	8260B	
680-93445-2	PZ01-09	Total/NA	Water	8260B	

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93445-1

## **GC/MS VOA (Continued)**

# Analysis Batch: 190083 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93445-25	TB 130820-1	Total/NA	Water	8260B	
680-93445-26	TB 130820-2	Total/NA	Water	8260B	
LCS 400-190083/1000	Lab Control Sample	Total/NA	Water	8260B	
MB 400-190083/4	Method Blank	Total/NA	Water	8260B	

### **GC/MS Semi VOA**

## **Prep Batch: 290348**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93445-1	PZ01-04	Total/NA	Water	3520C	<del></del>
680-93445-2	PZ01-09	Total/NA	Water	3520C	
680-93445-D-1-A MS	680-93445-D-1-A MS	Total/NA	Water	3520C	
680-93445-D-1-B MSD	680-93445-D-1-B MSD	Total/NA	Water	3520C	
LCS 680-290348/4-A	Lab Control Sample	Total/NA	Water	3520C	
MB 680-290348/3-A	Method Blank	Total/NA	Water	3520C	

#### Prep Batch: 290598

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batc
680-93445-3	SB01-07 (0.5-1.5)	Total/NA	Solid	3546	
680-93445-4	SB01-07 (9.0-10.0)	Total/NA	Solid	3546	
680-93445-5	SB01-08 (1.5-2.5)	Total/NA	Solid	3546	
680-93445-5 MSD	SB01-08 (1.5-2.5)	Total/NA	Solid	3546	
680-93445-6	SB01-08 (9.0-10.0)	Total/NA	Solid	3546	
680-93445-7	SB01-09 (0.0-1.0)	Total/NA	Solid	3546	
680-93445-8	SB01-09 (4.0-5.0)	Total/NA	Solid	3546	
680-93445-9	SB01-10 (0.0-1.0)	Total/NA	Solid	3546	
680-93445-10	SB01-10 (4.0-5.0)	Total/NA	Solid	3546	
680-93445-11	SB02-01 (0.0-1.0)	Total/NA	Solid	3546	
680-93445-12	SB02-01 (7.0-8.0)	Total/NA	Solid	3546	
680-93445-13	SB02-02 (0.0-1.0)	Total/NA	Solid	3546	
680-93445-14	SB02-02 (4.5-5.5)	Total/NA	Solid	3546	
680-93445-15	SB02-03 (0.5-1.5)	Total/NA	Solid	3546	
680-93445-16	SB02-03 (5.0-6.0)	Total/NA	Solid	3546	
680-93445-17	SB02-04 (0.5-1.5)	Total/NA	Solid	3546	
680-93445-18	SB02-04 (7.0-8.0)	Total/NA	Solid	3546	
680-93445-19	SB02-05 (0.5-1.5)	Total/NA	Solid	3546	
680-93445-20	SB02-05 (7.0-8.0)	Total/NA	Solid	3546	
680-93445-21	SB02-06 (0.5-1.5)	Total/NA	Solid	3546	
680-93445-22	SB02-06 (6.5-7.5)	Total/NA	Solid	3546	
LCS 680-290598/22-A	Lab Control Sample	Total/NA	Solid	3546	
MB 680-290598/21-A	Method Blank	Total/NA	Solid	3546	

# Analysis Batch: 290916

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93445-1	PZ01-04	Total/NA	Water	8270D	290348
680-93445-2	PZ01-09	Total/NA	Water	8270D	290348
680-93445-D-1-A MS	680-93445-D-1-A MS	Total/NA	Water	8270D	290348
680-93445-D-1-B MSD	680-93445-D-1-B MSD	Total/NA	Water	8270D	290348
LCS 680-290348/4-A	Lab Control Sample	Total/NA	Water	8270D	290348
MB 680-290348/3-A	Method Blank	Total/NA	Water	8270D	290348

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93445-1

## GC/MS Semi VOA (Continued)

## Analysis Batch: 291413

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93445-3	SB01-07 (0.5-1.5)	Total/NA	Solid	8270D	290598
LCS 680-290598/22-A	Lab Control Sample	Total/NA	Solid	8270D	290598
MB 680-290598/21-A	Method Blank	Total/NA	Solid	8270D	290598

### Analysis Batch: 291613

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93445-22	SB02-06 (6.5-7.5)	Total/NA	Solid	8270D	290598

### Analysis Batch: 291673

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93445-5	SB01-08 (1.5-2.5)	Total/NA	Solid	8270D	290598
680-93445-5 MSD	SB01-08 (1.5-2.5)	Total/NA	Solid	8270D	290598
680-93445-6	SB01-08 (9.0-10.0)	Total/NA	Solid	8270D	290598
680-93445-7	SB01-09 (0.0-1.0)	Total/NA	Solid	8270D	290598
680-93445-8	SB01-09 (4.0-5.0)	Total/NA	Solid	8270D	290598
680-93445-9	SB01-10 (0.0-1.0)	Total/NA	Solid	8270D	290598
680-93445-10	SB01-10 (4.0-5.0)	Total/NA	Solid	8270D	290598
680-93445-11	SB02-01 (0.0-1.0)	Total/NA	Solid	8270D	290598
680-93445-12	SB02-01 (7.0-8.0)	Total/NA	Solid	8270D	290598
680-93445-13	SB02-02 (0.0-1.0)	Total/NA	Solid	8270D	290598
680-93445-15	SB02-03 (0.5-1.5)	Total/NA	Solid	8270D	290598
680-93445-16	SB02-03 (5.0-6.0)	Total/NA	Solid	8270D	290598
680-93445-17	SB02-04 (0.5-1.5)	Total/NA	Solid	8270D	290598
680-93445-18	SB02-04 (7.0-8.0)	Total/NA	Solid	8270D	290598
680-93445-19	SB02-05 (0.5-1.5)	Total/NA	Solid	8270D	290598
680-93445-21	SB02-06 (0.5-1.5)	Total/NA	Solid	8270D	290598

### Analysis Batch: 291919

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93445-4	SB01-07 (9.0-10.0)	Total/NA	Solid	8270D	290598
680-93445-14	SB02-02 (4.5-5.5)	Total/NA	Solid	8270D	290598
680-93445-20	SB02-05 (7.0-8.0)	Total/NA	Solid	8270D	290598

### **GC VOA**

### **Prep Batch: 290368**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93445-3	SB01-07 (0.5-1.5)	Total/NA	Solid	5035	_
680-93445-4	SB01-07 (9.0-10.0)	Total/NA	Solid	5035	
680-93445-5	SB01-08 (1.5-2.5)	Total/NA	Solid	5035	
680-93445-6	SB01-08 (9.0-10.0)	Total/NA	Solid	5035	
680-93445-7	SB01-09 (0.0-1.0)	Total/NA	Solid	5035	
680-93445-8	SB01-09 (4.0-5.0)	Total/NA	Solid	5035	
680-93445-9	SB01-10 (0.0-1.0)	Total/NA	Solid	5035	
680-93445-10	SB01-10 (4.0-5.0)	Total/NA	Solid	5035	
680-93445-11	SB02-01 (0.0-1.0)	Total/NA	Solid	5035	
680-93445-12	SB02-01 (7.0-8.0)	Total/NA	Solid	5035	
680-93445-13	SB02-02 (0.0-1.0)	Total/NA	Solid	5035	
680-93445-14	SB02-02 (4.5-5.5)	Total/NA	Solid	5035	
680-93445-15	SB02-03 (0.5-1.5)	Total/NA	Solid	5035	

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93445-1

## GC VOA (Continued)

## Prep Batch: 290368 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93445-16	SB02-03 (5.0-6.0)	Total/NA	Solid	5035	
680-93445-17	SB02-04 (0.5-1.5)	Total/NA	Solid	5035	
680-93445-18	SB02-04 (7.0-8.0)	Total/NA	Solid	5035	
680-93445-19	SB02-05 (0.5-1.5)	Total/NA	Solid	5035	
680-93445-20	SB02-05 (7.0-8.0)	Total/NA	Solid	5035	
680-93445-21	SB02-06 (0.5-1.5)	Total/NA	Solid	5035	
680-93445-22	SB02-06 (6.5-7.5)	Total/NA	Solid	5035	

### Analysis Batch: 290726

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93445-5	SB01-08 (1.5-2.5)	Total/NA	Solid	8015C	290368
680-93445-6	SB01-08 (9.0-10.0)	Total/NA	Solid	8015C	290368
680-93445-8	SB01-09 (4.0-5.0)	Total/NA	Solid	8015C	290368
680-93445-10	SB01-10 (4.0-5.0)	Total/NA	Solid	8015C	290368
680-93445-11	SB02-01 (0.0-1.0)	Total/NA	Solid	8015C	290368
680-93445-12	SB02-01 (7.0-8.0)	Total/NA	Solid	8015C	290368
LCS 680-290726/6	Lab Control Sample	Total/NA	Solid	8015C	
LCSD 680-290726/7	Lab Control Sample Dup	Total/NA	Solid	8015C	
MB 680-290726/5	Method Blank	Total/NA	Solid	8015C	

### Analysis Batch: 290745

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93445-14	SB02-02 (4.5-5.5)	Total/NA	Solid	8015C	290368
680-93445-15	SB02-03 (0.5-1.5)	Total/NA	Solid	8015C	290368
680-93445-16	SB02-03 (5.0-6.0)	Total/NA	Solid	8015C	290368
680-93445-17	SB02-04 (0.5-1.5)	Total/NA	Solid	8015C	290368
680-93445-18	SB02-04 (7.0-8.0)	Total/NA	Solid	8015C	290368
680-93445-19	SB02-05 (0.5-1.5)	Total/NA	Solid	8015C	290368
680-93445-20	SB02-05 (7.0-8.0)	Total/NA	Solid	8015C	290368
LCS 680-290745/7	Lab Control Sample	Total/NA	Solid	8015C	
LCSD 680-290745/8	Lab Control Sample Dup	Total/NA	Solid	8015C	
MB 680-290745/6	Method Blank	Total/NA	Solid	8015C	

### Analysis Batch: 290971

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93445-3	SB01-07 (0.5-1.5)	Total/NA	Solid	8015C	290368
LCS 680-290971/8	Lab Control Sample	Total/NA	Solid	8015C	
LCSD 680-290971/	11 Lab Control Sample Dup	Total/NA	Solid	8015C	
MB 680-290971/9	Method Blank	Total/NA	Solid	8015C	

### Analysis Batch: 291184

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93445-1	PZ01-04	Total/NA	Water	8015C	
680-93445-2	PZ01-09	Total/NA	Water	8015C	
LCS 680-291184/6	Lab Control Sample	Total/NA	Water	8015C	
LCSD 680-291184/7	Lab Control Sample Dup	Total/NA	Water	8015C	
MB 680-291184/5	Method Blank	Total/NA	Water	8015C	

#### Analysis Batch: 291258

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Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93445-4	SB01-07 (9.0-10.0)	Total/NA	Solid	8015C	290368

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93445-1

## GC VOA (Continued)

# Analysis Batch: 291258 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93445-7	SB01-09 (0.0-1.0)	Total/NA	Solid	8015C	290368
680-93445-9	SB01-10 (0.0-1.0)	Total/NA	Solid	8015C	290368
680-93445-13	SB02-02 (0.0-1.0)	Total/NA	Solid	8015C	290368
680-93445-21	SB02-06 (0.5-1.5)	Total/NA	Solid	8015C	290368
LCS 680-291258/6	Lab Control Sample	Total/NA	Solid	8015C	
LCSD 680-291258/8	Lab Control Sample Dup	Total/NA	Solid	8015C	
MB 680-291258/7	Method Blank	Total/NA	Solid	8015C	

### Analysis Batch: 291393

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93445-22	SB02-06 (6.5-7.5)	Total/NA	Solid	8015C	290368
LCS 680-291393/8	Lab Control Sample	Total/NA	Solid	8015C	
LCSD 680-291393/9	Lab Control Sample Dup	Total/NA	Solid	8015C	
MB 680-291393/7	Method Blank	Total/NA	Solid	8015C	

### GC Semi VOA

### Prep Batch: 103240

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batc
680-93445-7	SB01-09 (0.0-1.0)	Total/NA	Solid	3550C	_
680-93445-8	SB01-09 (4.0-5.0)	Total/NA	Solid	3550C	
680-93445-9	SB01-10 (0.0-1.0)	Total/NA	Solid	3550C	
680-93445-10	SB01-10 (4.0-5.0)	Total/NA	Solid	3550C	
680-93445-11	SB02-01 (0.0-1.0)	Total/NA	Solid	3550C	
680-93445-12	SB02-01 (7.0-8.0)	Total/NA	Solid	3550C	
680-93445-14	SB02-02 (4.5-5.5)	Total/NA	Solid	3550C	
680-93445-15	SB02-03 (0.5-1.5)	Total/NA	Solid	3550C	
680-93445-16	SB02-03 (5.0-6.0)	Total/NA	Solid	3550C	
680-93445-17	SB02-04 (0.5-1.5)	Total/NA	Solid	3550C	
680-93445-18	SB02-04 (7.0-8.0)	Total/NA	Solid	3550C	
680-93445-20	SB02-05 (7.0-8.0)	Total/NA	Solid	3550C	
680-93445-21	SB02-06 (0.5-1.5)	Total/NA	Solid	3550C	
LCS 490-103240/2-A	Lab Control Sample	Total/NA	Solid	3550C	
MB 490-103240/1-A	Method Blank	Total/NA	Solid	3550C	

### Analysis Batch: 103532

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93445-7	SB01-09 (0.0-1.0)	Total/NA	Solid	8015C	103240
680-93445-8	SB01-09 (4.0-5.0)	Total/NA	Solid	8015C	103240
680-93445-9	SB01-10 (0.0-1.0)	Total/NA	Solid	8015C	103240
680-93445-10	SB01-10 (4.0-5.0)	Total/NA	Solid	8015C	103240
680-93445-11	SB02-01 (0.0-1.0)	Total/NA	Solid	8015C	103240
680-93445-12	SB02-01 (7.0-8.0)	Total/NA	Solid	8015C	103240
680-93445-14	SB02-02 (4.5-5.5)	Total/NA	Solid	8015C	103240
680-93445-15	SB02-03 (0.5-1.5)	Total/NA	Solid	8015C	103240
680-93445-16	SB02-03 (5.0-6.0)	Total/NA	Solid	8015C	103240
680-93445-17	SB02-04 (0.5-1.5)	Total/NA	Solid	8015C	103240
680-93445-18	SB02-04 (7.0-8.0)	Total/NA	Solid	8015C	103240
680-93445-20	SB02-05 (7.0-8.0)	Total/NA	Solid	8015C	103240
680-93445-21	SB02-06 (0.5-1.5)	Total/NA	Solid	8015C	103240

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9/11/2013

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93445-1

# GC Semi VOA (Continued)

# Analysis Batch: 103532 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 490-103240/2-A	Lab Control Sample	Total/NA	Solid	8015C	103240
MB 490-103240/1-A	Method Blank	Total/NA	Solid	8015C	103240

### Prep Batch: 104093

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93445-1	PZ01-04	Total/NA	Water	3510C	
680-93445-2	PZ01-09	Total/NA	Water	3510C	
680-93445-23	PZ01-04 (DRO-SGT)	Total/NA	Water	3510C	
680-93445-24	PZ01-09 (DRO-SGT)	Total/NA	Water	3510C	
LCS 490-104093/2-A	Lab Control Sample	Total/NA	Water	3510C	
MB 490-104093/1-A	Method Blank	Total/NA	Water	3510C	

### **Prep Batch: 104094**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93445-3	SB01-07 (0.5-1.5)	Total/NA	Solid	3550C	<u> </u>
680-93445-4	SB01-07 (9.0-10.0)	Total/NA	Solid	3550C	
680-93445-5	SB01-08 (1.5-2.5)	Total/NA	Solid	3550C	
680-93445-6	SB01-08 (9.0-10.0)	Total/NA	Solid	3550C	
680-93445-6 MS	SB01-08 (9.0-10.0)	Total/NA	Solid	3550C	
680-93445-6 MSD	SB01-08 (9.0-10.0)	Total/NA	Solid	3550C	
680-93445-13	SB02-02 (0.0-1.0)	Total/NA	Solid	3550C	
680-93445-19	SB02-05 (0.5-1.5)	Total/NA	Solid	3550C	
680-93445-22	SB02-06 (6.5-7.5)	Total/NA	Solid	3550C	
LCS 490-104094/2-A	Lab Control Sample	Total/NA	Solid	3550C	
MB 490-104094/1-A	Method Blank	Total/NA	Solid	3550C	

### Analysis Batch: 104122

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93445-1	PZ01-04	Total/NA	Water	8015C	104093
680-93445-2	PZ01-09	Total/NA	Water	8015C	104093
680-93445-3	SB01-07 (0.5-1.5)	Total/NA	Solid	8015C	104094
680-93445-4	SB01-07 (9.0-10.0)	Total/NA	Solid	8015C	104094
680-93445-5	SB01-08 (1.5-2.5)	Total/NA	Solid	8015C	104094
680-93445-6	SB01-08 (9.0-10.0)	Total/NA	Solid	8015C	104094
680-93445-6 MS	SB01-08 (9.0-10.0)	Total/NA	Solid	8015C	104094
680-93445-6 MSD	SB01-08 (9.0-10.0)	Total/NA	Solid	8015C	104094
680-93445-13	SB02-02 (0.0-1.0)	Total/NA	Solid	8015C	104094
680-93445-19	SB02-05 (0.5-1.5)	Total/NA	Solid	8015C	104094
680-93445-22	SB02-06 (6.5-7.5)	Total/NA	Solid	8015C	104094
680-93445-23	PZ01-04 (DRO-SGT)	Total/NA	Water	8015C	104093
680-93445-24	PZ01-09 (DRO-SGT)	Total/NA	Water	8015C	104093
LCS 490-104093/2-A	Lab Control Sample	Total/NA	Water	8015C	104093
LCS 490-104094/2-A	Lab Control Sample	Total/NA	Solid	8015C	104094
MB 490-104093/1-A	Method Blank	Total/NA	Water	8015C	104093
MB 490-104094/1-A	Method Blank	Total/NA	Solid	8015C	104094

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Project/Site: CSX C&O Canal Brunswick, MD

Lab Sample ID: 680-93445-1

Matrix: Water

Client Sample ID: PZ01-04
Date Collected: 08/20/13 15:40
Date Received: 08/21/13 10:07

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B			190083	08/28/13 22:50	WPD	TAL PEN
Total/NA	Prep	3520C			290348	08/22/13 14:46	RBS	TAL SAV
Total/NA	Analysis	8270D		1	290916	08/26/13 21:55	SMC	TAL SAV
Total/NA	Analysis	8015C		1	291184	08/28/13 12:34	AJMC	TAL SAV
Total/NA	Prep	3510C			104093	08/31/13 08:40	CLH	TAL NSH
Total/NA	Analysis	8015C		1	104122	08/31/13 19:20	JLF	TAL NSH

Client Sample ID: PZ01-09

Lab Sample ID: 680-93445-2

Date Collected: 08/20/13 16:10 Matrix: Water

Date Received: 08/21/13 10:07

_	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	190083	08/28/13 23:15	WPD	TAL PEN
Total/NA	Prep	3520C			290348	08/22/13 14:46	RBS	TAL SAV
Total/NA	Analysis	8270D		1	290916	08/26/13 22:20	SMC	TAL SAV
Total/NA	Analysis	8015C		1	291184	08/28/13 12:59	AJMC	TAL SAV
Total/NA	Prep	3510C			104093	08/31/13 08:40	CLH	TAL NSH
Total/NA	Analysis	8015C		1	104122	08/31/13 19:36	JLF	TAL NSH

Client Sample ID: SB01-07 (0.5-1.5)

Lab Sample ID: 680-93445-3

Date Collected: 08/20/13 08:30 Matrix: Solid
Date Received: 08/21/13 10:07 Percent Solids: 71.7

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035			189677	08/23/13 16:13	LRS	TAL PEN
Total/NA	Analysis	8260B		1	189967	08/27/13 17:55	WPD	TAL PEN
Total/NA	Prep	3546			290598	08/23/13 13:40	JCS	TAL SAV
Total/NA	Analysis	8270D		1	291413	08/30/13 01:07	SMP	TAL SAV
Total/NA	Prep	5035			290368	08/22/13 10:07	FES	TAL SAV
Total/NA	Analysis	8015C		1	290971	08/27/13 17:48	AJMC	TAL SAV
Total/NA	Prep	3550C			104094	08/31/13 08:51	JLP	TAL NSH
Total/NA	Analysis	8015C		1	104122	08/31/13 21:43	JLF	TAL NSH

Client Sample ID: SB01-07 (9.0-10.0)

Lab Sample ID: 680-93445-4

Date Collected: 08/20/13 08:40 Matrix: Solid
Date Received: 08/21/13 10:07 Percent Solids: 74.4

Batch Batch Dilution Batch Prepared Prep Type Туре Method Number Run Factor or Analyzed Analyst Lab Prep 5035 Total/NA 189677 08/23/13 16:13 LRS TAL PEN Total/NA 8260B 189967 08/27/13 18:18 WPD TAL PEN Analysis TAL SAV Total/NA Prep 3546 290598 08/23/13 13:40 JCS Total/NA 8270D 09/03/13 15:11 SMC TAL SAV Analysis 291919

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Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB01-07 (9.0-10.0)

Date Collected: 08/20/13 08:40 Date Received: 08/21/13 10:07

Lab Sample ID: 680-93445-4

Matrix: Solid Percent Solids: 74.4

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035	<del></del>		290368	08/22/13 10:07	FES	TAL SAV
Total/NA	Analysis	8015C		1	291258	08/28/13 19:20	AJMC	TAL SAV
Total/NA	Prep	3550C			104094	08/31/13 08:51	JLP	TAL NSH
Total/NA	Analysis	8015C		1	104122	08/31/13 21:59	JLF	TAL NSH

Client Sample ID: SB01-08 (1.5-2.5) Lab Sample ID: 680-93445-5

Date Collected: 08/20/13 09:00 **Matrix: Solid** Date Received: 08/21/13 10:07 Percent Solids: 78.8

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035			189677	08/23/13 16:13	LRS	TAL PEN
Total/NA	Analysis	8260B		1	189967	08/27/13 18:44	WPD	TAL PEN
Total/NA	Prep	3546			290598	08/23/13 13:40	JCS	TAL SAV
Total/NA	Analysis	8270D		1	291673	08/30/13 18:59	SMC	TAL SAV
Total/NA	Prep	5035			290368	08/22/13 10:07	FES	TAL SAV
Total/NA	Analysis	8015C		1	290726	08/24/13 18:17	AJMC	TAL SAV
Total/NA	Prep	3550C			104094	08/31/13 08:51	JLP	TAL NSH
Total/NA	Analysis	8015C		1	104122	08/31/13 22:46	JLF	TAL NSH

Client Sample ID: SB01-08 (9.0-10.0)

Lab Sample ID: 680-93445-6 Date Collected: 08/20/13 09:10 **Matrix: Solid** Date Received: 08/21/13 10:07 Percent Solids: 80.2

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035			189677	08/23/13 16:13	LRS	TAL PEN
Total/NA	Analysis	8260B		1	189967	08/27/13 19:10	WPD	TAL PEN
Total/NA	Prep	3546			290598	08/23/13 13:40	JCS	TAL SAV
Total/NA	Analysis	8270D		1	291673	08/30/13 19:25	SMC	TAL SAV
Total/NA	Prep	5035			290368	08/22/13 10:07	FES	TAL SAV
Total/NA	Analysis	8015C		1	290726	08/24/13 18:37	AJMC	TAL SAV
Total/NA	Prep	3550C			104094	08/31/13 08:51	JLP	TAL NSH
Total/NA	Analysis	8015C		1	104122	08/31/13 20:55	JLF	TAL NSH

Client Sample ID: SB01-09 (0.0-1.0)

Lab Sample ID: 680-93445-7 Date Collected: 08/20/13 09:30 **Matrix: Solid** Date Received: 08/21/13 10:07 Percent Solids: 71.4

Batch	Batch		Dilution	Batch	Prepared			
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035	-		189677	08/23/13 16:13	LRS	TAL PEN
Total/NA	Analysis	8260B		1	189967	08/27/13 19:36	WPD	TAL PEN
Total/NA	Prep	3546			290598	08/23/13 13:40	JCS	TAL SAV
Total/NA	Analysis	8270D		1	291673	08/30/13 19:50	SMC	TAL SAV
Total/NA	Prep	5035			290368	08/22/13 10:07	FES	TAL SAV

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB01-09 (0.0-1.0)

Date Collected: 08/20/13 09:30 Date Received: 08/21/13 10:07 Lab Sample ID: 680-93445-7

Matrix: Solid
Percent Solids: 71.4

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	8015C		1	291258	08/28/13 20:19	AJMC	TAL SAV
Total/NA	Prep	3550C			103240	08/28/13 11:44	JLP	TAL NSH
Total/NA	Analysis	8015C		1	103532	08/30/13 00:58	JML	TAL NSH

Client Sample ID: SB01-09 (4.0-5.0)

Lab Sample ID: 680-93445-8

Date Collected: 08/20/13 09:40

Date Received: 08/21/13 10:07

Matrix: Solid
Percent Solids: 84.6

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035			189677	08/23/13 16:13	LRS	TAL PEN
Total/NA	Analysis	8260B		1	189967	08/27/13 20:01	WPD	TAL PEN
Total/NA	Prep	3546			290598	08/23/13 13:40	JCS	TAL SAV
Total/NA	Analysis	8270D		1	291673	08/30/13 20:16	SMC	TAL SAV
Total/NA	Prep	5035			290368	08/22/13 10:07	FES	TAL SAV
Total/NA	Analysis	8015C		1	290726	08/24/13 19:17	AJMC	TAL SAV
Total/NA	Prep	3550C			103240	08/28/13 11:44	JLP	TAL NSH
Total/NA	Analysis	8015C		1	103532	08/30/13 01:14	JML	TAL NSH

Client Sample ID: SB01-10 (0.0-1.0)

Lab Sample ID: 680-93445-9

Date Collected: 08/20/13 10:15

Date Received: 08/21/13 10:07

Matrix: Solid
Percent Solids: 77.1

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035			189677	08/23/13 16:13	LRS	TAL PEN
Total/NA	Analysis	8260B		1	189967	08/27/13 20:27	WPD	TAL PEN
Total/NA	Prep	3546			290598	08/23/13 13:40	JCS	TAL SAV
Total/NA	Analysis	8270D		1	291673	08/30/13 20:41	SMC	TAL SAV
Total/NA	Prep	5035			290368	08/22/13 10:07	FES	TAL SAV
Total/NA	Analysis	8015C		1	291258	08/28/13 20:39	AJMC	TAL SAV
Total/NA	Prep	3550C			103240	08/28/13 11:44	JLP	TAL NSH
Total/NA	Analysis	8015C		1	103532	08/30/13 01:30	JML	TAL NSH

Client Sample ID: SB01-10 (4.0-5.0)

Lab Sample ID: 680-93445-10

Date Collected: 08/20/13 10:25

Date Received: 08/21/13 10:07

Matrix: Solid
Percent Solids: 72.7

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035			189677	08/23/13 16:13	LRS	TAL PEN
Total/NA	Analysis	8260B		1	189967	08/27/13 20:53	WPD	TAL PEN
Total/NA	Prep	3546			290598	08/23/13 13:40	JCS	TAL SAV
Total/NA	Analysis	8270D		1	291673	08/30/13 21:06	SMC	TAL SAV
Total/NA	Prep	5035			290368	08/22/13 10:07	FES	TAL SAV
Total/NA	Analysis	8015C		1	290726	08/24/13 19:56	AJMC	TAL SAV

Date Received: 08/21/13 10:07

Project/Site: CSX C&O Canal Brunswick, MD

Lab Sample ID: 680-93445-10

Matrix: Solid

TestAmerica Job ID: 680-93445-1

Percent Solids: 72.7

Client Sample ID: SB01-10 (4.0-5.0) Date Collected: 08/20/13 10:25

Prepared Batch Batch Dilution Batch Prep Type Туре Method Run Factor Number or Analyzed Analyst Lab Total/NA Prep 3550C 103240 08/28/13 11:44 JLP TAL NSH Total/NA 8015C 103532 08/30/13 01:45 TAL NSH Analysis 1 JML

Client Sample ID: SB02-01 (0.0-1.0) Lab Sample ID: 680-93445-11

Date Collected: 08/20/13 11:15 **Matrix: Solid** Date Received: 08/21/13 10:07 Percent Solids: 59.7

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035			189677	08/23/13 16:13	LRS	TAL PEN
Total/NA	Analysis	8260B		1	189967	08/27/13 21:18	WPD	TAL PEN
Total/NA	Prep	3546			290598	08/23/13 13:40	JCS	TAL SAV
Total/NA	Analysis	8270D		1	291673	08/30/13 21:32	SMC	TAL SAV
Total/NA	Prep	5035			290368	08/22/13 10:07	FES	TAL SAV
Total/NA	Analysis	8015C		1	290726	08/24/13 20:16	AJMC	TAL SAV
Total/NA	Prep	3550C			103240	08/28/13 11:44	JLP	TAL NSH
Total/NA	Analysis	8015C		1	103532	08/30/13 02:01	JML	TAL NSH

Client Sample ID: SB02-01 (7.0-8.0) Lab Sample ID: 680-93445-12

Date Collected: 08/20/13 11:25 Matrix: Solid Date Received: 08/21/13 10:07 Percent Solids: 81.7

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035			189677	08/23/13 16:13	LRS	TAL PEN
Total/NA	Analysis	8260B		1	189967	08/27/13 21:44	WPD	TAL PEN
Total/NA	Prep	3546			290598	08/23/13 13:40	JCS	TAL SAV
Total/NA	Analysis	8270D		1	291673	08/30/13 21:57	SMC	TAL SAV
Total/NA	Prep	5035			290368	08/22/13 10:07	FES	TAL SAV
Total/NA	Analysis	8015C		1	290726	08/24/13 20:36	AJMC	TAL SAV
Total/NA	Prep	3550C			103240	08/28/13 11:44	JLP	TAL NSH
Total/NA	Analysis	8015C		1	103532	08/30/13 02:17	JML	TAL NSH

Client Sample ID: SB02-02 (0.0-1.0)

Date Collected: 08/20/13 11:45 **Matrix: Solid** Date Received: 08/21/13 10:07 Percent Solids: 78.5

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035			189677	08/23/13 16:13	LRS	TAL PEN
Total/NA	Analysis	8260B		1	189967	08/27/13 22:10	WPD	TAL PEN
Total/NA	Prep	3546			290598	08/23/13 13:40	JCS	TAL SAV
Total/NA	Analysis	8270D		1	291673	08/30/13 22:22	SMC	TAL SAV
Total/NA	Prep	5035			290368	08/22/13 10:07	FES	TAL SAV
Total/NA	Analysis	8015C		1	291258	08/28/13 21:19	AJMC	TAL SAV
Total/NA	Prep	3550C			104094	08/31/13 08:51	JLP	TAL NSH

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Lab Sample ID: 680-93445-13

### **Lab Chronicle**

Client: ARCADIS U.S., Inc.

Date Collected: 08/20/13 11:45

Date Received: 08/21/13 10:07

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB02-02 (0.0-1.0)

TestAmerica Job ID: 680-93445-1

Lab Sample ID: 680-93445-13

Matrix: Solid

Percent Solids: 78.5

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	8015C		1	104122	08/31/13 23:02	JLF	TAL NSH

Client Sample ID: SB02-02 (4.5-5.5)

Lab Sample ID: 680-93445-14

 Date Collected: 08/20/13 11:50
 Matrix: Solid

 Date Received: 08/21/13 10:07
 Percent Solids: 81.3

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035			189677	08/23/13 16:13	LRS	TAL PEN
Total/NA	Analysis	8260B		1	189967	08/27/13 22:35	WPD	TAL PEN
Total/NA	Prep	3546			290598	08/23/13 13:40	JCS	TAL SAV
Total/NA	Analysis	8270D		1	291919	09/03/13 15:38	SMC	TAL SAV
Total/NA	Prep	5035			290368	08/22/13 10:07	FES	TAL SAV
Total/NA	Analysis	8015C		1	290745	08/26/13 12:49	AJMC	TAL SAV
Total/NA	Prep	3550C			103240	08/28/13 11:44	JLP	TAL NSH
Total/NA	Analysis	8015C		1	103532	08/30/13 02:48	JML	TAL NSH

Client Sample ID: SB02-03 (0.5-1.5)

Lab Sample ID: 680-93445-15

Date Collected: 08/20/13 14:10
Date Received: 08/21/13 10:07

Matrix: Solid
Percent Solids: 79.6

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035			189677	08/23/13 16:13	LRS	TAL PEN
Total/NA	Analysis	8260B		1	189967	08/27/13 23:01	WPD	TAL PEN
Total/NA	Prep	3546			290598	08/23/13 13:40	JCS	TAL SAV
Total/NA	Analysis	8270D		1	291673	08/30/13 23:12	SMC	TAL SAV
Total/NA	Prep	5035			290368	08/22/13 11:07	FES	TAL SAV
Total/NA	Analysis	8015C		1	290745	08/26/13 13:09	AJMC	TAL SAV
Total/NA	Prep	3550C			103240	08/28/13 11:44	JLP	TAL NSH
Total/NA	Analysis	8015C		1	103532	08/30/13 03:04	JML	TAL NSH

Client Sample ID: SB02-03 (5.0-6.0) Lab Sample ID: 680-93445-16

 Date Collected: 08/20/13 14:15
 Matrix: Solid

 Date Received: 08/21/13 10:07
 Percent Solids: 81.5

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035			189677	08/23/13 16:13	LRS	TAL PEN
Total/NA	Analysis	8260B		1	189967	08/27/13 23:27	WPD	TAL PEN
Total/NA	Prep	3546			290598	08/23/13 13:40	JCS	TAL SAV
Total/NA	Analysis	8270D		1	291673	08/30/13 23:37	SMC	TAL SAV
Total/NA	Prep	5035			290368	08/22/13 11:07	FES	TAL SAV
Total/NA	Analysis	8015C		1	290745	08/26/13 13:28	AJMC	TAL SAV
Total/NA	Prep	3550C			103240	08/28/13 11:44	JLP	TAL NSH
Total/NA	Analysis	8015C		1	103532	08/30/13 03:20	JML	TAL NSH

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Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB02-04 (0.5-1.5)

Date Collected: 08/20/13 14:25

Date Received: 08/21/13 10:07

Lab Sample ID: 680-93445-17

Matrix: Solid

Percent Solids: 57.9

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035			189677	08/23/13 16:13	LRS	TAL PEN
Total/NA	Analysis	8260B		1	189967	08/27/13 23:52	WPD	TAL PEN
Total/NA	Prep	3546			290598	08/23/13 13:40	JCS	TAL SAV
Total/NA	Analysis	8270D		1	291673	08/31/13 00:02	SMC	TAL SAV
Total/NA	Prep	5035			290368	08/22/13 11:07	FES	TAL SAV
Total/NA	Analysis	8015C		1	290745	08/26/13 13:48	AJMC	TAL SAV
Total/NA	Prep	3550C			103240	08/28/13 11:44	JLP	TAL NSH
Total/NA	Analysis	8015C		1	103532	08/30/13 03:35	JML	TAL NSH

Client Sample ID: SB02-04 (7.0-8.0)

Date Collected: 08/20/13 14:30

Date Received: 08/21/13 10:07

Lab Sample ID: 680-93445-18

Percent Solids: 78.8

**Matrix: Solid** 

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035			189677	08/23/13 16:13	LRS	TAL PEN
Total/NA	Analysis	8260B		1	189967	08/28/13 00:18	WPD	TAL PEN
Total/NA	Prep	3546			290598	08/23/13 13:40	JCS	TAL SAV
Total/NA	Analysis	8270D		1	291673	08/31/13 00:28	SMC	TAL SAV
Total/NA	Prep	5035			290368	08/22/13 11:07	FES	TAL SAV
Total/NA	Analysis	8015C		1	290745	08/26/13 14:08	AJMC	TAL SAV
Total/NA	Prep	3550C			103240	08/28/13 11:44	JLP	TAL NSH
Total/NA	Analysis	8015C		1	103532	08/30/13 03:51	JML	TAL NSH

Client Sample ID: SB02-05 (0.5-1.5)

Date Collected: 08/20/13 14:50

Date Received: 08/21/13 10:07

Lab Sample ID: 680-93445-19	
Matrix: Solid	

Percent Solids: 58.7

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035			189677	08/23/13 16:13	LRS	TAL PEN
Total/NA	Analysis	8260B		1	189967	08/28/13 00:44	WPD	TAL PEN
Total/NA	Prep	3546			290598	08/23/13 13:40	JCS	TAL SAV
Total/NA	Analysis	8270D		1	291673	08/31/13 00:53	SMC	TAL SAV
Total/NA	Prep	5035			290368	08/22/13 11:07	FES	TAL SAV
Total/NA	Analysis	8015C		1	290745	08/26/13 14:30	AJMC	TAL SAV
Total/NA	Prep	3550C			104094	08/31/13 08:51	JLP	TAL NSH
Total/NA	Analysis	8015C		1	104122	08/31/13 23:18	JLF	TAL NSH

Client Sample ID: SB02-05 (7.0-8.0)

Date Collected: 08/20/13 15:00

Date Received: 08/21/13 10:07

Lab Sample ID: 680-93445-20

**Matrix: Solid** Percent Solids: 82.8

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035			189677	08/23/13 16:13	LRS	TAL PEN

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB02-05 (7.0-8.0)

Date Collected: 08/20/13 15:00 Date Received: 08/21/13 10:07 Lab Sample ID: 680-93445-20

Matrix: Solid
Percent Solids: 82.8

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	189967	08/28/13 01:09	WPD	TAL PEN
Total/NA	Prep	3546			290598	08/23/13 13:40	JCS	TAL SAV
Total/NA	Analysis	8270D		1	291919	09/03/13 16:04	SMC	TAL SAV
Total/NA	Prep	5035			290368	08/22/13 11:07	FES	TAL SAV
Total/NA	Analysis	8015C		1	290745	08/26/13 14:50	AJMC	TAL SAV
Total/NA	Prep	3550C			103240	08/28/13 11:44	JLP	TAL NSH
Total/NA	Analysis	8015C		1	103532	08/30/13 04:54	JML	TAL NSH

Client Sample ID: SB02-06 (0.5-1.5)

Lab Sample ID: 680-93445-21

Date Collected: 08/20/13 15:25

Date Received: 08/21/13 10:07

Matrix: Solid
Percent Solids: 62.3

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035			189677	08/23/13 16:13	LRS	TAL PEN
Total/NA	Analysis	8260B		1	189967	08/28/13 01:35	WPD	TAL PEN
Total/NA	Prep	3546			290598	08/23/13 13:40	JCS	TAL SAV
Total/NA	Analysis	8270D		1	291673	08/31/13 01:43	SMC	TAL SAV
Total/NA	Prep	5035			290368	08/22/13 11:07	FES	TAL SAV
Total/NA	Analysis	8015C		1	291258	08/28/13 21:58	AJMC	TAL SAV
Total/NA	Prep	3550C			103240	08/28/13 11:44	JLP	TAL NSH
Total/NA	Analysis	8015C		1	103532	08/30/13 05:09	JML	TAL NSH

Client Sample ID: SB02-06 (6.5-7.5)

Lab Sample ID: 680-93445-22

 Date Collected: 08/20/13 15:35
 Matrix: Solid

 Date Received: 08/21/13 10:07
 Percent Solids: 83.2

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035			189677	08/23/13 16:13	LRS	TAL PEN
Total/NA	Analysis	8260B		1	189967	08/28/13 02:01	WPD	TAL PEN
Total/NA	Prep	3546			290598	08/23/13 13:40	JCS	TAL SAV
Total/NA	Analysis	8270D		1	291613	08/30/13 18:17	SMC	TAL SAV
Total/NA	Prep	5035			290368	08/22/13 11:07	FES	TAL SAV
Total/NA	Analysis	8015C		1	291393	08/29/13 12:48	AJMC	TAL SAV
Total/NA	Prep	3550C			104094	08/31/13 08:51	JLP	TAL NSH
Total/NA	Analysis	8015C		1	104122	08/31/13 23:33	JLF	TAL NSH

Client Sample ID: PZ01-04 (DRO-SGT)

Lab Sample ID: 680-93445-23

Date Collected: 08/20/13 15:40 Matrix: Water

Date Received: 08/21/13 10:07

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			104093	08/31/13 08:40	CLH	TAL NSH
Total/NA	Analysis	8015C		1	104122	08/31/13 19:52	JLF	TAL NSH

TestAmerica Savannah

### **Lab Chronicle**

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: PZ01-09 (DRO-SGT)

TestAmerica Job ID: 680-93445-1

Lab Sample ID: 680-93445-24

Matrice Mateu

Matrix: Water

Date Collected: 08/20/13 16:10 Date Received: 08/21/13 10:07

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			104093	08/31/13 08:40	CLH	TAL NSH
Total/NA	Analysis	8015C		1	104122	08/31/13 20:08	JLF	TAL NSH

Client Sample ID: TB 130820-1 Lab Sample ID: 680-93445-25

Matrix: Water

Date Collected: 08/20/13 00:00 Date Received: 08/21/13 10:07

Dilution Batch Batch Batch Prepared Prep Type Туре Method Run Factor Number or Analyzed Analyst Total/NA Analysis 8260B 190083 08/28/13 23:41 WPD TAL PEN

Client Sample ID: TB 130820-2 Lab Sample ID: 680-93445-26

Date Collected: 08/20/13 00:00 Matrix: Water

Date Received: 08/21/13 10:07

Batch Batch Dilution Batch Prepared Method Run Factor Number or Analyzed Prep Type Type Analyst Lab 8260B TAL PEN Total/NA Analysis 190083 08/29/13 00:07 WPD

**Laboratory References:** 

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

TAL PEN = TestAmerica Pensacola, 3355 McLemore Drive, Pensacola, FL 32514, TEL (850)474-1001

TAL SAV = TestAmerica Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

	INVOICE MUST BE SUBMITTED TO CSXT WITH ORIGINAL COC TAL-6006 (0509)	INVOICE MUST BE SUBMITTED		· ·	LES	ORIGINAL - RETURN TO LABORATORY WITH SAMPLES	ORIGINAL -
	og Number	LAB USE: Custody Intact Yes		o 子 Lab Remarks:	Date/Time:   5   100 7	y Lagolagolk (	Received By Labo
				10.00	Date/Time:	d By:	Relinquished By
	2.9/3.4/3.4°c	Date/Time:		Received By:	Dake/Tinfe:	( <b>By</b> )	Relinquished By
erika Hariotzak	Comments & Special Analytical Requirements:	Date/Time:		Peceived By:	8/20/13 190	MASIL	Relinquished
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	(C) COMMENTS LABUSE	1100	Sulfuric Acid Note	Preservative Codes: 3 = Sult		nd Time: Standard 6-13 Days	Turnaround Time:
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ξ	megan, Kchner @ ARCAD, 5-us.	8400	Address: [114 Benfield	a	8	CSXT Project Name: Cao Cana / Resussifica	CSXT Proje
	PM: Meg AN KellineR		Company: ARCAD: S	Proj. City: Beunsmack	Proj. City:	CSXT Project Number: 9415381	CSXT Proje
	Project # MD 000 5 H 3 00 11 . 00 14		CONSULTANT INFORMATION	(State of Orlgin) MD	Proj. State	CSXT PROJECT INFORMATION	CSXT PR
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	Shipment Method: Feder	. P. 813-885-7427 P. 813-885-7049 P. 850-474-1001 F. 850-478-2671		L restAmerica Tampa - 6.72 benjamin Hoad, Suite 100, Tampa, FL 33534 □ TestAmerica Pensacola - 3355 McLemore Drive, Pensacola, FL 32514 F		TRANSPORTATION CUSTODY	TRA!
	SHIPMENT INFORMATION	.334-7838 F: 912-352-0165 P: 330-497-9396 F: 330-497-0772		ica Savannan - 5102 Lariocne Avi ica North Canton - 4101 Shuffel [	4	CHAIN OF	C
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		LABORATORY INFORMATION	INFORMATIC	ž					# 000 000	CD & CC - # 303	
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CHAIN OF	L L	TestAmerica North	Canton - 4101 S	huffel Drive NV	Canton - 4101 Shuffel Drive NW, North Canton, OH 44720	4720 2.5.	P: 330-497-9396  F: 330-497-0772	ere/add	SHIPMENT INFORMATION	MATION	
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CSXT Contact:		LWON:	3368	Z City.	Chy, State, Zip:			Phone:	ne:	Fax:	
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Sample Identification	Number & Type	Date	Time	Sampler Y o	YorN Comp	Code	<u>ි</u>			- Anna	
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INVOICE MUST BE SUBMITTED TO CSXT WITH ORIGINAL COC	INVOICE MUST BE SUBMITTED		A COLUMN	APLES	DRIGINAL - RETURN TO LABORATORY WITH SAMPLES
og Number	LAB USE: Custody Intact Yes No		Lab Remarks:	Date/Time / 1007	Received By Laboratory: M
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and the 22	13 13	Sampler YorN Comp Code	Date Time	Number & Type	Sample Identification
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e de la constante de la consta	<u>((</u>	Ot = Oil SOL = Other Solid	WW = Waste Water SW = Surface Water	EDD Required, Format:	Level III EDD Requir
	ING 779	SO = Soil LIQ = Liquid SL = Sludae	Matrix Codes: GW = Groundwater		Deliverables:
	7(	5 = Sodium Hydroxide Code 6 = Other Code	1 = Hydrochloric Acid 2 = Nitric Acid	l Days	2 Day Rush Standard 14 Days Other
ALYSIS	METHODS FOR ANALYSIS	= Sodium Thiosulfate		ays	À
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SHIPMENT INFORMATION	P: 912-354-7858 F: 912-352-0165 44720 P: 330-497-9396 F: 330-497-0772	Avenue, Savannah, GA 31404 el Drive NW, North Canton, OH	OffestAmerica Savannah - 5102 Lai TestAmerica North Canton - 4101		HO NIVIO
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	7	TestAmerica Savann	iah - 5102 LaRo	che Avenue, Sar	vannah, GA 31404	P: 912-354	TestAmerica Savannah - 5102 LaRoche Avenue, Savannah, GA 31404 P: 912-354-7858 F: 912-352-0165	165		720		
CHAIN OF		TestAmerica North Canton - 4101 Shuffel Drive NW, North Canton, OH 44720 P: 330-497-9396 F: 330-497-0772	Santon - 4101 S	huffel Drive NW	, North Canton, OH	44720 P: 3	30-497-9396 F: 30	0-497-0772	SHIPMENT INFORMATION	FORMATION		
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Mon-ENV34G23   On-Same 20:   Phone:	5	35			Add	K	0 11 1		Email:			
Preservative Codes: 3 = Sulfuric Acid   Note = 1			LAVON: EN	13369	S S	State, Zip:			Phone:		Fax:	
1 = Hydrochlonic Acid   5 = Sodium Hydroxide   Code   2 = Nitric Acid   6 = Other   Code	ndard 6-1; cify # Day	3 Days	Preservative C 0 = No Preserv		s = Sulfuric A t ≍ Sodium T		ote	METHODS FC	DR ANALYSIS		OMMENTS	LAB USE
Matrix Codes: SO = Soil   LIO = Liquid   Matrix Codes: SI = Sludge   LIO = Liquid   Matrix Codes: SI = Sludge   LIO = Liquid   Matrix	Standard 14 E Other	Jays	1 = Hydrochlori 2 = Nitric Acid	Acid	s = Sodium H		***************************************					
SW = Groundwater   SL = Sludge   NW = Water   Ol = Oil	Other Deliv:		Matrix Codes:		SO = Soil	LIQ = Liqt			- <del></del>			
Date   Time   Sample Collection   Filtered Type   Matrix   Type   Matrix   Type   Matrix   Type   Matrix   Type   Matrix   Type   Typ	D Require	d, Format:	GW = Groundw WW = Waste W SW = Surface V		St = Sludge Ol = Oil SOt = Other	Solid	540					
Time:   Sample Collection   Filtered Type Matrix   Time:   Sample Collection   Filtered Type Matrix   Time:   Sample Collection   Col							<i>يرد</i> [					
Time   Sampler   Yor N   Comp   Code   Sampler   Yor N   Comp   Sampler   Yor N   Comp   Sampler   Yor N   Comp   Sampler   Yor N   Comp   Sampler   Samp		Containers	Sample	Collection		Type	17 Yatrix					
. 40≈ 4506 1518 LL N (200 X   150 X	-	Number & Type	ا <u>ه</u> .	Time		Comp or Grab	<u>う</u>					
158   1	3	30751		525	7.	Comp	8					
Time:	7.63	7	<del>- )</del>	92.51		っ	$X   \mathcal{R}$					
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Time:   A   A   A   A   A   A   A   A   A												
Time:   Acceived By:   Comments & Special Analytical Required By:   Date/Time:   Comments & Special Analytical Required By:   Date/Time:   Comments & Special Analytical Required By:   Castody Infact   Custody Seat #   LAB Log Number   Hab Log Number   LAB Log Number   Hab Log												
Time:   A Beceived By:   Date/Time:   Comments & Special Analytical Requirements   Comments & C												
4 Time:   3 GG0   Received By:   Date/Time:   Comments & Special Analytical Requires   Comments &		:	-									
Time:   Comments & Special Analytical Requirements   Comments & Comments							_					
6-Time: Calcoline: Ca	7			Received By		,	Date	/Time:	Сошще	ents & Spec	ial Analytical Ro	equirements:
e/Time: Received By: Date/Time: Date/Time: LAB USE: Custody Intact Custody Seat $*$ LAB Log Number $= 2  \text{Mac}  Ma$		Daté/Time:		Received By			Date	vTime:			S458-080	
Custody Infact Custody Seat # LAB Log Number   LAB Log Nu		Date/Time:	,	Received By			Date	./Пme:				
	!	Date/Amp.	-6	Lab Remark			₽ L	USE: Custody Inta Yes No	ict Custody	Seat #	LAB Log Numb	)er
										1		

Nashville 2960 Foller Creechten Drive Nashville TN 37204 LAB USE Comments & Special Analytical Requirements: Project \*ANDOODSH3 COV. ONCO Shh8b-089 LAB Log Number COMMENTS SHIPMENT INFORMATION Errall garning Shipment Tracking No. Meson METHODS FOR ANALYSIS ☐ TestAmenica Savannah - 5102 LaRoche Avenya, Savannah, GA 31404 P. 912-354-7858 F. 912-352-0165 ☐ TestAmenica North Canton - 4101 Shuffel Drive NW, North Canton, OH 44720 P. 330-497-9396 F. 330-497-0772 ☐ TestAmerica Tampa - 6712 Benjamin Road, Sulte 100, Tampa, Fl. 33634 P. 813-885-7427 F. 813-885-7049 CL TestAmerica Pensacola - 8355 McLemore Drive, Pensacola, Fl. 82514 P. 850-474-1001 F. 850-478-2671 CL TestAmerica Buffalo - 10 Hazelwood Drive, Sulte 106, Amherst, NY 14228 P. 715-691-2600 F. 716-961-7991 CL TestAmerica Chicago - 2417 Bond Street, University Park, IL 80468 P. 708-534-5200 F. 708-534-5211 8-21-13 @ 0815 Date/Time: Date/Time: **Sate/Time** CONSULTANT INFORMATION Type Matrix
Comp Code
or Grab Code Pres. るの一つぞろ 3 LIQ = Liquid City, State, Zpyl 4 = Sodium Thiosulfate 5 = Sodium Hydraxide Company: SOL = Other Solid Address: Filtered Sampler Y or N 3 = Sulfuric Acid St = Studge SO = Soil [Ö ≅ ⊙ J.C. Mary Lab Remarks: Received By: Received By: Received By 0400 na, to Sample Collection 750 Preservative Codes: 0 = No Preservatives 1 = Hydrochloric Acid SW = Surface Water WW = Waste Water GW = Groundwater Matrix Codes: Che Embar tsamba Containers Number & Type 子の次に Date/Time: Date/Thre EDD Required, Format: CHAIN OF CUSTODY Standard 6-13 Days Specify # Days
Standard 14 Days DRIGINAL - RETURN TO LABORATORY WITH SAMPLES Other Deliv: CSXT Project Number: 941538 0.0 L Sample Identification CSXT PROJECT INFORMATION Deliverables:
CSXT Standard (Level II)
Level III SAMPLE INFORMATION Received By Laboratory: Turnaround Time: CSXT Project Name; 2 Day Rush 1 Day Rush 3 Day Rush Relinquished By: alinquished By: CSXT.Contact Level IV

		LABORATORY	LABORATORY INFORMATION					# CCC	(1) (プン) # 303	7
		☐ TestAmerica Sava	☐ TestAmerica Savannab - 5102 LaRoche Avenue, Savannah, GA 31404 ' P. 912-354-7858 P. 912-352-0165	wenue, Savannah, GA	31404 P. 912-	354-7858 F. 912-	52-0165		3000	
	CHAIN OF	D TestAmerica Nor	h Canton - 4101 Shuffe	I Drive NW, North Can	ton, OH 44720	P: 330-497-9396	F: 330-497-0772	SHIPMENT INFORMATION	GRMATION	
	CLISTODY	L lestAmerica lam	pa - 6712 Benjamin Ro: 	ad, Suite 100, Tampa,	FL 33634 Pt 81	3-885-7427 F: 81	3-885-7049	Shipment Method:		
TKANSFORTATION		TestAmerica Ruff	ato - 10 Hazelwood Ddv	e Unive, Pensacola, Fr.	323 14 F. 830, NY 1/1228 P.	4/4-1001 F: 850-	1/8-26/1			
		☐ TestAmerica Chio	☐ TestAmerica Chicago - 2417 Bond Street, University Park, II, 50466 P; 708-534-5200 F; 708-534-5217	, University Park, IL 6	2466 P: 708-50	4-5200 F: 708-53	4-5211	Shipment Tracking No:	. No:	
CSXT PROJECT INFORMATION		Proj. State (State of Origin)	of Origin)	CONSULTANT INFORMATION	IT INFORMA	NOL	1	Project #: MDG	Project *: MD/20843_001	100004
CSXT Project Number: 941538		Proj. Sily:		Company:	600	2	1	PM:		
CSXT Project Name:	なた。			Address:	R. C.	アネーク	1000	Email:		
CSXT Contact:		LWON: 7	1	Olfv. State Zio:		4		Dhone.	.>01	
		NSC S	NU 55/200 J				>	-11Ot16:	rau.	
	Standard 6-13 Days	Preservative Codes:	ო	= Sulfuric Acid	Note	()			COMMENTS	LAB USE
	Specify # Days	0 = No Preservatives		4 = Sodium Thiosulfate	Pres.	METH	METHODS FOR ANALYSIS	ALYSIS		
	MV Standard 14 Days	1 = Hydrochloric Acid		5 = Sodium Hydroxide	Code					
]	9f	2 = Nitric Acid	6 = Other	her		0				
	Other Deliv:	Matrix Codes:			LIQ = Liquid	<del></del>				ŕ
dard (Levej II)		GW = Groundwater		SL = Sludge		1				
	EDD Required, Format:	WW = Waste Water								
ALIZACI L		SW = Surface Water		SOL # Other Solid			···	·•		
SAMPLE INFORMATION						(	***			
	Containers	Sample	Sample Collection	Filtered Ty	Type Matrix	5)!				
Sample identification	Number & Type	Date	Time Sampler	X or X	Comp Code	D&				
1-0.01 10-2008	[.e.] [18402	Stro	11.5 4	2 2 7	Chr Las	×				
15607-0117.0-8	1 (2)	<u> </u>	(1951)	6		X				
12302-02200-1	(0"		35,			 				
1-54 10-02/	( \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \		(2) (S)			\ \ \				
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CAC 100	1							_		
1-02 20-1	707		2			×				
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7-01-04-10-6	5.Q.N (	<del>7</del> 7. • • • •	[ [B. F.]							
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1202-65 70-4	86   V	>	A 10051	7	8	X				
Reidfluishedbur 1	Saltimori, Constitution of the Constitution of	3 1900		12 Sep. 1		Date/Time:		Comments & S	Comments & Special Analytical Requirements:	squirements:
Relinquished By:	Dake/Time!		Received By:			Date/Time:				معمونات ومعاددات
0.00									7	
neinquistrea by:	Date/1 ime:		Received By:			Date/Time:		, 9		
Received By Laboratory:	Date/Timer		Lab Remarks:			LAB USE: Cu	Questody Intact	Custody Seat-#	LAB Log Number	
ORIGINAL - RETURN TO LABORATORY WITH SAMPLES	ITH SAMPLES					NVOICE MUST E	E SUBMITTED.	INVOICE MUST BE SUBMITTED TO CSXT WITH ORIGINAL COC	RIGINAL COC	TAL-6006 (0509)

		☐ TestAmerica Savannati - 5102 LaRoche	Savannath - 5102 LaRoche Avenuo, Savannath, 6A 31404 P: 912-354-7858 F: 912-352-0165	e Avenue, Savann	ah, 6A 31404	P: 912-354-79	58 F. 912-352-0	165			
として	CHAIN OF	TestAmerica North	Canton - 4101 Shu	ifel Drive NW, Nor	rth Canton, OH 4	4720 9:330	North Canton - 4101 Shuffel Drive NW, North Canton, OH 44720 P. 330-497-9396 F: 330-497-0772	0-497-0772	SHIPMENT INFORMATION	GRMATION	٠
TRAINSPORTATION		🔘 TestAmerica Tampa 🔘 TestAmerica Pensa	Tampa - 6712 Benjamin Road, Suite 100, Tampa, Fl. 33634 Pensacola - 3355 McLemore Drive, Pensacola, Fl. 32514 B	toad, Suite 100, T ore Drive, Pensac	ampa, FL 33634 :ola, FL 32514	P: 813-885-7427 P: 850-474-1001	P: 813-885-7427 F: 813-885-7049 P: 850-474-1001 , F: 850-478-2671	-7049	Shipment Method:		
		TestAmerica Buffali TestAmerica Chicag	Buffalo - 10 Hazelwood Drive, Suite 106, Amherst, NY 14228 P: 716-691- Chloago - 2417 Bond Street, University Park, IL 60466 P: 708-534-5200	rive, Suite 106, A set, Univorsity Par	mherst, NY 142. K, IL 60466 P.	28 P: 716-69 : 708-534-520	Buffalo - 10 Hazelwood Drive, Suite 106, Amherst, NY 14228 P: 716-691-2500 F: 716-951-7991 Chloago - 2417 Bond Street, University Park, IL 60466 P: 708-534-5200 P: 708-534-5211		Shipment Tracking No.	J No:	
CSXT PROJECT INFORMATION	IMATION	Proj. State (State of Origin)	f Origin)	CONSU	CONSULTANT INFORMATION	DRMATION			roject King	Project \$1,000813,0611.06004	,0000
CSXT Project Number: 94	415/461-	Proj City:		Company	250	,	-		PIM:		
CSXT Project Name:	100 Sign			Address	2	となる	SOL	2	Email:		
CSXT Contact:		LYON:	W33483	City, State, Zpp.	e, Zlp:		2		Phone:	Fax:	
Turnaround Time:	Standard 6-13 Days	Preservative Codes:	6	= Suffuric Acid	Z	Note 🖛 🕖			_	COMMENTS	LAB USE
1 Day Rush		0 = No Preservatives		4 = Sodium Thiosulfate		Pres.	METHOD	METHODS FOR ANALYSIS	ALYSIS		
2 Day Rush	Standard 14 Days Other	1 = Hydrochloric Acid 2 = Nitric Acid		5 = Sodium Hydroxide 6 = Other		Code					
Defiqerables:		Matrix Codes:	SOS	SO ≂ Soil	LIQ ≈ Liquid	) [2]					
CSXT Standard (Level II)		GW = Groundwater		SL = Sludge		<u>I</u>				******	
	EDD Required, Format:	WW = Waste Water		O! = Oi! SOL = Other Solid		<u>フ</u>			.==		
SAMPLE INFORMATION	2					T				<del></del>	
	Containers	Sample	Sample Collection	Filtered	Type	SI Xigu					
Sample Identification	/	Date		Sampler Y or N	Comp or Grab	9 <u>%</u>					
SBM-061.	0,5-1.5 15,402	412012	15151	7		$\frac{\times}{2}$					
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Halpkuishey By:	Septiment A	iani	Received By	-   _		Date	Date/Time:	-	Comments &		equirement
Relinquished By:	Dale/Timb:	ľ	Received By:	<b>₹</b>		S ag	24:15 © oSIS Date/Time:		-		,
Relinquished By:	Date/Time:		Received By:			Date	Date/Time:		22	ShhS1-089	
									) <b>)</b>	-	-
Received By Laboratory:	Date/Time-		Lab Remarks:			3	LAB USE: Custod	Custody (mact	Custody Seal #	LAB Log Number	iber

LABORATORY INFORMATION   Caretamerica Savannah - 5102 LaRocha Aven   Caretamerica North Canton - 4101 Shuffal Drift   Caretamerica North Canton - 4101 Shuffal Drift   Caretamerica North Canton - 4101 Shuffal Drift   Caretamerica Sas Muchanore Drift   Caretamerica Sample - 4101 Shuffal Drift   Caretamerica Sample - 4101 Shuffal Drift   Caretamerica Sample   Collection   Caretamerica Sample   Collection   Caretamerica Sample   Collection   Caretamerica Sample   Caretamerica Sampl	COC # \(\sumetarrow\rightarrow\ri	FORMATION Project # MY ODOSU 3, DOIL, OBOOT	CAINS, PM: Mean Volling	eld DVd Legan	100 2500 SON		Pres. METHODS FOR ANALYSIS	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	A print	7117.	J 5	1000	Matrix Office of the Control of the		K B X	6WX	6WIX		<u> </u>	<u>Х</u>	X	——————————————————————————————————————	×		Date/Timo: Comments & Special Analytical Requirements:	Date/Time:		Date Time: 18 19 19 19 19 19 19 19 19 19 19 19 19 19
M.188. S & L. W.188. S & L. W.	Suite 106, Amherst, NY 14228 P.; 716-69 Iniversity Park, IL 60466 P.; 708-534-520	CONSULTANT INFORMATION	Company: A CLATA	Address: [1] LAGGE	CIN. STR. Flewan 16. M	uric Acid Note 1	•	9	= OIJ	<u> </u>	Other Solid		Filtered Type	or Grab	N Carl 6 N	N GODINEX	XIM9 CHI		20					7 7	Date	Date	Date	1.0811925
W.78. W.78. W.78. W.78. W.78. W.79.	iseskmerica North Canton - 4101 Shuffel I Testkmerica. Tampa - 6712 Benjamin Road Testkmerica Pensacola - 3355 McLemore I Sestkmerica Briffalo - 10 Hazelwood Drive, Sestkmerica Chicago - 2477 Bond Street. I	o). State (State of Original	252	N.	ENV3			ic Acid					ample Collection	DINI)	N			1	1 0830 14	1 05840 1	06/80	040	/ 0630	V nate V		Received By:	Received By:	
CHAIN CUSTO	CHAIN OF CUSTODY	ē.	Pr	JUNBONIC]]	is in	Days		Standard 14 Days 1: Other 2:		EDD Required, Format: W			Containers Number &	Туре	* VOK			<b>→</b>	Internative				<u> </u>	- - - - -	Date/Time:   (3 )	Dath/Time:	Date/Time:	

Page 125 of 134

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Client: ARCADIS U.S., Inc. Job Number: 680-93445-1

Login Number: 93445 List Source: TestAmerica Savannah

List Number: 1

Creator: Conner, Keaton

Creator. Conner, Reaton		
Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>N/A</td> <td></td>	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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Client: ARCADIS U.S., Inc. Job Number: 680-93445-1

List Source: TestAmerica Pensacola
List Number: 1
List Creation: 08/22/13 12:43 PM

Creator: Meade, Chris J

0.8°, 3.2°C IR5
0.8°, 3.2°C IR5

TestAmerica Savannah

Client: ARCADIS U.S., Inc. Job Number: 680-93445-1

List Source: TestAmerica Pensacola
List Number: 2
List Source: TestAmerica Pensacola
List Creation: 08/22/13 12:46 PM

Creator: Meade, Chris J

Creator: Meade, Chris J		
Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>N/A</td> <td></td>	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	0.8°, 3.2°C IR5
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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Client: ARCADIS U.S., Inc. Job Number: 680-93445-1

List Source: TestAmerica Pensacola
List Number: 3
List Creation: 08/22/13 12:47 PM

Creator: Meade, Chris J

Creator: Meade, Chris J		
Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>N/A</td> <td></td>	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	0.8°, 3.2°C IR5
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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TestAmerica Job ID: 680-93445-1

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

## **Laboratory: TestAmerica Savannah**

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

Authority	Program	EPA Region	Certification ID	Expiration Date
	AFCEE		SAVLAB	
A2LA	DoD ELAP		399.01	07-31-14
A2LA	ISO/IEC 17025		399.01	02-28-15
Alabama	State Program	4	41450	06-30-14
Arkansas DEQ	State Program	6	88-0692	02-01-14 *
California	NELAP	9	3217CA	07-31-14 *
Colorado	State Program	8	N/A	12-31-13
Connecticut	State Program	1	PH-0161	03-31-15
Florida	NELAP	4	E87052	06-30-14
GA Dept. of Agriculture	State Program	4	N/A	12-31-13
Georgia	State Program	4	N/A	06-30-14
Georgia	State Program	4	803	06-30-14
Guam	State Program	9	09-005r	06-17-14
Hawaii	State Program	9	N/A	06-30-14
Illinois	NELAP	5	200022	11-30-13
Indiana	State Program	5	N/A	06-30-14
lowa	State Program	7	353	07-01-15
Kentucky	State Program	4	90084	12-31-13
Kentucky (UST)	State Program	4	18	06-30-14
Louisiana	NELAP	6	30690	06-30-14
Maine	State Program	1	GA00006	08-16-14
Maryland	State Program	3	250	12-31-13
Massachusetts	State Program	1	M-GA006	06-30-14
Michigan	State Program	5	9925	06-30-14
Mississippi	State Program	4	N/A	06-30-14
Montana	State Program	8	CERT0081	01-01-14
Nebraska	State Program	7	TestAmerica-Savannah	06-30-14
New Jersey	NELAP	2	GA769	06-30-14
New Mexico	State Program	6	N/A	06-30-14
New York	NELAP	2	10842	04-01-14
North Carolina DENR	State Program	4	269	12-31-13
North Carolina DHHS	State Program	4	13701	07-31-14
Oklahoma	State Program	6	9984	08-31-13 *
Pennsylvania	NELAP	3	68-00474	06-30-14
Puerto Rico	State Program	2	GA00006	01-01-14
South Carolina	State Program	4	98001	06-30-13 *
Tennessee	<del>.</del>	4	TN02961	06-30-14
Termessee	State Program NELAP	6	T104704185-08-TX	11-30-13
rexas USDA	NELAP Federal	Ü		04-07-14
			SAV 3-04	
Virginia	NELAP	3	460161	06-14-14
Washington	State Program	10	C1794	06-10-14
West Virginia	State Program	3	9950C	12-31-13
West Virginia DEP	State Program	3	94	09-30-13 *
Wisconsin	State Program	5	999819810	08-31-14
Wyoming	State Program	8	8TMS-L	06-30-14

## Laboratory: TestAmerica Nashville

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

TestAmerica Savannah

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<sup>\*</sup> Expired certification is currently pending renewal and is considered valid.

TestAmerica Job ID: 680-93445-1

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

## Laboratory: TestAmerica Nashville (Continued)

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

Authority	Program	EPA Region	Certification ID	<b>Expiration Date</b>
A2LA	ISO/IEC 17025		0453.07	12-31-13
AIHA	IHLAP		100790	09-01-13
Alaska (UST)	State Program	10	UST-087	07-24-14
Arizona	State Program	9	AZ0473	05-05-14
Arizona	State Program	9	AZ0473	05-05-14 *
Arkansas DEQ	State Program	6	88-0737	04-25-14
California	NELAP	9	1168CA	10-31-13
Canadian Assoc Lab Accred (CALA)	Canada		3744	03-08-14
Connecticut	State Program	1	PH-0220	12-31-13
Florida	NELAP	4	E87358	06-30-14
Illinois	NELAP	5	200010	12-09-13
lowa	State Program	7	131	05-01-14
Kansas	NELAP	7	E-10229	10-31-13
Kentucky (UST)	State Program	4	19	06-30-14
Louisiana	NELAP	6	30613	06-30-14
Maryland	State Program	3	316	03-31-14
Massachusetts	State Program	1	M-TN032	06-30-14
Minnesota	NELAP	5	047-999-345	12-31-13
Mississippi	State Program	4	N/A	06-30-14
Montana (UST)	State Program	8	NA	01-01-15
Nevada	State Program	9	TN00032	07-31-14
New Hampshire	NELAP	1	2963	10-10-13
New Jersey	NELAP	2	TN965	06-30-14
New York	NELAP	2	11342	04-01-14
North Carolina DENR	State Program	4	387	12-31-13
North Dakota	State Program	8	R-146	06-30-14
Ohio VAP	State Program	5	CL0033	01-19-14
Oklahoma	State Program	6	9412	08-31-14
Oregon	NELAP	10	TN200001	04-29-14
Pennsylvania	NELAP	3	68-00585	06-30-14
Rhode Island	State Program	1	LAO00268	12-30-13
South Carolina	State Program	4	84009 (001)	02-28-14
Tennessee	State Program	4	2008	02-23-14
Texas	NELAP	6	T104704077-09-TX	08-31-14
USDA	Federal		S-48469	11-02-13
Utah	NELAP	8	TN00032	07-31-14
Virginia	NELAP	3	460152	06-14-14
Washington	State Program	10	C789	07-19-14
West Virginia DEP	State Program	3	219	02-28-14
Wisconsin	State Program	5	998020430	08-31-14
Wyoming (UST)	A2LA	8	453.07	12-31-13

## **Laboratory: TestAmerica Pensacola**

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

Authority Alabama	Program State Program	EPA Region 4	Certification ID 40150	Expiration Date 06-30-14
Arizona	State Program	9	AZ0710	01-11-14
Arkansas DEQ	State Program	6	88-0689	09-01-13
Florida	NELAP	4	E81010	06-30-14

<sup>\*</sup> Expired certification is currently pending renewal and is considered valid.

TestAmerica Savannah

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# **Certification Summary**

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93445-1

## Laboratory: TestAmerica Pensacola (Continued)

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

Authority	Program	EPA Region	Certification ID	<b>Expiration Date</b>
Georgia	State Program	4	N/A	06-30-14
Illinois	NELAP	5	200041	10-09-13
lowa	State Program	7	367	08-01-14
Kansas	NELAP	7	E-10253	10-31-13
Kentucky (UST)	State Program	4	53	06-30-14
Louisiana	NELAP	6	30976	06-30-14
Maryland	State Program	3	233	09-30-14
Massachusetts	State Program	1	M-FL094	06-30-13 *
Michigan	State Program	5	9912	06-30-13 *
New Jersey	NELAP	2	FL006	06-30-13 *
North Carolina DENR	State Program	4	314	12-31-13
Oklahoma	State Program	6	9810	08-31-14
Pennsylvania	NELAP	3	68-00467	01-31-14
Rhode Island	State Program	1	LAO00307	12-31-13
South Carolina	State Program	4	96026	06-30-13 *
Tennessee	State Program	4	TN02907	06-30-14
Texas	NELAP	6	T104704286-12-5	09-30-13
USDA	Federal		P330-10-00407	12-10-13
Virginia	NELAP	3	460166	06-14-14
West Virginia DEP	State Program	3	136	06-30-14

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<sup>\*</sup> Expired certification is currently pending renewal and is considered valid.



THE LEADER IN ENVIRONMENTAL TESTING

# ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Savannah 5102 LaRoche Avenue Savannah, GA 31404 Tel: (912)354-7858

TestAmerica Job ID: 680-93498-1

Client Project/Site: CSX C&O Canal Brunswick, MD

For:

ARCADIS U.S., Inc. 1114 Benfield Blvd. Suite A Millersville, Maryland 21108

Attn: Ms. Megan Kellner

Show Hovey

Authorized for release by: 9/13/2013 11:43:43 AM

Lisa Harvey, Project Manager II lisa.harvey@testamericainc.com

.....LINKS .....

Review your project results through

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**Have a Question?** 



Visit us at: www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

### **Case Narrative**

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93498-1

Job ID: 680-93498-1

Laboratory: TestAmerica Savannah

Narrative

# CASE NARRATIVE Client: ARCADIS U.S., Inc.

Project: CSX C&O Canal Brunswick, MD Report Number: 680-93498-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

#### RECEIPT

The samples were received on 8/22/2013 9:39 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 2.6° C, 2.6° C and 2.8° C.

The footage on the COC for the VOCs and GRO is a shorter range than what was indicated for the SVOCs and DRO. For consitency in reporting moisture values, the specific soil boring was logged in for all tests based on the sample ID and date/time sampled, and were subsequently logged in so as to report at the largest of the depth range.

The tare weights were covered by the client ID labels on 39 of 48 terra core vials. Tare weights are used to determine the weight of soil in the vial.

#### **VOLATILE ORGANIC COMPOUNDS (GC-MS)**

Samples SB02-07 (0.5-1.5) (680-93498-4), SB02-07 (5.5-6.5) (680-93498-5), SB02-08 (0.5-1.5) (680-93498-6), SB02-08 (7.0-8.0) (680-93498-7), SB02-09 (0.5-1.5) (680-93498-8), SB02-09 (4.5-5.5) (680-93498-9), SB02-10 (0.5-1.5) (680-93498-10), SB02-10 (5.0-6.0) (680-93498-11), SB03-01 (0.5-1.5) (680-93498-12), SB03-01 (5.0-6.0) (680-93498-13), SB03-02 (0.0-1.0) (680-93498-14), SB03-02 (3.0-4.0) (680-93498-15), SB03-03 (0.5-1.5) (680-93498-16), SB03-03 (3.0-4.0) (680-93498-17), SB03-04 (0.5-1.5) (680-93498-18) and SB03-04 (4.0-5.0) (680-93498-19) were analyzed for Volatile Organic Compounds (GC-MS) in accordance with EPA SW-846 Method 8260B.

Samples PZ02-04 (082113) (680-93498-1) and TB01 (0802113) (680-93498-3) were analyzed for Volatile Organic Compounds (GC-MS) in accordance with EPA SW-846 Method 8260B.

Method(s) 8260B: A full list spike was utilized for this method. Due to the large number of spiked analytes, there is a high probability that one or more analytes will recover outside acceptance limits. The laboratory's SOP allows for 5 analytes to recover outside criteria for this method when a full list spike is utilized. The LCSD associated with batch 189997 had 1 analyte outside control limits; therefore, re-extraction/re-analysis was not performed. These results have been reported and qualified.

#### SEMIVOLATILE ORGANIC COMPOUNDS

Samples SB02-07 (0.5-1.5) (680-93498-4), SB02-07 (5.5-6.5) (680-93498-5), SB02-08 (0.5-1.5) (680-93498-6), SB02-08 (7.0-8.0) (680-93498-7), SB02-09 (0.5-1.5) (680-93498-8), SB02-09 (4.5-5.5) (680-93498-9), SB02-10 (0.5-1.5) (680-93498-10), SB02-10 (5.0-6.0) (680-93498-11), SB03-01 (0.5-1.5) (680-93498-12), SB03-01 (5.0-6.0) (680-93498-13), SB03-02 (0.0-1.0) (680-93498-14), SB03-02 (0.0-1.0) (680-93498-15), SB03-03 (0.5-1.5) (680-93498-16), SB03-03 (0.0-4.0) (680-93498-17), SB03-04 (0.5-1.5) (680-93498-18) and SB03-04 (4.0-5.0) (680-93498-19) were analyzed for Semivolatile Organic Compounds (Solid) in accordance with EPA SW-846 Method 8270D

Sample PZ02-04 (082113) (680-93498-1) was analyzed for Semivolatile Organic Compounds (Aqueous) in accordance with EPA SW-846 Method 8270D.

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Project/Site: CSX C&O Canal Brunswick, MD

## Job ID: 680-93498-1 (Continued)

#### Laboratory: TestAmerica Savannah (Continued)

Method(s) 8270D: The following analytes have been identified, in the reference method and/or via historical data, to be poor and/or erratic performers: Famphur, 1,4-Napthaquinone, Methane sulfonate, Benzaldehyde, 1-naphthylamine, 2-naphthylamine, p-Dimethylamino azobenzene, p-phenylenediamine, a,a-dimethylphenethylamine, Methapyriline, 2-picoline (2-methylpyridine), 3,3'-dimethylbenzidine, 3,3'-dichlorobenzidine, Benzaldehyde, Benzoic acid, Dinoseb, Hexachlorophene, Hexachlorocyclopentadiene, o,o,o-triethylphosphoro-thioate. These analytes may have a %D >60% if the average %D of all the analytes in the continuing calibration verification (CCV) is 30%. These analytes may have a %D>60% if the average %D of all the analytes in the initial calibration verification (ICV) is 30%.

Method(s) 8270D: The continuing calibration verification (CCV) analyzed in batch 291040 was outside the method criteria for the following analyte(s): N-Nitrosophenylamine and pyridine. A CCV standard at or below the reporting limit (RL) was analyzed with the affected samples and found to be acceptable. As indicated in the reference method, sample analysis may proceed; however, any detection for the affected analyte(s) is considered estimated.

Method(s) 8270D: The initial calibration curve analyzed in batch 290775 was outside method criteria for the following analyte(s): Atrazine and Benzidine. As indicated in the reference method, sample analysis may proceed; however, any detection or non-detection for the affected analyte(s) is considered an estimated concentration.

Method(s) 8270D: The initial calibration verification (ICV) analyzed in batch 290775 was outside method criteria for the following analyte(s): Benzidine and Benzaldehyde. As indicated in the reference method, sample analysis may proceed; however, any detection for the affected analyte(s) is considered estimated.

Method(s) 8270D: The initial calibration curve analyzed in batch 291781 was outside method criteria for the following analyte(s): benzoic acid. As indicated in the reference method, sample analysis may proceed; however, any detection or non-detection for the affected analyte(s) is considered an estimated concentration.

Method(s) 8270D: Manual integration was performed on the following sample(s): SB02-07 (0.5-1.5) (680-93498-4), SB03-01 (0.5-1.5) (680-93498-12), SB03-02 (0.0-1.0) (680-93498-14).

Method(s) 8270D: The following sample(s) contained one acid and/or one base surrogate outside acceptance limits: SB02-10 (0.5-1.5) (680-93498-10), SB03-01 (0.5-1.5) (680-93498-12), SB03-02 (0.0-1.0) (680-93498-14), SB03-03 (0.5-1.5) (680-93498-16), SB03-04 (0.5-1.5) (680-93498-18), SB03-04 (4.0-5.0) (680-93498-19). The laboratory's SOP allows one acid surrogate and/or one base surrogate to be outside acceptance limits; therefore, re-extraction/re-analysis was not performed. These results have been reported and qualified.

Method(s) 8270D: A full list spike was utilized for this method. Due to the large number of spiked analytes, there is a high probability that one or more analytes will recover outside acceptance limits. The laboratory's SOP allows for four analytes to recover outside criteria for this method when a full list spike is utilized. The LCS associated with batch 290873 had one analyte outside control limits; therefore, re-extraction/re-analysis was not performed. These results have been reported and qualified.

Method(s) 8270D: The continuing calibration verification (CCV) analyzed in batch 291613 was outside the method criteria for the following analyte(s): 2,2'oxybis[1-chloropropane], 2-Methylphenol, 3&4 Methylphenol, Anthracene, Benzidine, 1,2 Dichlorbenzene, Benzyl alcohol, Butyl benzyl phthalate, Carbazole, Di-n-butyl phthalate, Fluoranthene, Hexachloroethane, N-Nitrosodimethylamine, N-Nitrosodi-n-propylamine, phenol, pyrene, pyridine and Terphenyl-d14. A CCV standard at or below the reporting limit (RL) was analyzed with the affected samples and found to be acceptable. As indicated in the reference method, sample analysis may proceed; however, any detection for the affected analyte(s) is considered estimated.

Method(s) 8270D: The matrix spike / matrix spike duplicate (MS/MSD) recoveries and precision were outside control limits. Refer to QC pages.

Method(s) 8270D: Surrogate recovery for the following sample(s) was outside control limits: SB02-07 (0.5-1.5) (680-93498-4), SB02-09 (0.5-1.5) (680-93498-8). Re-extraction and/or re-analysis was performed with concurring results. The original analysis has been reported.

Method(s) 8270D: Surrogate recovery for the following sample(s) was outside control limits: SB02-08 (0.5-1.5) (680-93498-6). Re-extraction and/or re-analysis was performed outside of holding time with acceptable results. Both sets of data are reported. The

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Project/Site: CSX C&O Canal Brunswick, MD

## Job ID: 680-93498-1 (Continued)

#### Laboratory: TestAmerica Savannah (Continued)

results for the sample re-extracted outside hold time will have an "H" flag.

Method(s) 8270D: Surrogate recovery for the following sample(s) was outside acceptance limits: (LCS 680-292846/8-A), (MB 680-292846/7-A). All associated sample surrogates fell within acceptance criteria; therefore, the data have been reported.

Method(s) 8270D: Internal standard (ISTD) response for the following QC sample(s) was outside of acceptance limits: (LCS 680-292846/8-A), (MB 680-292846/7-A). The QC sample(s) were not re-analyzed due to related samples being re-extracts with expired holding times. Data have been qualified and reported.

Method(s) 8270D: The laboratory control sample (LCS) for batch 292846 recovered outside control limits for several analytes. The LCS was not re-analyzed due to related samples being re-extracts with expired holding times. Data have been qualified and reported.

Method(s) 8270D: The initial calibration curve analyzed in batch 292972 was outside method criteria for the following analyte(s): Benzidine. As indicated in the reference method, sample analysis may proceed; however, any detection or non-detection for the affected analyte(s) is considered an estimated concentration.

#### **GASOLINE RANGE ORGANICS (GRO)**

Samples SB02-07 (0.5-1.5) (680-93498-4), SB02-07 (5.5-6.5) (680-93498-5), SB02-08 (0.5-1.5) (680-93498-6), SB02-08 (7.0-8.0) (680-93498-7), SB02-09 (0.5-1.5) (680-93498-8), SB02-09 (4.5-5.5) (680-93498-9), SB02-10 (0.5-1.5) (680-93498-10), SB02-10 (5.0-6.0) (680-93498-11), SB03-01 (0.5-1.5) (680-93498-12), SB03-01 (5.0-6.0) (680-93498-13), SB03-02 (0.0-1.0) (680-93498-14), SB03-02 (3.0-4.0) (680-93498-15), SB03-03 (0.5-1.5) (680-93498-16), SB03-03 (3.0-4.0) (680-93498-17), SB03-04 (0.5-1.5) (680-93498-18) and SB03-04 (4.0-5.0) (680-93498-19) were analyzed for gasoline range organics (GRO) in accordance with EPA SW-846 Method 8015B.

Sample PZ02-04 (082113) (680-93498-1) was analyzed for gasoline range organics (GRO) in accordance with EPA SW-846 Method 8015C.

Due to the nature of this analysis which involves a total area sum over the entire retention time range, manual integrations are routinely performed for target analytes and surrogates to ensure consistent integration.

Gasoline Range Organics (GRO)-C6-C10 was detected in method blank MB 680-291184/5 at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. Refer to the QC report for details.

Method(s) 8015C: Internal standard (ISTD) response for the following samples were outside of acceptance limits: SB02-07 (0.5-1.5) (680-93498-4), SB02-07 (5.5-6.5) (680-93498-5), SB02-08 (0.5-1.5) (680-93498-6), SB02-08 (7.0-8.0) (680-93498-7), SB02-09 (0.5-1.5) (680-93498-8), SB02-10 (0.5-1.5) (680-93498-10). Most of this project had similar low recoveries for internal standards; as such the samples were not re-analyzed, the data have been reported per the project manager.

Method(s) 8015C: Internal standard responses were outside of acceptance limits for the following sample: SB03-02 (0.0-1.0) (680-93498-14), SB03-03 (0.5-1.5) (680-93498-16), SB03-04 (0.5-1.5) (680-93498-18). The project shows evidence of matrix interference. Samples were reanalyzed confirming the internal standard reponse outside acceptance limites; data have been reported.

Method(s) 8015C: Surrogate recovery for the following samples were outside control limits: SB02-07 (0.5-1.5) (680-93498-4), SB02-08 (0.5-1.5) (680-93498-6), SB02-09 (0.5-1.5) (680-93498-8), SB02-10 (0.5-1.5) (680-93498-10), SB03-03 (0.5-1.5) (680-93498-16), SB03-04 (0.5-1.5) (680-93498-18), SB03-04 (4.0-5.0) (680-93498-19). Evidence of matrix interference is present throughout the projetc. Sample was re-analyzed confirming recovery outside the control limits; original results have been reported.

#### **DIESEL RANGE ORGANICS (DRO)**

Samples SB02-07 (0.5-1.5) (680-93498-4), SB02-07 (5.5-6.5) (680-93498-5), SB02-08 (0.5-1.5) (680-93498-6), SB02-08 (7.0-8.0) (680-93498-7), SB02-09 (0.5-1.5) (680-93498-8), SB02-09 (4.5-5.5) (680-93498-9), SB02-10 (0.5-1.5) (680-93498-10), SB02-10 (5.0-6.0) (680-93498-11), SB03-01 (0.5-1.5) (680-93498-12), SB03-01 (5.0-6.0) (680-93498-13), SB03-02 (0.0-1.0) (680-93498-14), SB03-02 (3.0-4.0) (680-93498-15), SB03-03 (0.5-1.5) (680-93498-16), SB03-03 (3.0-4.0) (680-93498-17), SB03-04 (0.5-1.5) (680-93498-18) and SB03-04 (4.0-5.0) (680-93498-19) were analyzed for Diesel Range Organics (DRO) in accordance with EPA SW-846 Method 8015C.

Samples PZ02-04 (082113) (680-93498-1) and PZ02-04 (082113) (DRO-SGT) (680-93498-20) were analyzed for Diesel Range Organics

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#### **Case Narrative**

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93498-1

Job ID: 680-93498-1 (Continued)

## Laboratory: TestAmerica Savannah (Continued)

(DRO) in accordance with EPA SW-846 Method 8015C.

Due to the nature of this analysis which involves a total area sum over the entire retention time range, manual integrations are routinely performed for target analytes and surrogates to ensure consistent integration.

Diesel Range Organics [C10-C28] was detected in method blank MB 490-103111/1-A at a level exceeding the reporting limit. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. Refer to the QC report for details.

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# **Sample Summary**

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93498-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
680-93498-1	PZ02-04 (082113)	Water	08/21/13 09:35	08/22/13 09:39
680-93498-3	TB01 (0802113)	Water	08/21/13 00:00	08/22/13 09:39
680-93498-4	SB02-07 (0.5-1.5)	Solid	08/21/13 08:50	08/22/13 09:39
680-93498-5	SB02-07 (5.5-6.5)	Solid	08/21/13 09:00	08/22/13 09:39
680-93498-6	SB02-08 (0.5-1.5)	Solid	08/21/13 09:10	08/22/13 09:39
680-93498-7	SB02-08 (7.0-8.0)	Solid	08/21/13 09:20	08/22/13 09:39
680-93498-8	SB02-09 (0.5-1.5)	Solid	08/21/13 10:00	08/22/13 09:39
680-93498-9	SB02-09 (4.5-5.5)	Solid	08/21/13 10:10	08/22/13 09:39
680-93498-10	SB02-10 (0.5-1.5)	Solid	08/21/13 10:20	08/22/13 09:39
680-93498-11	SB02-10 (5.0-6.0)	Solid	08/21/13 10:30	08/22/13 09:39
680-93498-12	SB03-01 (0.5-1.5)	Solid	08/21/13 12:30	08/22/13 09:39
680-93498-13	SB03-01 (5.0-6.0)	Solid	08/21/13 12:40	08/22/13 09:39
680-93498-14	SB03-02 (0.0-1.0)	Solid	08/21/13 12:50	08/22/13 09:39
680-93498-15	SB03-02 (3.0-4.0)	Solid	08/21/13 13:00	08/22/13 09:39
680-93498-16	SB03-03 (0.5-1.5)	Solid	08/21/13 13:20	08/22/13 09:39
680-93498-17	SB03-03 (3.0-4.0)	Solid	08/21/13 13:30	08/22/13 09:39
680-93498-18	SB03-04 (0.5-1.5)	Solid	08/21/13 13:50	08/22/13 09:39
680-93498-19	SB03-04 (4.0-5.0)	Solid	08/21/13 14:00	08/22/13 09:39
680-93498-20	PZ02-04 (082113) (DRO-SGT)	Water	08/21/13 09:35	08/22/13 09:39

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## **Method Summary**

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93498-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL PEN
8270D	Semivolatile Organic Compounds (GC/MS)	SW846	TAL SAV
8015C	Nonhalogenated Organics using GC/FID -Modified (Gasoline Range Organics)	SW846	TAL SAV
8015C	Nonhalogenated Organics using GC/FID -Modified (Diesel Range Organics)	SW846	TAL NSH

#### Protocol References:

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

#### Laboratory References:

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

TAL PEN = TestAmerica Pensacola, 3355 McLemore Drive, Pensacola, FL 32514, TEL (850)474-1001

TAL SAV = TestAmerica Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

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# **Definitions/Glossary**

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93498-1

## **Qualifiers**

## **GC/MS VOA**

Qualifier	Qualifier Description				
U	Indicates the analyte was analyzed for but not detected.				
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.				
*	LCS or LCSD exceeds the control limits				
COMP OF TWO					

## GC/MS Semi VOA

Qualifier Description
Indicates the analyte was analyzed for but not detected.
ICV,CCV,ICB,CCB, ISA, ISB, CRI, CRA, DLCK or MRL standard: Instrument related QC exceeds the control limits.
MS/MSD Recovery and/or RPD exceeds the control limits
Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
LCS or LCSD exceeds the control limits
Surrogate is outside control limits
Sample was prepped or analyzed beyond the specified holding time

## **GC VOA**

Qualifier	Qualifier Description
В	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
X	Surrogate is outside control limits
U	Indicates the analyte was analyzed for but not detected.
CC Somi V	

#### GC Semi VOA

Qualifier	Qualifier Description
В	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

## Glossary

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

TestAmerica Savannah

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Client: ARCADIS U.S., Inc.

Date Collected: 08/21/13 09:35

Date Received: 08/22/13 09:39

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: PZ02-04 (082113)

TestAmerica Job ID: 680-93498-1

Lab Sample ID: 680-93498-1

Matrix: Water

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

Analyte		Qualifier	RL	MDL		D	Prepared	Analyzed	Dil Fac
Acetone	25	U	25	3.5	ug/L			08/29/13 00:33	1
Benzene	1.0	U	1.0	0.34	ug/L			08/29/13 00:33	1
Bromodichloromethane	1.0	U	1.0	0.50	ug/L			08/29/13 00:33	1
Bromoform	5.0	U	5.0	0.71	ug/L			08/29/13 00:33	1
Carbon disulfide	1.0	U	1.0	0.50	ug/L			08/29/13 00:33	1
Carbon tetrachloride	1.0	U	1.0	0.50	ug/L			08/29/13 00:33	1
Chlorobenzene	1.0	U	1.0	0.50	ug/L			08/29/13 00:33	1
Chloroethane	1.0	U	1.0	0.76	ug/L			08/29/13 00:33	1
Chloroform	1.0	U	1.0	0.60	ug/L			08/29/13 00:33	1
Chloromethane	1.0	U	1.0	0.83	ug/L			08/29/13 00:33	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.50	ug/L			08/29/13 00:33	1
cis-1,3-Dichloropropene	5.0	U	5.0	0.50	ug/L			08/29/13 00:33	1
Cyclohexane	1.0	U	1.0	0.50	ug/L			08/29/13 00:33	1
Dibromochloromethane	1.0	U	1.0	0.50	ug/L			08/29/13 00:33	1
1,2-Dibromo-3-Chloropropane	5.0	U	5.0	0.78	ug/L			08/29/13 00:33	1
1,2-Dichlorobenzene	1.0	U	1.0	0.50	ug/L			08/29/13 00:33	1
1,3-Dichlorobenzene	1.0		1.0		ug/L			08/29/13 00:33	1
1,4-Dichlorobenzene	1.0	U	1.0	0.64	ug/L			08/29/13 00:33	1
Dichlorodifluoromethane	1.0	U	1.0	0.85				08/29/13 00:33	1
1,1-Dichloroethane	1.0	U	1.0	0.50				08/29/13 00:33	1
1,2-Dichloroethane	1.0	U	1.0		ug/L			08/29/13 00:33	1
1,1-Dichloroethene	1.0	U	1.0	0.50	<del>.</del>			08/29/13 00:33	1
1,2-Dichloropropane	1.0	U	1.0		ug/L			08/29/13 00:33	1
Diisopropyl ether	1.0	U	1.0		ug/L			08/29/13 00:33	1
Ethylbenzene	1.0		1.0		ug/L			08/29/13 00:33	1
Ethylene Dibromide	1.0		1.0	0.50	_			08/29/13 00:33	1
Ethyl tert-butyl ether	1.0		1.0		ug/L			08/29/13 00:33	1
2-Hexanone	25		25		ug/L			08/29/13 00:33	1
Isopropylbenzene	1.0		1.0	0.53	_			08/29/13 00:33	1
Methyl acetate	5.0		5.0		ug/L			08/29/13 00:33	1
Methylcyclohexane	1.0		1.0		ug/L			08/29/13 00:33	1
Methylene Chloride	5.0		5.0		ug/L			08/29/13 00:33	1
Methyl Ethyl Ketone	25		25		ug/L			08/29/13 00:33	1
methyl isobutyl ketone	25		25		ug/L			08/29/13 00:33	1
Methyl tert-butyl ether	1.0		1.0	0.74	_			08/29/13 00:33	1
Naphthalene	1.0	U	1.0		ug/L			08/29/13 00:33	1
Styrene	1.0		1.0		ug/L			08/29/13 00:33	1
Tert-amyl methyl ether	1.0		1.0	0.60	-			08/29/13 00:33	1
tert-Butyl alcohol	5.0		5.0		ug/L			08/29/13 00:33	1
1,1,2,2-Tetrachloroethane	1.0		1.0		ug/L			08/29/13 00:33	1
Tetrachloroethene	1.0		1.0	0.58				08/29/13 00:33	1
Toluene	1.0		1.0	0.70	_			08/29/13 00:33	1
trans-1,2-Dichloroethene	1.0		1.0		ug/L			08/29/13 00:33	· · · · · · · · · · · · · · · · · · ·
trans-1,3-Dichloropropene	5.0		5.0		ug/L			08/29/13 00:33	
1,2,4-Trichlorobenzene	1.0		1.0	0.82	•			08/29/13 00:33	1
1,1,1-Trichloroethane	1.0		1.0		ug/L			08/29/13 00:33	1
1,1,2-Trichloroethane	5.0		5.0	0.50				08/29/13 00:33	1
Trichloroethene	1.0		1.0		ug/L			08/29/13 00:33	1
Trichlorofluoromethane	1.0		1.0		ug/L			08/29/13 00:33	· · · · · · · · · · · · · · · · · · ·

TestAmerica Savannah

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93498-1

Client Sample ID: PZ02-04 (082113)

Date Collected: 08/21/13 09:35 Date Received: 08/22/13 09:39 Lab Sample ID: 680-93498-1

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	1.0	0.50	ug/L			08/29/13 00:33	1
Vinyl chloride	1.0	U	1.0	0.50	ug/L			08/29/13 00:33	1
Xylenes, Total	10	U	10	1.6	ug/L			08/29/13 00:33	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	96		78 - 118			-		08/29/13 00:33	1
Dibromofluoromethane	101		81 - 121					08/29/13 00:33	1
Toluene-d8 (Surr)	98		80 - 120					08/29/13 00:33	1

-	90		00 - 120					06/29/13 00:33	,
Method: 8270D - Semivolatile C									
Analyte		Qualifier	RL	MDL		D	Prepared	Analyzed	Dil Fac
Acenaphthene	9.9		9.9		ug/L		08/23/13 15:49	08/26/13 19:50	1
Acenaphthylene	9.9		9.9		ug/L		08/23/13 15:49	08/26/13 19:50	1
Acetophenone	9.9		9.9		ug/L		08/23/13 15:49	08/26/13 19:50	1
Anthracene	9.9	U	9.9	0.68	_		08/23/13 15:49	08/26/13 19:50	1
Atrazine	9.9	U	9.9	1.2	ug/L		08/23/13 15:49	08/26/13 19:50	1
Benzaldehyde	9.9	U ^	9.9	1.1	ug/L		08/23/13 15:49	08/26/13 19:50	1
Benzo[a]anthracene	9.9	U	9.9	0.55	ug/L		08/23/13 15:49	08/26/13 19:50	1
Benzo[a]pyrene	9.9	U	9.9	0.70	ug/L		08/23/13 15:49	08/26/13 19:50	1
Benzo[b]fluoranthene	9.9	U	9.9	2.6	ug/L		08/23/13 15:49	08/26/13 19:50	1
Benzo[g,h,i]perylene	9.9	U	9.9	0.86	ug/L		08/23/13 15:49	08/26/13 19:50	1
Benzo[k]fluoranthene	9.9	U	9.9	1.2	ug/L		08/23/13 15:49	08/26/13 19:50	1
1,1'-Biphenyl	9.9	U	9.9	0.58	ug/L		08/23/13 15:49	08/26/13 19:50	1
Bis(2-chloroethoxy)methane	9.9	U	9.9	0.93	ug/L		08/23/13 15:49	08/26/13 19:50	1
Bis(2-chloroethyl)ether	9.9	U	9.9	1.1	ug/L		08/23/13 15:49	08/26/13 19:50	1
bis (2-chloroisopropyl) ether	9.9	U	9.9	0.77	ug/L		08/23/13 15:49	08/26/13 19:50	1
Bis(2-ethylhexyl) phthalate	9.9	U	9.9	1.6	ug/L		08/23/13 15:49	08/26/13 19:50	1
4-Bromophenyl phenyl ether	9.9	U	9.9	0.76	ug/L		08/23/13 15:49	08/26/13 19:50	1
Butyl benzyl phthalate	9.9	U	9.9	1.2	ug/L		08/23/13 15:49	08/26/13 19:50	1
Caprolactam	9.9	U	9.9	0.78	ug/L		08/23/13 15:49	08/26/13 19:50	1
Carbazole	9.9	U	9.9	0.70	ug/L		08/23/13 15:49	08/26/13 19:50	1
4-Chloroaniline	20	U	20	2.2	ug/L		08/23/13 15:49	08/26/13 19:50	1
4-Chloro-3-methylphenol	9.9	U	9.9	0.99	ug/L		08/23/13 15:49	08/26/13 19:50	1
2-Chloronaphthalene	9.9	U	9.9	0.79	ug/L		08/23/13 15:49	08/26/13 19:50	1
2-Chlorophenol	9.9	U	9.9	0.86	ug/L		08/23/13 15:49	08/26/13 19:50	1
4-Chlorophenyl phenyl ether	9.9	U	9.9	0.83	ug/L		08/23/13 15:49	08/26/13 19:50	1
Chrysene	9.9	U	9.9	0.51	ug/L		08/23/13 15:49	08/26/13 19:50	1
Dibenz(a,h)anthracene	9.9	U	9.9	0.99	ug/L		08/23/13 15:49	08/26/13 19:50	1
Dibenzofuran	9.9		9.9	0.78	ug/L		08/23/13 15:49	08/26/13 19:50	1
3,3'-Dichlorobenzidine	60	U	60	30	ug/L		08/23/13 15:49	08/26/13 19:50	1
2,4-Dichlorophenol	9.9	U	9.9		ug/L		08/23/13 15:49	08/26/13 19:50	1
Diethyl phthalate	9.9		9.9		ug/L		08/23/13 15:49	08/26/13 19:50	1
2,4-Dimethylphenol	9.9	U	9.9	4.0	ug/L		08/23/13 15:49	08/26/13 19:50	1
Dimethyl phthalate	9.9		9.9		ug/L		08/23/13 15:49	08/26/13 19:50	1
Di-n-butyl phthalate	9.9		9.9		ug/L		08/23/13 15:49	08/26/13 19:50	1
4,6-Dinitro-2-methylphenol	50		50		ug/L		08/23/13 15:49	08/26/13 19:50	1
2,4-Dinitrophenol	50		50		ug/L		08/23/13 15:49	08/26/13 19:50	1
2,4-Dinitrotoluene	9.9		9.9		ug/L ug/L		08/23/13 15:49	08/26/13 19:50	1
2,6-Dinitrotoluene	9.9		9.9	1.1	ug/L		08/23/13 15:49	08/26/13 19:50	1
,	9.9				•		08/23/13 15:49	08/26/13 19:50	1
Di-n-octyl phthalate	9.9	U	9.9	1.4	ug/L		00/23/13 15:49	00/20/13 19:50	1

TestAmerica Savannah

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93498-1

Lab Sample ID: 680-93498-1

Matrix: Water

Clie	nt	Sa	ım	ple	ID:	PΖ	<b>'02</b>	-04	(082113)
	_								

Date Collected: 08/21/13 09:35 Date Received: 08/22/13 09:39

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
Fluoranthene	9.9	U	9.9	0.73	ug/L		08/23/13 15:49	08/26/13 19:50	
Fluorene	9.9	U	9.9	0.95	ug/L		08/23/13 15:49	08/26/13 19:50	
Hexachlorobenzene	9.9	U	9.9	0.78	ug/L		08/23/13 15:49	08/26/13 19:50	
Hexachlorobutadiene	9.9	U	9.9	0.62	ug/L		08/23/13 15:49	08/26/13 19:50	
Hexachlorocyclopentadiene	9.9	U	9.9	2.5	ug/L		08/23/13 15:49	08/26/13 19:50	
Hexachloroethane	9.9	U	9.9	0.75	_		08/23/13 15:49	08/26/13 19:50	
Indeno[1,2,3-cd]pyrene	9.9		9.9		ug/L		08/23/13 15:49	08/26/13 19:50	
Isophorone	9.9	U	9.9	0.89	_		08/23/13 15:49	08/26/13 19:50	
2-Methylnaphthalene	9.9	U	9.9	0.77	-		08/23/13 15:49	08/26/13 19:50	
2-Methylphenol	9.9		9.9	0.88			08/23/13 15:49	08/26/13 19:50	
3 & 4 Methylphenol	9.9	U	9.9	1.3	ug/L		08/23/13 15:49	08/26/13 19:50	
Naphthalene	9.9		9.9	0.69	-		08/23/13 15:49	08/26/13 19:50	
2-Nitroaniline	50		50	1.3			08/23/13 15:49	08/26/13 19:50	
3-Nitroaniline	50		50	5.0	ug/L		08/23/13 15:49	08/26/13 19:50	
4-Nitroaniline	50		50		ug/L		08/23/13 15:49	08/26/13 19:50	
Nitrobenzene	9.9		9.9	0.72			08/23/13 15:49	08/26/13 19:50	
2-Nitrophenol	9.9		9.9	0.75	-		08/23/13 15:49	08/26/13 19:50	
4-Nitrophenol	50		50		ug/L		08/23/13 15:49	08/26/13 19:50	
N-Nitrosodi-n-propylamine	9.9		9.9	0.71			08/23/13 15:49	08/26/13 19:50	
N-Nitrosodiphenylamine	9.9		9.9	0.91	ug/L		08/23/13 15:49	08/26/13 19:50	
Pentachlorophenol	50		50		ug/L		08/23/13 15:49	08/26/13 19:50	
Phenanthrene	9.9		9.9	0.76			08/23/13 15:49	08/26/13 19:50	
Phenol	9.9		9.9	0.82	-		08/23/13 15:49	08/26/13 19:50	
Pyrene	9.9		9.9	0.63	-		08/23/13 15:49	08/26/13 19:50	
2,4,5-Trichlorophenol	9.9		9.9		ug/L ug/L		08/23/13 15:49	08/26/13 19:50	
2,4,6-Trichlorophenol	9.9		9.9	0.84	-		08/23/13 15:49	08/26/13 19:50	
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fa
2-Fluorobiphenyl	63		38 - 130				08/23/13 15:49	08/26/13 19:50	
2-Fluorophenol (Surr)	60		25 _ 130				08/23/13 15:49	08/26/13 19:50	
Nitrobenzene-d5 (Surr)	70		39 - 130				08/23/13 15:49	08/26/13 19:50	
Phenol-d5 (Surr)	55		25 _ 130				08/23/13 15:49	08/26/13 19:50	
Terphenyl-d14 (Surr)	43		10 - 143				08/23/13 15:49	08/26/13 19:50	
2,4,6-Tribromophenol (Surr)	82		31 - 141				08/23/13 15:49	08/26/13 19:50	
Method: 8015C - Nonhalogenate	d Organics usi	ng GC/FID	-Modified (Gaso	line Ran	ge Organi	ics)			
Analyte		Qualifier	RL		Unit	Ď	Prepared	Analyzed	Dil Fa
Gasoline Range Organics (GRO) -C6-C10	19	JB	50	11	ug/L			08/28/13 12:08	
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fa
a,a,a-Trifluorotoluene	94		70 - 130					08/28/13 12:08	
Method: 8015C - Nonhalogenate	_	_				-			
Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fa
Diesel Range Organics [C10-C28]	360	В	97	27	ug/L	_	08/28/13 07:23	08/28/13 17:40	
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fa
o-Terphenyl (Surr)	74		50 - 150				08/28/13 07:23	08/28/13 17:40	

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93498-1

Client Sample ID: TB01 (0802113)

Date Collected: 08/21/13 00:00 Date Received: 08/22/13 09:39 Lab Sample ID: 680-93498-3

Matrix: Water

Analyte		Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil F
Acetone	25	U	25	3.5	ug/L			08/29/13 01:24	
Benzene	1.0	U	1.0	0.34	ug/L			08/29/13 01:24	
Bromodichloromethane	1.0	U	1.0	0.50	ug/L			08/29/13 01:24	
Bromoform	5.0	U	5.0	0.71	ug/L			08/29/13 01:24	
Carbon disulfide	1.0	U	1.0	0.50	ug/L			08/29/13 01:24	
Carbon tetrachloride	1.0	U	1.0	0.50	ug/L			08/29/13 01:24	
Chlorobenzene	1.0	U	1.0	0.50	ug/L			08/29/13 01:24	
Chloroethane	1.0	U	1.0	0.76	ug/L			08/29/13 01:24	
Chloroform	1.0	U	1.0	0.60	ug/L			08/29/13 01:24	
Chloromethane	1.0	U	1.0	0.83	ug/L			08/29/13 01:24	
cis-1,2-Dichloroethene	1.0	U	1.0	0.50	ug/L			08/29/13 01:24	
cis-1,3-Dichloropropene	5.0	U	5.0	0.50	ug/L			08/29/13 01:24	
Cyclohexane	1.0	U	1.0	0.50	ug/L			08/29/13 01:24	
Dibromochloromethane	1.0	U	1.0	0.50	ug/L			08/29/13 01:24	
1,2-Dibromo-3-Chloropropane	5.0	U	5.0	0.78	ug/L			08/29/13 01:24	
1,2-Dichlorobenzene	1.0	U	1.0	0.50	ug/L			08/29/13 01:24	
1,3-Dichlorobenzene	1.0	U	1.0	0.54	ug/L			08/29/13 01:24	
1,4-Dichlorobenzene	1.0	U	1.0	0.64	ug/L			08/29/13 01:24	
Dichlorodifluoromethane	1.0	U	1.0	0.85	ug/L			08/29/13 01:24	
1,1-Dichloroethane	1.0	U	1.0	0.50	ug/L			08/29/13 01:24	
1,2-Dichloroethane	1.0	U	1.0	0.50	ug/L			08/29/13 01:24	
1,1-Dichloroethene	1.0	U	1.0	0.50	ug/L			08/29/13 01:24	
1,2-Dichloropropane	1.0	U	1.0	0.50	ug/L			08/29/13 01:24	
Diisopropyl ether	1.0	U	1.0		ug/L			08/29/13 01:24	
Ethylbenzene	1.0	U	1.0		ug/L			08/29/13 01:24	
Ethylene Dibromide	1.0	U	1.0	0.50	ug/L			08/29/13 01:24	
Ethyl tert-butyl ether	1.0	U	1.0	0.68	ug/L			08/29/13 01:24	
2-Hexanone	25	U	25	3.1	ug/L			08/29/13 01:24	
Isopropylbenzene	1.0	U	1.0		ug/L			08/29/13 01:24	
Methyl acetate	5.0	U	5.0		ug/L			08/29/13 01:24	
Methylcyclohexane	1.0	U	1.0		ug/L			08/29/13 01:24	
Methylene Chloride	5.0	U	5.0	3.0	ug/L			08/29/13 01:24	
Methyl Ethyl Ketone	25	U	25	2.6	ug/L			08/29/13 01:24	
methyl isobutyl ketone	25	U	25	1.8	ug/L			08/29/13 01:24	
Methyl tert-butyl ether	1.0	U	1.0	0.74	ug/L			08/29/13 01:24	
Naphthalene	1.0	U	1.0		ug/L			08/29/13 01:24	
Styrene	1.0	U	1.0		ug/L			08/29/13 01:24	
Tert-amyl methyl ether	1.0		1.0		ug/L			08/29/13 01:24	
tert-Butyl alcohol	5.0		5.0		ug/L			08/29/13 01:24	
1,1,2,2-Tetrachloroethane	1.0		1.0		ug/L			08/29/13 01:24	
Tetrachloroethene	1.0		1.0		ug/L			08/29/13 01:24	
Toluene	1.0		1.0		ug/L			08/29/13 01:24	
trans-1,2-Dichloroethene	1.0		1.0		ug/L			08/29/13 01:24	
trans-1,3-Dichloropropene	5.0		5.0		ug/L			08/29/13 01:24	
1,2,4-Trichlorobenzene	1.0		1.0		ug/L			08/29/13 01:24	
1,1,1-Trichloroethane	1.0		1.0		ug/L			08/29/13 01:24	
1,1,2-Trichloroethane	5.0		5.0		ug/L			08/29/13 01:24	
Trichloroethene	1.0		1.0		ug/L			08/29/13 01:24	
Trichlorofluoromethane	1.0		1.0		ug/L			08/29/13 01:24	

TestAmerica Savannah

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93498-1

**Client Sample ID: TB01 (0802113)** 

Date Collected: 08/21/13 00:00 Date Received: 08/22/13 09:39

Lab Sample ID: 680-93498-3

Matrix: Water

Method: 8260B - Volatile Organi	Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)												
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac				
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	1.0	0.50	ug/L			08/29/13 01:24	1				
Vinyl chloride	1.0	U	1.0	0.50	ug/L			08/29/13 01:24	1				
Xylenes, Total	10	U	10	1.6	ug/L			08/29/13 01:24	1				
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac				
4-Bromofluorobenzene	97		78 - 118			-		08/29/13 01:24	1				
Dibromofluoromethane	101		81 - 121					08/29/13 01:24	1				
Toluene-d8 (Surr)	99		80 - 120					08/29/13 01:24	1				

Client Sample ID: SB02-07 (0.5-1.5)

Date Collected: 08/21/13 08:50

Date Received: 08/22/13 09:39

Lab Sample ID: 680-93498-4

Matrix: Solid Percent Solids: 52.6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	46	U *	46	14	ug/Kg	<del>*</del>	08/26/13 09:52	08/28/13 13:11	1
Benzene	9.3	U	9.3	0.91	ug/Kg	₩	08/26/13 09:52	08/28/13 13:11	1
Bromodichloromethane	9.3	U	9.3	1.6	ug/Kg	₽	08/26/13 09:52	08/28/13 13:11	1
Bromoform	9.3	U	9.3	1.2	ug/Kg	*	08/26/13 09:52	08/28/13 13:11	1
Bromomethane	9.3	U	9.3	2.6	ug/Kg	₽	08/26/13 09:52	08/28/13 13:11	1
Carbon disulfide	9.3	U	9.3	2.2	ug/Kg	₽	08/26/13 09:52	08/28/13 13:11	1
Carbon tetrachloride	9.3	U	9.3	3.2	ug/Kg	*	08/26/13 09:52	08/28/13 13:11	1
Chlorobenzene	9.3	U	9.3	0.97	ug/Kg	₽	08/26/13 09:52	08/28/13 13:11	1
Chloroethane	9.3	U	9.3	3.5	ug/Kg	₽	08/26/13 09:52	08/28/13 13:11	1
Chloroform	9.3	U	9.3	1.1	ug/Kg	₽	08/26/13 09:52	08/28/13 13:11	1
Chloromethane	9.3	U	9.3	1.9	ug/Kg	₽	08/26/13 09:52	08/28/13 13:11	1
cis-1,2-Dichloroethene	9.3	U	9.3	1.4	ug/Kg	₽	08/26/13 09:52	08/28/13 13:11	1
cis-1,3-Dichloropropene	9.3	U	9.3	2.2	ug/Kg	₽	08/26/13 09:52	08/28/13 13:11	1
Cyclohexane	9.3	U	9.3	1.7	ug/Kg	₽	08/26/13 09:52	08/28/13 13:11	1
Dibromochloromethane	9.3	U	9.3	1.6	ug/Kg	₽	08/26/13 09:52	08/28/13 13:11	1
1,2-Dibromo-3-Chloropropane	9.3	U	9.3	6.1	ug/Kg	₽	08/26/13 09:52	08/28/13 13:11	1
1,2-Dichlorobenzene	9.3	U	9.3	1.3	ug/Kg	₩	08/26/13 09:52	08/28/13 13:11	1
1,3-Dichlorobenzene	9.3	U	9.3	1.8	ug/Kg	₽	08/26/13 09:52	08/28/13 13:11	1
1,4-Dichlorobenzene	9.3	U	9.3	1.5	ug/Kg	\$	08/26/13 09:52	08/28/13 13:11	1
Dichlorodifluoromethane	9.3	U	9.3	2.4	ug/Kg	₽	08/26/13 09:52	08/28/13 13:11	1
1,1-Dichloroethane	9.3	U	9.3	1.5	ug/Kg	₽	08/26/13 09:52	08/28/13 13:11	1
1,2-Dichloroethane	9.3	U	9.3	1.5	ug/Kg	*	08/26/13 09:52	08/28/13 13:11	1
1,1-Dichloroethene	9.3	U	9.3	1.4	ug/Kg	₽	08/26/13 09:52	08/28/13 13:11	1
1,2-Dichloropropane	9.3	U	9.3	1.4	ug/Kg	₽	08/26/13 09:52	08/28/13 13:11	1
Diisopropyl ether	9.3	U	9.3	1.0	ug/Kg	₽	08/26/13 09:52	08/28/13 13:11	1
Ethylbenzene	9.3	U	9.3	1.1	ug/Kg	₽	08/26/13 09:52	08/28/13 13:11	1
Ethylene Dibromide	9.3	U	9.3	0.89	ug/Kg	₽	08/26/13 09:52	08/28/13 13:11	1
Ethyl tert-butyl ether	9.3	U	9.3	1.0	ug/Kg	₽	08/26/13 09:52	08/28/13 13:11	1
2-Hexanone	46	U	46	9.3	ug/Kg	₽	08/26/13 09:52	08/28/13 13:11	1
Isopropylbenzene	9.3	U	9.3	1.3	ug/Kg	₽	08/26/13 09:52	08/28/13 13:11	1
Methyl acetate	9.3	U	9.3	8.5	ug/Kg	₩.	08/26/13 09:52	08/28/13 13:11	1
Methylcyclohexane	9.3	U	9.3	1.6	ug/Kg	₽	08/26/13 09:52	08/28/13 13:11	1
Methylene Chloride	28	U	28	19	ug/Kg	☼	08/26/13 09:52	08/28/13 13:11	1
Methyl Ethyl Ketone	46	U	46	7.6	ug/Kg	\$	08/26/13 09:52	08/28/13 13:11	1
methyl isobutyl ketone	46	U	46	7.4	ug/Kg	₩	08/26/13 09:52	08/28/13 13:11	1

TestAmerica Savannah

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

Lab Sample ID: 680-93498-4

TestAmerica Job ID: 680-93498-1

Matrix: Solid Percent Solids: 52.6

Client Sample ID: SB02-07 (0.5-1.5)

Date Collected: 08/21/13 08:50 Date Received: 08/22/13 09:39

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methyl tert-butyl ether	9.3	U	9.3	1.9	ug/Kg	<del>\</del>	08/26/13 09:52	08/28/13 13:11	1
Naphthalene	9.3	U	9.3	1.9	ug/Kg	\$	08/26/13 09:52	08/28/13 13:11	1
Styrene	9.3	U	9.3	1.4	ug/Kg	₽	08/26/13 09:52	08/28/13 13:11	1
Tert-amyl methyl ether	9.3	U	9.3	0.82	ug/Kg	₩	08/26/13 09:52	08/28/13 13:11	1
tert-Butyl alcohol	9.3	U	9.3	6.3	ug/Kg	₽	08/26/13 09:52	08/28/13 13:11	1
1,1,2,2-Tetrachloroethane	9.3	U	9.3	1.3	ug/Kg	₽	08/26/13 09:52	08/28/13 13:11	1
Tetrachloroethene	9.3	U	9.3	1.6	ug/Kg	₩	08/26/13 09:52	08/28/13 13:11	1
Toluene	9.3	U	9.3	1.3	ug/Kg	*	08/26/13 09:52	08/28/13 13:11	1
trans-1,2-Dichloroethene	9.3	U	9.3	1.4	ug/Kg	₽	08/26/13 09:52	08/28/13 13:11	1
trans-1,3-Dichloropropene	9.3	U	9.3	1.7	ug/Kg	₽	08/26/13 09:52	08/28/13 13:11	1
1,2,4-Trichlorobenzene	9.3	U	9.3	1.4	ug/Kg	\$	08/26/13 09:52	08/28/13 13:11	1
1,1,1-Trichloroethane	9.3	U	9.3	2.0	ug/Kg	₩	08/26/13 09:52	08/28/13 13:11	1
1,1,2-Trichloroethane	9.3	U	9.3	1.7	ug/Kg	₽	08/26/13 09:52	08/28/13 13:11	1
Trichloroethene	9.3	U	9.3	0.89	ug/Kg	*	08/26/13 09:52	08/28/13 13:11	1
Trichlorofluoromethane	6.6	J	9.3	1.8	ug/Kg	₽	08/26/13 09:52	08/28/13 13:11	1
1,1,2-Trichloro-1,2,2-trifluoroethane	9.3	U	9.3	3.7	ug/Kg	₽	08/26/13 09:52	08/28/13 13:11	1
Vinyl chloride	9.3	U	9.3	1.7	ug/Kg	\$	08/26/13 09:52	08/28/13 13:11	1
Xylenes, Total	19	U	19	3.5	ug/Kg	₩	08/26/13 09:52	08/28/13 13:11	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	97		72 - 122				08/26/13 09:52	08/28/13 13:11	1
Dibromofluoromethane	104		79 - 123				08/26/13 09:52	08/28/13 13:11	1
Toluene-d8 (Surr)	98		80 - 120				08/26/13 09:52	08/28/13 13:11	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzaldehyde	620	U	620	110	ug/Kg	*	08/26/13 21:27	08/30/13 11:35	1
Phenol	620	U	620	64	ug/Kg	₽	08/26/13 21:27	08/30/13 11:35	1
Bis(2-chloroethyl)ether	620	U	620	85	ug/Kg	₽	08/26/13 21:27	08/30/13 11:35	1
2-Chlorophenol	620	U	620	76	ug/Kg	₽	08/26/13 21:27	08/30/13 11:35	1
2-Methylphenol	620	U	620	51	ug/Kg	₽	08/26/13 21:27	08/30/13 11:35	1
bis (2-chloroisopropyl) ether	620	U	620	57	ug/Kg	₽	08/26/13 21:27	08/30/13 11:35	1
Acetophenone	80	J	620	53	ug/Kg	\$	08/26/13 21:27	08/30/13 11:35	1
3 & 4 Methylphenol	620	U	620	81	ug/Kg	₽	08/26/13 21:27	08/30/13 11:35	1
N-Nitrosodi-n-propylamine	620	U	620	60	ug/Kg	₽	08/26/13 21:27	08/30/13 11:35	1
Hexachloroethane	620	U	620	53	ug/Kg	\$	08/26/13 21:27	08/30/13 11:35	1
Nitrobenzene	620	U	620	49	ug/Kg	₽	08/26/13 21:27	08/30/13 11:35	1
Isophorone	620	U	620	62	ug/Kg	₽	08/26/13 21:27	08/30/13 11:35	1
2-Nitrophenol	620	U	620	77	ug/Kg	₽	08/26/13 21:27	08/30/13 11:35	1
2,4-Dimethylphenol	620	U	620	83	ug/Kg	₽	08/26/13 21:27	08/30/13 11:35	1
Bis(2-chloroethoxy)methane	620	U	620	74	ug/Kg	₽	08/26/13 21:27	08/30/13 11:35	1
2,4-Dichlorophenol	620	U	620	66	ug/Kg		08/26/13 21:27	08/30/13 11:35	1
Naphthalene	530	J	620	57	ug/Kg	₽	08/26/13 21:27	08/30/13 11:35	1
4-Chloroaniline	1200	U	1200	98	ug/Kg	₽	08/26/13 21:27	08/30/13 11:35	1
Hexachlorobutadiene	620	U	620	68	ug/Kg		08/26/13 21:27	08/30/13 11:35	1
Caprolactam	620	U	620	120	ug/Kg	₽	08/26/13 21:27	08/30/13 11:35	1
4-Chloro-3-methylphenol	620	U	620	66	ug/Kg	₽	08/26/13 21:27	08/30/13 11:35	1
2-Methylnaphthalene	590	J	620	72	ug/Kg		08/26/13 21:27	08/30/13 11:35	1
Hexachlorocyclopentadiene	620	U	620	77	ug/Kg	₽	08/26/13 21:27	08/30/13 11:35	1
2,4,6-Trichlorophenol	620	U	620	55	ug/Kg	₽	08/26/13 21:27	08/30/13 11:35	1

TestAmerica Savannah

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93498-1

Client Sample ID: SB02-07 (0.5-1.5)

Lab Sample ID: 680-93498-4

Date Collected: 08/21/13 08:50

Date Received: 08/22/13 09:39

Matrix: Solid
Percent Solids: 52.6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-Trichlorophenol	620	U	620	66	ug/Kg	₩	08/26/13 21:27	08/30/13 11:35	1
1,1'-Biphenyl	1400	U	1400	1400	ug/Kg	₽	08/26/13 21:27	08/30/13 11:35	1
2-Chloronaphthalene	620	U	620	66	ug/Kg	₽	08/26/13 21:27	08/30/13 11:35	1
2-Nitroaniline	3200	U	3200	85	ug/Kg	₽	08/26/13 21:27	08/30/13 11:35	1
Dimethyl phthalate	620	U	620	64	ug/Kg	₽	08/26/13 21:27	08/30/13 11:35	•
2,6-Dinitrotoluene	620	U	620	79	ug/Kg	₽	08/26/13 21:27	08/30/13 11:35	1
Acenaphthylene	620	U	620	68	ug/Kg	₽	08/26/13 21:27	08/30/13 11:35	1
3-Nitroaniline	3200	U	3200	87	ug/Kg	₽	08/26/13 21:27	08/30/13 11:35	1
Acenaphthene	620	U	620	77	ug/Kg	₽	08/26/13 21:27	08/30/13 11:35	1
2,4-Dinitrophenol	3200	U	3200	1600	ug/Kg	₽	08/26/13 21:27	08/30/13 11:35	1
4-Nitrophenol	3200	U	3200	620	ug/Kg	₽	08/26/13 21:27	08/30/13 11:35	1
Dibenzofuran	160	J	620	62	ug/Kg	₽	08/26/13 21:27	08/30/13 11:35	1
2,4-Dinitrotoluene	620	U	620	92	ug/Kg	\$	08/26/13 21:27	08/30/13 11:35	1
Diethyl phthalate	620	U	620	70	ug/Kg	₽	08/26/13 21:27	08/30/13 11:35	1
Fluorene	620	U	620	68	ug/Kg	₩	08/26/13 21:27	08/30/13 11:35	1
4-Chlorophenyl phenyl ether	620	U	620	83	ug/Kg	₽	08/26/13 21:27	08/30/13 11:35	1
4-Nitroaniline	3200	U	3200	92	ug/Kg	₩	08/26/13 21:27	08/30/13 11:35	
4,6-Dinitro-2-methylphenol	3200	U	3200	320	ug/Kg	₩	08/26/13 21:27	08/30/13 11:35	1
N-Nitrosodiphenylamine	620	U *	620	62	ug/Kg		08/26/13 21:27	08/30/13 11:35	1
4-Bromophenyl phenyl ether	620	U	620	68	ug/Kg	₽	08/26/13 21:27	08/30/13 11:35	1
Hexachlorobenzene	620	U	620	74	ug/Kg	₽	08/26/13 21:27	08/30/13 11:35	1
Atrazine	620	U	620	43	ug/Kg		08/26/13 21:27	08/30/13 11:35	1
Pentachlorophenol	3200	U	3200	620	ug/Kg	₩	08/26/13 21:27	08/30/13 11:35	
Phenanthrene	310	J	620	51	ug/Kg	₩	08/26/13 21:27	08/30/13 11:35	1
Anthracene	620	U	620	47	ug/Kg		08/26/13 21:27	08/30/13 11:35	
Carbazole	620	U	620	57	ug/Kg	₩	08/26/13 21:27	08/30/13 11:35	1
Di-n-butyl phthalate	620	U	620	57	ug/Kg	₩	08/26/13 21:27	08/30/13 11:35	1
Fluoranthene	290	J	620	60	ug/Kg		08/26/13 21:27	08/30/13 11:35	1
Pyrene	98	J	620	51	ug/Kg	₩	08/26/13 21:27	08/30/13 11:35	1
Butyl benzyl phthalate	620	U	620	49	ug/Kg	₽	08/26/13 21:27	08/30/13 11:35	1
3,3'-Dichlorobenzidine	1200	U	1200	53	ug/Kg		08/26/13 21:27	08/30/13 11:35	1
Benzo[a]anthracene	91	J	620	51	ug/Kg	₽	08/26/13 21:27	08/30/13 11:35	1
Chrysene	120	J	620	40	ug/Kg	₽	08/26/13 21:27	08/30/13 11:35	1
Bis(2-ethylhexyl) phthalate	620	U	620	55	ug/Kg		08/26/13 21:27	08/30/13 11:35	1
Di-n-octyl phthalate	620	U	620	55	ug/Kg	₽	08/26/13 21:27	08/30/13 11:35	1
Benzo[b]fluoranthene	620	U	620	72	ug/Kg	₽	08/26/13 21:27	08/30/13 11:35	
Benzo[k]fluoranthene	620	U	620	120	ug/Kg		08/26/13 21:27	08/30/13 11:35	1
Benzo[a]pyrene	620	U	620	98	ug/Kg	₽	08/26/13 21:27	08/30/13 11:35	1
Indeno[1,2,3-cd]pyrene	140	J	620	53	ug/Kg	₽	08/26/13 21:27	08/30/13 11:35	1
Dibenz(a,h)anthracene	83		620	74	ug/Kg		08/26/13 21:27	08/30/13 11:35	1
Benzo[g,h,i]perylene	120		620		ug/Kg	₽	08/26/13 21:27	08/30/13 11:35	1

Surrogate	%Recovery	Qualifier	Limits	1	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	65		46 - 130	08/	/26/13 21:27	08/30/13 11:35	1
2-Fluorobiphenyl	52	Χ	58 <sub>-</sub> 130	08/	/26/13 21:27	08/30/13 11:35	1
Terphenyl-d14 (Surr)	58	Χ	60 - 130	08/	/26/13 21:27	08/30/13 11:35	1
Phenol-d5 (Surr)	59		49 - 130	08/	/26/13 21:27	08/30/13 11:35	1
2-Fluorophenol (Surr)	58		40 - 130	08/	/26/13 21:27	08/30/13 11:35	1
2,4,6-Tribromophenol (Surr)	59		58 <sub>-</sub> 130	08/	/26/13 21:27	08/30/13 11:35	1

TestAmerica Savannah

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB02-07 (0.5-1.5)

Date Collected: 08/21/13 08:50

Lab Sample ID: 680-93498-4

TestAmerica Job ID: 680-93498-1

Matrix: Solid

Date Received: 08/22/13 09:39 Percent Solids: 52.6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO) -C6-C10	670		500	38	ug/Kg	<del></del>	08/22/13 14:33	08/23/13 16:26	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene	136	X	70 - 131				08/22/13 14:33	08/23/13 16:26	1

Method: 8015C - Nonhalogenated									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	6700	J	9400	2600	ug/Kg	<b>\$</b>	08/26/13 14:47	08/29/13 00:17	1
ORO C24-C40	5100	J	9400	2600	ug/Kg	₽	08/26/13 14:47	08/29/13 00:17	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
o-Terphenyl (Surr)	73		50 - 150				08/26/13 14:47	08/29/13 00:17	1

Client Sample ID: SB02-07 (5.5-6.5)

Date Collected: 08/21/13 09:00 Date Received: 08/22/13 09:39 Lab Sample ID: 680-93498-5

Matrix: Solid Percent Solids: 82.0

Method: 8260B - Volatile Organi Analyte	•	Qualifier	RL	MDI	Unit	D	Prepared	Analyzed	Dil Fac
				6.5	ug/Kg	— <del>ö</del>	08/26/13 09:52	08/28/13 13:34	1
Acetone Benzene	4.4		4.4	0.43	ug/Kg ug/Kg		08/26/13 09:52	08/28/13 13:34	1
	4.4	_		0.43		₩			1
Bromodichloromethane Bromoform	4.4		4.4	0.75	ug/Kg ug/Kg		08/26/13 09:52 08/26/13 09:52	08/28/13 13:34 08/28/13 13:34	
	4.4		4.4			₩			1
Bromomethane			4.4		ug/Kg	₩	08/26/13 09:52	08/28/13 13:34	
Carbon disulfide	4.4		4.4	1.1	ug/Kg	· · · · · · · · · · · · · · · · · · ·	08/26/13 09:52	08/28/13 13:34	1
Carbon tetrachloride	4.4		4.4	1.5	ug/Kg	₩	08/26/13 09:52	08/28/13 13:34	1
Chlorobenzene	4.4		4.4	0.46	ug/Kg		08/26/13 09:52	08/28/13 13:34	1
Chloroethane	4.4	. <del>.</del>	4.4	1.7		· · · · ·	08/26/13 09:52	08/28/13 13:34	
Chloroform	4.4		4.4		ug/Kg		08/26/13 09:52	08/28/13 13:34	1
Chloromethane	4.4	-	4.4	0.89	0 0	₩	08/26/13 09:52	08/28/13 13:34	1
cis-1,2-Dichloroethene	4.4		4.4	0.67			08/26/13 09:52	08/28/13 13:34	1
cis-1,3-Dichloropropene	4.4		4.4	1.1	- 5 5	*	08/26/13 09:52	08/28/13 13:34	1
Cyclohexane	4.4	U	4.4	0.83	0 0	₩	08/26/13 09:52	08/28/13 13:34	1
Dibromochloromethane	4.4	U	4.4	0.77	ug/Kg		08/26/13 09:52	08/28/13 13:34	1
1,2-Dibromo-3-Chloropropane	4.4	U	4.4	2.9	ug/Kg	₩	08/26/13 09:52	08/28/13 13:34	1
1,2-Dichlorobenzene	4.4	U	4.4	0.63	ug/Kg	₩	08/26/13 09:52	08/28/13 13:34	1
1,3-Dichlorobenzene	4.4	U	4.4	0.84	ug/Kg	₩	08/26/13 09:52	08/28/13 13:34	1
1,4-Dichlorobenzene	4.4	U	4.4	0.73	ug/Kg	₩	08/26/13 09:52	08/28/13 13:34	1
Dichlorodifluoromethane	4.4	U	4.4	1.2	ug/Kg	₩	08/26/13 09:52	08/28/13 13:34	1
1,1-Dichloroethane	4.4	U	4.4	0.74	ug/Kg	₩	08/26/13 09:52	08/28/13 13:34	1
1,2-Dichloroethane	4.4	U	4.4	0.73	ug/Kg	\$	08/26/13 09:52	08/28/13 13:34	1
1,1-Dichloroethene	4.4	U	4.4	0.67	ug/Kg	₽	08/26/13 09:52	08/28/13 13:34	1
1,2-Dichloropropane	4.4	U	4.4	0.66	ug/Kg	₩	08/26/13 09:52	08/28/13 13:34	1
Diisopropyl ether	4.4	U	4.4	0.49	ug/Kg	₩.	08/26/13 09:52	08/28/13 13:34	1
Ethylbenzene	4.4	U	4.4	0.54	ug/Kg	₩	08/26/13 09:52	08/28/13 13:34	1
Ethylene Dibromide	4.4	U	4.4	0.43	ug/Kg	₩	08/26/13 09:52	08/28/13 13:34	1
Ethyl tert-butyl ether	4.4	U	4.4	0.50	ug/Kg	Φ.	08/26/13 09:52	08/28/13 13:34	1
2-Hexanone	22	U	22	4.4	ug/Kg	₽	08/26/13 09:52	08/28/13 13:34	1
Isopropylbenzene	4.4	U	4.4	0.60	ug/Kg	₽	08/26/13 09:52	08/28/13 13:34	1
Methyl acetate	4.4	Ü	4.4		ug/Kg		08/26/13 09:52	08/28/13 13:34	1

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

Lab Sample ID: 680-93498-5

TestAmerica Job ID: 680-93498-1

Matrix: Solid

Percent Solids: 82.0

Client Sample ID: SB02-07 (5.5-6.5)

Date Collected: 08/21/13 09:00 Date Received: 08/22/13 09:39

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methylcyclohexane	4.4	U	4.4	0.77	ug/Kg	<del>-</del>	08/26/13 09:52	08/28/13 13:34	1
Methylene Chloride	13	U	13	8.9	ug/Kg	₽	08/26/13 09:52	08/28/13 13:34	1
Methyl Ethyl Ketone	22	U	22	3.6	ug/Kg	₽	08/26/13 09:52	08/28/13 13:34	1
methyl isobutyl ketone	22	U	22	3.6	ug/Kg	₩	08/26/13 09:52	08/28/13 13:34	1
Methyl tert-butyl ether	4.4	U	4.4	0.89	ug/Kg	₩	08/26/13 09:52	08/28/13 13:34	1
Naphthalene	4.4	U	4.4	0.89	ug/Kg	\$	08/26/13 09:52	08/28/13 13:34	1
Styrene	4.4	U	4.4	0.67	ug/Kg	₩	08/26/13 09:52	08/28/13 13:34	1
Tert-amyl methyl ether	4.4	U	4.4	0.39	ug/Kg	₽	08/26/13 09:52	08/28/13 13:34	1
tert-Butyl alcohol	4.4	U	4.4	3.0	ug/Kg	\$	08/26/13 09:52	08/28/13 13:34	1
1,1,2,2-Tetrachloroethane	4.4	U	4.4	0.64	ug/Kg	₽	08/26/13 09:52	08/28/13 13:34	1
Tetrachloroethene	4.4	U	4.4	0.75	ug/Kg	₽	08/26/13 09:52	08/28/13 13:34	1
Toluene	4.4	U	4.4	0.62	ug/Kg	\$	08/26/13 09:52	08/28/13 13:34	1
trans-1,2-Dichloroethene	4.4	U	4.4	0.67	ug/Kg	₽	08/26/13 09:52	08/28/13 13:34	1
trans-1,3-Dichloropropene	4.4	U	4.4	0.82	ug/Kg	₽	08/26/13 09:52	08/28/13 13:34	1
1,2,4-Trichlorobenzene	4.4	U	4.4	0.65	ug/Kg	₽	08/26/13 09:52	08/28/13 13:34	1
1,1,1-Trichloroethane	4.4	U	4.4	0.98	ug/Kg	₽	08/26/13 09:52	08/28/13 13:34	1
1,1,2-Trichloroethane	4.4	U	4.4	0.82	ug/Kg	₽	08/26/13 09:52	08/28/13 13:34	1
Trichloroethene	4.4	U	4.4	0.43	ug/Kg	₽	08/26/13 09:52	08/28/13 13:34	1
Trichlorofluoromethane	4.4	U	4.4	0.84	ug/Kg	₽	08/26/13 09:52	08/28/13 13:34	1
1,1,2-Trichloro-1,2,2-trifluoroethane	4.4	U	4.4	1.8	ug/Kg	₩	08/26/13 09:52	08/28/13 13:34	1
Vinyl chloride	4.4	U	4.4	0.82	ug/Kg	₩	08/26/13 09:52	08/28/13 13:34	1
Xylenes, Total	8.9	U	8.9	1.7	ug/Kg	₽	08/26/13 09:52	08/28/13 13:34	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	99		72 - 122				08/26/13 09:52	08/28/13 13:34	1
Dibromofluoromethane	105		79 - 123				08/26/13 09:52	08/28/13 13:34	1
Toluene-d8 (Surr)	99		80 - 120				08/26/13 09:52	08/28/13 13:34	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzaldehyde	400	U	400	70	ug/Kg	₩	08/26/13 21:27	08/30/13 11:59	1
Phenol	400	U	400	41	ug/Kg	₽	08/26/13 21:27	08/30/13 11:59	1
Bis(2-chloroethyl)ether	400	U	400	55	ug/Kg	₽	08/26/13 21:27	08/30/13 11:59	1
2-Chlorophenol	400	U	400	48	ug/Kg	\$	08/26/13 21:27	08/30/13 11:59	1
2-Methylphenol	400	U	400	33	ug/Kg	₽	08/26/13 21:27	08/30/13 11:59	1
bis (2-chloroisopropyl) ether	400	U	400	36	ug/Kg	₽	08/26/13 21:27	08/30/13 11:59	1
Acetophenone	400	U	400	34	ug/Kg	\$	08/26/13 21:27	08/30/13 11:59	1
3 & 4 Methylphenol	400	U	400	52	ug/Kg	₽	08/26/13 21:27	08/30/13 11:59	1
N-Nitrosodi-n-propylamine	400	U	400	39	ug/Kg	₽	08/26/13 21:27	08/30/13 11:59	1
Hexachloroethane	400	U	400	34	ug/Kg	₽	08/26/13 21:27	08/30/13 11:59	1
Nitrobenzene	400	U	400	32	ug/Kg	₽	08/26/13 21:27	08/30/13 11:59	1
Isophorone	400	U	400	40	ug/Kg	₽	08/26/13 21:27	08/30/13 11:59	1
2-Nitrophenol	400	U	400	50	ug/Kg	₽	08/26/13 21:27	08/30/13 11:59	1
2,4-Dimethylphenol	400	U	400	53	ug/Kg	₽	08/26/13 21:27	08/30/13 11:59	1
Bis(2-chloroethoxy)methane	400	U	400	47	ug/Kg	₽	08/26/13 21:27	08/30/13 11:59	1
2,4-Dichlorophenol	400	U	400	42	ug/Kg	₽	08/26/13 21:27	08/30/13 11:59	1
Naphthalene	400	U	400	36	ug/Kg	₽	08/26/13 21:27	08/30/13 11:59	1
4-Chloroaniline	800	U	800	63	ug/Kg	₽	08/26/13 21:27	08/30/13 11:59	1
Hexachlorobutadiene	400	U	400	44	ug/Kg		08/26/13 21:27	08/30/13 11:59	1
Caprolactam	400	U	400	80	ug/Kg	₽	08/26/13 21:27	08/30/13 11:59	1

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB02-07 (5.5-6.5)

Date Collected: 08/21/13 09:00 Date Received: 08/22/13 09:39

2-Fluorobiphenyl

Terphenyl-d14 (Surr)

Lab Sample ID: 680-93498-5

Matrix: Solid
Percent Solids: 82.0

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4-Chloro-3-methylphenol	400	U	400	42	ug/Kg	<u> </u>	08/26/13 21:27	08/30/13 11:59	1
2-Methylnaphthalene	400	U	400	46	ug/Kg	φ.	08/26/13 21:27	08/30/13 11:59	1
Hexachlorocyclopentadiene	400	U	400	50	ug/Kg	₩	08/26/13 21:27	08/30/13 11:59	1
2,4,6-Trichlorophenol	400	U	400	35	ug/Kg	₩	08/26/13 21:27	08/30/13 11:59	1
2,4,5-Trichlorophenol	400	U	400	42	ug/Kg		08/26/13 21:27	08/30/13 11:59	1
1,1'-Biphenyl	900	U	900	900	ug/Kg	₩	08/26/13 21:27	08/30/13 11:59	1
2-Chloronaphthalene	400	U	400	42	ug/Kg	₩	08/26/13 21:27	08/30/13 11:59	1
2-Nitroaniline	2100	U	2100	55	ug/Kg		08/26/13 21:27	08/30/13 11:59	1
Dimethyl phthalate	400	U	400	41	ug/Kg	₩	08/26/13 21:27	08/30/13 11:59	
2,6-Dinitrotoluene	400	U	400	51	ug/Kg	₩	08/26/13 21:27	08/30/13 11:59	
Acenaphthylene	400	U	400	44	ug/Kg		08/26/13 21:27	08/30/13 11:59	1
3-Nitroaniline	2100	U	2100	56	ug/Kg	₩	08/26/13 21:27	08/30/13 11:59	
Acenaphthene	400	U	400	50	ug/Kg	₩	08/26/13 21:27	08/30/13 11:59	1
2,4-Dinitrophenol	2100	U	2100	1000	ug/Kg		08/26/13 21:27	08/30/13 11:59	1
4-Nitrophenol	2100	U	2100	400	ug/Kg	₽	08/26/13 21:27	08/30/13 11:59	1
Dibenzofuran	400	U	400	40	ug/Kg	₽	08/26/13 21:27	08/30/13 11:59	1
2,4-Dinitrotoluene	400	U	400	59	ug/Kg		08/26/13 21:27	08/30/13 11:59	1
Diethyl phthalate	400	U	400	45	ug/Kg	₩	08/26/13 21:27	08/30/13 11:59	
Fluorene	400	U	400		ug/Kg	₩	08/26/13 21:27	08/30/13 11:59	
4-Chlorophenyl phenyl ether	400	U	400		ug/Kg		08/26/13 21:27	08/30/13 11:59	,
4-Nitroaniline	2100	U	2100	59	ug/Kg	₩	08/26/13 21:27	08/30/13 11:59	
4,6-Dinitro-2-methylphenol	2100		2100			₩	08/26/13 21:27	08/30/13 11:59	
N-Nitrosodiphenylamine	400		400		ug/Kg	<del>-</del>	08/26/13 21:27	08/30/13 11:59	
4-Bromophenyl phenyl ether	400		400	44		₽	08/26/13 21:27	08/30/13 11:59	1
Hexachlorobenzene	400		400		ug/Kg	₽	08/26/13 21:27	08/30/13 11:59	
Atrazine	400		400	28	ug/Kg		08/26/13 21:27	08/30/13 11:59	
Pentachlorophenol	2100	U	2100			₩	08/26/13 21:27	08/30/13 11:59	
Phenanthrene	400	U	400		ug/Kg	₽	08/26/13 21:27	08/30/13 11:59	
Anthracene	400		400		ug/Kg	<del>-</del>	08/26/13 21:27	08/30/13 11:59	
Carbazole	400		400	36	ug/Kg	₽	08/26/13 21:27	08/30/13 11:59	1
Di-n-butyl phthalate	400	U	400	36	ug/Kg	₽	08/26/13 21:27	08/30/13 11:59	1
Fluoranthene	400		400	39		<del>-</del>	08/26/13 21:27	08/30/13 11:59	
Pyrene	400		400	33	ug/Kg	₽	08/26/13 21:27	08/30/13 11:59	
Butyl benzyl phthalate	400		400		ug/Kg	₽	08/26/13 21:27	08/30/13 11:59	
3,3'-Dichlorobenzidine	800		800		ug/Kg		08/26/13 21:27	08/30/13 11:59	,
Benzo[a]anthracene	400		400		ug/Kg	₽	08/26/13 21:27	08/30/13 11:59	,
Chrysene	400		400		ug/Kg	₽	08/26/13 21:27	08/30/13 11:59	,
Bis(2-ethylhexyl) phthalate	400		400		ug/Kg		08/26/13 21:27	08/30/13 11:59	,
Di-n-octyl phthalate	400		400		ug/Kg ug/Kg	₽	08/26/13 21:27	08/30/13 11:59	,
Benzo[b]fluoranthene	400		400		ug/Kg ug/Kg	₽	08/26/13 21:27	08/30/13 11:59	,
Benzo[k]fluoranthene	400		400		ug/Kg		08/26/13 21:27	08/30/13 11:59	· · · · · · · · · · · · · · · · · · ·
Benzo[a]pyrene	400		400		ug/Kg ug/Kg	₽	08/26/13 21:27	08/30/13 11:59	1
Indeno[1,2,3-cd]pyrene	400		400		ug/Kg ug/Kg	₽	08/26/13 21:27	08/30/13 11:59	1
Dibenz(a,h)anthracene	400		400		ug/Kg ug/Kg		08/26/13 21:27	08/30/13 11:59	
Benzo[g,h,i]perylene	400		400		ug/Kg ug/Kg	₽	08/26/13 21:27	08/30/13 11:59	,
-10/ /10 -17/	.00	-			- 5 · <del>-5</del>				,
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	76		46 - 130				08/26/13 21:27	08/30/13 11:59	1

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TestAmerica Job ID: 680-93498-1

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB02-07 (5.5-6.5)

Lab Sample ID: 680-93498-5

Matrix: Solid Percent Solids: 82.0

Date Collected: 08/21/13 09:00 Date Received: 08/22/13 09:39

Method: 8270D - Semivolatile Organic Compound	ds (GC/MS) (Continued)
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Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Phenol-d5 (Surr)	73		49 - 130	08/26/13 21:27	08/30/13 11:59	1
2-Fluorophenol (Surr)	73		40 - 130	08/26/13 21:27	08/30/13 11:59	1
2,4,6-Tribromophenol (Surr)	88		58 - 130	08/26/13 21:27	08/30/13 11:59	1

Method: 8015C - Nonhalogenate Analyte	•	ng GC/FID Qualifier	-Modified (Gaso RL	oline Ran MDL		nics) D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO) -C6-C10	800		230	18	ug/Kg	<del>*</del>	08/22/13 14:33	08/23/13 16:46	1
Surrogate a.a.a-Trifluorotoluene	%Recovery	Qualifier	Limits 70 - 131				Prepared 08/22/13 14:33	Analyzed 08/23/13 16:46	Dil Fac

Method: 8015C - Nonhalogenate	d Organics usi	ng GC/FID	-Modified (Dies	el Range	Organics	s)			
Analyte	•	Qualifier	RL	_	Unit	, D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	3100	J	5900	1700	ug/Kg	<u> </u>	08/26/13 14:47	08/29/13 00:01	1
ORO C24-C40	5900	U	5900	1700	ug/Kg	₽	08/26/13 14:47	08/29/13 00:01	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
o-Terphenyl (Surr)	79		50 - 150				08/26/13 14:47	08/29/13 00:01	1

Client Sample ID: SB02-08 (0.5-1.5) Lab Sample ID: 680-93498-6

Date Collected: 08/21/13 09:10 **Matrix: Solid** Date Received: 08/22/13 09:39 Percent Solids: 72.5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	28	U *	28	8.2	ug/Kg	₩	08/26/13 09:52	08/28/13 14:00	1
Benzene	5.6	U	5.6	0.55	ug/Kg	₩	08/26/13 09:52	08/28/13 14:00	1
Bromodichloromethane	5.6	U	5.6	0.94	ug/Kg	₩	08/26/13 09:52	08/28/13 14:00	1
Bromoform	5.6	U	5.6	0.70	ug/Kg	₽	08/26/13 09:52	08/28/13 14:00	1
Bromomethane	5.6	U	5.6	1.6	ug/Kg	₩	08/26/13 09:52	08/28/13 14:00	1
Carbon disulfide	5.6	U	5.6	1.3	ug/Kg	₩	08/26/13 09:52	08/28/13 14:00	1
Carbon tetrachloride	5.6	U	5.6	1.9	ug/Kg	₽	08/26/13 09:52	08/28/13 14:00	1
Chlorobenzene	5.6	U	5.6	0.58	ug/Kg	₽	08/26/13 09:52	08/28/13 14:00	1
Chloroethane	5.6	U	5.6	2.1	ug/Kg	₽	08/26/13 09:52	08/28/13 14:00	1
Chloroform	5.6	U	5.6	0.66	ug/Kg	₽	08/26/13 09:52	08/28/13 14:00	1
Chloromethane	5.6	U	5.6	1.1	ug/Kg	₩	08/26/13 09:52	08/28/13 14:00	1
cis-1,2-Dichloroethene	5.6	U	5.6	0.85	ug/Kg	₽	08/26/13 09:52	08/28/13 14:00	1
cis-1,3-Dichloropropene	5.6	U	5.6	1.3	ug/Kg	₽	08/26/13 09:52	08/28/13 14:00	1
Cyclohexane	5.6	U	5.6	1.1	ug/Kg	₽	08/26/13 09:52	08/28/13 14:00	1
Dibromochloromethane	5.6	U	5.6	0.97	ug/Kg	₽	08/26/13 09:52	08/28/13 14:00	1
1,2-Dibromo-3-Chloropropane	5.6	U	5.6	3.7	ug/Kg	₽	08/26/13 09:52	08/28/13 14:00	1
1,2-Dichlorobenzene	5.6	U	5.6	0.79	ug/Kg	₽	08/26/13 09:52	08/28/13 14:00	1
1,3-Dichlorobenzene	5.6	U	5.6	1.1	ug/Kg	₽	08/26/13 09:52	08/28/13 14:00	1
1,4-Dichlorobenzene	5.6	U	5.6	0.92	ug/Kg	₽	08/26/13 09:52	08/28/13 14:00	1
Dichlorodifluoromethane	5.6	U	5.6	1.5	ug/Kg	₽	08/26/13 09:52	08/28/13 14:00	1
1,1-Dichloroethane	5.6	U	5.6	0.93	ug/Kg	₽	08/26/13 09:52	08/28/13 14:00	1
1,2-Dichloroethane	5.6	U	5.6	0.92	ug/Kg	₽	08/26/13 09:52	08/28/13 14:00	1
1,1-Dichloroethene	5.6	U	5.6	0.84	ug/Kg	₩	08/26/13 09:52	08/28/13 14:00	1
1,2-Dichloropropane	5.6	U	5.6	0.83	ug/Kg	₽	08/26/13 09:52	08/28/13 14:00	1

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93498-1

Lab Sample ID: 680-93498-6

Matrix: Solid Percent Solids: 72.5

Client Sample ID: SB02-08 (0.5-1.5)

Date Collected: 08/21/13 09:10 Date Received: 08/22/13 09:39

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diisopropyl ether	5.6	U	5.6	0.61	ug/Kg	<u> </u>	08/26/13 09:52	08/28/13 14:00	1
Ethylbenzene	5.6	U	5.6	0.68	ug/Kg	₽	08/26/13 09:52	08/28/13 14:00	1
Ethylene Dibromide	5.6	U	5.6	0.54	ug/Kg	₽	08/26/13 09:52	08/28/13 14:00	1
Ethyl tert-butyl ether	5.6	U	5.6	0.63	ug/Kg	₽	08/26/13 09:52	08/28/13 14:00	1
2-Hexanone	28	U	28	5.6	ug/Kg	₽	08/26/13 09:52	08/28/13 14:00	1
Isopropylbenzene	5.6	U	5.6	0.76	ug/Kg	≎	08/26/13 09:52	08/28/13 14:00	1
Methyl acetate	5.6	U	5.6	5.1	ug/Kg	₽	08/26/13 09:52	08/28/13 14:00	1
Methylcyclohexane	5.6	U	5.6	0.97	ug/Kg	₽	08/26/13 09:52	08/28/13 14:00	1
Methylene Chloride	17	U	17	11	ug/Kg	₽	08/26/13 09:52	08/28/13 14:00	1
Methyl Ethyl Ketone	28	U	28	4.6	ug/Kg	₽	08/26/13 09:52	08/28/13 14:00	1
methyl isobutyl ketone	28	U	28	4.5	ug/Kg	₽	08/26/13 09:52	08/28/13 14:00	1
Methyl tert-butyl ether	5.6	U	5.6	1.1	ug/Kg	≎	08/26/13 09:52	08/28/13 14:00	1
Naphthalene	5.6	U	5.6	1.1	ug/Kg	₽	08/26/13 09:52	08/28/13 14:00	1
Styrene	5.6	U	5.6	0.85	ug/Kg	₽	08/26/13 09:52	08/28/13 14:00	1
Tert-amyl methyl ether	5.6	U	5.6	0.49	ug/Kg	₽	08/26/13 09:52	08/28/13 14:00	1
tert-Butyl alcohol	5.6	U	5.6	3.8	ug/Kg	₽	08/26/13 09:52	08/28/13 14:00	1
1,1,2,2-Tetrachloroethane	5.6	U	5.6	0.80	ug/Kg	₽	08/26/13 09:52	08/28/13 14:00	1
Tetrachloroethene	5.6	U	5.6	0.94	ug/Kg	₽	08/26/13 09:52	08/28/13 14:00	1
Toluene	5.6	U	5.6	0.78	ug/Kg	₽	08/26/13 09:52	08/28/13 14:00	1
trans-1,2-Dichloroethene	5.6	U	5.6	0.85	ug/Kg	₽	08/26/13 09:52	08/28/13 14:00	1
trans-1,3-Dichloropropene	5.6	U	5.6	1.0	ug/Kg	₽	08/26/13 09:52	08/28/13 14:00	1
1,2,4-Trichlorobenzene	5.6	U	5.6	0.82	ug/Kg	\$	08/26/13 09:52	08/28/13 14:00	1
1,1,1-Trichloroethane	5.6	U	5.6	1.2	ug/Kg	₽	08/26/13 09:52	08/28/13 14:00	1
1,1,2-Trichloroethane	5.6	U	5.6	1.0	ug/Kg	₽	08/26/13 09:52	08/28/13 14:00	1
Trichloroethene	5.6	U	5.6	0.54	ug/Kg	₽	08/26/13 09:52	08/28/13 14:00	1
Trichlorofluoromethane	5.6	U	5.6	1.1	ug/Kg	₽	08/26/13 09:52	08/28/13 14:00	1
1,1,2-Trichloro-1,2,2-trifluoroethane	5.6	U	5.6	2.2	ug/Kg	₽	08/26/13 09:52	08/28/13 14:00	1
Vinyl chloride	5.6	U	5.6	1.0	ug/Kg	₩.	08/26/13 09:52	08/28/13 14:00	1
Xylenes, Total	11	U	11	2.1	ug/Kg	₽	08/26/13 09:52	08/28/13 14:00	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	99		72 - 122				08/26/13 09:52	08/28/13 14:00	1
Dibromofluoromethane	102		79 - 123				08/26/13 09:52	08/28/13 14:00	1
Toluene-d8 (Surr)	97		80 - 120				08/26/13 09:52	08/28/13 14:00	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzaldehyde	450	U	450	80	ug/Kg	₩	08/26/13 21:27	08/30/13 12:23	1
Phenol	450	U	450	47	ug/Kg	₽	08/26/13 21:27	08/30/13 12:23	1
Bis(2-chloroethyl)ether	450	U	450	62	ug/Kg	₽	08/26/13 21:27	08/30/13 12:23	1
2-Chlorophenol	450	U	450	55	ug/Kg	\$	08/26/13 21:27	08/30/13 12:23	1
2-Methylphenol	450	U	450	37	ug/Kg	₽	08/26/13 21:27	08/30/13 12:23	1
bis (2-chloroisopropyl) ether	450	U	450	41	ug/Kg	₽	08/26/13 21:27	08/30/13 12:23	1
Acetophenone	71	J	450	39	ug/Kg	\$	08/26/13 21:27	08/30/13 12:23	1
3 & 4 Methylphenol	450	U	450	59	ug/Kg	₽	08/26/13 21:27	08/30/13 12:23	1
N-Nitrosodi-n-propylamine	450	U	450	44	ug/Kg	₽	08/26/13 21:27	08/30/13 12:23	1
Hexachloroethane	450	U	450	39	ug/Kg		08/26/13 21:27	08/30/13 12:23	1
Nitrobenzene	450	U	450	36	ug/Kg	☼	08/26/13 21:27	08/30/13 12:23	1
Isophorone	450	U	450	45	ug/Kg	☼	08/26/13 21:27	08/30/13 12:23	1
2-Nitrophenol	450	U	450	57	ug/Kg	₽	08/26/13 21:27	08/30/13 12:23	1

TestAmerica Savannah

2

6

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93498-1

Client Sample ID: SB02-08 (0.5-1.5) Lab Sample ID: 680-93498-6 Date Collected: 08/21/13 09:10 Matrix: Solid Date Received: 08/22/13 09:39

Percent Solids: 72.5

Method: 8270D - Semivolatile C	rganic Compou	nds (GC/MS)	(Continued)						
Analyte		Qualifier	RL	MDL		D	Prepared	Analyzed	Dil Fa
2,4-Dimethylphenol	450	U	450	61	ug/Kg	\$	08/26/13 21:27	08/30/13 12:23	
Bis(2-chloroethoxy)methane	450	U	450	54	ug/Kg		08/26/13 21:27	08/30/13 12:23	
2,4-Dichlorophenol	450	U	450	48	ug/Kg	₽	08/26/13 21:27	08/30/13 12:23	
laphthalene	640		450	41	ug/Kg	₽	08/26/13 21:27	08/30/13 12:23	
-Chloroaniline	910	U	910	72	ug/Kg	₽	08/26/13 21:27	08/30/13 12:23	
Hexachlorobutadiene	450	U	450	50	ug/Kg	₽	08/26/13 21:27	08/30/13 12:23	
Caprolactam	94	J	450	91	ug/Kg	₽	08/26/13 21:27	08/30/13 12:23	
-Chloro-3-methylphenol	450	U	450	48	ug/Kg	₽	08/26/13 21:27	08/30/13 12:23	
-Methylnaphthalene	670		450	52	ug/Kg	\$	08/26/13 21:27	08/30/13 12:23	
lexachlorocyclopentadiene	450	U	450	57	ug/Kg	₽	08/26/13 21:27	08/30/13 12:23	
2,4,6-Trichlorophenol	450	U	450	40	ug/Kg	₽	08/26/13 21:27	08/30/13 12:23	
2,4,5-Trichlorophenol	450	U	450	48	ug/Kg		08/26/13 21:27	08/30/13 12:23	
,1'-Biphenyl	1000	U	1000	1000	ug/Kg	☼	08/26/13 21:27	08/30/13 12:23	
2-Chloronaphthalene	450	U	450	48	ug/Kg	₽	08/26/13 21:27	08/30/13 12:23	
2-Nitroaniline	2300	U	2300	62	ug/Kg		08/26/13 21:27	08/30/13 12:23	
Dimethyl phthalate	450	U	450	47	ug/Kg	₩	08/26/13 21:27	08/30/13 12:23	
2,6-Dinitrotoluene	450	U	450	58	ug/Kg	₽	08/26/13 21:27	08/30/13 12:23	
Acenaphthylene	450	U	450	50	ug/Kg		08/26/13 21:27	08/30/13 12:23	
B-Nitroaniline	2300	U	2300	63	ug/Kg	₽	08/26/13 21:27	08/30/13 12:23	
cenaphthene	450	U	450		ug/Kg	₽	08/26/13 21:27	08/30/13 12:23	
,4-Dinitrophenol	2300		2300	1100	ug/Kg		08/26/13 21:27	08/30/13 12:23	
-Nitrophenol	2300		2300	450	ug/Kg	₽	08/26/13 21:27	08/30/13 12:23	
Dibenzofuran	310		450	45	ug/Kg	₽	08/26/13 21:27	08/30/13 12:23	
,4-Dinitrotoluene	450		450	68	ug/Kg		08/26/13 21:27	08/30/13 12:23	
Diethyl phthalate	450		450	51	ug/Kg	₩	08/26/13 21:27	08/30/13 12:23	
luorene	62		450	50	ug/Kg	₩	08/26/13 21:27	08/30/13 12:23	
-Chlorophenyl phenyl ether	450		450	61	ug/Kg		08/26/13 21:27	08/30/13 12:23	
-Nitroaniline	2300		2300	68	ug/Kg ug/Kg	₩	08/26/13 21:27	08/30/13 12:23	
,6-Dinitro-2-methylphenol	2300		2300	230	ug/Kg ug/Kg		08/26/13 21:27	08/30/13 12:23	
I-Nitrosodiphenylamine	450		450	45	ug/Kg ug/Kg	· · · · · · · · · · · · · · · · · · ·	08/26/13 21:27	08/30/13 12:23	
· · ·	450		450	50	ug/Kg ug/Kg		08/26/13 21:27	08/30/13 12:23	
-Bromophenyl phenyl ether Hexachlorobenzene	450		450 450	54	ug/Kg ug/Kg		08/26/13 21:27	08/30/13 12:23	
Atrazine	450		450		ug/Kg	<b>₩</b>	08/26/13 21:27	08/30/13 12:23	
Pentachlorophenol	2300	U	2300	450	ug/Kg	<b>₩</b>	08/26/13 21:27	08/30/13 12:23	
Phenanthrene	650		450		ug/Kg		08/26/13 21:27	08/30/13 12:23	
Anthracene	93		450 450		ug/Kg	<b>\$</b>	08/26/13 21:27	08/30/13 12:23	
Carbazole	450		450	41	ug/Kg	<b>‡</b>	08/26/13 21:27	08/30/13 12:23	
Di-n-butyl phthalate	450	U	450	41	ug/Kg	<del>X</del> .	08/26/13 21:27	08/30/13 12:23	
luoranthene	470		450	44	ug/Kg		08/26/13 21:27	08/30/13 12:23	
yrene	200		450	37	ug/Kg		08/26/13 21:27	08/30/13 12:23	
Butyl benzyl phthalate	450		450	36	ug/Kg		08/26/13 21:27	08/30/13 12:23	
,3'-Dichlorobenzidine	910	U	910	39	ug/Kg	<b>*</b>	08/26/13 21:27	08/30/13 12:23	
Senzo[a]anthracene	130		450	37	ug/Kg	*	08/26/13 21:27	08/30/13 12:23	
Chrysene	260		450	29	ug/Kg		08/26/13 21:27	08/30/13 12:23	
sis(2-ethylhexyl) phthalate	450		450	40	ug/Kg	₩	08/26/13 21:27	08/30/13 12:23	
Di-n-octyl phthalate	450	U	450	40	ug/Kg	₩	08/26/13 21:27	08/30/13 12:23	
Benzo[b]fluoranthene	330	J	450	52	ug/Kg	₩	08/26/13 21:27	08/30/13 12:23	
Benzo[k]fluoranthene	450	U	450	90	ug/Kg	₽	08/26/13 21:27	08/30/13 12:23	
Benzo[a]pyrene	450	U	450	72	ug/Kg	₩	08/26/13 21:27	08/30/13 12:23	

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB02-08 (0.5-1.5)

Lab Sample ID: 680-93498-6

Date Collected: 08/21/13 09:10

Matrix: Solid

Date Received: 08/22/13 09:39

Matrix: Solids: 72.5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Indeno[1,2,3-cd]pyrene	210	J	450	39	ug/Kg	₩	08/26/13 21:27	08/30/13 12:23	1
Dibenz(a,h)anthracene	67	J	450	54	ug/Kg	₽	08/26/13 21:27	08/30/13 12:23	1
Benzo[g,h,i]perylene	160	J	450	30	ug/Kg	₽	08/26/13 21:27	08/30/13 12:23	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	63		46 - 130				08/26/13 21:27	08/30/13 12:23	1
2-Fluorobiphenyl	49	Χ	58 - 130				08/26/13 21:27	08/30/13 12:23	1
Terphenyl-d14 (Surr)	58	Χ	60 - 130				08/26/13 21:27	08/30/13 12:23	1
Phenol-d5 (Surr)	51		49 - 130				08/26/13 21:27	08/30/13 12:23	1
2-Fluorophenol (Surr)	47		40 - 130				08/26/13 21:27	08/30/13 12:23	1
2,4,6-Tribromophenol (Surr)	37	X	58 <sub>-</sub> 130				08/26/13 21:27	08/30/13 12:23	1

Benzalderyde	2,4,6-1 ribromopnenoi (Surr)	37	X	58 - 130				08/26/13 21:27	08/30/13 12:23	7
Benzalderyde		•	•	•	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bis(2-chloroethy/)ether										1
2-Chilorophenol 450 UH 450 55 ug/Kg 0 0909/13 19:28 09/11/13 15:52 blos (2-chlorolsopropyl) ether 450 UH 450 37 ug/Kg 0 0909/13 19:28 09/11/13 15:52 blos (2-chlorolsopropyl) ether 450 UH 450 38 ug/Kg 0 0909/13 19:28 09/11/13 15:52 Acetophenone 450 UH 450 59 ug/Kg 0 0909/13 19:28 09/11/13 15:52 3.8 4 Methylphenol 450 UH 450 59 ug/Kg 0 0909/13 19:28 09/11/13 15:52 N-Nitrosodi-n-propylamine 450 UH 450 38 ug/Kg 0 0909/13 19:28 09/11/13 15:52 N-Nitrosodi-n-propylamine 450 UH 450 38 ug/Kg 0 0909/13 19:28 09/11/13 15:52 N-Nitrosodi-n-propylamine 450 UH 450 35 ug/Kg 0 0909/13 19:28 09/11/13 15:52 Sophorone 450 UH 450 35 ug/Kg 0 0909/13 19:28 09/11/13 15:52 Sophorone 450 UH 450 35 ug/Kg 0 0909/13 19:28 09/11/13 15:52 Sophorone 450 UH 450 050 u	Phenol	450	UH	450	46	ug/Kg	₩	09/09/13 19:28	09/11/13 15:52	1
2-Methylphenol 450 U H 450 37 UJKg 0 09/09/13 19:28 09/11/13 15:52 bits (2-chloroisopropy)) ether 450 U H 450 41 UJKg 0 09/09/13 19:28 09/11/13 15:52 03 & 4 Methylphenol 450 U H 450 59 UJKg 0 09/09/13 19:28 09/11/13 15:52 03 & 4 Methylphenol 450 U H 450 59 UJKg 0 09/09/13 19:28 09/11/13 15:52 03 & 4 Methylphenol 450 U H 450 59 UJKg 0 09/09/13 19:28 09/11/13 15:52 03 & 4 Methylphenol 450 U H 450 38 UJKg 0 09/09/13 19:28 09/11/13 15:52 03 & 4 Methylphenol 450 U H 450 38 UJKg 0 09/09/13 19:28 09/11/13 15:52 03 & 4 Methylphenol 450 U H 450 38 UJKg 0 09/09/13 19:28 09/11/13 15:52 03 & 4 Methylphenol 450 U H 450 35 UJKg 0 09/09/13 19:28 09/11/13 15:52 03 & 4 Methylphenol 450 U H 450 35 UJKg 0 09/09/13 19:28 09/11/13 15:52 03 & 4 Methylphenol 450 U H 450 56 UJKg 0 09/09/13 19:28 09/11/13 15:52 03 & 4 Methylphenol 450 U H 450 56 UJKg 0 09/09/13 19:28 09/11/13 15:52 03 & 4 Methylphenol 450 U H 450 56 UJKg 0 09/09/13 19:28 09/11/13 15:52 03 & 4 Methylphenol 450 U H 450 60 UJKg 0 09/09/13 19:28 09/11/13 15:52 03 & 4 Methylphenol 450 U H 450 450 48 UJKg 0 09/09/13 19:28 09/11/13 15:52 03 & 4 Methylphenol 450 U H 450 450 450 UJKg 0 09/09/13 19:28 09/11/13 15:52 03 & 4 Methylphenol 450 U H 450 450 450 UJKg 0 09/09/13 19:28 09/11/13 15:52 03 & 4 Methylphenol 450 U H 450 450 UJKg 0 09/09/13 19:28 09/11/13 15:52 03 & 4 Methylphenol 450 U H 450 450 UJKg 0 09/09/13 19:28 09/11/13 15:52 03 & 4 Methylphenol 450 U H 450 450 UJKg 0 09/09/13 19:28 09/11/13 15:52 03 & 4 Methylphenol 450 U H 450 450 UJKg 0 09/09/13 19:28 09/11/13 15:52 03 & 4 Methylphenol 450 U H 450 450 UJKg 0 09/09/13 19:28 09/11/13 15:52 03 & 4 Methylphenol 450 U H 450 450 UJKg 0 09/09/13 19:28 09/11/13 15:52 03 & 4 Methylphenol 450 U H 450 450 UJKg 0 09/09/13 19:28 09/11/13 15:52 03 & 4 Methylphenol 450 U H 450 450 UJKg 0 09/09/13 19:28 09/11/13 15:52 03 & 4 Methylphenol 450 U H 450 450 UJKg 0 09/09/13 19:28 09/11/13 15:52 03 & 4 Methylphenol 450 U H 450 450 UJKg 0 09/09/13 19:28 09/11/13 15:52 03 & 4 Methylphenol 450 U H 450 450 UJKg 0 09/09/13 19:28 09/11/13 15:52	Bis(2-chloroethyl)ether	450	UH	450	61	ug/Kg	₩	09/09/13 19:28	09/11/13 15:52	1
bis (2-chlorolsopropyl) ether	2-Chlorophenol	450	UH	450	55	ug/Kg		09/09/13 19:28	09/11/13 15:52	1
Acetophenone         450         UH         450         38 ug/Kg         9 09/09/13 19:28         09/11/13 15:52           3 & A Methylphenol         450         UH         450         59 ug/Kg         0 9/09/13 19:28         09/11/13 15:52           N-Nitrosodinproplamine         450         UH         450         44 ug/Kg         0 9/09/13 19:28         09/11/13 15:52           Hexachloroethane         450         UH         450         38 ug/Kg         0 9/09/13 19:28         09/11/13 15:52           Nitrobenzene         450         UH         450         35 ug/Kg         0 9/09/13 19:28         09/11/13 15:52           Sophorone         450         UH         450         65 ug/Kg         0 9/09/13 19:28         09/11/13 15:52           2-Nitrophenol         450         UH         450         66 ug/Kg         0 9/09/13 19:28         09/11/13 15:52           2-Libinoterboxy/methane         450         UH         450         63 ug/Kg         0 9/09/13 19:28         09/11/13 15:52           2-L-Dichloroebhoxy/methane         450         UH         450         48 ug/Kg         0 9/09/13 19:28         09/11/13 15:52           2-L-Dichloroebhoxy/methane         41         UH*         450         48 ug/Kg         0 9/09/13 19:28	2-Methylphenol	450	UH	450	37	ug/Kg	₩	09/09/13 19:28	09/11/13 15:52	1
3 & Methylphenol 450 UH 450 59 ug/kg 0 09/09/13 19:28 09/11/13 15:52 N-Nitrosodi-n-propylamine 450 UH 450 34 ug/kg 0 09/09/13 19:28 09/11/13 15:52 Hexachloroethane 450 UH 450 35 ug/kg 0 09/09/13 19:28 09/11/13 15:52 Isophorone 450 UH 450 35 ug/kg 0 09/09/13 19:28 09/11/13 15:52 Isophorone 450 UH 450 35 ug/kg 0 09/09/13 19:28 09/11/13 15:52 Isophorone 450 UH 450 36 ug/kg 0 09/09/13 19:28 09/11/13 15:52 Isophorone 450 UH 450 36 ug/kg 0 09/09/13 19:28 09/11/13 15:52 Isophorone 450 UH 450 36 ug/kg 0 09/09/13 19:28 09/11/13 15:52 Isophorone 450 UH 450 36 ug/kg 0 09/09/13 19:28 09/11/13 15:52 Isophorone 450 UH 450 36 ug/kg 0 09/09/13 19:28 09/11/13 15:52 Isophorone 450 UH 450 36 ug/kg 0 09/09/13 19:28 09/11/13 15:52 Isophorone 450 UH 450 37 ug/kg 0 09/09/13 19:28 09/11/13 15:52 Isophorone 450 UH 450 41 ug/kg 0 09/09/13 19:28 09/11/13 15:52 Isophorone 450 UH 450 41 ug/kg 0 09/09/13 19:28 09/11/13 15:52 Isophorone 450 UH 450 49 ug/kg 0 09/09/13 19:28 09/11/13 15:52 Isophorone 450 UH 450 49 ug/kg 0 09/09/13 19:28 09/11/13 15:52 Isophorone 450 UH 450 49 ug/kg 0 09/09/13 19:28 09/11/13 15:52 Isophorone 450 UH 450 48 ug/kg 0 09/09/13 19:28 09/11/13 15:52 Isophorone 450 UH 450 48 ug/kg 0 09/09/13 19:28 09/11/13 15:52 Isophorone 450 UH 450 48 ug/kg 0 09/09/13 19:28 09/11/13 15:52 Isophorone 450 UH 450 48 ug/kg 0 09/09/13 19:28 09/11/13 15:52 Isophorone 450 UH 450 48 ug/kg 0 09/09/13 19:28 09/11/13 15:52 Isophorone 450 UH 450 48 ug/kg 0 09/09/13 19:28 09/11/13 15:52 Isophorone 450 UH 450 48 ug/kg 0 09/09/13 19:28 09/11/13 15:52 Isophorone 450 UH 450 48 ug/kg 0 09/09/13 19:28 09/11/13 15:52 Isophorone 450 UH 450 48 ug/kg 0 09/09/13 19:28 09/11/13 15:52 Isophorone 450 UH 450 48 ug/kg 0 09/09/13 19:28 09/11/13 15:52 Isophorone 450 UH 450 48 ug/kg 0 09/09/13 19:28 09/11/13 15:52 Isophorone 450 UH 450 48 ug/kg 0 09/09/13 19:28 09/11/13 15:52 Isophorone 450 UH 450 48 ug/kg 0 09/09/13 19:28 09/11/13 15:52 Isophorone 450 UH 450 48 ug/kg 0 09/09/13 19:28 09/11/13 15:52 Isophorone 450 UH 450 48 ug/kg 0 09/09/13 19:28 09/11/13 15:52 Iso	bis (2-chloroisopropyl) ether	450	UH	450	41	ug/Kg	₩	09/09/13 19:28	09/11/13 15:52	1
N-Nitrosodin-propylamine	Acetophenone	450	UH	450	38	ug/Kg		09/09/13 19:28	09/11/13 15:52	1
Hexachloroethane	3 & 4 Methylphenol	450	UH	450	59	ug/Kg	₩	09/09/13 19:28	09/11/13 15:52	1
Nitrobenzene 450 U H 450 35 ug/Kg 0 09/09/13 19:28 09/11/13 15:52 1sophorone 450 U H 450 45 ug/Kg 0 09/09/13 19:28 09/11/13 15:52 2-Nitrophenol 450 U H 450 56 ug/Kg 0 09/09/13 19:28 09/11/13 15:52 2-Nitrophenol 450 U H 450 56 ug/Kg 0 09/09/13 19:28 09/11/13 15:52 2-Nitrophenol 450 U H 450 50 ug/Kg 0 09/09/13 19:28 09/11/13 15:52 2-Nitrophenol 450 U H 450 50 ug/Kg 0 09/09/13 19:28 09/11/13 15:52 2-Nitrophenol 450 U H 450 50 ug/Kg 0 09/09/13 19:28 09/11/13 15:52 2-Nitrophenol 450 U H 450 50 ug/Kg 0 09/09/13 19:28 09/11/13 15:52 2-Nitrophenol 450 U H 450 450 46 ug/Kg 0 09/09/13 19:28 09/11/13 15:52 2-Nitrophenol 450 U H 450 460 ug/Kg 0 09/09/13 19:28 09/11/13 15:52 2-Nitrophenol 450 U H 450 460 ug/Kg 0 09/09/13 19:28 09/11/13 15:52 2-Nitrophenol 450 U H 450 460 ug/Kg 0 09/09/13 19:28 09/11/13 15:52 2-Nitrophenol 450 U H 450 460 ug/Kg 0 09/09/13 19:28 09/11/13 15:52 2-Nitrophenol 450 U H 450 460 ug/Kg 0 09/09/13 19:28 09/11/13 15:52 2-Nitrophenol 450 U H 450 460 ug/Kg 0 09/09/13 19:28 09/11/13 15:52 2-Nitrophenol 450 U H 450 460 ug/Kg 0 09/09/13 19:28 09/11/13 15:52 2-Nitrophenol 450 U H 450 460 ug/Kg 0 09/09/13 19:28 09/11/13 15:52 2-Nitrophenol 450 U H 450 460 ug/Kg 0 09/09/13 19:28 09/11/13 15:52 2-Nitrophenol 450 U H 450 460 ug/Kg 0 09/09/13 19:28 09/11/13 15:52 2-Nitrophenol 450 U H 450 460 ug/Kg 0 09/09/13 19:28 09/11/13 15:52 2-Nitrophenol 450 U H 450 460 ug/Kg 0 09/09/13 19:28 09/11/13 15:52 2-Nitrophenol 450 U H 450 460 ug/Kg 0 09/09/13 19:28 09/11/13 15:52 2-Nitrophenol 450 U H 450 460 ug/Kg 0 09/09/13 19:28 09/11/13 15:52 2-Nitrophenol 450 U H 450 460 ug/Kg 0 09/09/13 19:28 09/11/13 15:52 2-Nitrophenol 450 U H 450 460 ug/Kg 0 09/09/13 19:28 09/11/13 15:52 2-Nitrophenol 450 U H 450 460 ug/Kg 0 09/09/13 19:28 09/11/13 15:52 2-Nitrophenol 450 U H 450 460 ug/Kg 0 09/09/13 19:28 09/11/13 15:52 2-Nitrophenol 450 U H 450 460 ug/Kg 0 09/09/13 19:28 09/11/13 15:52 2-Nitrophenol 450 U H 450 460 ug/Kg 0 09/09/13 19:28 09/11/13 15:52 2-Nitrophenol 450 U H 450 460 ug/Kg 0 09/09/13 19:28 09/11/13 15:52 2-Nitrophenol 4	N-Nitrosodi-n-propylamine	450	UH	450	44	ug/Kg	₩	09/09/13 19:28	09/11/13 15:52	1
Sophorone	Hexachloroethane	450	UH	450	38	ug/Kg		09/09/13 19:28	09/11/13 15:52	1
2-Nitrophenol         450         UH         450         56         ug/kg         0 09/09/13 19:28         09/11/13 15:52           2,4-Dimethylphenol         450         UH         450         60         ug/kg         0 09/09/13 19:28         09/11/13 15:52           Bis/C-chloroethoxy/methane         450         UH*         450         53         ug/kg         0 09/09/13 19:28         09/11/13 15:52           2,4-Dichlorophenol         450         UH*         450         48         ug/kg         0 09/09/13 19:28         09/11/13 15:52           4-Chloroaniline         41         JH*         450         41         ug/kg         0 09/09/13 19:28         09/11/13 15:52           4-Chloroaniline         900         UH*         450         41         ug/kg         0 09/09/13 19:28         09/11/13 15:52           4-Chloro-3-methylahenol         450         UH         450         49         ug/kg         0 09/09/13 19:28         09/11/13 15:52           2-Methylaphthalene         450         UH         450         48         ug/kg         0 09/09/13 19:28         09/11/13 15:52           2-Methylaphthalene         450         UH         450         48         ug/kg         0 09/09/13 19:28         09/11/13 15:52      <	Nitrobenzene	450	UH	450	35	ug/Kg	₩	09/09/13 19:28	09/11/13 15:52	1
2.4-Dimethylphenol	Isophorone	450	UH	450	45	ug/Kg	₩	09/09/13 19:28	09/11/13 15:52	1
Selection of the content of the co	2-Nitrophenol	450	UH	450	56	ug/Kg	φ	09/09/13 19:28	09/11/13 15:52	1
2.4-Dichlorophenol	2,4-Dimethylphenol	450	UH	450	60	ug/Kg	₩	09/09/13 19:28	09/11/13 15:52	1
Naphthalene         41 JH*         450 MI         41 Ug/Kg         09/09/13 19:28 09/11/13 15:52           4-Chloroaniline         900 UH*         900 T1 Ug/Kg         09/09/13 19:28 09/11/13 15:52           4-Chloroaniline         450 UH         450 MP         49 Ug/Kg         09/09/13 19:28 09/11/13 15:52           Caprolactam         450 UH         450 MP         48 Ug/Kg         09/09/13 19:28 09/11/13 15:52           4-Chloro-3-methylphenol         450 UH         450 MP         48 Ug/Kg         09/09/13 19:28 09/11/13 15:52           2-Methylnaphthalene         450 UH         450 MP         450 UH         450 MP         90/Kg         09/09/13 19:28 09/11/13 15:52           2-Methylnaphthalene         450 UH         450 MP         450 UH         450 MP         90/Kg         09/09/13 19:28 09/11/13 15:52           2-Methylnaphthalene         450 UH         450 MP         450 MP         90/Kg         09/09/13 19:28 09/11/13 15:52           2-Methylnaphthalene         450 UH         450 MP         460 Ug/Kg         09/09/13 19:28 09/11/13 15:52           2-Methylnaphthalene         450 UH*         450 MP         48 Ug/Kg         09/09/13 19:28 09/11/13 15:52           2-Abitroaniline         250 UH*         450 MP         48 Ug/Kg         09/09/13 19:28 09/11/13 15:52           2-Nit	Bis(2-chloroethoxy)methane	450	U H *	450	53	ug/Kg	₩	09/09/13 19:28	09/11/13 15:52	1
4-Chloroaniline 900 UH* 900 71 ug/Kg 90/9/13 19:28 09/11/13 15:52  Hexachlorobutadiene 450 UH 450 49 ug/Kg 90/9/13 19:28 09/11/13 15:52  Caprolactam 450 UH 450 90 ug/Kg 90/9/13 19:28 09/11/13 15:52  4-Chloro-3-methylphenol 450 UH 450 48 ug/Kg 90/9/13 19:28 09/11/13 15:52  2-Methylnaphthalene 450 UH* 450 52 ug/Kg 90/9/13 19:28 09/11/13 15:52  2-Methylnaphthalene 450 UH* 450 56 ug/Kg 90/9/13 19:28 09/11/13 15:52  2-Methylnaphthalene 450 UH 450 56 ug/Kg 90/9/13 19:28 09/11/13 15:52  2-Methylnaphthalene 450 UH* 450 56 ug/Kg 90/9/13 19:28 09/11/13 15:52  2-Methylnaphthalene 450 UH* 450 40 ug/Kg 90/9/13 19:28 09/11/13 15:52  2-Methylnaphthalene 450 UH* 450 40 ug/Kg 90/9/13 19:28 09/11/13 15:52  2-Methylnaphthalene 450 UH* 450 48 ug/Kg 90/9/13 19:28 09/11/13 15:52  2-Methylnaphthalene 450 UH* 450 48 ug/Kg 90/9/13 19:28 09/11/13 15:52  2-Methylnaphthalene 450 UH* 450 48 ug/Kg 90/9/13 19:28 09/11/13 15:52  2-Methylnaphthalene 450 UH* 450 46 ug/Kg 90/9/13 19:28 09/11/13 15:52  2-Chloronaphthalene 450 UH* 450 46 ug/Kg 90/9/9/13 19:28 09/11/13 15:52  2-Methylnaphthalene 450 UH* 450 49 ug/Kg 90/9/13 19:28 09/11/13 15:52  3-Nitroaniline 2300 UH 2300 63 ug/Kg 90/9/13 19:28 09/11/13 15:52  3-Nitroaniline 2300 UH 2300 63 ug/Kg 90/9/13 19:28 09/11/13 15:52  4-Cenaphthylene 450 UH* 450 49 ug/Kg 90/9/13 19:28 09/11/13 15:52  3-Nitroaniline 2300 UH 2300 63 ug/Kg 90/9/13 19:28 09/11/13 15:52  4-Cenaphthene 450 UH* 450 49 ug/Kg 90/9/13 19:28 09/11/13 15:52  4-Cenaphthene 450 UH* 450 46 ug/Kg 90/9/13 19:28 09/11/13 15:52  4-Cenaphthene 450 UH* 450 46 ug/Kg 90/9/13 19:28 09/11/13 15:52  4-Cenaphthene 450 UH* 450 49 ug/Kg 90/9/13 19:28 09/11/13 15:52  4-Cenaphthene 450 UH* 450 49 ug/Kg 90/9/13 19:28 09/11/13 15:52	2,4-Dichlorophenol	450	U H *	450	48	ug/Kg	₽	09/09/13 19:28	09/11/13 15:52	1
Hexachlorobutadiene         450         U H         450         49         ug/kg         09/09/13 19:28         09/11/13 15:52           Caprolactam         450         U H         450         90         ug/kg         09/09/13 19:28         09/11/13 15:52           4-Chloro-3-methylphenol         450         U H         450         48         ug/kg         09/09/13 19:28         09/11/13 15:52           2-Methylnaphthalene         450         U H         450         52         ug/kg         09/09/13 19:28         09/11/13 15:52           2-Methylnaphthalene         450         U H         450         56         ug/kg         09/09/13 19:28         09/11/13 15:52           2-Methylnaphthalene         450         U H         450         56         ug/kg         09/09/13 19:28         09/11/13 15:52           2-A,6-Trichlorophenol         450         U H         450         40         ug/kg         09/09/13 19:28         09/11/13 15:52           2-A,6-Trichlorophenol         450         U H*         450         48         ug/kg         09/09/13 19:28         09/11/13 15:52           2-A,6-Trichlorophenol         450         U H*         450         48         ug/kg         09/09/13 19:28         09/11/13 15:52 <t< td=""><td>Naphthalene</td><td>41</td><td>J H *</td><td>450</td><td>41</td><td>ug/Kg</td><td>₩</td><td>09/09/13 19:28</td><td>09/11/13 15:52</td><td>1</td></t<>	Naphthalene	41	J H *	450	41	ug/Kg	₩	09/09/13 19:28	09/11/13 15:52	1
Caprolactam         450         U H         450         90         ug/Kg         90/90/13 19:28         09/11/13 15:52           4-Chloro-3-methylphenol         450         U H         450         48         ug/Kg         90/90/13 19:28         09/11/13 15:52           2-Methylnaphthalene         450         U H         450         52         ug/Kg         90/90/13 19:28         09/11/13 15:52           Hexachlorocyclopentadiene         450         U H         450         56         ug/Kg         90/90/13 19:28         09/11/13 15:52           2,4,6-Trichlorophenol         450         U H         450         40         ug/Kg         90/90/13 19:28         09/11/13 15:52           2,4,5-Trichlorophenol         450         U H         450         48         ug/Kg         90/90/13 19:28         09/11/13 15:52           2,4,5-Trichlorophenol         450         U H         450         48         ug/Kg         90/90/13 19:28         09/11/13 15:52           2,4,5-Trichlorophenol         450         U H         450         48         ug/Kg         90/90/13 19:28         09/11/13 15:52           2,-Chloronaphthalene         450         U H         450         48         ug/Kg         90/90/13 19:28         09/11/13 15:52	4-Chloroaniline	900	U H *	900	71	ug/Kg	₩	09/09/13 19:28	09/11/13 15:52	1
4-Chloro-3-methylphenol 450 U H 450 48 ug/Kg 90/09/13 19:28 09/11/13 15:52 2-Methylnaphthalene 450 U H 450 52 ug/Kg 90/09/13 19:28 09/11/13 15:52 1-Mexachlorocyclopentadiene 450 U H 450 56 ug/Kg 90/09/13 19:28 09/11/13 15:52 1-Mexachlorocyclopentadiene 450 U H 450 56 ug/Kg 90/09/13 19:28 09/11/13 15:52 1-Mexachlorocyclopentadiene 450 U H 450 40 ug/Kg 90/09/13 19:28 09/11/13 15:52 1-Mexachlorocyclopentadiene 450 U H 450 40 ug/Kg 90/09/13 19:28 09/11/13 15:52 1-Mexachlorocyclopentadiene 450 U H 450 48 ug/Kg 90/09/13 19:28 09/11/13 15:52 1-Mexachlorocyclopentadiene 450 U H 450 48 ug/Kg 90/09/13 19:28 09/11/13 15:52 1-Mexachlorocyclopentadiene 450 U H 450 48 ug/Kg 90/09/13 19:28 09/11/13 15:52 1-Mexachlorocyclopentadiene 450 U H 450 48 ug/Kg 90/09/13 19:28 09/11/13 15:52 1-Mexachlorocyclopentadiene 450 U H 450 46 ug/Kg 90/09/13 19:28 09/11/13 15:52 1-Mexachlorocyclopentadiene 450 U H 450 46 ug/Kg 90/09/13 19:28 09/11/13 15:52 1-Mexachlorocyclopentadiene 450 U H 450 450 46 ug/Kg 90/09/13 19:28 09/11/13 15:52 1-Mexachlorocyclopentadiene 450 U H 450 49 ug/Kg 90/09/13 19:28 09/11/13 15:52 1-Mexachlorocyclopentadiene 450 U H 450 49 ug/Kg 90/09/13 19:28 09/11/13 15:52 1-Mexachlorocyclopentadiene 450 U H 450 49 ug/Kg 90/09/13 19:28 09/11/13 15:52 1-Mexachlorocyclopene 450 U H 450 450 ug/Kg 90/09/13 19:28 09/11/13 15:52 1-Mexachlorocyclopene 450 U H 450 450 ug/Kg 90/09/13 19:28 09/11/13 15:52 1-Mexachlorocyclopene 450 U H 450 450 ug/Kg 90/09/13 19:28 09/11/13 15:52 1-Mexachlorocyclopene 450 U H 450 450 ug/Kg 90/09/13 19:28 09/11/13 15:52 1-Mexachlorocyclopene 450 U H 450 450 ug/Kg 90/09/13 19:28 09/11/13 15:52 1-Mexachlorocyclopene 450 U H 450 450 ug/Kg 90/09/13 19:28 09/11/13 15:52 1-Mexachlorocyclopene 450 U H 450 450 ug/Kg 90/09/13 19:28 09/11/13 15:52 1-Mexachlorocyclopene 450 U H 450 450 ug/Kg 90/09/13 19:28 09/11/13 15:52	Hexachlorobutadiene	450	UH	450	49	ug/Kg	₩	09/09/13 19:28	09/11/13 15:52	1
2-Methylnaphthalene	Caprolactam	450	UH	450	90	ug/Kg	₩	09/09/13 19:28	09/11/13 15:52	1
Hexachlorocyclopentadiene 450 U H 450 56 ug/Kg 09/09/13 19:28 09/11/13 15:52 2,4,6-Trichlorophenol 450 U H 450 40 ug/Kg 09/09/13 19:28 09/11/13 15:52 2,4,5-Trichlorophenol 450 U H 450 48 ug/Kg 09/09/13 19:28 09/11/13 15:52 1,1'-Biphenyl 1000 U H 1000 U H 1000 U U H 1000 U U H 1000 U U H 1000 U U H 1000 U U H 1000 U U U H 1000 U U U H 1000 U U U U U U U U U U U U U U U U U	4-Chloro-3-methylphenol	450	UH	450	48	ug/Kg	₽	09/09/13 19:28	09/11/13 15:52	1
2,4,6-Trichlorophenol       450       U H       450       40       ug/Kg       © 09/09/13 19:28       09/11/13 15:52         2,4,5-Trichlorophenol       450       U H *       450       48       ug/Kg       © 09/09/13 19:28       09/11/13 15:52         1,1'-Biphenyl       1000       U H *       1000       1000       ug/Kg       © 09/09/13 19:28       09/11/13 15:52         2-Chloronaphthalene       450       U H *       450       48       ug/Kg       © 09/09/13 19:28       09/11/13 15:52         2-Nitroaniline       2300       U H *       2300       61       ug/Kg       © 09/09/13 19:28       09/11/13 15:52         2-Dimethyl phthalate       450       U H *       450       46       ug/Kg       © 09/09/13 19:28       09/11/13 15:52         2,6-Dinitrotoluene       450       U H *       450       57       ug/Kg       © 09/09/13 19:28       09/11/13 15:52         Acenaphthylene       450       U H *       450       49       ug/Kg       © 09/09/13 19:28       09/11/13 15:52         3-Nitroaniline       2300       U H *       450       450       ug/Kg       © 09/09/13 19:28       09/11/13 15:52         4-Cenaphthene       450       U H *       450       56	2-Methylnaphthalene	450	UH*	450	52	ug/Kg	₽	09/09/13 19:28	09/11/13 15:52	1
2,4,5-Trichlorophenol       450       U H *       450       48 ug/Kg       © 09/09/13 19:28       09/11/13 15:52         1,1'-Biphenyl       1000       U H *       1000       1000 ug/Kg       © 09/09/13 19:28       09/11/13 15:52         2-Chloronaphthalene       450       U H *       450       48 ug/Kg       © 09/09/13 19:28       09/11/13 15:52         2-Nitroaniline       2300       U H       2300       61 ug/Kg       © 09/09/13 19:28       09/11/13 15:52         Dimethyl phthalate       450       U H *       450       46 ug/Kg       © 09/09/13 19:28       09/11/13 15:52         2,6-Dinitrotoluene       450       U H *       450       57 ug/Kg       © 09/09/13 19:28       09/11/13 15:52         Acenaphthylene       450       U H *       450       49 ug/Kg       © 09/09/13 19:28       09/11/13 15:52         3-Nitroaniline       2300       U H       2300       63 ug/Kg       © 09/09/13 19:28       09/11/13 15:52         Acenaphthene       450       U H *       450       56 ug/Kg       © 09/09/13 19:28       09/11/13 15:52         2,4-Dinitrophenol       2300       U H       2300       1100       ug/Kg       © 09/09/13 19:28       09/11/13 15:52         4-Nitrophenol       2300<	Hexachlorocyclopentadiene	450	UH	450	56	ug/Kg	₩	09/09/13 19:28	09/11/13 15:52	1
1,1'-Biphenyl       1000       U H *       1000       1000       ug/Kg       © 09/09/13 19:28       09/11/13 15:52         2-Chloronaphthalene       450       U H *       450       48       ug/Kg       © 09/09/13 19:28       09/11/13 15:52         2-Nitroaniline       2300       U H       2300       61       ug/Kg       © 09/09/13 19:28       09/11/13 15:52         Dimethyl phthalate       450       U H *       450       46       ug/Kg       © 09/09/13 19:28       09/11/13 15:52         2,6-Dinitrotoluene       450       U H *       450       57       ug/Kg       © 09/09/13 19:28       09/11/13 15:52         Acenaphthylene       450       U H *       450       49       ug/Kg       © 09/09/13 19:28       09/11/13 15:52         3-Nitroaniline       2300       U H       2300       63       ug/Kg       © 09/09/13 19:28       09/11/13 15:52         Acenaphthene       450       U H *       450       56       ug/Kg       © 09/09/13 19:28       09/11/13 15:52         2,4-Dinitrophenol       2300       U H       2300       1100       ug/Kg       © 09/09/13 19:28       09/11/13 15:52         4-Nitrophenol       2300       U H       2300       450       ug/Kg <td>2,4,6-Trichlorophenol</td> <td>450</td> <td>UH</td> <td>450</td> <td>40</td> <td>ug/Kg</td> <td>₩</td> <td>09/09/13 19:28</td> <td>09/11/13 15:52</td> <td>1</td>	2,4,6-Trichlorophenol	450	UH	450	40	ug/Kg	₩	09/09/13 19:28	09/11/13 15:52	1
2-Chloronaphthalene 450 U H * 450 48 ug/Kg © 09/09/13 19:28 09/11/13 15:52 2-Nitroaniline 2300 U H 2300 61 ug/Kg © 09/09/13 19:28 09/11/13 15:52 Dimethyl phthalate 450 U H * 450 46 ug/Kg © 09/09/13 19:28 09/11/13 15:52 2,6-Dinitrotoluene 450 U H * 450 57 ug/Kg © 09/09/13 19:28 09/11/13 15:52 Acenaphthylene 450 U H * 450 49 ug/Kg © 09/09/13 19:28 09/11/13 15:52 3-Nitroaniline 2300 U H 2300 63 ug/Kg © 09/09/13 19:28 09/11/13 15:52 Acenaphthene 450 U H * 450 56 ug/Kg © 09/09/13 19:28 09/11/13 15:52 2,4-Dinitrophenol 2300 U H 2300 1100 ug/Kg © 09/09/13 19:28 09/11/13 15:52 4-Nitrophenol 2300 U H 2300 450 ug/Kg © 09/09/13 19:28 09/11/13 15:52 4-Nitrophenol 2300 U H 2300 450 ug/Kg © 09/09/13 19:28 09/11/13 15:52	2,4,5-Trichlorophenol	450	U H *	450	48	ug/Kg		09/09/13 19:28	09/11/13 15:52	1
2-Nitroaniline 2300 U H 2300 61 ug/Kg 09/09/13 19:28 09/11/13 15:52 Dimethyl phthalate 450 U H 4 450 46 ug/Kg 09/09/13 19:28 09/11/13 15:52 2,6-Dinitrotoluene 450 U H 4 450 57 ug/Kg 09/09/13 19:28 09/11/13 15:52 Acenaphthylene 450 U H 4 450 49 ug/Kg 09/09/13 19:28 09/11/13 15:52 3-Nitroaniline 2300 U H 2300 63 ug/Kg 09/09/13 19:28 09/11/13 15:52 Acenaphthene 450 U H 4 450 56 ug/Kg 09/09/13 19:28 09/11/13 15:52 2,4-Dinitrophenol 2300 U H 2300 1100 ug/Kg 09/09/13 19:28 09/11/13 15:52 4-Nitrophenol 2300 U H 2300 450 ug/Kg 09/09/13 19:28 09/11/13 15:52 4-Nitrophenol 2300 U H 2300 450 ug/Kg 09/09/13 19:28 09/11/13 15:52	1,1'-Biphenyl	1000	U H *	1000	1000	ug/Kg	₩	09/09/13 19:28	09/11/13 15:52	1
Dimethyl phthalate       450       U H *       450       46       ug/Kg       © 09/09/13 19:28       09/11/13 15:52         2,6-Dinitrotoluene       450       U H *       450       57       ug/Kg       © 09/09/13 19:28       09/11/13 15:52         Acenaphthylene       450       U H *       450       49       ug/Kg       © 09/09/13 19:28       09/11/13 15:52         3-Nitroaniline       2300       U H       2300       63       ug/Kg       © 09/09/13 19:28       09/11/13 15:52         Acenaphthene       450       U H *       450       56       ug/Kg       © 09/09/13 19:28       09/11/13 15:52         2,4-Dinitrophenol       2300       U H       2300       1100       ug/Kg       © 09/09/13 19:28       09/11/13 15:52         4-Nitrophenol       2300       U H       2300       450       ug/Kg       © 09/09/13 19:28       09/11/13 15:52	2-Chloronaphthalene	450	U H *	450	48	ug/Kg	₩	09/09/13 19:28	09/11/13 15:52	1
2,6-Dinitrotoluene       450       U H *       450       57       ug/Kg       © 09/09/13 19:28       09/11/13 15:52         Acenaphthylene       450       U H *       450       49       ug/Kg       © 09/09/13 19:28       09/11/13 15:52         3-Nitroaniline       2300       U H       2300       63       ug/Kg       © 09/09/13 19:28       09/11/13 15:52         Acenaphthene       450       U H *       450       56       ug/Kg       © 09/09/13 19:28       09/11/13 15:52         2,4-Dinitrophenol       2300       U H       2300       1100       ug/Kg       © 09/09/13 19:28       09/11/13 15:52         4-Nitrophenol       2300       U H       2300       450       ug/Kg       © 09/09/13 19:28       09/11/13 15:52	2-Nitroaniline	2300	UH	2300	61	ug/Kg	₽	09/09/13 19:28	09/11/13 15:52	1
Acenaphthylene 450 U H * 450 49 ug/Kg * 09/09/13 19:28 09/11/13 15:52 3-Nitroaniline 2300 U H 2300 63 ug/Kg * 09/09/13 19:28 09/11/13 15:52 Acenaphthene 450 U H * 450 56 ug/Kg * 09/09/13 19:28 09/11/13 15:52 2,4-Dinitrophenol 2300 U H 2300 1100 ug/Kg * 09/09/13 19:28 09/11/13 15:52 4-Nitrophenol 2300 U H 2300 450 ug/Kg * 09/09/13 19:28 09/11/13 15:52	Dimethyl phthalate	450	U H *	450	46	ug/Kg	₩	09/09/13 19:28	09/11/13 15:52	1
3-Nitroaniline 2300 U H 2300 63 ug/Kg 09/09/13 19:28 09/11/13 15:52 Acenaphthene 450 U H 450 56 ug/Kg 09/09/13 19:28 09/11/13 15:52 2,4-Dinitrophenol 2300 U H 2300 1100 ug/Kg 09/09/13 19:28 09/11/13 15:52 4-Nitrophenol 2300 U H 2300 450 ug/Kg 09/09/13 19:28 09/11/13 15:52	2,6-Dinitrotoluene	450	U H *	450	57	ug/Kg	₩	09/09/13 19:28	09/11/13 15:52	1
Acenaphthene     450     UH*     450     56     ug/Kg     09/09/13 19:28     09/11/13 15:52       2,4-Dinitrophenol     2300     UH     2300     1100     ug/Kg     09/09/13 19:28     09/11/13 15:52       4-Nitrophenol     2300     UH     2300     450     ug/Kg     09/09/13 19:28     09/11/13 15:52	Acenaphthylene	450	UH*	450	49	ug/Kg	₽	09/09/13 19:28	09/11/13 15:52	1
2,4-Dinitrophenol       2300       U H       2300       1100       ug/Kg       **       09/09/13 19:28       09/11/13 15:52         4-Nitrophenol       2300       U H       2300       450       ug/Kg       **       09/09/13 19:28       09/11/13 15:52	3-Nitroaniline	2300	UH	2300	63	ug/Kg	₽	09/09/13 19:28	09/11/13 15:52	1
4-Nitrophenol 2300 U H 2300 450 ug/Kg © 09/09/13 19:28 09/11/13 15:52	Acenaphthene	450	U H *	450	56	ug/Kg	₽	09/09/13 19:28	09/11/13 15:52	1
	2,4-Dinitrophenol	2300	UH	2300	1100	ug/Kg		09/09/13 19:28	09/11/13 15:52	1
Dispuratives 450 JULY 450 A5 110/00 \$ 00/00/42 40:20 00/44/42 45:52	4-Nitrophenol	2300	UH	2300	450	ug/Kg	₩	09/09/13 19:28	09/11/13 15:52	1
Diberizorurari 450 U.H. 450 45 ug/kg - 09/09/13 19.26 09/11/13 15.52	Dibenzofuran	450	U H *	450	45	ug/Kg	₽	09/09/13 19:28	09/11/13 15:52	1

TestAmerica Savannah

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TestAmerica Job ID: 680-93498-1

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12

9/13/2013

Client: ARCADIS U.S., Inc.

Date Collected: 08/21/13 09:10

Date Received: 08/22/13 09:39

a,a,a-Trifluorotoluene

ORO C24-C40

Diesel Range Organics [C10-C28]

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB02-08 (0.5-1.5)

TestAmerica Job ID: 680-93498-1

Lab Sample ID: 680-93498-6

Percent Solids: 72.5

Matrix: Solid

	ı	Dil	Fá	ас	5
				1	
				1	6
				1	
				1	
				1	

Method: 8270D - Semivolatile On Analyte		Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4-Dinitrotoluene	450	UH*	450	67	ug/Kg	₩	09/09/13 19:28	09/11/13 15:52	
Diethyl phthalate	450	UH*	450	50	ug/Kg	₽	09/09/13 19:28	09/11/13 15:52	
Fluorene	450	U H *	450	49	ug/Kg	₩	09/09/13 19:28	09/11/13 15:52	1
4-Chlorophenyl phenyl ether	450	UH*	450	60	ug/Kg	<b>\$</b>	09/09/13 19:28	09/11/13 15:52	1
4-Nitroaniline	2300	UH	2300	67	ug/Kg	₩	09/09/13 19:28	09/11/13 15:52	1
4,6-Dinitro-2-methylphenol	2300	UH	2300	230	ug/Kg	₩	09/09/13 19:28	09/11/13 15:52	1
N-Nitrosodiphenylamine	450	U H *	450	45	ug/Kg	\$	09/09/13 19:28	09/11/13 15:52	1
4-Bromophenyl phenyl ether	450	U H *	450	49	ug/Kg	₩	09/09/13 19:28	09/11/13 15:52	1
Hexachlorobenzene	450	U H *	450	53	ug/Kg	₽	09/09/13 19:28	09/11/13 15:52	1
Atrazine	450	UH	450	31	ug/Kg	*	09/09/13 19:28	09/11/13 15:52	1
Pentachlorophenol	2300	UH	2300	450	ug/Kg	₩	09/09/13 19:28	09/11/13 15:52	1
Phenanthrene	110	J H *	450	37	ug/Kg	₽	09/09/13 19:28	09/11/13 15:52	1
Anthracene	450	U H *	450	34	ug/Kg	₽	09/09/13 19:28	09/11/13 15:52	1
Carbazole	450	UH	450	41	ug/Kg	₽	09/09/13 19:28	09/11/13 15:52	1
Di-n-butyl phthalate	450	U H *	450	41	ug/Kg	₩	09/09/13 19:28	09/11/13 15:52	1
Fluoranthene	120	J H *	450	44	ug/Kg	₽	09/09/13 19:28	09/11/13 15:52	1
Pyrene	95	J H *	450	37	ug/Kg	₽	09/09/13 19:28	09/11/13 15:52	1
Butyl benzyl phthalate	450	U H *	450	35	ug/Kg	₩	09/09/13 19:28	09/11/13 15:52	1
3,3'-Dichlorobenzidine	900	UH	900	38	ug/Kg	<b>\$</b>	09/09/13 19:28	09/11/13 15:52	1
Benzo[a]anthracene	60	J H *	450	37	ug/Kg	₩	09/09/13 19:28	09/11/13 15:52	1
Chrysene	71	J H *	450	29	ug/Kg	₩	09/09/13 19:28	09/11/13 15:52	1
Bis(2-ethylhexyl) phthalate	450	UH	450	40	ug/Kg	\$	09/09/13 19:28	09/11/13 15:52	1
Di-n-octyl phthalate	450	UH	450	40	ug/Kg	₽	09/09/13 19:28	09/11/13 15:52	1
Benzo[b]fluoranthene	62	J H *	450	52	ug/Kg	₩	09/09/13 19:28	09/11/13 15:52	1
Benzo[k]fluoranthene	450	U H *	450	89	ug/Kg	\$	09/09/13 19:28	09/11/13 15:52	1
Benzo[a]pyrene	450	U H *	450	71	ug/Kg	₩	09/09/13 19:28	09/11/13 15:52	1
Indeno[1,2,3-cd]pyrene	42	JH	450	38	ug/Kg	₽	09/09/13 19:28	09/11/13 15:52	1
Dibenz(a,h)anthracene	450	U H *	450	53	ug/Kg	₽	09/09/13 19:28	09/11/13 15:52	1
Benzo[g,h,i]perylene	36	JH	450	30	ug/Kg	₽	09/09/13 19:28	09/11/13 15:52	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	65		46 - 130				09/09/13 19:28	09/11/13 15:52	1
2-Fluorobiphenyl	66		58 - 130				09/09/13 19:28	09/11/13 15:52	1
Terphenyl-d14 (Surr)	73		60 - 130				09/09/13 19:28	09/11/13 15:52	1
Phenol-d5 (Surr)	71		49 - 130				09/09/13 19:28	09/11/13 15:52	1
2-Fluorophenol (Surr)	70		40 - 130				09/09/13 19:28	09/11/13 15:52	1
2,4,6-Tribromophenol (Surr)	65		58 - 130				09/09/13 19:28	09/11/13 15:52	1
Method: 8015C - Nonhalogenate	_	•	•		-				
Analyte		Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO) -C6-C10	540		270	21	ug/Kg	*	08/22/13 14:33	08/23/13 17:06	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
							00/00/10 11 55		

TestAmerica Savannah

08/23/13 17:06

Analyzed

08/29/13 00:33

08/29/13 00:33

08/22/13 14:33

Prepared

08/26/13 14:47

08/26/13 14:47

D

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70 - 131

RL

6900

6900

MDL Unit

1900 ug/Kg

1900 ug/Kg

139 X

Method: 8015C - Nonhalogenated Organics using GC/FID -Modified (Diesel Range Organics) Result Qualifier

5500 J

6800 J

Dil Fac

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93498-1

Client Sample ID: SB02-08 (0.5-1.5)

Date Collected: 08/21/13 09:10 Date Received: 08/22/13 09:39 Lab Sample ID: 680-93498-6

Matrix: Solid Percent Solids: 72.5

 Surrogate
 %Recovery o-Terphenyl (Surr)
 Qualifier
 Limits
 Prepared
 Analyzed objection
 Dil Fac

 0-Terphenyl (Surr)
 67
 50 - 150
 08/26/13 14:47
 08/29/13 00:33
 1

Client Sample ID: SB02-08 (7.0-8.0)

Date Collected: 08/21/13 09:20

Date Received: 08/22/13 09:39

Lab Sample ID: 680-93498-7

Matrix: Solid

Percent Solids: 83.6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
Acetone	22	U *	22	6.4	ug/Kg	<del></del>	08/26/13 09:52	08/28/13 14:23	
Benzene	4.4	U	4.4	0.43	ug/Kg	₩	08/26/13 09:52	08/28/13 14:23	
Bromodichloromethane	4.4	U	4.4	0.74	ug/Kg	₩	08/26/13 09:52	08/28/13 14:23	
Bromoform	4.4	U	4.4	0.55	ug/Kg		08/26/13 09:52	08/28/13 14:23	
Bromomethane	4.4	U	4.4	1.2	ug/Kg	₩	08/26/13 09:52	08/28/13 14:23	
Carbon disulfide	4.4	U	4.4	1.1	ug/Kg	₩	08/26/13 09:52	08/28/13 14:23	
Carbon tetrachloride	4.4	U	4.4	1.5	ug/Kg	₩.	08/26/13 09:52	08/28/13 14:23	
Chlorobenzene	4.4	U	4.4	0.46	ug/Kg	₩	08/26/13 09:52	08/28/13 14:23	
Chloroethane	4.4	U	4.4	1.7	ug/Kg	₩	08/26/13 09:52	08/28/13 14:23	
Chloroform	4.4	U	4.4	0.52	ug/Kg		08/26/13 09:52	08/28/13 14:23	
Chloromethane	4.4	U	4.4	0.88	ug/Kg	₩	08/26/13 09:52	08/28/13 14:23	
cis-1,2-Dichloroethene	4.4	U	4.4	0.67	ug/Kg	₽	08/26/13 09:52	08/28/13 14:23	
cis-1,3-Dichloropropene	4.4	U	4.4	1.1	ug/Kg		08/26/13 09:52	08/28/13 14:23	
Cyclohexane	4.4	U	4.4	0.83	ug/Kg	₽	08/26/13 09:52	08/28/13 14:23	
Dibromochloromethane	4.4	U	4.4	0.77	ug/Kg	₽	08/26/13 09:52	08/28/13 14:23	
1,2-Dibromo-3-Chloropropane	4.4	U	4.4	2.9	ug/Kg	φ.	08/26/13 09:52	08/28/13 14:23	
1,2-Dichlorobenzene	4.4	U	4.4	0.62	ug/Kg	₽	08/26/13 09:52	08/28/13 14:23	
1,3-Dichlorobenzene	4.4	U	4.4	0.84	ug/Kg	₽	08/26/13 09:52	08/28/13 14:23	
1,4-Dichlorobenzene	4.4	U	4.4	0.72	ug/Kg		08/26/13 09:52	08/28/13 14:23	
Dichlorodifluoromethane	4.4	U	4.4	1.1	ug/Kg	₽	08/26/13 09:52	08/28/13 14:23	
1,1-Dichloroethane	4.4	U	4.4	0.73	ug/Kg	₽	08/26/13 09:52	08/28/13 14:23	
1,2-Dichloroethane	4.4	U	4.4	0.72	ug/Kg		08/26/13 09:52	08/28/13 14:23	
1,1-Dichloroethene	4.4	U	4.4	0.66	ug/Kg	₩	08/26/13 09:52	08/28/13 14:23	
1,2-Dichloropropane	4.4	U	4.4	0.65	ug/Kg	₽	08/26/13 09:52	08/28/13 14:23	
Diisopropyl ether	4.4	U	4.4	0.48	ug/Kg		08/26/13 09:52	08/28/13 14:23	
Ethylbenzene	4.4	U	4.4	0.54	ug/Kg	₽	08/26/13 09:52	08/28/13 14:23	
Ethylene Dibromide	4.4	U	4.4	0.42	ug/Kg	₽	08/26/13 09:52	08/28/13 14:23	
Ethyl tert-butyl ether	4.4	U	4.4	0.49	ug/Kg	φ.	08/26/13 09:52	08/28/13 14:23	
2-Hexanone	22	U	22	4.4	ug/Kg	₽	08/26/13 09:52	08/28/13 14:23	
Isopropylbenzene	4.4	U	4.4	0.60	ug/Kg	₽	08/26/13 09:52	08/28/13 14:23	
Methyl acetate	4.4	U	4.4	4.0	ug/Kg	ф.	08/26/13 09:52	08/28/13 14:23	
Methylcyclohexane	4.4	U	4.4	0.77	ug/Kg	₽	08/26/13 09:52	08/28/13 14:23	
Methylene Chloride	13	U	13	8.8	ug/Kg	₽	08/26/13 09:52	08/28/13 14:23	
Methyl Ethyl Ketone	22	U	22	3.6	ug/Kg		08/26/13 09:52	08/28/13 14:23	
methyl isobutyl ketone	22	U	22		ug/Kg	₩	08/26/13 09:52	08/28/13 14:23	
Methyl tert-butyl ether	4.4	U	4.4		ug/Kg	₩	08/26/13 09:52	08/28/13 14:23	
Naphthalene	4.4		4.4		ug/Kg		08/26/13 09:52	08/28/13 14:23	
Styrene	4.4		4.4		ug/Kg	₽	08/26/13 09:52	08/28/13 14:23	
Fert-amyl methyl ether	4.4		4.4		ug/Kg	₽	08/26/13 09:52	08/28/13 14:23	
ert-Butyl alcohol	4.4		4.4		ug/Kg	ф	08/26/13 09:52	08/28/13 14:23	
1,1,2,2-Tetrachloroethane	4.4		4.4		ug/Kg	₽	08/26/13 09:52	08/28/13 14:23	
Tetrachloroethene	4.4		4.4		ug/Kg	₽	08/26/13 09:52	08/28/13 14:23	

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93498-1

Lab Sample ID: 680-93498-7

Matrix: Solid Percent Solids: 83.6

Client Sample ID: SB02-08 (7.0-8.0)

Date Collected: 08/21/13 09:20 Date Received: 08/22/13 09:39

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Toluene	4.4	U	4.4	0.62	ug/Kg	₩	08/26/13 09:52	08/28/13 14:23	1
trans-1,2-Dichloroethene	4.4	U	4.4	0.67	ug/Kg	\$	08/26/13 09:52	08/28/13 14:23	1
trans-1,3-Dichloropropene	4.4	U	4.4	0.81	ug/Kg	₽	08/26/13 09:52	08/28/13 14:23	1
1,2,4-Trichlorobenzene	4.4	U	4.4	0.64	ug/Kg	\$	08/26/13 09:52	08/28/13 14:23	1
1,1,1-Trichloroethane	4.4	U	4.4	0.97	ug/Kg	₽	08/26/13 09:52	08/28/13 14:23	1
1,1,2-Trichloroethane	4.4	U	4.4	0.81	ug/Kg	₽	08/26/13 09:52	08/28/13 14:23	1
Trichloroethene	4.4	U	4.4	0.42	ug/Kg	\$	08/26/13 09:52	08/28/13 14:23	1
Trichlorofluoromethane	4.4	U	4.4	0.84	ug/Kg	₽	08/26/13 09:52	08/28/13 14:23	1
1,1,2-Trichloro-1,2,2-trifluoroethane	4.4	U	4.4	1.8	ug/Kg	₽	08/26/13 09:52	08/28/13 14:23	1
Vinyl chloride	4.4	U	4.4	0.81	ug/Kg	₽	08/26/13 09:52	08/28/13 14:23	1
Xylenes, Total	8.8	U	8.8	1.7	ug/Kg	\$	08/26/13 09:52	08/28/13 14:23	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	97		72 - 122				08/26/13 09:52	08/28/13 14:23	1
Dibromofluoromethane	105		79 - 123				08/26/13 09:52	08/28/13 14:23	1
Toluene-d8 (Surr)	97		80 - 120				08/26/13 09:52	08/28/13 14:23	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzaldehyde	390	U	390	69	ug/Kg	\$	08/26/13 21:27	08/30/13 12:48	1
Phenol	390	U	390	41	ug/Kg	₽	08/26/13 21:27	08/30/13 12:48	1
Bis(2-chloroethyl)ether	390	U	390	54	ug/Kg	₽	08/26/13 21:27	08/30/13 12:48	1
2-Chlorophenol	390	U	390	48	ug/Kg	₽	08/26/13 21:27	08/30/13 12:48	1
2-Methylphenol	390	U	390	32	ug/Kg	₽	08/26/13 21:27	08/30/13 12:48	1
bis (2-chloroisopropyl) ether	390	U	390	36	ug/Kg	₩	08/26/13 21:27	08/30/13 12:48	1
Acetophenone	390	U	390	33	ug/Kg	₽	08/26/13 21:27	08/30/13 12:48	1
3 & 4 Methylphenol	390	U	390	51	ug/Kg	₽	08/26/13 21:27	08/30/13 12:48	1
N-Nitrosodi-n-propylamine	390	U	390	38	ug/Kg	₩	08/26/13 21:27	08/30/13 12:48	1
Hexachloroethane	390	U	390	33	ug/Kg		08/26/13 21:27	08/30/13 12:48	1
Nitrobenzene	390	U	390	31	ug/Kg	₩	08/26/13 21:27	08/30/13 12:48	1
Isophorone	390	U	390	39	ug/Kg	₩	08/26/13 21:27	08/30/13 12:48	1
2-Nitrophenol	390	U	390	49	ug/Kg	₩	08/26/13 21:27	08/30/13 12:48	1
2,4-Dimethylphenol	390	U	390	53	ug/Kg	₩	08/26/13 21:27	08/30/13 12:48	1
Bis(2-chloroethoxy)methane	390	U	390	47	ug/Kg	₽	08/26/13 21:27	08/30/13 12:48	1
2,4-Dichlorophenol	390	U	390	42	ug/Kg	₽	08/26/13 21:27	08/30/13 12:48	1
Naphthalene	390	U	390	36	ug/Kg	₽	08/26/13 21:27	08/30/13 12:48	1
4-Chloroaniline	790	U	790	62	ug/Kg	₽	08/26/13 21:27	08/30/13 12:48	1
Hexachlorobutadiene	390	U	390	43	ug/Kg	₽	08/26/13 21:27	08/30/13 12:48	1
Caprolactam	390	U	390	79	ug/Kg	₽	08/26/13 21:27	08/30/13 12:48	1
4-Chloro-3-methylphenol	390	U	390	42	ug/Kg	₽	08/26/13 21:27	08/30/13 12:48	1
2-Methylnaphthalene	390	U	390	45	ug/Kg		08/26/13 21:27	08/30/13 12:48	1
Hexachlorocyclopentadiene	390	U	390	49	ug/Kg	₩	08/26/13 21:27	08/30/13 12:48	1
2,4,6-Trichlorophenol	390	U	390	35	ug/Kg	₩	08/26/13 21:27	08/30/13 12:48	1
2,4,5-Trichlorophenol	390	U	390	42	ug/Kg		08/26/13 21:27	08/30/13 12:48	1
1,1'-Biphenyl	880	U	880	880	ug/Kg	₩	08/26/13 21:27	08/30/13 12:48	1
2-Chloronaphthalene	390	U	390	42	ug/Kg	₽	08/26/13 21:27	08/30/13 12:48	1
2-Nitroaniline	2000	U	2000	54	ug/Kg	₽	08/26/13 21:27	08/30/13 12:48	1
Dimethyl phthalate	390	U	390	41	ug/Kg	☼	08/26/13 21:27	08/30/13 12:48	1
2,6-Dinitrotoluene	390	U	390	50	ug/Kg	☼	08/26/13 21:27	08/30/13 12:48	1
Acenaphthylene	390	U	390	43	ug/Kg		08/26/13 21:27	08/30/13 12:48	1

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93498-1

Client Sample ID: SB02-08 (7.0-8.0)

Lab Sample ID: 680-93498-7

Date Collected: 08/21/13 09:20 Matrix: Solid
Date Received: 08/22/13 09:39 Percent Solids: 83.6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
3-Nitroaniline	2000	U	2000	55	ug/Kg	₩	08/26/13 21:27	08/30/13 12:48	
Acenaphthene	390	U	390	49	ug/Kg	₽	08/26/13 21:27	08/30/13 12:48	1
2,4-Dinitrophenol	2000	U	2000	990	ug/Kg	₽	08/26/13 21:27	08/30/13 12:48	1
4-Nitrophenol	2000	U	2000	390	ug/Kg	₽	08/26/13 21:27	08/30/13 12:48	1
Dibenzofuran	390	U	390	39	ug/Kg	₽	08/26/13 21:27	08/30/13 12:48	1
2,4-Dinitrotoluene	390	U	390	58	ug/Kg	₽	08/26/13 21:27	08/30/13 12:48	1
Diethyl phthalate	390	U	390	44	ug/Kg	₽	08/26/13 21:27	08/30/13 12:48	1
Fluorene	390	U	390	43	ug/Kg	₽	08/26/13 21:27	08/30/13 12:48	1
4-Chlorophenyl phenyl ether	390	U	390	53	ug/Kg	₽	08/26/13 21:27	08/30/13 12:48	1
4-Nitroaniline	2000	U	2000	58	ug/Kg	₩	08/26/13 21:27	08/30/13 12:48	1
4,6-Dinitro-2-methylphenol	2000	U	2000	200	ug/Kg	₩	08/26/13 21:27	08/30/13 12:48	1
N-Nitrosodiphenylamine	390	U *	390	39	ug/Kg		08/26/13 21:27	08/30/13 12:48	1
4-Bromophenyl phenyl ether	390	U	390	43	ug/Kg	₩	08/26/13 21:27	08/30/13 12:48	1
Hexachlorobenzene	390	U	390	47	ug/Kg	₩	08/26/13 21:27	08/30/13 12:48	1
Atrazine	390	U	390	27	ug/Kg		08/26/13 21:27	08/30/13 12:48	1
Pentachlorophenol	2000	U	2000	390	ug/Kg	₽	08/26/13 21:27	08/30/13 12:48	1
Phenanthrene	390	U	390	32	ug/Kg	₽	08/26/13 21:27	08/30/13 12:48	1
Anthracene	390	U	390	30	ug/Kg		08/26/13 21:27	08/30/13 12:48	1
Carbazole	390	U	390	36	ug/Kg	₽	08/26/13 21:27	08/30/13 12:48	1
Di-n-butyl phthalate	390	U	390	36	ug/Kg	₽	08/26/13 21:27	08/30/13 12:48	1
Fluoranthene	91	J	390	38	ug/Kg	ф.	08/26/13 21:27	08/30/13 12:48	1
Pyrene	390	U	390	32	ug/Kg	₽	08/26/13 21:27	08/30/13 12:48	1
Butyl benzyl phthalate	390	U	390	31	ug/Kg	₽	08/26/13 21:27	08/30/13 12:48	1
3,3'-Dichlorobenzidine	790	U	790	33	ug/Kg	φ.	08/26/13 21:27	08/30/13 12:48	1
Benzo[a]anthracene	390	U	390	32	ug/Kg	₽	08/26/13 21:27	08/30/13 12:48	1
Chrysene	390	U	390	25	ug/Kg	₽	08/26/13 21:27	08/30/13 12:48	1
Bis(2-ethylhexyl) phthalate	390	U	390		ug/Kg	ф	08/26/13 21:27	08/30/13 12:48	1
Di-n-octyl phthalate	390	U	390	35		₩	08/26/13 21:27	08/30/13 12:48	1
Benzo[b]fluoranthene	390	U	390	45	ug/Kg	₩	08/26/13 21:27	08/30/13 12:48	1
Benzo[k]fluoranthene	390	U	390		ug/Kg		08/26/13 21:27	08/30/13 12:48	1
Benzo[a]pyrene	390	U	390	62		₩	08/26/13 21:27	08/30/13 12:48	1
Indeno[1,2,3-cd]pyrene	390	U	390		ug/Kg	₩	08/26/13 21:27	08/30/13 12:48	1
Dibenz(a,h)anthracene	390	U	390		ug/Kg		08/26/13 21:27	08/30/13 12:48	1
Benzo[g,h,i]perylene	390		390		ug/Kg	\$	08/26/13 21:27	08/30/13 12:48	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	75		46 - 130				08/26/13 21:27	08/30/13 12:48	
2-Fluorobiphenyl	81		58 - 130				08/26/13 21:27	08/30/13 12:48	1
Terphenyl-d14 (Surr)	67		60 - 130				08/26/13 21:27	08/30/13 12:48	1
Phenol-d5 (Surr)	65		49 - 130				08/26/13 21:27	08/30/13 12:48	
2-Fluorophenol (Surr)	68		40 - 130				08/26/13 21:27	08/30/13 12:48	
2,4,6-Tribromophenol (Surr)	76		58 <sub>-</sub> 130				08/26/13 21:27	08/30/13 12:48	1

Method: 8015C - Nonhalogenate	d Organics usi	ng GC/FID	-Modified (Gaso	oline Ran	ge Organ	nics)			
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO) -C6-C10	200	J	220	17	ug/Kg	₩	08/22/13 14:33	08/23/13 17:26	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene	109		70 - 131				08/22/13 14:33	08/23/13 17:26	1

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93498-1

Lab Sample ID: 680-93498-7

Matrix: Solid

Percent Solids: 83.6

Client Sample ID: SB02-08 (7.0-8.0)

Date Collected: 08/21/13 09:20 Date Received: 08/22/13 09:39

Method: 8015C - Nonhalogenated Analyte	_	ng GC/FID Qualifier	-Modified (Dies	_		<b>5)</b> D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	4600	J	5900	1600	ug/Kg	₽	08/26/13 14:47	08/29/13 00:49	1
ORO C24-C40	3000	J	5900	1600	ug/Kg	₽	08/26/13 14:47	08/29/13 00:49	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
o-Terphenyl (Surr)	61		50 - 150				08/26/13 14:47	08/29/13 00:49	1

Client Sample ID: SB02-09 (0.5-1.5)

Date Collected: 08/21/13 10:00

Date Received: 08/22/13 09:39

Lab	Samp	le ID:	680-93498-8
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**Matrix: Solid** 

Percent Solids: 52.6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	49	U *	49	14	ug/Kg	₩	08/26/13 09:52	08/28/13 14:46	1
Benzene	9.8	U	9.8	0.96	ug/Kg	₽	08/26/13 09:52	08/28/13 14:46	1
Bromodichloromethane	9.8	U	9.8	1.6	ug/Kg	☼	08/26/13 09:52	08/28/13 14:46	1
Bromoform	9.8	U	9.8	1.2	ug/Kg	₽	08/26/13 09:52	08/28/13 14:46	1
Bromomethane	9.8	U	9.8	2.7	ug/Kg	☼	08/26/13 09:52	08/28/13 14:46	1
Carbon disulfide	9.8	U	9.8	2.3	ug/Kg	☼	08/26/13 09:52	08/28/13 14:46	1
Carbon tetrachloride	9.8	U	9.8	3.3	ug/Kg		08/26/13 09:52	08/28/13 14:46	1
Chlorobenzene	9.8	U	9.8	1.0	ug/Kg	₽	08/26/13 09:52	08/28/13 14:46	1
Chloroethane	9.8	U	9.8	3.7	ug/Kg	₩	08/26/13 09:52	08/28/13 14:46	1
Chloroform	9.8	U	9.8	1.2	ug/Kg		08/26/13 09:52	08/28/13 14:46	1
Chloromethane	9.8	U	9.8	2.0	ug/Kg	₽	08/26/13 09:52	08/28/13 14:46	1
cis-1,2-Dichloroethene	9.8	U	9.8	1.5	ug/Kg	₽	08/26/13 09:52	08/28/13 14:46	1
cis-1,3-Dichloropropene	9.8	U	9.8	2.3	ug/Kg		08/26/13 09:52	08/28/13 14:46	1
Cyclohexane	9.8	U	9.8	1.8	ug/Kg	₽	08/26/13 09:52	08/28/13 14:46	1
Dibromochloromethane	9.8	U	9.8	1.7	ug/Kg	₽	08/26/13 09:52	08/28/13 14:46	1
1,2-Dibromo-3-Chloropropane	9.8	U	9.8	6.4	ug/Kg		08/26/13 09:52	08/28/13 14:46	1
1,2-Dichlorobenzene	9.8	U	9.8	1.4	ug/Kg	₽	08/26/13 09:52	08/28/13 14:46	1
1,3-Dichlorobenzene	9.8	U	9.8	1.9	ug/Kg	₽	08/26/13 09:52	08/28/13 14:46	1
1,4-Dichlorobenzene	9.8	U	9.8	1.6	ug/Kg		08/26/13 09:52	08/28/13 14:46	1
Dichlorodifluoromethane	9.8	U	9.8	2.5	ug/Kg	₽	08/26/13 09:52	08/28/13 14:46	1
1,1-Dichloroethane	9.8	U	9.8	1.6	ug/Kg	₽	08/26/13 09:52	08/28/13 14:46	1
1,2-Dichloroethane	9.8	U	9.8	1.6	ug/Kg		08/26/13 09:52	08/28/13 14:46	1
1,1-Dichloroethene	9.8	U	9.8	1.5	ug/Kg	₽	08/26/13 09:52	08/28/13 14:46	1
1,2-Dichloropropane	9.8	U	9.8	1.4	ug/Kg	₽	08/26/13 09:52	08/28/13 14:46	1
Diisopropyl ether	9.8	U	9.8	1.1	ug/Kg	\$	08/26/13 09:52	08/28/13 14:46	1
Ethylbenzene	9.8	U	9.8	1.2	ug/Kg	₽	08/26/13 09:52	08/28/13 14:46	1
Ethylene Dibromide	9.8	U	9.8	0.94	ug/Kg	₽	08/26/13 09:52	08/28/13 14:46	1
Ethyl tert-butyl ether	9.8	U	9.8	1.1	ug/Kg		08/26/13 09:52	08/28/13 14:46	1
2-Hexanone	49	U	49	9.8	ug/Kg	₽	08/26/13 09:52	08/28/13 14:46	1
Isopropylbenzene	9.8	U	9.8	1.3	ug/Kg	₽	08/26/13 09:52	08/28/13 14:46	1
Methyl acetate	9.8	U	9.8	9.0	ug/Kg		08/26/13 09:52	08/28/13 14:46	1
Methylcyclohexane	9.8	U	9.8	1.7	ug/Kg	₽	08/26/13 09:52	08/28/13 14:46	1
Methylene Chloride	29	U	29	20	ug/Kg	₽	08/26/13 09:52	08/28/13 14:46	1
Methyl Ethyl Ketone	49	U	49	8.0	ug/Kg	ф	08/26/13 09:52	08/28/13 14:46	1
methyl isobutyl ketone	49	U	49	7.8	ug/Kg	₩	08/26/13 09:52	08/28/13 14:46	1
Methyl tert-butyl ether	9.8	U	9.8	2.0	ug/Kg	₩	08/26/13 09:52	08/28/13 14:46	1
Naphthalene	9.8		9.8	2.0	ug/Kg		08/26/13 09:52	08/28/13 14:46	1
Styrene	9.8	U	9.8	1.5	ug/Kg	₩	08/26/13 09:52	08/28/13 14:46	1

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93498-1

Client Sample ID: SB02-09 (0.5-1.5)

Lab Sample ID: 680-93498-8 Date Collected: 08/21/13 10:00 Matrix: Solid Date Received: 08/22/13 09:39

Percent Solids: 52.6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tert-amyl methyl ether	9.8	U	9.8	0.86	ug/Kg	₩	08/26/13 09:52	08/28/13 14:46	1
tert-Butyl alcohol	9.8	U	9.8	6.6	ug/Kg	\$	08/26/13 09:52	08/28/13 14:46	1
1,1,2,2-Tetrachloroethane	9.8	U	9.8	1.4	ug/Kg	₽	08/26/13 09:52	08/28/13 14:46	1
Tetrachloroethene	9.8	U	9.8	1.6	ug/Kg	₽	08/26/13 09:52	08/28/13 14:46	1
Toluene	9.8	U	9.8	1.4	ug/Kg	₽	08/26/13 09:52	08/28/13 14:46	1
trans-1,2-Dichloroethene	9.8	U	9.8	1.5	ug/Kg	₽	08/26/13 09:52	08/28/13 14:46	1
trans-1,3-Dichloropropene	9.8	U	9.8	1.8	ug/Kg	₽	08/26/13 09:52	08/28/13 14:46	1
1,2,4-Trichlorobenzene	9.8	U	9.8	1.4	ug/Kg	₽	08/26/13 09:52	08/28/13 14:46	1
1,1,1-Trichloroethane	9.8	U	9.8	2.1	ug/Kg	₽	08/26/13 09:52	08/28/13 14:46	1
1,1,2-Trichloroethane	9.8	U	9.8	1.8	ug/Kg	₽	08/26/13 09:52	08/28/13 14:46	1
Trichloroethene	9.8	U	9.8	0.94	ug/Kg	\$	08/26/13 09:52	08/28/13 14:46	1
Trichlorofluoromethane	9.8	U	9.8	1.9	ug/Kg	₽	08/26/13 09:52	08/28/13 14:46	1
1,1,2-Trichloro-1,2,2-trifluoroethane	9.8	U	9.8	3.9	ug/Kg	₽	08/26/13 09:52	08/28/13 14:46	1
Vinyl chloride	9.8	U	9.8	1.8	ug/Kg	\$	08/26/13 09:52	08/28/13 14:46	1
Xylenes, Total	20	U	20	3.7	ug/Kg	\$	08/26/13 09:52	08/28/13 14:46	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac

Surroga	te	%Recovery	Qualifier	Limits	Prepare	d Analyzed	Dil Fac
4-Bromo	fluorobenzene	99		72 - 122	08/26/13 0	9:52 08/28/13 14:46	1
Dibromo	fluoromethane	105		79 - 123	08/26/13 0	9:52 08/28/13 14:46	1
Toluene-	d8 (Surr)	96		80 - 120	08/26/13 0	9:52 08/28/13 14:46	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzaldehyde	620	U	620	110	ug/Kg	<del></del>	08/26/13 21:27	08/30/13 13:12	1
Phenol	620	U	620	64	ug/Kg	₩	08/26/13 21:27	08/30/13 13:12	1
Bis(2-chloroethyl)ether	620	U	620	85	ug/Kg	₽	08/26/13 21:27	08/30/13 13:12	1
2-Chlorophenol	620	U	620	75	ug/Kg	<b>\$</b>	08/26/13 21:27	08/30/13 13:12	1
2-Methylphenol	620	U	620	51	ug/Kg	₽	08/26/13 21:27	08/30/13 13:12	1
bis (2-chloroisopropyl) ether	620	U	620	57	ug/Kg	₽	08/26/13 21:27	08/30/13 13:12	1
Acetophenone	250	J	620	53	ug/Kg	₽	08/26/13 21:27	08/30/13 13:12	1
3 & 4 Methylphenol	620	U	620	81	ug/Kg	₽	08/26/13 21:27	08/30/13 13:12	1
N-Nitrosodi-n-propylamine	620	U	620	60	ug/Kg	₽	08/26/13 21:27	08/30/13 13:12	1
Hexachloroethane	620	U	620	53	ug/Kg	₽	08/26/13 21:27	08/30/13 13:12	1
Nitrobenzene	620	U	620	49	ug/Kg	₽	08/26/13 21:27	08/30/13 13:12	1
Isophorone	620	U	620	62	ug/Kg	₽	08/26/13 21:27	08/30/13 13:12	1
2-Nitrophenol	620	U	620	77	ug/Kg	\$	08/26/13 21:27	08/30/13 13:12	1
2,4-Dimethylphenol	620	U	620	83	ug/Kg	₽	08/26/13 21:27	08/30/13 13:12	1
Bis(2-chloroethoxy)methane	620	U	620	74	ug/Kg	₽	08/26/13 21:27	08/30/13 13:12	1
2,4-Dichlorophenol	620	U	620	66	ug/Kg	<b>\$</b>	08/26/13 21:27	08/30/13 13:12	1
Naphthalene	1400		620	57	ug/Kg	₽	08/26/13 21:27	08/30/13 13:12	1
4-Chloroaniline	1200	U	1200	98	ug/Kg	₽	08/26/13 21:27	08/30/13 13:12	1
Hexachlorobutadiene	620	U	620	68	ug/Kg	₽	08/26/13 21:27	08/30/13 13:12	1
Caprolactam	230	J	620	120	ug/Kg	₽	08/26/13 21:27	08/30/13 13:12	1
4-Chloro-3-methylphenol	620	U	620	66	ug/Kg	₽	08/26/13 21:27	08/30/13 13:12	1
2-Methylnaphthalene	1800		620	72	ug/Kg	₽	08/26/13 21:27	08/30/13 13:12	1
Hexachlorocyclopentadiene	620	U	620	77	ug/Kg	₽	08/26/13 21:27	08/30/13 13:12	1
2,4,6-Trichlorophenol	620	U	620	55	ug/Kg	₽	08/26/13 21:27	08/30/13 13:12	1
2,4,5-Trichlorophenol	620	U	620	66	ug/Kg	₽	08/26/13 21:27	08/30/13 13:12	1
1,1'-Biphenyl	1400	U	1400	1400	ug/Kg	₽	08/26/13 21:27	08/30/13 13:12	1
2-Chloronaphthalene	620	U	620	66	ug/Kg	₽	08/26/13 21:27	08/30/13 13:12	1

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Client: ARCADIS U.S., Inc.

Date Collected: 08/21/13 10:00

Date Received: 08/22/13 09:39

Butyl benzyl phthalate

3,3'-Dichlorobenzidine

Benzo[a]anthracene

Di-n-octyl phthalate

Bis(2-ethylhexyl) phthalate

Benzo[b]fluoranthene

Indeno[1,2,3-cd]pyrene

Dibenz(a,h)anthracene

Benzo[g,h,i]perylene

Benzo[k]fluoranthene

Benzo[a]pyrene

Chrysene

Project/Site: CSX C&O Canal Brunswick, MD Client Sample ID: SB02-09 (0.5-1.5)

08/26/13 21:27

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Lab Sample ID: 680-93498-8

TestAmerica Job ID: 680-93498-1

Matrix: Solid Percent Solids: 52.6

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued) Result Qualifier MDL D Prepared Dil Fac Analyte Unit Analyzed 2-Nitroaniline 3200 3200 ug/Kg 08/26/13 21:27 08/30/13 13:12 85 φ 620 U 620 Dimethyl phthalate 08/26/13 21:27 08/30/13 13:12 64 ug/Kg ä 2,6-Dinitrotoluene 620 U 620 ug/Kg 08/26/13 21:27 08/30/13 13:12 φ 620 08/26/13 21:27 08/30/13 13:12 70 68 ug/Kg Acenaphthylene 3-Nitroaniline 3200 U 3200 87 ug/Kg 08/26/13 21:27 08/30/13 13:12 ₽ 620 08/26/13 21:27 08/30/13 13:12 Acenaphthene 620 77 ug/Kg φ 2,4-Dinitrophenol 3200 U 3200 1600 ug/Kg 08/26/13 21:27 08/30/13 13:12 3200 U 3200 08/26/13 21:27 08/30/13 13:12 4-Nitrophenol 620 ug/Kg ₽ Dibenzofuran 550 620 62 ug/Kg 08/26/13 21:27 08/30/13 13:12 φ 2,4-Dinitrotoluene 620 Ü 620 92 ug/Kg 08/26/13 21:27 08/30/13 13:12 # Diethyl phthalate 620 U 620 70 ug/Kg 08/26/13 21:27 08/30/13 13:12 620 ₩ 08/26/13 21:27 Fluorene 620 U 68 ug/Kg 08/30/13 13:12 ġ 08/26/13 21:27 620 4-Chlorophenyl phenyl ether 620 U 83 ug/Kg 08/30/13 13:12 4-Nitroaniline 3200 3200 92 ug/Kg 08/26/13 21:27 08/30/13 13:12 3200 ġ 4,6-Dinitro-2-methylphenol 3200 U 320 ug/Kg 08/26/13 21:27 08/30/13 13:12 à N-Nitrosodiphenylamine 620 U 620 08/26/13 21:27 08/30/13 13:12 ug/Kg 620 08/26/13 21:27 4-Bromophenyl phenyl ether 620 U 68 ug/Kg 08/30/13 13:12 Hexachlorobenzene 620 620 08/26/13 21:27 08/30/13 13:12 ug/Kg 620 ψ 08/26/13 21:27 08/30/13 13:12 Atrazine 620 43 ug/Kg ₩ Pentachlorophenol 3200 U 3200 620 ug/Kg 08/26/13 21:27 08/30/13 13:12 ₽ 08/26/13 21:27 1100 620 51 ug/Kg 08/30/13 13:12 Phenanthrene ψ 620 08/26/13 21:27 **Anthracene** 130 47 ug/Kg 08/30/13 13:12 ug/Kg ₩ 620 08/26/13 21:27 08/30/13 13:12 Carbazole 98 57 # Di-n-butyl phthalate 620 620 57 ug/Kg 08/26/13 21:27 08/30/13 13:12 **Fluoranthene** 710 620 60 ug/Kg 08/26/13 21:27 08/30/13 13:12 620 08/26/13 21:27 08/30/13 13:12 360 51 ug/Kg

620

1200

620

620

620

620

620

620

620

620

620

620

49 ug/Kg

53 ug/Kg

40 ug/Kg

55 ug/Kg

55 ug/Kg

72 ug/Kg

120

98 ug/Kg

53 ug/Kg

41 ug/Kg

ug/Kg

ug/Kg

ug/Kg

620

1200 U

280 J

560

620 U

560

620 U

230

200

78

190

620 U

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	58		46 - 130	08/26/13 21:27	08/30/13 13:12	1
2-Fluorobiphenyl	63		58 - 130	08/26/13 21:27	08/30/13 13:12	1
Terphenyl-d14 (Surr)	53	Χ	60 - 130	08/26/13 21:27	08/30/13 13:12	1
Phenol-d5 (Surr)	43	X	49 - 130	08/26/13 21:27	08/30/13 13:12	1
2-Fluorophenol (Surr)	38	X	40 - 130	08/26/13 21:27	08/30/13 13:12	1
2,4,6-Tribromophenol (Surr)	51	X	58 - 130	08/26/13 21:27	08/30/13 13:12	1

Client: ARCADIS U.S., Inc.

Surrogate o-Terphenyl (Surr)

Project/Site: CSX C&O Canal Brunswick, MD

Lab Sample ID: 680-93498-8

Analyzed

Prepared

TestAmerica Job ID: 680-93498-1

Client Sample ID: SB02-09 (0.5-1.5)

%Recovery Qualifier

67

Date Collected: 08/21/13 10:00 Matrix: Solid Date Received: 08/22/13 09:39 Percent Solids: 52.6

Method: 8015C - Nonhalogenate	•	•	•			•			
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO) -C6-C10	5600		420	32	ug/Kg	<del></del>	08/22/13 14:33	08/23/13 17:46	1
-00-010									
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fa
a,a,a-Trifluorotoluene	185	X	70 - 131				08/22/13 14:33	08/23/13 17:46	1
Method: 8015C - Nonhalogenate Analyte	•	ng GC/FID Qualifier	-Modified (Dies	•	Organics Unit	) D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	4600	J	9500	2700	ug/Kg	₩	08/26/13 14:47	08/29/13 01:04	1
ORO C24-C40	9500	U	9500	2700	ua/Ka	☼	08/26/13 14:47	08/29/13 01:04	1

Client Sample ID: SB02-09 (4.5-5.5)

Lab Sample ID: 680-93498-9 Date Collected: 08/21/13 10:10 **Matrix: Solid** Date Received: 08/22/13 09:39 Percent Solids: 82.8

Limits

50 - 150

Method: 8260B - Volatile Organi Analyte		Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	8.1	J *	20	5.7	ug/Kg	<del>\</del>	08/26/13 09:52	08/28/13 15:09	1
Benzene	3.9	U	3.9	0.38	ug/Kg	₽	08/26/13 09:52	08/28/13 15:09	1
Bromodichloromethane	3.9	U	3.9	0.66	ug/Kg	₽	08/26/13 09:52	08/28/13 15:09	1
Bromoform	3.9	U	3.9	0.49	ug/Kg	₽	08/26/13 09:52	08/28/13 15:09	1
Bromomethane	3.9	U	3.9	1.1	ug/Kg	₽	08/26/13 09:52	08/28/13 15:09	1
Carbon disulfide	3.9	U	3.9	0.94	ug/Kg	₽	08/26/13 09:52	08/28/13 15:09	1
Carbon tetrachloride	3.9	U	3.9	1.3	ug/Kg	₽	08/26/13 09:52	08/28/13 15:09	1
Chlorobenzene	3.9	U	3.9	0.41	ug/Kg	₽	08/26/13 09:52	08/28/13 15:09	1
Chloroethane	3.9	U	3.9	1.5	ug/Kg	₽	08/26/13 09:52	08/28/13 15:09	1
Chloroform	3.9	U	3.9	0.46	ug/Kg	₽	08/26/13 09:52	08/28/13 15:09	1
Chloromethane	3.9	U	3.9	0.78	ug/Kg	₽	08/26/13 09:52	08/28/13 15:09	1
cis-1,2-Dichloroethene	3.9	U	3.9	0.59	ug/Kg	₽	08/26/13 09:52	08/28/13 15:09	1
cis-1,3-Dichloropropene	3.9	U	3.9	0.94	ug/Kg	<b>\$</b>	08/26/13 09:52	08/28/13 15:09	1
Cyclohexane	3.9	U	3.9	0.73	ug/Kg	₽	08/26/13 09:52	08/28/13 15:09	1
Dibromochloromethane	3.9	U	3.9	0.68	ug/Kg	₽	08/26/13 09:52	08/28/13 15:09	1
1,2-Dibromo-3-Chloropropane	3.9	U	3.9	2.6	ug/Kg	\$	08/26/13 09:52	08/28/13 15:09	1
1,2-Dichlorobenzene	3.9	U	3.9	0.55	ug/Kg	₽	08/26/13 09:52	08/28/13 15:09	1
1,3-Dichlorobenzene	3.9	U	3.9	0.74	ug/Kg	₽	08/26/13 09:52	08/28/13 15:09	1
1,4-Dichlorobenzene	3.9	U	3.9	0.64	ug/Kg	₽	08/26/13 09:52	08/28/13 15:09	1
Dichlorodifluoromethane	3.9	U	3.9	1.0	ug/Kg	₽	08/26/13 09:52	08/28/13 15:09	1
1,1-Dichloroethane	3.9	U	3.9	0.65	ug/Kg	₽	08/26/13 09:52	08/28/13 15:09	1
1,2-Dichloroethane	3.9	U	3.9	0.64	ug/Kg	₽	08/26/13 09:52	08/28/13 15:09	1
1,1-Dichloroethene	3.9	U	3.9	0.59	ug/Kg	₽	08/26/13 09:52	08/28/13 15:09	1
1,2-Dichloropropane	3.9	U	3.9	0.58	ug/Kg	₽	08/26/13 09:52	08/28/13 15:09	1
Diisopropyl ether	3.9	U	3.9	0.43	ug/Kg	₽	08/26/13 09:52	08/28/13 15:09	1
Ethylbenzene	3.9	U	3.9	0.48	ug/Kg	₽	08/26/13 09:52	08/28/13 15:09	1
Ethylene Dibromide	3.9	U	3.9	0.37	ug/Kg	₽	08/26/13 09:52	08/28/13 15:09	1
Ethyl tert-butyl ether	3.9	U	3.9	0.44	ug/Kg	₽	08/26/13 09:52	08/28/13 15:09	1
2-Hexanone	20	U	20	3.9	ug/Kg	₽	08/26/13 09:52	08/28/13 15:09	1
Isopropylbenzene	3.9	U	3.9	0.53	ug/Kg	₽	08/26/13 09:52	08/28/13 15:09	1
Methyl acetate	3.9	U	3.9	3.6	ug/Kg		08/26/13 09:52	08/28/13 15:09	1

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Dil Fac

9/13/2013

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD Client Sample ID: SB02-09 (4.5-5.5)

Lab Sample ID: 680-93498-9

TestAmerica Job ID: 680-93498-1

Percent Solids: 82.8

Matrix: Solid

Date Collected:	08/21/13 10:10	0
<b>Date Received:</b>	08/22/13 09:39	9

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued) Dil Fac Result Qualifier RL MDL Unit D Prepared Analyte Analyzed  $\overline{\alpha}$ Methylcyclohexane 3.9 Ū 3.9 0.68 ug/Kg 08/26/13 09:52 08/28/13 15:09 12 U Methylene Chloride 12 08/26/13 09:52 08/28/13 15:09 7.8 ug/Kg ₽ Methyl Ethyl Ketone 20 U 20 3.2 ug/Kg 08/26/13 09:52 08/28/13 15:09 methyl isobutyl ketone 20 U 20 08/26/13 09:52 08/28/13 15:09 3.1 ug/Kg ₩ Methyl tert-butyl ether 3.9 U 3.9 0.78 ug/Kg 08/26/13 09:52 08/28/13 15:09 3.9 U 3.9 08/26/13 09:52 08/28/13 15:09 Naphthalene 0.78 ug/Kg ₽ Styrene 3.9 U 3.9 0.59 ug/Kg 08/26/13 09:52 08/28/13 15:09 3.9 U 3.9 08/26/13 09:52 Tert-amyl methyl ether 0.34 ug/Kg 08/28/13 15:09 tert-Butyl alcohol 3.9 U 3.9 2.7 ug/Kg 08/26/13 09:52 08/28/13 15:09 1,1,2,2-Tetrachloroethane 3.9 U 3.9 0.56 ug/Kg 08/26/13 09:52 08/28/13 15:09 ₩ Tetrachloroethene 3.9 U 3.9 0.66 ug/Kg 08/26/13 09:52 08/28/13 15:09 3.9 ₽ 08/26/13 09:52 Toluene 3.9 U 0.55 ug/Kg 08/28/13 15:09 trans-1,2-Dichloroethene 39 U 3.9 0.59 ug/Kg 08/26/13 09:52 08/28/13 15:09 trans-1,3-Dichloropropene 3.9 U 3.9 0.72 ug/Kg 08/26/13 09:52 08/28/13 15:09 1,2,4-Trichlorobenzene 39 U 3.9 08/26/13 09:52 08/28/13 15:09 0.57 ug/Kg 1,1,1-Trichloroethane 3.9 U 3.9 0.86 ug/Kg 08/26/13 09:52 08/28/13 15:09 08/26/13 09:52 1,1,2-Trichloroethane 3.9 U 3.9 0.72 ug/Kg 08/28/13 15:09 Trichloroethene 3.9 U 3.9 0.37 ug/Kg 08/26/13 09:52 08/28/13 15:09 3.9 U 3.9 08/26/13 09:52 08/28/13 15:09 Trichlorofluoromethane 0.74 ug/Kg ₽ 1,1,2-Trichloro-1,2,2-trifluoroethane 3.9 U 3.9 1.6 ug/Kg 08/26/13 09:52 08/28/13 15:09 Vinyl chloride 3.9 U 3.9 0.72 ug/Kg 08/26/13 09:52 08/28/13 15:09 Xylenes, Total 7.8 U 08/26/13 09:52 7.8 1.5 ug/Kg 08/28/13 15:09

Surrogate	%Recovery	Qualifier Limit	's	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	97	72 - 1	22	08/26/13 09:52	08/28/13 15:09	1
Dibromofluoromethane	106	79 - 1	23	08/26/13 09:52	08/28/13 15:09	1
Toluene-d8 (Surr)	98	80 - 1	20	08/26/13 09:52	08/28/13 15:09	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzaldehyde	390	U	390	69	ug/Kg	₩	08/26/13 21:27	08/30/13 13:37	1
Phenol	390	U	390	40	ug/Kg	₽	08/26/13 21:27	08/30/13 13:37	1
Bis(2-chloroethyl)ether	390	U	390	54	ug/Kg	₽	08/26/13 21:27	08/30/13 13:37	1
2-Chlorophenol	390	U	390	48	ug/Kg	\$	08/26/13 21:27	08/30/13 13:37	1
2-Methylphenol	390	U	390	32	ug/Kg	₽	08/26/13 21:27	08/30/13 13:37	1
bis (2-chloroisopropyl) ether	390	U	390	36	ug/Kg	₽	08/26/13 21:27	08/30/13 13:37	1
Acetophenone	390	U	390	33	ug/Kg	\$	08/26/13 21:27	08/30/13 13:37	1
3 & 4 Methylphenol	390	U	390	51	ug/Kg	₽	08/26/13 21:27	08/30/13 13:37	1
N-Nitrosodi-n-propylamine	390	U	390	38	ug/Kg	₽	08/26/13 21:27	08/30/13 13:37	1
Hexachloroethane	390	U	390	33	ug/Kg	₽	08/26/13 21:27	08/30/13 13:37	1
Nitrobenzene	390	U	390	31	ug/Kg	₽	08/26/13 21:27	08/30/13 13:37	1
Isophorone	390	U	390	39	ug/Kg	₽	08/26/13 21:27	08/30/13 13:37	1
2-Nitrophenol	390	U	390	49	ug/Kg	₽	08/26/13 21:27	08/30/13 13:37	1
2,4-Dimethylphenol	390	U	390	52	ug/Kg	₽	08/26/13 21:27	08/30/13 13:37	1
Bis(2-chloroethoxy)methane	390	U	390	46	ug/Kg	₽	08/26/13 21:27	08/30/13 13:37	1
2,4-Dichlorophenol	390	U	390	42	ug/Kg	₽	08/26/13 21:27	08/30/13 13:37	1
Naphthalene	390	U	390	36	ug/Kg	₽	08/26/13 21:27	08/30/13 13:37	1
4-Chloroaniline	790	U	790	62	ug/Kg	₽	08/26/13 21:27	08/30/13 13:37	1
Hexachlorobutadiene	390	U	390	43	ug/Kg	\$	08/26/13 21:27	08/30/13 13:37	1
Caprolactam	390	U	390	79	ug/Kg	₽	08/26/13 21:27	08/30/13 13:37	1

TestAmerica Savannah

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB02-09 (4.5-5.5)

Date Collected: 08/21/13 10:10 Date Received: 08/22/13 09:39

2-Fluorobiphenyl

Terphenyl-d14 (Surr)

Lab Sample ID: 680-93498-9

Matrix: Solid	
Percent Solids: 82.8	

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
4-Chloro-3-methylphenol	390	U	390	42	ug/Kg	<del>\</del>	08/26/13 21:27	08/30/13 13:37	
2-Methylnaphthalene	390	U	390	45	ug/Kg	φ.	08/26/13 21:27	08/30/13 13:37	
Hexachlorocyclopentadiene	390	U	390	49	ug/Kg	₽	08/26/13 21:27	08/30/13 13:37	
2,4,6-Trichlorophenol	390	U	390	35	ug/Kg	₽	08/26/13 21:27	08/30/13 13:37	
2,4,5-Trichlorophenol	390	U	390	42	ug/Kg		08/26/13 21:27	08/30/13 13:37	
1,1'-Biphenyl	880	U	880	880	ug/Kg	₽	08/26/13 21:27	08/30/13 13:37	
2-Chloronaphthalene	390	U	390	42	ug/Kg	₽	08/26/13 21:27	08/30/13 13:37	
2-Nitroaniline	2000	U	2000	54	ug/Kg	\$	08/26/13 21:27	08/30/13 13:37	
Dimethyl phthalate	390	U	390	40	ug/Kg	₽	08/26/13 21:27	08/30/13 13:37	
2,6-Dinitrotoluene	390	U	390	50	ug/Kg	₽	08/26/13 21:27	08/30/13 13:37	
Acenaphthylene	390	U	390	43	ug/Kg	φ.	08/26/13 21:27	08/30/13 13:37	
3-Nitroaniline	2000	U	2000	55	ug/Kg	₽	08/26/13 21:27	08/30/13 13:37	
Acenaphthene	390	U	390	49	ug/Kg	₽	08/26/13 21:27	08/30/13 13:37	
2,4-Dinitrophenol	2000		2000	990			08/26/13 21:27	08/30/13 13:37	
4-Nitrophenol	2000	U	2000	390	ug/Kg	₽	08/26/13 21:27	08/30/13 13:37	
Dibenzofuran	390	U	390		ug/Kg	₽	08/26/13 21:27	08/30/13 13:37	
2,4-Dinitrotoluene	390		390		ug/Kg		08/26/13 21:27	08/30/13 13:37	
Diethyl phthalate	390	U	390		ug/Kg	₽	08/26/13 21:27	08/30/13 13:37	
Fluorene	390		390		ug/Kg	₽	08/26/13 21:27	08/30/13 13:37	
4-Chlorophenyl phenyl ether	390		390		ug/Kg		08/26/13 21:27	08/30/13 13:37	
4-Nitroaniline	2000	U	2000	58		₽	08/26/13 21:27	08/30/13 13:37	
4,6-Dinitro-2-methylphenol	2000		2000		ug/Kg	₽	08/26/13 21:27	08/30/13 13:37	
N-Nitrosodiphenylamine	390	U *	390	39			08/26/13 21:27	08/30/13 13:37	
4-Bromophenyl phenyl ether	390		390	43	0 0	₽	08/26/13 21:27	08/30/13 13:37	
Hexachlorobenzene	390		390	46	0 0	₽	08/26/13 21:27	08/30/13 13:37	
Atrazine	390		390	27			08/26/13 21:27	08/30/13 13:37	
Pentachlorophenol	2000	U	2000	390	ug/Kg	₽	08/26/13 21:27	08/30/13 13:37	
Phenanthrene	390	U	390		ug/Kg	₽	08/26/13 21:27	08/30/13 13:37	
Anthracene	390		390		ug/Kg		08/26/13 21:27	08/30/13 13:37	
Carbazole	390	U	390	36		₽	08/26/13 21:27	08/30/13 13:37	
Di-n-butyl phthalate	390		390	36		₽	08/26/13 21:27	08/30/13 13:37	
Fluoranthene	390		390		ug/Kg		08/26/13 21:27	08/30/13 13:37	
Pyrene	390		390		ug/Kg	₽	08/26/13 21:27	08/30/13 13:37	
Butyl benzyl phthalate	390		390		ug/Kg	₽	08/26/13 21:27	08/30/13 13:37	
3,3'-Dichlorobenzidine	790		790		ug/Kg		08/26/13 21:27	08/30/13 13:37	
Benzo[a]anthracene	390		390		ug/Kg ug/Kg	₩	08/26/13 21:27	08/30/13 13:37	
Chrysene	390		390		ug/Kg ug/Kg	₽	08/26/13 21:27	08/30/13 13:37	
Bis(2-ethylhexyl) phthalate	390		390		ug/Kg		08/26/13 21:27	08/30/13 13:37	
Di-n-octyl phthalate	390		390		ug/Kg ug/Kg	₽	08/26/13 21:27	08/30/13 13:37	
Benzo[b]fluoranthene	390		390		ug/Kg ug/Kg	₩	08/26/13 21:27	08/30/13 13:37	
Benzo[k]fluoranthene	390		390		ug/Kg ug/Kg		08/26/13 21:27	08/30/13 13:37	
Benzo[a]pyrene	390		390		ug/Kg ug/Kg	₽	08/26/13 21:27	08/30/13 13:37	
Indeno[1,2,3-cd]pyrene	390		390		ug/Kg ug/Kg	₩	08/26/13 21:27	08/30/13 13:37	
Dibenz(a,h)anthracene	390		390		ug/Kg ug/Kg		08/26/13 21:27	08/30/13 13:37	
						₩			
Benzo[g,h,i]perylene	390	J	390	20	ug/Kg	**	08/26/13 21:27	08/30/13 13:37	
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fa
Nitrobenzene-d5 (Surr)	75	-	46 - 130				08/26/13 21:27	08/30/13 13:37	
• /			50 400				00/00/40 04:07	00/20/40 40:07	

TestAmerica Savannah

58 - 130

60 - 130

85

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93498-1

Lab Sample ID: 680-93498-9

Matrix: Solid Percent Solids: 82.8

Client Sample ID: SB02-09 (4.5-5.5)

Date Collected: 08/21/13 10:10 Date Received: 08/22/13 09:39

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Phenol-d5 (Surr)	69		49 - 130	08/26/13 21:27	08/30/13 13:37	1
2-Fluorophenol (Surr)	70		40 - 130	08/26/13 21:27	08/30/13 13:37	1
2,4,6-Tribromophenol (Surr)	90		58 <sub>-</sub> 130	08/26/13 21:27	08/30/13 13:37	1

Method: 8015C - Nonhalogenate Analyte	_	ng GC/FID Qualifier	-Modified (Gaso	line Ran	-	ics)	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)	210		210		ug/Kg	— <del>¤</del>	08/22/13 14:33	08/23/13 18:06	1
-C6-C10 Surrogate	%Recovery	Qualifier	Limits				Prepared	Analvzed	Dil Fac
a,a,a-Trifluorotoluene	106		70 - 131				08/22/13 14:33	08/23/13 18:06	

Method: 8015C - Nonhalogenated	d Organics usi	ng GC/FID	-Modified (Dies	el Range	ange Organics)				
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	5200	J	6000	1700	ug/Kg	\$	08/26/13 14:47	08/29/13 01:20	1
ORO C24-C40	4800	J	6000	1700	ug/Kg	₽	08/26/13 14:47	08/29/13 01:20	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
o-Terphenyl (Surr)	69		50 - 150				08/26/13 14:47	08/29/13 01:20	1

Client Sample ID: SB02-10 (0.5-1.5)

Lab Sample ID: 680-93498-10

Date Collected: 08/21/13 10:20 Matrix: Solid
Date Received: 08/22/13 09:39 Percent Solids: 57.0

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	34	U	34	9.9	ug/Kg	₩	08/26/13 09:52	08/29/13 08:56	1
Benzene	6.8	U	6.8	0.66	ug/Kg	₩	08/26/13 09:52	08/29/13 08:56	1
Bromodichloromethane	6.8	U	6.8	1.1	ug/Kg	₩	08/26/13 09:52	08/29/13 08:56	1
Bromoform	6.8	U	6.8	0.85	ug/Kg	₩	08/26/13 09:52	08/29/13 08:56	1
Bromomethane	6.8	U	6.8	1.9	ug/Kg	₩	08/26/13 09:52	08/29/13 08:56	1
Carbon disulfide	6.8	U	6.8	1.6	ug/Kg	₩	08/26/13 09:52	08/29/13 08:56	1
Carbon tetrachloride	6.8	U	6.8	2.3	ug/Kg	*	08/26/13 09:52	08/29/13 08:56	1
Chlorobenzene	6.8	U	6.8	0.70	ug/Kg	₽	08/26/13 09:52	08/29/13 08:56	1
Chloroethane	6.8	U	6.8	2.6	ug/Kg	₽	08/26/13 09:52	08/29/13 08:56	1
Chloroform	6.8	U	6.8	0.80	ug/Kg	\$	08/26/13 09:52	08/29/13 08:56	1
Chloromethane	6.8	U	6.8	1.4	ug/Kg	₽	08/26/13 09:52	08/29/13 08:56	1
cis-1,2-Dichloroethene	6.8	U	6.8	1.0	ug/Kg	₽	08/26/13 09:52	08/29/13 08:56	1
cis-1,3-Dichloropropene	6.8	U	6.8	1.6	ug/Kg	φ.	08/26/13 09:52	08/29/13 08:56	1
Cyclohexane	6.8	U	6.8	1.3	ug/Kg	₽	08/26/13 09:52	08/29/13 08:56	1
Dibromochloromethane	6.8	U	6.8	1.2	ug/Kg	₽	08/26/13 09:52	08/29/13 08:56	1
1,2-Dibromo-3-Chloropropane	6.8	U	6.8	4.5	ug/Kg	₽	08/26/13 09:52	08/29/13 08:56	1
1,2-Dichlorobenzene	6.8	U	6.8	0.96	ug/Kg	₽	08/26/13 09:52	08/29/13 08:56	1
1,3-Dichlorobenzene	6.8	U	6.8	1.3	ug/Kg	₽	08/26/13 09:52	08/29/13 08:56	1
1,4-Dichlorobenzene	6.8	U	6.8	1.1	ug/Kg		08/26/13 09:52	08/29/13 08:56	1
Dichlorodifluoromethane	6.8	U	6.8	1.8	ug/Kg	₩	08/26/13 09:52	08/29/13 08:56	1
1,1-Dichloroethane	6.8	U	6.8	1.1	ug/Kg	₩	08/26/13 09:52	08/29/13 08:56	1
1,2-Dichloroethane	6.8	U	6.8	1.1	ug/Kg		08/26/13 09:52	08/29/13 08:56	1
1,1-Dichloroethene	6.8	U	6.8	1.0	ug/Kg	☼	08/26/13 09:52	08/29/13 08:56	1
1,2-Dichloropropane	6.8	U	6.8	1.0	ug/Kg	₩	08/26/13 09:52	08/29/13 08:56	1

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93498-1

Lab Sample ID: 680-93498-10 Matrix: Solid

Percent Solids: 57.0

Client Sample ID: SB02-10 (0.5-1.5)

Date Collected: 08/21/13 10:20 Date Received: 08/22/13 09:39

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diisopropyl ether	6.8	U	6.8	0.74	ug/Kg	<u> </u>	08/26/13 09:52	08/29/13 08:56	1
Ethylbenzene	6.8	U	6.8	0.83	ug/Kg	₽	08/26/13 09:52	08/29/13 08:56	1
Ethylene Dibromide	6.8	U	6.8	0.65	ug/Kg	≎	08/26/13 09:52	08/29/13 08:56	1
Ethyl tert-butyl ether	6.8	U	6.8	0.76	ug/Kg	₽	08/26/13 09:52	08/29/13 08:56	1
2-Hexanone	34	U	34	6.8	ug/Kg	₽	08/26/13 09:52	08/29/13 08:56	1
Isopropylbenzene	6.8	U	6.8	0.92	ug/Kg	≎	08/26/13 09:52	08/29/13 08:56	1
Methyl acetate	6.8	U	6.8	6.2	ug/Kg	₽	08/26/13 09:52	08/29/13 08:56	1
Methylcyclohexane	6.8	U	6.8	1.2	ug/Kg	₽	08/26/13 09:52	08/29/13 08:56	1
Methylene Chloride	20	U	20	14	ug/Kg	≎	08/26/13 09:52	08/29/13 08:56	1
Methyl Ethyl Ketone	34	U	34	5.5	ug/Kg	₽	08/26/13 09:52	08/29/13 08:56	1
methyl isobutyl ketone	34	U	34	5.4	ug/Kg	₽	08/26/13 09:52	08/29/13 08:56	1
Methyl tert-butyl ether	6.8	U	6.8	1.4	ug/Kg	₽	08/26/13 09:52	08/29/13 08:56	1
Naphthalene	6.8	U	6.8	1.4	ug/Kg	₽	08/26/13 09:52	08/29/13 08:56	1
Styrene	6.8	U	6.8	1.0	ug/Kg	₽	08/26/13 09:52	08/29/13 08:56	1
Tert-amyl methyl ether	6.8	U	6.8	0.60	ug/Kg	₽	08/26/13 09:52	08/29/13 08:56	1
tert-Butyl alcohol	6.8	U	6.8	4.6	ug/Kg	₽	08/26/13 09:52	08/29/13 08:56	1
1,1,2,2-Tetrachloroethane	6.8	U	6.8	0.97	ug/Kg	₽	08/26/13 09:52	08/29/13 08:56	1
Tetrachloroethene	6.8	U	6.8	1.1	ug/Kg	₽	08/26/13 09:52	08/29/13 08:56	1
Toluene	6.8	U	6.8	0.95	ug/Kg	₽	08/26/13 09:52	08/29/13 08:56	1
trans-1,2-Dichloroethene	6.8	U	6.8	1.0	ug/Kg	₩	08/26/13 09:52	08/29/13 08:56	1
trans-1,3-Dichloropropene	6.8	U	6.8	1.2	ug/Kg	₽	08/26/13 09:52	08/29/13 08:56	1
1,2,4-Trichlorobenzene	6.8	U	6.8	0.99	ug/Kg	\$	08/26/13 09:52	08/29/13 08:56	1
1,1,1-Trichloroethane	6.8	U	6.8	1.5	ug/Kg	₩	08/26/13 09:52	08/29/13 08:56	1
1,1,2-Trichloroethane	6.8	U	6.8	1.2	ug/Kg	₽	08/26/13 09:52	08/29/13 08:56	1
Trichloroethene	6.8	U	6.8	0.65	ug/Kg		08/26/13 09:52	08/29/13 08:56	1
Trichlorofluoromethane	6.8	U	6.8	1.3	ug/Kg	₩	08/26/13 09:52	08/29/13 08:56	1
1,1,2-Trichloro-1,2,2-trifluoroethane	6.8	U	6.8	2.7	ug/Kg	₩	08/26/13 09:52	08/29/13 08:56	1
Vinyl chloride	6.8	U	6.8	1.2	ug/Kg		08/26/13 09:52	08/29/13 08:56	1
Xylenes, Total	14	U	14	2.6	ug/Kg	₽	08/26/13 09:52	08/29/13 08:56	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	101		72 - 122				08/26/13 09:52	08/29/13 08:56	1
Dibromofluoromethane	105		79 - 123				08/26/13 09:52	08/29/13 08:56	1
Toluene-d8 (Surr)	98		80 - 120				08/26/13 09:52	08/29/13 08:56	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzaldehyde	580	U	580	100	ug/Kg	<del>*</del>	08/26/13 21:27	08/30/13 14:01	1
Phenol	580	U	580	60	ug/Kg	₩	08/26/13 21:27	08/30/13 14:01	1
Bis(2-chloroethyl)ether	580	U	580	79	ug/Kg	₽	08/26/13 21:27	08/30/13 14:01	1
2-Chlorophenol	580	U	580	70	ug/Kg	*	08/26/13 21:27	08/30/13 14:01	1
2-Methylphenol	580	U	580	47	ug/Kg	₽	08/26/13 21:27	08/30/13 14:01	1
bis (2-chloroisopropyl) ether	580	U	580	53	ug/Kg	₽	08/26/13 21:27	08/30/13 14:01	1
Acetophenone	580	U	580	49	ug/Kg	*	08/26/13 21:27	08/30/13 14:01	1
3 & 4 Methylphenol	580	U	580	75	ug/Kg	₽	08/26/13 21:27	08/30/13 14:01	1
N-Nitrosodi-n-propylamine	580	U	580	56	ug/Kg	₽	08/26/13 21:27	08/30/13 14:01	1
Hexachloroethane	580	U	580	49	ug/Kg	₽	08/26/13 21:27	08/30/13 14:01	1
Nitrobenzene	580	U	580	46	ug/Kg	₽	08/26/13 21:27	08/30/13 14:01	1
Isophorone	580	U	580	58	ug/Kg	₽	08/26/13 21:27	08/30/13 14:01	1
2-Nitrophenol	580	U	580	72	ug/Kg		08/26/13 21:27	08/30/13 14:01	1

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93498-1

Client Sample ID: SB02-10 (0.5-1.5)

Lab Sample ID: 680-93498-10

Date Collected: 08/21/13 10:20

Matrix: Solid

Date Received: 08/22/13 09:39

Percent Solids: 57.0

Method: 8270D - Semivolatile C <sup>Analyte</sup>	•	Qualifier	RL	MDL	Unit	D	Prepared	Analyzod	Dil Fa
<u> </u>						— <del>¤</del>	08/26/13 21:27	Analyzed 08/30/13 14:01	DII Fa
2,4-Dimethylphenol	580		580	77 68	ug/Kg ug/Kg	₩	08/26/13 21:27	08/30/13 14:01	
Bis(2-chloroethoxy)methane							08/26/13 21:27		
2,4-Dichlorophenol	580		580		ug/Kg	₩		08/30/13 14:01	
Naphthalene	4200	J	580	53	ug/Kg	₩	08/26/13 21:27	08/30/13 14:01	
4-Chloroaniline	1200		1200	91	ug/Kg		08/26/13 21:27	08/30/13 14:01	
Hexachlorobutadiene	580		580	63	ug/Kg		08/26/13 21:27	08/30/13 14:01	
Caprolactam	580		580	120	ug/Kg		08/26/13 21:27	08/30/13 14:01	
4-Chloro-3-methylphenol	580		580	61	ug/Kg	J	08/26/13 21:27	08/30/13 14:01	
2-Methylnaphthalene	78	J	580	67	ug/Kg		08/26/13 21:27	08/30/13 14:01	
Hexachlorocyclopentadiene	580		580	72	ug/Kg	<b>*</b>	08/26/13 21:27	08/30/13 14:01	
2,4,6-Trichlorophenol	580		580	51	ug/Kg		08/26/13 21:27	08/30/13 14:01	
2,4,5-Trichlorophenol	580	U	580	61	ug/Kg	₽	08/26/13 21:27	08/30/13 14:01	
1,1'-Biphenyl	1300	U	1300	1300	ug/Kg	₽	08/26/13 21:27	08/30/13 14:01	
2-Chloronaphthalene	580		580	61	ug/Kg	<b>.</b>	08/26/13 21:27	08/30/13 14:01	
2-Nitroaniline	3000	U	3000	79	ug/Kg	₩	08/26/13 21:27	08/30/13 14:01	
Dimethyl phthalate	580	U	580	60	ug/Kg	₩	08/26/13 21:27	08/30/13 14:01	
2,6-Dinitrotoluene	580	U	580	74	ug/Kg	₽	08/26/13 21:27	08/30/13 14:01	
Acenaphthylene	580	U	580	63	ug/Kg	₽	08/26/13 21:27	08/30/13 14:01	
3-Nitroaniline	3000	U	3000	81	ug/Kg	₩	08/26/13 21:27	08/30/13 14:01	
Acenaphthene	580	U	580	72	ug/Kg	₽	08/26/13 21:27	08/30/13 14:01	
2,4-Dinitrophenol	3000	U	3000	1500	ug/Kg	₽	08/26/13 21:27	08/30/13 14:01	
4-Nitrophenol	3000	U	3000	580	ug/Kg	₽	08/26/13 21:27	08/30/13 14:01	
Dibenzofuran	580	U	580	58	ug/Kg	₩	08/26/13 21:27	08/30/13 14:01	
2,4-Dinitrotoluene	580	U	580	86	ug/Kg		08/26/13 21:27	08/30/13 14:01	
Diethyl phthalate	580	U	580	65	ug/Kg	₽	08/26/13 21:27	08/30/13 14:01	
Fluorene	580	U	580	63	ug/Kg	₽	08/26/13 21:27	08/30/13 14:01	
4-Chlorophenyl phenyl ether	580	U	580	77	ug/Kg		08/26/13 21:27	08/30/13 14:01	
4-Nitroaniline	3000	U	3000	86	ug/Kg	₽	08/26/13 21:27	08/30/13 14:01	
4,6-Dinitro-2-methylphenol	3000	U	3000	300	ug/Kg	₩	08/26/13 21:27	08/30/13 14:01	
N-Nitrosodiphenylamine	580		580	58	ug/Kg		08/26/13 21:27	08/30/13 14:01	
4-Bromophenyl phenyl ether	580	U	580	63	ug/Kg	₽	08/26/13 21:27	08/30/13 14:01	
Hexachlorobenzene	580		580	68	ug/Kg	₽	08/26/13 21:27	08/30/13 14:01	
Atrazine	580		580	40	ug/Kg		08/26/13 21:27	08/30/13 14:01	
Pentachlorophenol	3000		3000	580	ug/Kg	.⇔	08/26/13 21:27	08/30/13 14:01	
Phenanthrene	580		580	47			08/26/13 21:27	08/30/13 14:01	
Anthracene	580		580	44	ug/Kg	· · · · · · · · · · · · · · · · · · ·	08/26/13 21:27	08/30/13 14:01	
Carbazole	580		580		ug/Kg ug/Kg	₩	08/26/13 21:27	08/30/13 14:01	
	580					т Ф			
Di-n-butyl phthalate			580		ug/Kg		08/26/13 21:27 08/26/13 21:27	08/30/13 14:01	
Fluoranthene	140		580		ug/Kg			08/30/13 14:01	
Pyrene	580		580		ug/Kg	<b>‡</b>	08/26/13 21:27	08/30/13 14:01	
Butyl benzyl phthalate	580		580		ug/Kg	<del>X</del> .	08/26/13 21:27	08/30/13 14:01	
3,3'-Dichlorobenzidine	1200		1200		ug/Kg	<b>#</b>	08/26/13 21:27	08/30/13 14:01	
Benzo[a]anthracene	580		580		ug/Kg	<b>\$</b>	08/26/13 21:27	08/30/13 14:01	
Chrysene	580		580		ug/Kg	<u>.</u> .	08/26/13 21:27	08/30/13 14:01	
Bis(2-ethylhexyl) phthalate	580		580		ug/Kg	<b>*</b>	08/26/13 21:27	08/30/13 14:01	
Di-n-octyl phthalate	580		580	51	ug/Kg	<b>*</b>	08/26/13 21:27	08/30/13 14:01	
Benzo[b]fluoranthene	580	U	580	67	ug/Kg		08/26/13 21:27	08/30/13 14:01	
Benzo[k]fluoranthene	580	U	580	110	ug/Kg	₽	08/26/13 21:27	08/30/13 14:01	
Benzo[a]pyrene	580	U	580	91	ug/Kg	₽	08/26/13 21:27	08/30/13 14:01	

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Client: ARCADIS U.S., Inc.

Date Collected: 08/21/13 10:20

Date Received: 08/22/13 09:39

a,a,a-Trifluorotoluene

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB02-10 (0.5-1.5)

TestAmerica Job ID: 680-93498-1

Lab Sample ID: 680-93498-10

Matrix: Solid

Percent Solids: 57.0

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Indeno[1,2,3-cd]pyrene	580	U	580	49	ug/Kg	₩	08/26/13 21:27	08/30/13 14:01	1
Dibenz(a,h)anthracene	580	U	580	68	ug/Kg	₽	08/26/13 21:27	08/30/13 14:01	1
Benzo[g,h,i]perylene	580	U	580	39	ug/Kg	₽	08/26/13 21:27	08/30/13 14:01	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	68		46 - 130				08/26/13 21:27	08/30/13 14:01	1
2-Fluorobiphenyl	76		58 <sub>-</sub> 130				08/26/13 21:27	08/30/13 14:01	1
Terphenyl-d14 (Surr)	55	X	60 - 130				08/26/13 21:27	08/30/13 14:01	1
Phenol-d5 (Surr)	59		49 - 130				08/26/13 21:27	08/30/13 14:01	1
2-Fluorophenol (Surr)	61		40 - 130				08/26/13 21:27	08/30/13 14:01	1
2,4,6-Tribromophenol (Surr)	71		58 <sub>-</sub> 130				08/26/13 21:27	08/30/13 14:01	1

Method: 8015C - Nonhalogenate	d Organics usi	ng GC/FID	-Modified (Gaso	oline Ran	ge Organ	ics)			
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO) -C6-C10	660		380	29	ug/Kg	<del></del>	08/22/13 14:33	08/23/13 18:25	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	5400	J	8700	2400	ug/Kg	<u> </u>	08/26/13 14:47	08/29/13 01:36	1
ORO C24-C40	8700	U	8700	2400	ug/Kg	₽	08/26/13 14:47	08/29/13 01:36	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
o-Terphenyl (Surr)	62		50 - 150				08/26/13 14:47	08/29/13 01:36	

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Client Sample ID: SB02-10 (5.0-6.0) Lab Sample ID: 680-93498-11

Date Collected: 08/21/13 10:30 Date Received: 08/22/13 09:39 Percent Solids: 81.5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	24	U –	24	7.0	ug/Kg	<del></del>	08/26/13 09:52	08/29/13 09:21	1
Benzene	4.8	U	4.8	0.47	ug/Kg	₽	08/26/13 09:52	08/29/13 09:21	1
Bromodichloromethane	4.8	U	4.8	0.80	ug/Kg	₽	08/26/13 09:52	08/29/13 09:21	1
Bromoform	4.8	U	4.8	0.60	ug/Kg	₽	08/26/13 09:52	08/29/13 09:21	1
Bromomethane	4.8	U	4.8	1.3	ug/Kg	₽	08/26/13 09:52	08/29/13 09:21	1
Carbon disulfide	4.8	U	4.8	1.1	ug/Kg	₽	08/26/13 09:52	08/29/13 09:21	1
Carbon tetrachloride	4.8	U	4.8	1.6	ug/Kg	₽	08/26/13 09:52	08/29/13 09:21	1
Chlorobenzene	4.8	U	4.8	0.50	ug/Kg	₽	08/26/13 09:52	08/29/13 09:21	1
Chloroethane	4.8	U	4.8	1.8	ug/Kg	₽	08/26/13 09:52	08/29/13 09:21	1
Chloroform	4.8	U	4.8	0.57	ug/Kg	₽	08/26/13 09:52	08/29/13 09:21	1
Chloromethane	4.8	U	4.8	0.96	ug/Kg	₽	08/26/13 09:52	08/29/13 09:21	1
cis-1,2-Dichloroethene	4.8	U	4.8	0.73	ug/Kg	₽	08/26/13 09:52	08/29/13 09:21	1
cis-1,3-Dichloropropene	4.8	U	4.8	1.1	ug/Kg	₽	08/26/13 09:52	08/29/13 09:21	1
Cyclohexane	4.8	U	4.8	0.90	ug/Kg	₽	08/26/13 09:52	08/29/13 09:21	1
Dibromochloromethane	4.8	U	4.8	0.83	ug/Kg	₽	08/26/13 09:52	08/29/13 09:21	1
1,2-Dibromo-3-Chloropropane	4.8	U	4.8	3.2	ug/Kg	₽	08/26/13 09:52	08/29/13 09:21	1
1,2-Dichlorobenzene	4.8	U	4.8	0.68	ug/Kg	₽	08/26/13 09:52	08/29/13 09:21	1

TestAmerica Savannah

**Matrix: Solid** 

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB02-10 (5.0-6.0)

Date Collected: 08/21/13 10:30 Date Received: 08/22/13 09:39 Lab Sample ID: 680-93498-11

Matrix: Solid Percent Solids: 81.5

Dil Fac	Analyzed
1	08/29/13 09:21
1	08/29/13 09:21
1	08/29/13 09:21
1	08/29/13 09:21
1	08/29/13 09:21
1	08/29/13 09:21
1	08/29/13 09:21
1	08/29/13 09:21
1	08/29/13 09:21
1	08/29/13 09:21

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,3-Dichlorobenzene	4.8	U	4.8	0.91	ug/Kg	₩	08/26/13 09:52	08/29/13 09:21	1
1,4-Dichlorobenzene	4.8	U	4.8	0.79	ug/Kg	\$	08/26/13 09:52	08/29/13 09:21	1
Dichlorodifluoromethane	4.8	U	4.8	1.2	ug/Kg	₽	08/26/13 09:52	08/29/13 09:21	1
1,1-Dichloroethane	4.8	U	4.8	0.80	ug/Kg	≎	08/26/13 09:52	08/29/13 09:21	1
1,2-Dichloroethane	4.8	U	4.8	0.79	ug/Kg	₽	08/26/13 09:52	08/29/13 09:21	1
1,1-Dichloroethene	4.8	U	4.8	0.72	ug/Kg	≎	08/26/13 09:52	08/29/13 09:21	1
1,2-Dichloropropane	4.8	U	4.8	0.71	ug/Kg	₩	08/26/13 09:52	08/29/13 09:21	1
Diisopropyl ether	4.8	U	4.8	0.53	ug/Kg	₽	08/26/13 09:52	08/29/13 09:21	1
Ethylbenzene	4.8	U	4.8	0.58	ug/Kg	₩	08/26/13 09:52	08/29/13 09:21	1
Ethylene Dibromide	4.8	U	4.8	0.46	ug/Kg	₽	08/26/13 09:52	08/29/13 09:21	1
Ethyl tert-butyl ether	4.8	U	4.8	0.54	ug/Kg	₽	08/26/13 09:52	08/29/13 09:21	1
2-Hexanone	24	U	24	4.8	ug/Kg	₩	08/26/13 09:52	08/29/13 09:21	1
Isopropylbenzene	4.8	U	4.8	0.65	ug/Kg	≎	08/26/13 09:52	08/29/13 09:21	1
Methyl acetate	4.8	U	4.8	4.4	ug/Kg	\$	08/26/13 09:52	08/29/13 09:21	1
Methylcyclohexane	4.8	U	4.8	0.83	ug/Kg	₽	08/26/13 09:52	08/29/13 09:21	1
Methylene Chloride	14	U	14	9.6	ug/Kg	₽	08/26/13 09:52	08/29/13 09:21	1
Methyl Ethyl Ketone	24	U	24	3.9	ug/Kg	\$	08/26/13 09:52	08/29/13 09:21	1
methyl isobutyl ketone	24	U	24	3.8	ug/Kg	₽	08/26/13 09:52	08/29/13 09:21	1
Methyl tert-butyl ether	4.8	U	4.8	0.96	ug/Kg	₽	08/26/13 09:52	08/29/13 09:21	1
Naphthalene	4.8	U	4.8	0.96	ug/Kg	₽	08/26/13 09:52	08/29/13 09:21	1
Styrene	4.8	U	4.8	0.73	ug/Kg	₽	08/26/13 09:52	08/29/13 09:21	1
Tert-amyl methyl ether	4.8	U	4.8	0.42	ug/Kg	≎	08/26/13 09:52	08/29/13 09:21	1
tert-Butyl alcohol	4.8	U	4.8	3.3	ug/Kg	₽	08/26/13 09:52	08/29/13 09:21	1
1,1,2,2-Tetrachloroethane	4.8	U	4.8	0.69	ug/Kg	₩	08/26/13 09:52	08/29/13 09:21	1
Tetrachloroethene	4.8	U	4.8	0.80	ug/Kg	≎	08/26/13 09:52	08/29/13 09:21	1
Toluene	4.8	U	4.8	0.67	ug/Kg	₽	08/26/13 09:52	08/29/13 09:21	1
trans-1,2-Dichloroethene	4.8	U	4.8	0.73	ug/Kg	₩	08/26/13 09:52	08/29/13 09:21	1
trans-1,3-Dichloropropene	4.8	U	4.8	0.88	ug/Kg	₽	08/26/13 09:52	08/29/13 09:21	1
1,2,4-Trichlorobenzene	4.8	U	4.8	0.70	ug/Kg	*	08/26/13 09:52	08/29/13 09:21	1
1,1,1-Trichloroethane	4.8	U	4.8	1.1	ug/Kg	₽	08/26/13 09:52	08/29/13 09:21	1
1,1,2-Trichloroethane	4.8	U	4.8	0.88	ug/Kg	≎	08/26/13 09:52	08/29/13 09:21	1
Trichloroethene	4.8	U	4.8	0.46	ug/Kg	*	08/26/13 09:52	08/29/13 09:21	1
Trichlorofluoromethane	4.8	U	4.8	0.91	ug/Kg	₽	08/26/13 09:52	08/29/13 09:21	1
1,1,2-Trichloro-1,2,2-trifluoroethane	4.8	U	4.8	1.9	ug/Kg	₽	08/26/13 09:52	08/29/13 09:21	1
Vinyl chloride	4.8	U	4.8	0.88	ug/Kg	₽	08/26/13 09:52	08/29/13 09:21	1
Xylenes, Total	9.6	U	9.6	1.8	ug/Kg	₽	08/26/13 09:52	08/29/13 09:21	1
								Analyzed	Dil Fac

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	97		72 - 122	08/26/13 09:52	08/29/13 09:21	1
Dibromofluoromethane	103		79 - 123	08/26/13 09:52	08/29/13 09:21	1
Toluene-d8 (Surr)	98		80 - 120	08/26/13 09:52	08/29/13 09:21	1

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wethou: 6270D - Semivolatile Organ	nic Compou	nus (GC/MS)							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzaldehyde	400	U	400	70	ug/Kg	<del>\</del>	08/26/13 21:27	09/01/13 02:58	1
Phenol	400	U	400	41	ug/Kg	₩	08/26/13 21:27	09/01/13 02:58	1
Bis(2-chloroethyl)ether	400	U	400	54	ug/Kg	₩	08/26/13 21:27	09/01/13 02:58	1
2-Chlorophenol	400	U	400	48	ug/Kg	₩	08/26/13 21:27	09/01/13 02:58	1
2-Methylphenol	400	U	400	33	ug/Kg	₩	08/26/13 21:27	09/01/13 02:58	1
bis (2-chloroisopropyl) ether	400	U	400	36	ug/Kg	₩	08/26/13 21:27	09/01/13 02:58	1

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93498-1

Client Sample ID: SB02-10 (5.0-6.0)

Lab Sample ID: 680-93498-11

Date Collected: 08/21/13 10:30

Date Received: 08/22/13 09:39

Matrix: Solid
Percent Solids: 81.5

Method: 8270D - Semivolatile O Analyte	•	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
Acetophenone	400	U -	400	34	ug/Kg	<del></del>	08/26/13 21:27	09/01/13 02:58	
3 & 4 Methylphenol	400	U	400	52	ug/Kg	φ.	08/26/13 21:27	09/01/13 02:58	
N-Nitrosodi-n-propylamine	400	U	400	39	ug/Kg	₩	08/26/13 21:27	09/01/13 02:58	
Hexachloroethane	400	U	400	34	ug/Kg		08/26/13 21:27	09/01/13 02:58	
Nitrobenzene	400	U	400	31	ug/Kg	₩	08/26/13 21:27	09/01/13 02:58	
Isophorone	400	U	400	40	ug/Kg	₽	08/26/13 21:27	09/01/13 02:58	
2-Nitrophenol	400	U	400	50	ug/Kg		08/26/13 21:27	09/01/13 02:58	
2,4-Dimethylphenol	400		400	53	ug/Kg	₽	08/26/13 21:27	09/01/13 02:58	
Bis(2-chloroethoxy)methane	400		400	47	ug/Kg	₽	08/26/13 21:27	09/01/13 02:58	
2,4-Dichlorophenol	400		400		ug/Kg		08/26/13 21:27	09/01/13 02:58	
Naphthalene	400		400	36	ug/Kg	₽	08/26/13 21:27	09/01/13 02:58	
4-Chloroaniline	800		800	63	ug/Kg	₽	08/26/13 21:27	09/01/13 02:58	
Hexachlorobutadiene	400		400	44			08/26/13 21:27	09/01/13 02:58	
Caprolactam	400		400	80	ug/Kg	₽	08/26/13 21:27	09/01/13 02:58	
4-Chloro-3-methylphenol	400		400	42	ug/Kg	₩	08/26/13 21:27	09/01/13 02:58	
2-Methylnaphthalene	400		400	46	ug/Kg		08/26/13 21:27	09/01/13 02:58	
Hexachlorocyclopentadiene	400		400	50	ug/Kg	₩	08/26/13 21:27	09/01/13 02:58	
2,4,6-Trichlorophenol	400		400	35	ug/Kg ug/Kg	₽	08/26/13 21:27	09/01/13 02:58	
2,4,5-Trichlorophenol	400		400		ug/Kg ug/Kg	· · · · · · · · · · · · · · · · · · ·	08/26/13 21:27	09/01/13 02:58	
1,1'-Biphenyl	890		890	890	ug/Kg ug/Kg		08/26/13 21:27	09/01/13 02:58	
2-Chloronaphthalene	400		400				08/26/13 21:27	09/01/13 02:58	
2-Onitroaniline	2100		2100	54	ug/Kg ug/Kg		08/26/13 21:27	09/01/13 02:58	
	400		400			~ ⇔			
Dimethyl phthalate	400		400	41	ug/Kg	₩	08/26/13 21:27	09/01/13 02:58	
2,6-Dinitrotoluene				51			08/26/13 21:27	09/01/13 02:58	
Acenaphthylene		U	400	44	ug/Kg	₩	08/26/13 21:27	09/01/13 02:58	
3-Nitroaniline	2100		2100	56	ug/Kg	~ ⇔	08/26/13 21:27	09/01/13 02:58	
Acenaphthene	400		400	50	ug/Kg		08/26/13 21:27	09/01/13 02:58	
2,4-Dinitrophenol	2100		2100	1000	ug/Kg	₩ \$	08/26/13 21:27	09/01/13 02:58	
4-Nitrophenol	2100		2100	400	ug/Kg		08/26/13 21:27	09/01/13 02:58	
Dibenzofuran	400		400	40	ug/Kg	 	08/26/13 21:27	09/01/13 02:58	
2,4-Dinitrotoluene	400		400	59	ug/Kg		08/26/13 21:27	09/01/13 02:58	
Diethyl phthalate	400		400	45	ug/Kg		08/26/13 21:27	09/01/13 02:58	
Fluorene	400		400	44	ug/Kg	<u></u> .	08/26/13 21:27	09/01/13 02:58	
4-Chlorophenyl phenyl ether	400		400	53	ug/Kg	<u>*</u>	08/26/13 21:27	09/01/13 02:58	
4-Nitroaniline	2100		2100	59	ug/Kg	<u>*</u>	08/26/13 21:27	09/01/13 02:58	
4,6-Dinitro-2-methylphenol	2100		2100		ug/Kg	<u>.</u> .	08/26/13 21:27	09/01/13 02:58	
N-Nitrosodiphenylamine	400		400		ug/Kg	₩	08/26/13 21:27	09/01/13 02:58	
4-Bromophenyl phenyl ether	400		400	44	ug/Kg	₩	08/26/13 21:27	09/01/13 02:58	
Hexachlorobenzene	400		400	47	ug/Kg		08/26/13 21:27	09/01/13 02:58	
Atrazine	400		400	28	ug/Kg	₩.	08/26/13 21:27	09/01/13 02:58	
Pentachlorophenol	2100		2100	400	ug/Kg	₩.	08/26/13 21:27	09/01/13 02:58	
Phenanthrene	400	U	400	33	ug/Kg		08/26/13 21:27	09/01/13 02:58	
Anthracene	400		400	30	ug/Kg	₽	08/26/13 21:27	09/01/13 02:58	
Carbazole	400	U	400	36	ug/Kg	₩	08/26/13 21:27	09/01/13 02:58	
Di-n-butyl phthalate	400	U	400	36	ug/Kg	₩	08/26/13 21:27	09/01/13 02:58	
Fluoranthene	400	U	400	39	ug/Kg	₽	08/26/13 21:27	09/01/13 02:58	
Pyrene	400	U	400	33	ug/Kg	₩	08/26/13 21:27	09/01/13 02:58	
Butyl benzyl phthalate	400	U	400	31	ug/Kg	₽	08/26/13 21:27	09/01/13 02:58	
3,3'-Dichlorobenzidine	800	U	800	34	ug/Kg		08/26/13 21:27	09/01/13 02:58	

TestAmerica Savannah

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB02-10 (5.0-6.0)

Lab Sample ID: 680-93498-11

TestAmerica Job ID: 680-93498-1

Date Collected: 08/21/13 10:30 Matrix: Solid Date Received: 08/22/13 09:39 Percent Solids: 81.5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzo[a]anthracene	400	U	400	33	ug/Kg	<u></u>	08/26/13 21:27	09/01/13 02:58	1
Chrysene	400	U	400	25	ug/Kg	≎	08/26/13 21:27	09/01/13 02:58	1
Bis(2-ethylhexyl) phthalate	400	U	400	35	ug/Kg	₽	08/26/13 21:27	09/01/13 02:58	1
Di-n-octyl phthalate	400	U	400	35	ug/Kg	₽	08/26/13 21:27	09/01/13 02:58	1
Benzo[b]fluoranthene	400	U	400	46	ug/Kg	₽	08/26/13 21:27	09/01/13 02:58	1
Benzo[k]fluoranthene	400	U	400	79	ug/Kg	₽	08/26/13 21:27	09/01/13 02:58	1
Benzo[a]pyrene	400	U	400	63	ug/Kg	₽	08/26/13 21:27	09/01/13 02:58	1
Indeno[1,2,3-cd]pyrene	400	U	400	34	ug/Kg	₽	08/26/13 21:27	09/01/13 02:58	1
Dibenz(a,h)anthracene	400	U	400	47	ug/Kg	₽	08/26/13 21:27	09/01/13 02:58	1
Benzo[g,h,i]perylene	400	U	400	27	ug/Kg	₽	08/26/13 21:27	09/01/13 02:58	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	77		46 - 130				08/26/13 21:27	09/01/13 02:58	1
2-Fluorobiphenyl	80		58 - 130				08/26/13 21:27	09/01/13 02:58	1
Terphenyl-d14 (Surr)	88		60 - 130				08/26/13 21:27	09/01/13 02:58	1
Phenol-d5 (Surr)	76		49 - 130				08/26/13 21:27	09/01/13 02:58	1
2-Fluorophenol (Surr)	85		40 - 130				08/26/13 21:27	09/01/13 02:58	1
2,4,6-Tribromophenol (Surr)	107		58 <sub>-</sub> 130				08/26/13 21:27	09/01/13 02:58	1

Method: 8015C - Nonhalogenate	ed Organics usi	ng GC/FID	-Modified (Gaso	oline Ran	ge Organ	ics)			
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO) -C6-C10	240	U	240	18	ug/Kg	<del>\</del>	08/22/13 14:33	08/24/13 14:39	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene	83		70 - 131				08/22/13 14:33	08/24/13 14:39	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	3300	J	6100	1700	ug/Kg	₩	08/26/13 14:47	08/29/13 01:51	1
ORO C24-C40	6100	U	6100	1700	ug/Kg	₩	08/26/13 14:47	08/29/13 01:51	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
o-Terphenyl (Surr)	81	· <del></del>	<del>50 - 150</del>				08/26/13 14:47	08/29/13 01:51	1

Client Sample ID: SB03-01 (0.5-1.5) Lab Sample ID: 680-93498-12 Date Collected: 08/21/13 12:30 Matrix: Solid

Date Received: 08/22/13 09:39 Percent Solids: 74.6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	23	J	27	8.0	ug/Kg	₩	08/26/13 09:52	08/29/13 09:43	1
Benzene	5.5	U	5.5	0.54	ug/Kg	₽	08/26/13 09:52	08/29/13 09:43	1
Bromodichloromethane	5.5	U	5.5	0.92	ug/Kg	₩	08/26/13 09:52	08/29/13 09:43	1
Bromoform	5.5	U	5.5	0.69	ug/Kg	₽	08/26/13 09:52	08/29/13 09:43	1
Bromomethane	5.5	U	5.5	1.5	ug/Kg	₽	08/26/13 09:52	08/29/13 09:43	1
Carbon disulfide	5.5	U	5.5	1.3	ug/Kg	₽	08/26/13 09:52	08/29/13 09:43	1
Carbon tetrachloride	5.5	U	5.5	1.9	ug/Kg	₽	08/26/13 09:52	08/29/13 09:43	1
Chlorobenzene	5.5	U	5.5	0.57	ug/Kg	₩	08/26/13 09:52	08/29/13 09:43	1
Chloroethane	5.5	U	5.5	2.1	ug/Kg	₩	08/26/13 09:52	08/29/13 09:43	1
Chloroform	5.5	U	5.5	0.65	ug/Kg	₽	08/26/13 09:52	08/29/13 09:43	1

Client: ARCADIS U.S., Inc.

Date Collected: 08/21/13 12:30

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB03-01 (0.5-1.5)

Lab Sample ID: 680-93498-12

TestAmerica Job ID: 680-93498-1

Matrix: Solid

Percent Solids: 74.6

ate Received: 08/22/13 09:39								Percent Soli	ds: 74.6
Method: 8260B - Volatile Organi	•	(GC/MS) (Con	tinued) RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
Chloromethane				1.1	ug/Kg	— <del>¤</del>	08/26/13 09:52	08/29/13 09:43	DII Fa
cis-1,2-Dichloroethene	5.5		5.5		ug/Kg ug/Kg		08/26/13 09:52	08/29/13 09:43	
cis-1,3-Dichloropropene	5.5		5.5		ug/Kg ug/Kg	· · · · · · · · · · · · · · ·	08/26/13 09:52	08/29/13 09:43	
, , ,	5.5		5.5		ug/Kg ug/Kg		08/26/13 09:52	08/29/13 09:43	
Cyclohexane Dibromochloromethane	5.5		5.5		ug/Kg ug/Kg		08/26/13 09:52	08/29/13 09:43	
	5.5						08/26/13 09:52	08/29/13 09:43	
1,2-Dibromo-3-Chloropropane 1,2-Dichlorobenzene	5.5		5.5 5.5		ug/Kg ug/Kg	₩	08/26/13 09:52	08/29/13 09:43	
,						<b>~</b>			
1,3-Dichlorobenzene	5.5		5.5		ug/Kg	¥	08/26/13 09:52	08/29/13 09:43	
1,4-Dichlorobenzene	5.5		5.5		ug/Kg		08/26/13 09:52	08/29/13 09:43	
Dichlorodifluoromethane	5.5		5.5		ug/Kg		08/26/13 09:52	08/29/13 09:43	
1,1-Dichloroethane	5.5		5.5		ug/Kg		08/26/13 09:52	08/29/13 09:43	
1,2-Dichloroethane	5.5		5.5		ug/Kg	₩	08/26/13 09:52	08/29/13 09:43	
1,1-Dichloroethene	5.5		5.5		ug/Kg	<b>‡</b>	08/26/13 09:52	08/29/13 09:43	
1,2-Dichloropropane	5.5		5.5		ug/Kg		08/26/13 09:52	08/29/13 09:43	
Diisopropyl ether	5.5		5.5		ug/Kg	**	08/26/13 09:52	08/29/13 09:43	
Ethylbenzene	5.5		5.5		ug/Kg	₩	08/26/13 09:52	08/29/13 09:43	
Ethylene Dibromide	5.5	U	5.5	0.53	ug/Kg		08/26/13 09:52	08/29/13 09:43	
Ethyl tert-butyl ether	5.5	U	5.5	0.61	ug/Kg	₩	08/26/13 09:52	08/29/13 09:43	
2-Hexanone	27	U	27	5.5	ug/Kg	₩	08/26/13 09:52	08/29/13 09:43	
Isopropylbenzene	5.5	U	5.5	0.74	ug/Kg	₩	08/26/13 09:52	08/29/13 09:43	
Methyl acetate	5.5	U	5.5	5.0	ug/Kg	₩	08/26/13 09:52	08/29/13 09:43	
Methylcyclohexane	5.5	U	5.5	0.95	ug/Kg	₩	08/26/13 09:52	08/29/13 09:43	
Methylene Chloride	16	U	16	11	ug/Kg	₩	08/26/13 09:52	08/29/13 09:43	
Methyl Ethyl Ketone	27	U	27	4.5	ua/Ka		08/26/13 09:52	08/29/13 09:43	

Luiyibelizelle	3.3 0	3.3	0.07 ug/Ng	-,-	00/20/13 09.32	00/29/13 09.43	
Ethylene Dibromide	5.5 U	5.5	0.53 ug/Kg	₽	08/26/13 09:52	08/29/13 09:43	
Ethyl tert-butyl ether	5.5 U	5.5	0.61 ug/Kg	₽	08/26/13 09:52	08/29/13 09:43	
2-Hexanone	27 U	27	5.5 ug/Kg	₽	08/26/13 09:52	08/29/13 09:43	
Isopropylbenzene	5.5 U	5.5	0.74 ug/Kg	₽	08/26/13 09:52	08/29/13 09:43	
Methyl acetate	5.5 U	5.5	5.0 ug/Kg	₽	08/26/13 09:52	08/29/13 09:43	
Methylcyclohexane	5.5 U	5.5	0.95 ug/Kg	₽	08/26/13 09:52	08/29/13 09:43	
Methylene Chloride	16 U	16	11 ug/Kg	₽	08/26/13 09:52	08/29/13 09:43	
Methyl Ethyl Ketone	27 U	27	4.5 ug/Kg	φ.	08/26/13 09:52	08/29/13 09:43	
methyl isobutyl ketone	27 U	27	4.4 ug/Kg	₽	08/26/13 09:52	08/29/13 09:43	
Methyl tert-butyl ether	5.5 U	5.5	1.1 ug/Kg	₽	08/26/13 09:52	08/29/13 09:43	
Naphthalene	5.5 U	5.5	1.1 ug/Kg	φ.	08/26/13 09:52	08/29/13 09:43	
Styrene	5.5 U	5.5	0.83 ug/Kg	₽	08/26/13 09:52	08/29/13 09:43	
Tert-amyl methyl ether	5.5 U	5.5	0.48 ug/Kg	₽	08/26/13 09:52	08/29/13 09:43	
tert-Butyl alcohol	5.5 U	5.5	3.7 ug/Kg	₽	08/26/13 09:52	08/29/13 09:43	
1,1,2,2-Tetrachloroethane	5.5 U	5.5	0.79 ug/Kg	₽	08/26/13 09:52	08/29/13 09:43	
Tetrachloroethene	5.5 U	5.5	0.92 ug/Kg	₽	08/26/13 09:52	08/29/13 09:43	
Toluene	5.5 U	5.5	0.77 ug/Kg	₽	08/26/13 09:52	08/29/13 09:43	
trans-1,2-Dichloroethene	5.5 U	5.5	0.83 ug/Kg	₽	08/26/13 09:52	08/29/13 09:43	
trans-1,3-Dichloropropene	5.5 U	5.5	1.0 ug/Kg	₽	08/26/13 09:52	08/29/13 09:43	
1,2,4-Trichlorobenzene	5.5 U	5.5	0.80 ug/Kg	φ.	08/26/13 09:52	08/29/13 09:43	
1,1,1-Trichloroethane	5.5 U	5.5	1.2 ug/Kg	₽	08/26/13 09:52	08/29/13 09:43	
1,1,2-Trichloroethane	5.5 U	5.5	1.0 ug/Kg	₽	08/26/13 09:52	08/29/13 09:43	
Trichloroethene	5.5 U	5.5	0.53 ug/Kg	φ.	08/26/13 09:52	08/29/13 09:43	
Trichlorofluoromethane	5.5 U	5.5	1.0 ug/Kg	₽	08/26/13 09:52	08/29/13 09:43	
1,1,2-Trichloro-1,2,2-trifluoroethane	5.5 U	5.5	2.2 ug/Kg	₽	08/26/13 09:52	08/29/13 09:43	
Vinyl chloride	5.5 U	5.5	1.0 ug/Kg	φ.	08/26/13 09:52	08/29/13 09:43	
Xylenes, Total	11 U	11	2.1 ug/Kg	₩	08/26/13 09:52	08/29/13 09:43	

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	100		72 - 122	08/26/13 09:52	08/29/13 09:43	1
Dibromofluoromethane	102		79 - 123	08/26/13 09:52	08/29/13 09:43	1
Toluene-d8 (Surr)	97		80 - 120	08/26/13 09:52	08/29/13 09:43	1

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB03-01 (0.5-1.5)

Lab Sample ID: 680-93498-12

Date Collected: 08/21/13 12:30 Matrix: Solid
Date Received: 08/22/13 09:39 Percent Solids: 74.6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
Benzaldehyde	440	U	440	77	ug/Kg	<u> </u>	08/26/13 21:27	08/30/13 15:01	
Phenol	440	U	440	45	ug/Kg	₽	08/26/13 21:27	08/30/13 15:01	
Bis(2-chloroethyl)ether	440	U	440	60	ug/Kg	₽	08/26/13 21:27	08/30/13 15:01	
2-Chlorophenol	440	U	440	53	ug/Kg		08/26/13 21:27	08/30/13 15:01	
2-Methylphenol	440	U	440	36	ug/Kg	₩	08/26/13 21:27	08/30/13 15:01	
bis (2-chloroisopropyl) ether	440	U	440	40	ug/Kg	₩	08/26/13 21:27	08/30/13 15:01	
Acetophenone	62		440	37	ug/Kg		08/26/13 21:27	08/30/13 15:01	
3 & 4 Methylphenol	440	U	440	57	ug/Kg	₽	08/26/13 21:27	08/30/13 15:01	
N-Nitrosodi-n-propylamine	440	U	440	43	ug/Kg	₽	08/26/13 21:27	08/30/13 15:01	
Hexachloroethane	440	U	440	37	ug/Kg	φ.	08/26/13 21:27	08/30/13 15:01	
Nitrobenzene	440	U	440	35	ug/Kg	₽	08/26/13 21:27	08/30/13 15:01	
Isophorone	440		440	44	ug/Kg	₽	08/26/13 21:27	08/30/13 15:01	
2-Nitrophenol	440		440		ug/Kg		08/26/13 21:27	08/30/13 15:01	
2,4-Dimethylphenol	440		440	59	ug/Kg	₩	08/26/13 21:27	08/30/13 15:01	
Bis(2-chloroethoxy)methane	440		440	52	ug/Kg ug/Kg	₽	08/26/13 21:27	08/30/13 15:01	
2,4-Dichlorophenol	440		440	47	ug/Kg		08/26/13 21:27	08/30/13 15:01	
Naphthalene	470	· ·	440	40	ug/Kg	₽	08/26/13 21:27	08/30/13 15:01	
4-Chloroaniline	880	11	880	69	ug/Kg ug/Kg	₽	08/26/13 21:27	08/30/13 15:01	
Hexachlorobutadiene	440		440		ug/Kg ug/Kg		08/26/13 21:27	08/30/13 15:01	
	440		440	88	ug/Kg ug/Kg		08/26/13 21:27	08/30/13 15:01	
Caprolactam						~ ⇔		08/30/13 15:01	
4-Chloro-3-methylphenol	440		440	47	ug/Kg		08/26/13 21:27 08/26/13 21:27		
2-Methylnaphthalene	970		440	51	ug/Kg	₩		08/30/13 15:01	
Hexachlorocyclopentadiene	440		440	55	ug/Kg		08/26/13 21:27	08/30/13 15:01	
2,4,6-Trichlorophenol	440		440		ug/Kg	<u></u> .	08/26/13 21:27	08/30/13 15:01	
2,4,5-Trichlorophenol	440		440		ug/Kg		08/26/13 21:27	08/30/13 15:01	
1,1'-Biphenyl	990	U	990	990	ug/Kg		08/26/13 21:27	08/30/13 15:01	
2-Chloronaphthalene	440	U	440	47	ug/Kg	<u>T</u> .	08/26/13 21:27	08/30/13 15:01	
2-Nitroaniline	2300		2300	60	ug/Kg	*	08/26/13 21:27	08/30/13 15:01	
Dimethyl phthalate	440	U	440	45	ug/Kg	<b>₩</b>	08/26/13 21:27	08/30/13 15:01	
2,6-Dinitrotoluene	440		440	56	ug/Kg	<u>.</u>	08/26/13 21:27	08/30/13 15:01	
Acenaphthylene	440		440	48	ug/Kg	₽	08/26/13 21:27	08/30/13 15:01	
3-Nitroaniline	2300	U	2300	61	ug/Kg	₽	08/26/13 21:27	08/30/13 15:01	
Acenaphthene	440	U	440	55	ug/Kg		08/26/13 21:27	08/30/13 15:01	
2,4-Dinitrophenol	2300	U	2300	1100	ug/Kg	₩	08/26/13 21:27	08/30/13 15:01	
4-Nitrophenol	2300	U	2300	440	ug/Kg	₽	08/26/13 21:27	08/30/13 15:01	
Dibenzofuran	160	J	440	44	ug/Kg	₽	08/26/13 21:27	08/30/13 15:01	
2,4-Dinitrotoluene	440	U	440	65	ug/Kg	₩	08/26/13 21:27	08/30/13 15:01	
Diethyl phthalate	440	U	440	49	ug/Kg	₩	08/26/13 21:27	08/30/13 15:01	
Fluorene	440	U	440	48	ug/Kg	₩	08/26/13 21:27	08/30/13 15:01	
4-Chlorophenyl phenyl ether	440	U	440	59	ug/Kg	₽	08/26/13 21:27	08/30/13 15:01	
4-Nitroaniline	2300	U	2300	65	ug/Kg	₽	08/26/13 21:27	08/30/13 15:01	
4,6-Dinitro-2-methylphenol	2300	U	2300	230	ug/Kg	₽	08/26/13 21:27	08/30/13 15:01	
N-Nitrosodiphenylamine	440	U *	440	44	ug/Kg		08/26/13 21:27	08/30/13 15:01	
4-Bromophenyl phenyl ether	440	U	440	48	ug/Kg	₽	08/26/13 21:27	08/30/13 15:01	
Hexachlorobenzene	440	U	440		ug/Kg	₩	08/26/13 21:27	08/30/13 15:01	
Atrazine	440		440		ug/Kg	· · · · · · · · · · · · · · · · · · ·	08/26/13 21:27	08/30/13 15:01	
Pentachlorophenol	2300		2300	440	ug/Kg	₩	08/26/13 21:27	08/30/13 15:01	
Phenanthrene	350		440		ug/Kg	₽	08/26/13 21:27	08/30/13 15:01	
Anthracene	440		440		ug/Kg		08/26/13 21:27	08/30/13 15:01	

TestAmerica Savannah

TestAmerica Job ID: 680-93498-1

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB03-01 (0.5-1.5)

Date Collected: 08/21/13 12:30 Date Received: 08/22/13 09:39 Lab Sample ID: 680-93498-12

Matrix: Solid

Percent Solids: 74.6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbazole	440	U	440	40	ug/Kg	<u></u>	08/26/13 21:27	08/30/13 15:01	1
Di-n-butyl phthalate	440	U	440	40	ug/Kg	₽	08/26/13 21:27	08/30/13 15:01	1
Fluoranthene	220	J	440	43	ug/Kg	₽	08/26/13 21:27	08/30/13 15:01	1
Pyrene	93	J	440	36	ug/Kg	₽	08/26/13 21:27	08/30/13 15:01	1
Butyl benzyl phthalate	440	U	440	35	ug/Kg	₽	08/26/13 21:27	08/30/13 15:01	1
3,3'-Dichlorobenzidine	880	U	880	37	ug/Kg	₽	08/26/13 21:27	08/30/13 15:01	1
Benzo[a]anthracene	43	J	440	36	ug/Kg	₽	08/26/13 21:27	08/30/13 15:01	1
Chrysene	83	J	440	28	ug/Kg	₽	08/26/13 21:27	08/30/13 15:01	1
Bis(2-ethylhexyl) phthalate	440	U	440	39	ug/Kg	\$	08/26/13 21:27	08/30/13 15:01	1
Di-n-octyl phthalate	440	U	440	39	ug/Kg	₽	08/26/13 21:27	08/30/13 15:01	1
Benzo[b]fluoranthene	440	U	440	51	ug/Kg	₽	08/26/13 21:27	08/30/13 15:01	1
Benzo[k]fluoranthene	440	U	440	87	ug/Kg	₽	08/26/13 21:27	08/30/13 15:01	1
Benzo[a]pyrene	440	U	440	69	ug/Kg	₽	08/26/13 21:27	08/30/13 15:01	1
Indeno[1,2,3-cd]pyrene	440	U	440	37	ug/Kg	₽	08/26/13 21:27	08/30/13 15:01	1
Dibenz(a,h)anthracene	440	U	440	52	ug/Kg	₽	08/26/13 21:27	08/30/13 15:01	1
Benzo[g,h,i]perylene	440	U	440	29	ug/Kg	₽	08/26/13 21:27	08/30/13 15:01	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	60		46 - 130				08/26/13 21:27	08/30/13 15:01	1
2 Elyarahinhanyi	70		EQ 120				00/26/12 21:27	00/20/12 15:01	4

Surrogate	%Recovery Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	60	46 - 130	08/26/13 21:27	08/30/13 15:01	1
2-Fluorobiphenyl	72	58 - 130	08/26/13 21:27	08/30/13 15:01	1
Terphenyl-d14 (Surr)	58 X	60 - 130	08/26/13 21:27	08/30/13 15:01	1
Phenol-d5 (Surr)	53	49 - 130	08/26/13 21:27	08/30/13 15:01	1
2-Fluorophenol (Surr)	52	40 - 130	08/26/13 21:27	08/30/13 15:01	1
2,4,6-Tribromophenol (Surr)	72	58 - 130	08/26/13 21:27	08/30/13 15:01	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO) -C6-C10	280	U	280	21	ug/Kg	<del></del>	08/22/13 14:33	08/28/13 17:20	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
a.a.a-Trifluorotoluene	102		70 - 131				08/22/13 14:33	08/28/13 17:20	

Method: 8015C - Nonhalogenated Analyte	•	ng GC/FID Qualifier	-Modified (Dies RL	el Range MDL	•	) D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	27000		6700	1900	ug/Kg	<u> </u>	08/26/13 14:47	08/29/13 02:07	1
ORO C24-C40	4500	J	6700	1900	ug/Kg	₽	08/26/13 14:47	08/29/13 02:07	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
o-Terphenyl (Surr)	73		50 - 150				08/26/13 14:47	08/29/13 02:07	1

Client Sample ID: SB03-01 (5.0-6.0) Lab Sample ID: 680-93498-13 Date Collected: 08/21/13 12:40 **Matrix: Solid** Date Received: 08/22/13 09:39 Percent Solids: 80.3

Method: 8260B - Volatile Orga	nic Compounds (	(GC/MS)							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	23		23	6.8	ug/Kg	<del>\</del>	08/26/13 09:52	08/29/13 10:08	1
Benzene	4.7	U	4.7	0.46	ug/Kg	₽	08/26/13 09:52	08/29/13 10:08	1
Bromodichloromethane	4.7	U	4.7	0.79	ug/Kg	₽	08/26/13 09:52	08/29/13 10:08	1
Bromoform	4.7	U	4.7	0.59	ug/Kg	₽	08/26/13 09:52	08/29/13 10:08	1

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

Lab Sample ID: 680-93498-13

TestAmerica Job ID: 680-93498-1

Matrix: Solid

Percent Solids: 80.3

Client Sample ID: SB03-01 (5.0-6.0)

Date Collected: 08/21/13 12:40 Date Received: 08/22/13 09:39

Method: 8260B - Volatile Organic						_	_		
Analyte		Qualifier	RL	MDL		D	Prepared	Analyzed	Dil Fa
Bromomethane	4.7		4.7			*	08/26/13 09:52	08/29/13 10:08	
Carbon disulfide	4.7		4.7		ug/Kg	<u></u> .	08/26/13 09:52	08/29/13 10:08	
Carbon tetrachloride	4.7		4.7		ug/Kg	*	08/26/13 09:52	08/29/13 10:08	
Chlorobenzene	4.7		4.7		ug/Kg	*	08/26/13 09:52	08/29/13 10:08	
Chloroethane	4.7		4.7		ug/Kg	J	08/26/13 09:52	08/29/13 10:08	
Chloroform	4.7		4.7		ug/Kg		08/26/13 09:52	08/29/13 10:08	
Chloromethane	4.7		4.7			*	08/26/13 09:52	08/29/13 10:08	
cis-1,2-Dichloroethene	4.7		4.7	0.71		<sub></sub> .	08/26/13 09:52	08/29/13 10:08	
cis-1,3-Dichloropropene	4.7		4.7		ug/Kg	<b>₩</b>	08/26/13 09:52	08/29/13 10:08	
Cyclohexane	4.7		4.7		ug/Kg	₽	08/26/13 09:52	08/29/13 10:08	
Dibromochloromethane	4.7	U	4.7	0.82	ug/Kg		08/26/13 09:52	08/29/13 10:08	
1,2-Dibromo-3-Chloropropane	4.7	U	4.7	3.1	ug/Kg	₩	08/26/13 09:52	08/29/13 10:08	
1,2-Dichlorobenzene	4.7	U	4.7	0.67	ug/Kg	₩	08/26/13 09:52	08/29/13 10:08	
1,3-Dichlorobenzene	4.7	U	4.7	0.89	ug/Kg		08/26/13 09:52	08/29/13 10:08	
1,4-Dichlorobenzene	4.7	U	4.7	0.77	ug/Kg	₽	08/26/13 09:52	08/29/13 10:08	
Dichlorodifluoromethane	4.7	U	4.7	1.2	ug/Kg	₽	08/26/13 09:52	08/29/13 10:08	
1,1-Dichloroethane	4.7	U	4.7	0.78	ug/Kg	₽	08/26/13 09:52	08/29/13 10:08	
1,2-Dichloroethane	4.7	U	4.7	0.77	ug/Kg	₩	08/26/13 09:52	08/29/13 10:08	
1,1-Dichloroethene	4.7	U	4.7	0.70	ug/Kg	₩	08/26/13 09:52	08/29/13 10:08	
1,2-Dichloropropane	4.7	U	4.7	0.69	ug/Kg	₩	08/26/13 09:52	08/29/13 10:08	
Diisopropyl ether	4.7	U	4.7	0.52	ug/Kg	₽	08/26/13 09:52	08/29/13 10:08	
Ethylbenzene	4.7	U	4.7	0.57	ug/Kg	₩	08/26/13 09:52	08/29/13 10:08	
Ethylene Dibromide	4.7	U	4.7	0.45	ug/Kg	₽	08/26/13 09:52	08/29/13 10:08	
Ethyl tert-butyl ether	4.7	U	4.7	0.52	ug/Kg	\$	08/26/13 09:52	08/29/13 10:08	
2-Hexanone	23	U	23	4.7	ug/Kg	₽	08/26/13 09:52	08/29/13 10:08	
sopropylbenzene	4.7	U	4.7	0.64	ug/Kg	₽	08/26/13 09:52	08/29/13 10:08	
Methyl acetate	4.7	U	4.7	4.3	ug/Kg	₽	08/26/13 09:52	08/29/13 10:08	
Methylcyclohexane	4.7	U	4.7	0.82	ug/Kg	₩	08/26/13 09:52	08/29/13 10:08	
Methylene Chloride	14	U	14	9.4	ug/Kg	₩	08/26/13 09:52	08/29/13 10:08	
Methyl Ethyl Ketone	23	U	23	3.8	ug/Kg		08/26/13 09:52	08/29/13 10:08	
methyl isobutyl ketone	23	U	23	3.7	ug/Kg	₽	08/26/13 09:52	08/29/13 10:08	
Methyl tert-butyl ether	4.7	U	4.7	0.94	ug/Kg	₽	08/26/13 09:52	08/29/13 10:08	
Naphthalene	4.7	U	4.7	0.94	ug/Kg	φ.	08/26/13 09:52	08/29/13 10:08	
Styrene	4.7	U	4.7	0.71	ug/Kg	₩	08/26/13 09:52	08/29/13 10:08	
Tert-amyl methyl ether	4.7	U	4.7	0.41	ug/Kg	₩	08/26/13 09:52	08/29/13 10:08	
tert-Butyl alcohol	4.7	U	4.7		ug/Kg		08/26/13 09:52	08/29/13 10:08	
1,1,2,2-Tetrachloroethane	4.7		4.7		ug/Kg	₽	08/26/13 09:52	08/29/13 10:08	
Tetrachloroethene	4.7		4.7		ug/Kg	₽	08/26/13 09:52	08/29/13 10:08	
Toluene	4.7		4.7		ug/Kg	· · · · · · · · · · · · · · · · · · ·	08/26/13 09:52	08/29/13 10:08	
trans-1,2-Dichloroethene	4.7		4.7		ug/Kg	₩	08/26/13 09:52	08/29/13 10:08	
rans-1,3-Dichloropropene	4.7		4.7		ug/Kg	₽	08/26/13 09:52	08/29/13 10:08	
1,2,4-Trichlorobenzene	4.7		4.7		ug/Kg		08/26/13 09:52	08/29/13 10:08	
1,1,1-Trichloroethane	4.7		4.7		ug/Kg ug/Kg	₽	08/26/13 09:52	08/29/13 10:08	
1,1,2-Trichloroethane	4.7		4.7		ug/Kg ug/Kg	₽	08/26/13 09:52	08/29/13 10:08	
Trichloroethene	4.7		4.7		ug/Kg ug/Kg		08/26/13 09:52	08/29/13 10:08	
Trichlorofluoromethane	4.7		4.7		ug/Kg ug/Kg		08/26/13 09:52	08/29/13 10:08	
1,1,2-Trichloro-1,2,2-trifluoroethane	4.7		4.7		ug/Kg ug/Kg		08/26/13 09:52	08/29/13 10:08	
Vinyl chloride Xylenes, Total	4.7 9.4		4.7	0.80	ug/Kg	244	08/26/13 09:52	08/29/13 10:08 08/29/13 10:08	

TestAmerica Savannah

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9

10

4.6

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB03-01 (5.0-6.0)

Lab Sample ID: 680-93498-13

Date Collected: 08/21/13 12:40

Date Received: 08/22/13 09:39

Matrix: Solid

Percent Solids: 80.3

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	98		72 - 122	08/26/13 09:52	08/29/13 10:08	1
Dibromofluoromethane	105		79 - 123	08/26/13 09:52	08/29/13 10:08	1
Toluene-d8 (Surr)	98		80 - 120	08/26/13 09:52	08/29/13 10:08	1

Toluene-d8 (Surr) - -	98		80 - 120				08/26/13 09:52	08/29/13 10:08	1
Method: 8270D - Semivolatile Or	•	•	•	MDI	l lmi4		Duamanad	Amalumad	Dil Faa
Analyte		Qualifier	RL 410	MDL 71		— <del>D</del>	Prepared 08/26/13 21:27	Analyzed 08/30/13 15:26	Dil Fac
Benzaldehyde Phenol	410		410		ug/Kg	₩		08/30/13 15:26	1
					ug/Kg		08/26/13 21:27		
Bis(2-chloroethyl)ether	410		410		ug/Kg		08/26/13 21:27	08/30/13 15:26	
2-Chlorophenol	410		410		ug/Kg	₩	08/26/13 21:27	08/30/13 15:26	1
2-Methylphenol	410		410	33	ug/Kg		08/26/13 21:27	08/30/13 15:26	1
bis (2-chloroisopropyl) ether	410		410		ug/Kg		08/26/13 21:27	08/30/13 15:26	
Acetophenone	410		410		ug/Kg	*	08/26/13 21:27	08/30/13 15:26	1
3 & 4 Methylphenol	410		410		ug/Kg		08/26/13 21:27	08/30/13 15:26	1
N-Nitrosodi-n-propylamine	410		410	39	ug/Kg	T	08/26/13 21:27	08/30/13 15:26	
Hexachloroethane	410		410		ug/Kg	<b>#</b>	08/26/13 21:27	08/30/13 15:26	1
Nitrobenzene	410	U	410	32	ug/Kg	₩.	08/26/13 21:27	08/30/13 15:26	1
Isophorone	410	U	410	41	ug/Kg	₩	08/26/13 21:27	08/30/13 15:26	1
2-Nitrophenol	410	U	410	50	ug/Kg	₽	08/26/13 21:27	08/30/13 15:26	1
2,4-Dimethylphenol	410	U	410	54	ug/Kg	₩	08/26/13 21:27	08/30/13 15:26	1
Bis(2-chloroethoxy)methane	410	U	410	48	ug/Kg	₩	08/26/13 21:27	08/30/13 15:26	1
2,4-Dichlorophenol	410	U	410	43	ug/Kg	₽	08/26/13 21:27	08/30/13 15:26	1
Naphthalene	410	U	410	37	ug/Kg	₩	08/26/13 21:27	08/30/13 15:26	1
4-Chloroaniline	810	U	810	64	ug/Kg	₩	08/26/13 21:27	08/30/13 15:26	1
Hexachlorobutadiene	410	U	410	44	ug/Kg		08/26/13 21:27	08/30/13 15:26	1
Caprolactam	410	U	410	81	ug/Kg	₩	08/26/13 21:27	08/30/13 15:26	1
4-Chloro-3-methylphenol	410	U	410	43	ug/Kg	₩	08/26/13 21:27	08/30/13 15:26	1
2-Methylnaphthalene	410	U	410	47	ug/Kg		08/26/13 21:27	08/30/13 15:26	1
Hexachlorocyclopentadiene	410	U	410	50	ug/Kg	₽	08/26/13 21:27	08/30/13 15:26	1
2,4,6-Trichlorophenol	410	U	410	36	ug/Kg	₽	08/26/13 21:27	08/30/13 15:26	1
2,4,5-Trichlorophenol	410		410	43	ug/Kg		08/26/13 21:27	08/30/13 15:26	1
1,1'-Biphenyl	910		910	910	ug/Kg	₩	08/26/13 21:27	08/30/13 15:26	1
2-Chloronaphthalene	410		410	43	ug/Kg	₩	08/26/13 21:27	08/30/13 15:26	1
2-Nitroaniline	2100		2100		ug/Kg		08/26/13 21:27	08/30/13 15:26	1
Dimethyl phthalate	410		410		ug/Kg	₩	08/26/13 21:27	08/30/13 15:26	1
2,6-Dinitrotoluene	410		410		ug/Kg ug/Kg		08/26/13 21:27	08/30/13 15:26	1
	410		410			· · · · · · · · · · · ·	08/26/13 21:27		
Acenaphthylene					ug/Kg	₩		08/30/13 15:26	1
3-Nitroaniline	2100		2100		ug/Kg	₩	08/26/13 21:27	08/30/13 15:26	1
Acenaphthene	410		410	50	ug/Kg		08/26/13 21:27	08/30/13 15:26	
2,4-Dinitrophenol	2100		2100	1000	ug/Kg		08/26/13 21:27	08/30/13 15:26	1
4-Nitrophenol	2100		2100		ug/Kg	<b>\$</b>	08/26/13 21:27	08/30/13 15:26	1
Dibenzofuran	410		410		ug/Kg	<u>.</u>	08/26/13 21:27	08/30/13 15:26	1
2,4-Dinitrotoluene	410		410		ug/Kg	₩.	08/26/13 21:27	08/30/13 15:26	1
Diethyl phthalate	410	U	410		ug/Kg	₩	08/26/13 21:27	08/30/13 15:26	1
Fluorene	410	U	410	44	ug/Kg		08/26/13 21:27	08/30/13 15:26	1
4-Chlorophenyl phenyl ether	410	U	410	54	ug/Kg	<b>‡</b>	08/26/13 21:27	08/30/13 15:26	1
4-Nitroaniline	2100	U	2100	60	ug/Kg	₩	08/26/13 21:27	08/30/13 15:26	1
4,6-Dinitro-2-methylphenol	2100	U	2100	210	ug/Kg	₩	08/26/13 21:27	08/30/13 15:26	1
N-Nitrosodiphenylamine	410	U *	410	41	ug/Kg	\$	08/26/13 21:27	08/30/13 15:26	1
4-Bromophenyl phenyl ether	410	11	410		ug/Kg	₩	08/26/13 21:27	08/30/13 15:26	1

TestAmerica Savannah

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TestAmerica Job ID: 680-93498-1

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11

Client: ARCADIS U.S., Inc.

Date Collected: 08/21/13 12:40

Date Received: 08/22/13 09:39

Surrogate

Analyte

ORO C24-C40

o-Terphenyl (Surr)

Surrogate

a,a,a-Trifluorotoluene

**Diesel Range Organics [C10-C28]** 

Project/Site: CSX C&O Canal Brunswick, MD Client Sample ID: SB03-01 (5.0-6.0)

TestAmerica Job ID: 680-93498-1

Lab Sample ID: 680-93498-13

Matrix: Solid

Percent Solids: 80.3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
Hexachlorobenzene	410	U	410	48	ug/Kg	<del></del>	08/26/13 21:27	08/30/13 15:26	
Atrazine	410	U	410	28	ug/Kg	\$	08/26/13 21:27	08/30/13 15:26	1
Pentachlorophenol	2100	U	2100	410	ug/Kg	₽	08/26/13 21:27	08/30/13 15:26	1
Phenanthrene	410	U	410	33	ug/Kg	₽	08/26/13 21:27	08/30/13 15:26	1
Anthracene	410	U	410	31	ug/Kg	₽	08/26/13 21:27	08/30/13 15:26	1
Carbazole	410	U	410	37	ug/Kg	₽	08/26/13 21:27	08/30/13 15:26	1
Di-n-butyl phthalate	410	U	410	37	ug/Kg	₽	08/26/13 21:27	08/30/13 15:26	1
Fluoranthene	410	U	410	39	ug/Kg	₽	08/26/13 21:27	08/30/13 15:26	1
Pyrene	410	U	410	33	ug/Kg	₽	08/26/13 21:27	08/30/13 15:26	1
Butyl benzyl phthalate	410	U	410	32	ug/Kg	₽	08/26/13 21:27	08/30/13 15:26	1
3,3'-Dichlorobenzidine	810	U	810	34	ug/Kg	₽	08/26/13 21:27	08/30/13 15:26	1
Benzo[a]anthracene	410	U	410	33	ug/Kg	₽	08/26/13 21:27	08/30/13 15:26	1
Chrysene	410	U	410	26	ug/Kg	₽	08/26/13 21:27	08/30/13 15:26	1
Bis(2-ethylhexyl) phthalate	410	U	410	36	ug/Kg	\$	08/26/13 21:27	08/30/13 15:26	1
Di-n-octyl phthalate	410	U	410	36	ug/Kg	☼	08/26/13 21:27	08/30/13 15:26	1
Benzo[b]fluoranthene	410	U	410	47	ug/Kg	₽	08/26/13 21:27	08/30/13 15:26	1
Benzo[k]fluoranthene	410	U	410	80	ug/Kg	\$	08/26/13 21:27	08/30/13 15:26	1
Benzo[a]pyrene	410	U	410	64	ug/Kg	₽	08/26/13 21:27	08/30/13 15:26	1
Indeno[1,2,3-cd]pyrene	410	U	410	34	ug/Kg	₽	08/26/13 21:27	08/30/13 15:26	1
Dibenz(a,h)anthracene	410	U	410	48	ug/Kg		08/26/13 21:27	08/30/13 15:26	1
Benzo[g,h,i]perylene	410	U	410	27	ug/Kg	₽	08/26/13 21:27	08/30/13 15:26	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	67		46 - 130				08/26/13 21:27	08/30/13 15:26	1
2-Fluorobiphenyl	83		58 - 130				08/26/13 21:27	08/30/13 15:26	1
Terphenyl-d14 (Surr)	69		60 - 130				08/26/13 21:27	08/30/13 15:26	1
Phenol-d5 (Surr)	68		49 - 130				08/26/13 21:27	08/30/13 15:26	1
2-Fluorophenol (Surr)	68		40 - 130				08/26/13 21:27	08/30/13 15:26	1
2,4,6-Tribromophenol (Surr)	84		58 - 130				08/26/13 21:27	08/30/13 15:26	1
Method: 8015C - Nonhalogenat	ed Organics usi	ng GC/FID	-Modified (Gaso	line Ran	ge Organ	ics)			
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)	240	U	240	18	ug/Kg	<u> </u>	08/22/13 14:33	08/24/13 15:18	

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Analyzed

08/24/13 15:18

Analyzed

08/29/13 02:23

08/29/13 02:23

Analyzed

08/29/13 02:23

Dil Fac

Dil Fac

Dil Fac

Prepared

08/22/13 14:33

Prepared

08/26/13 14:47

08/26/13 14:47

Prepared

08/26/13 14:47

D

₩

Limits

70 - 131

RL

6200

6200

Limits

50 - 150

MDL Unit

1700 ug/Kg

1700 ug/Kg

%Recovery Qualifier

Method: 8015C - Nonhalogenated Organics using GC/FID -Modified (Diesel Range Organics)

11000

1700 J

%Recovery Qualifier

73

Result Qualifier

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB03-02 (0.0-1.0) Lab Sample ID: 680-93498-14

Date Collected: 08/21/13 12:50 Matrix: Solid Date Received: 08/22/13 09:39 Percent Solids: 67.7

Method: 8260B - Volatile Organic Inalyte		Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil F
cetone	22		29	8.4	ug/Kg	— <del>-</del>	08/26/13 09:52	08/29/13 10:32	
enzene	5.7		5.7	0.56	ug/Kg	₩	08/26/13 09:52	08/29/13 10:32	
romodichloromethane	5.7		5.7		ug/Kg	₽	08/26/13 09:52	08/29/13 10:32	
romoform	5.7		5.7		ug/Kg		08/26/13 09:52	08/29/13 10:32	
romomethane	5.7		5.7	1.6	ug/Kg ug/Kg		08/26/13 09:52	08/29/13 10:32	
carbon disulfide	5.7		5.7	1.4	ug/Kg ug/Kg		08/26/13 09:52	08/29/13 10:32	
carbon disullide	5.7		5.7	1.9			08/26/13 09:52	08/29/13 10:32	
					ug/Kg				
Chlorobenzene	5.7		5.7	0.60	ug/Kg	~ ⇔	08/26/13 09:52	08/29/13 10:32	
Chloroethane	5.7		5.7	2.2	ug/Kg		08/26/13 09:52	08/29/13 10:32	
Chloroform	5.7		5.7	0.68	ug/Kg		08/26/13 09:52	08/29/13 10:32	
Chloromethane	5.7		5.7	1.1	ug/Kg	<u>*</u>	08/26/13 09:52	08/29/13 10:32	
is-1,2-Dichloroethene	5.7		5.7	0.87	ug/Kg		08/26/13 09:52	08/29/13 10:32	
is-1,3-Dichloropropene	5.7		5.7		ug/Kg	<b>#</b>	08/26/13 09:52	08/29/13 10:32	
cyclohexane	5.7		5.7	1.1	ug/Kg	<b>*</b>	08/26/13 09:52	08/29/13 10:32	
ibromochloromethane	5.7		5.7	1.0	ug/Kg		08/26/13 09:52	08/29/13 10:32	
,2-Dibromo-3-Chloropropane	5.7		5.7	3.8	ug/Kg	₩	08/26/13 09:52	08/29/13 10:32	
,2-Dichlorobenzene	5.7	U	5.7	0.81	ug/Kg	₩	08/26/13 09:52	08/29/13 10:32	
,3-Dichlorobenzene	5.7	U	5.7	1.1	ug/Kg	₽	08/26/13 09:52	08/29/13 10:32	
,4-Dichlorobenzene	5.7	U	5.7	0.94	ug/Kg	₽	08/26/13 09:52	08/29/13 10:32	
ichlorodifluoromethane	5.7	U	5.7	1.5	ug/Kg	₽	08/26/13 09:52	08/29/13 10:32	
,1-Dichloroethane	5.7	U	5.7	0.95	ug/Kg	₽	08/26/13 09:52	08/29/13 10:32	
,2-Dichloroethane	5.7	U	5.7	0.94	ug/Kg	₽	08/26/13 09:52	08/29/13 10:32	
,1-Dichloroethene	5.7	U	5.7	0.86	ug/Kg	₽	08/26/13 09:52	08/29/13 10:32	
,2-Dichloropropane	5.7	U	5.7	0.85	ug/Kg	₽	08/26/13 09:52	08/29/13 10:32	
iisopropyl ether	5.7	U	5.7	0.63	ug/Kg		08/26/13 09:52	08/29/13 10:32	
thylbenzene	5.7	U	5.7	0.70	ug/Kg	₽	08/26/13 09:52	08/29/13 10:32	
thylene Dibromide	5.7	U	5.7	0.55	ug/Kg	₽	08/26/13 09:52	08/29/13 10:32	
thyl tert-butyl ether	5.7	U	5.7	0.64	ug/Kg		08/26/13 09:52	08/29/13 10:32	
-Hexanone	29	U	29	5.7	ug/Kg	₩	08/26/13 09:52	08/29/13 10:32	
sopropylbenzene	5.7	U	5.7	0.78	ug/Kg	₽	08/26/13 09:52	08/29/13 10:32	
lethyl acetate	5.7		5.7	5.3	ug/Kg		08/26/13 09:52	08/29/13 10:32	
lethylcyclohexane	5.7		5.7	1.0	ug/Kg	₽	08/26/13 09:52	08/29/13 10:32	
lethylene Chloride	17		17	11	ug/Kg	₽	08/26/13 09:52	08/29/13 10:32	
lethyl Ethyl Ketone	29		29	4.7	ug/Kg		08/26/13 09:52	08/29/13 10:32	
nethyl isobutyl ketone	29		29		ug/Kg	₽	08/26/13 09:52	08/29/13 10:32	
lethyl tert-butyl ether	5.7		5.7		ug/Kg	₽	08/26/13 09:52	08/29/13 10:32	
laphthalene	5.7		5.7	1.1	ug/Kg		08/26/13 09:52	08/29/13 10:32	
tyrene	5.7		5.7	0.87		<b>#</b>	08/26/13 09:52	08/29/13 10:32	
	5.7			0.50	ug/Kg ug/Kg	₩	08/26/13 09:52		
ert-amyl methyl ether			5.7					08/29/13 10:32	
ert-Butyl alcohol	5.7		5.7		ug/Kg	₩	08/26/13 09:52	08/29/13 10:32	
,1,2,2-Tetrachloroethane	5.7		5.7		ug/Kg	₩	08/26/13 09:52	08/29/13 10:32	
etrachloroethene	5.7		5.7		ug/Kg		08/26/13 09:52	08/29/13 10:32	
oluene	5.7		5.7		ug/Kg	‡ n	08/26/13 09:52	08/29/13 10:32	
rans-1,2-Dichloroethene	5.7		5.7		ug/Kg	<b>\$</b>	08/26/13 09:52	08/29/13 10:32	
ans-1,3-Dichloropropene	5.7		5.7		ug/Kg	· · · · · ·	08/26/13 09:52	08/29/13 10:32	
,2,4-Trichlorobenzene	5.7		5.7		ug/Kg		08/26/13 09:52	08/29/13 10:32	
,1,1-Trichloroethane	5.7		5.7	1.3	ug/Kg	<b>#</b>	08/26/13 09:52	08/29/13 10:32	
,1,2-Trichloroethane	5.7	11	5.7	1.1	ug/Kg	₩	08/26/13 09:52	08/29/13 10:32	

TestAmerica Savannah

TestAmerica Job ID: 680-93498-1

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

Lab Sample ID: 680-93498-14

TestAmerica Job ID: 680-93498-1

Matrix: Solid Percent Solids: 67.7

Client Sample ID: SB03-02 (0.0-1.0)

Date Collected: 08/21/13 12:50 Date Received: 08/22/13 09:39

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichlorofluoromethane	5.7	U	5.7	1.1	ug/Kg	₩	08/26/13 09:52	08/29/13 10:32	1
1,1,2-Trichloro-1,2,2-trifluoroethane	5.7	U	5.7	2.3	ug/Kg	₽	08/26/13 09:52	08/29/13 10:32	1
Vinyl chloride	5.7	U	5.7	1.1	ug/Kg	₽	08/26/13 09:52	08/29/13 10:32	1
Xylenes, Total	11	U	11	2.2	ug/Kg	₽	08/26/13 09:52	08/29/13 10:32	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	100		72 - 122				08/26/13 09:52	08/29/13 10:32	1
Dibromofluoromethane	105		79 - 123				08/26/13 09:52	08/29/13 10:32	1
Toluene-d8 (Surr)	99		80 - 120				08/26/13 09:52	08/29/13 10:32	1

- Toldene-do (Sull)									,
Method: 8270D - Semivolatile Or	•	•	•						
Analyte		Qualifier	RL	MDL		D	Prepared	Analyzed	Dil Fac
Benzaldehyde	480	U	480	85	ug/Kg	<del>*</del>	08/26/13 21:27	08/30/13 15:50	1
Phenol	480		480	50	ug/Kg	₩	08/26/13 21:27	08/30/13 15:50	1
Bis(2-chloroethyl)ether	480	U	480	66	ug/Kg	₩	08/26/13 21:27	08/30/13 15:50	1
2-Chlorophenol	480	U	480	59	ug/Kg	₩	08/26/13 21:27	08/30/13 15:50	1
2-Methylphenol	480	U	480	40	ug/Kg	₩	08/26/13 21:27	08/30/13 15:50	1
bis (2-chloroisopropyl) ether	480	U	480	44	ug/Kg	₩	08/26/13 21:27	08/30/13 15:50	1
Acetophenone	480	U	480	41	ug/Kg	₩	08/26/13 21:27	08/30/13 15:50	1
3 & 4 Methylphenol	480	U	480	63	ug/Kg	₩	08/26/13 21:27	08/30/13 15:50	1
N-Nitrosodi-n-propylamine	480	U	480	47	ug/Kg	₩	08/26/13 21:27	08/30/13 15:50	1
Hexachloroethane	480	U	480	41	ug/Kg	₩	08/26/13 21:27	08/30/13 15:50	1
Nitrobenzene	480	U	480	38	ug/Kg	₩	08/26/13 21:27	08/30/13 15:50	1
Isophorone	480	U	480	48	ug/Kg	₩	08/26/13 21:27	08/30/13 15:50	1
2-Nitrophenol	480	U	480	60	ug/Kg	₽	08/26/13 21:27	08/30/13 15:50	1
2,4-Dimethylphenol	480	U	480	65	ug/Kg	₩	08/26/13 21:27	08/30/13 15:50	1
Bis(2-chloroethoxy)methane	480	U	480	57	ug/Kg	₩	08/26/13 21:27	08/30/13 15:50	1
2,4-Dichlorophenol	480	U	480	51	ug/Kg		08/26/13 21:27	08/30/13 15:50	1
Naphthalene	420	J	480	44	ug/Kg	₩	08/26/13 21:27	08/30/13 15:50	1
4-Chloroaniline	970	U	970	76	ug/Kg	₩	08/26/13 21:27	08/30/13 15:50	1
Hexachlorobutadiene	480	U	480	53	ug/Kg		08/26/13 21:27	08/30/13 15:50	1
Caprolactam	480	U	480	97	ug/Kg	₩	08/26/13 21:27	08/30/13 15:50	1
4-Chloro-3-methylphenol	480	U	480	51	ug/Kg	₩	08/26/13 21:27	08/30/13 15:50	1
2-Methylnaphthalene	270		480	56	ug/Kg		08/26/13 21:27	08/30/13 15:50	1
Hexachlorocyclopentadiene	480	U	480	60	ug/Kg	₩	08/26/13 21:27	08/30/13 15:50	1
2,4,6-Trichlorophenol	480	U	480	43	ug/Kg	₩	08/26/13 21:27	08/30/13 15:50	1
2,4,5-Trichlorophenol	480	U	480	51	ug/Kg	ф.	08/26/13 21:27	08/30/13 15:50	1
1,1'-Biphenyl	1100	U	1100	1100	ug/Kg	₩	08/26/13 21:27	08/30/13 15:50	1
2-Chloronaphthalene	480	U	480	51	ug/Kg	₩	08/26/13 21:27	08/30/13 15:50	1
2-Nitroaniline	2500	U	2500	66	ug/Kg	φ.	08/26/13 21:27	08/30/13 15:50	1
Dimethyl phthalate	480	U	480	50	ug/Kg	₩	08/26/13 21:27	08/30/13 15:50	1
2,6-Dinitrotoluene	480	U	480	62	ug/Kg	₩	08/26/13 21:27	08/30/13 15:50	1
Acenaphthylene	480		480		ug/Kg		08/26/13 21:27	08/30/13 15:50	1
3-Nitroaniline	2500	U	2500	68	ug/Kg	₩	08/26/13 21:27	08/30/13 15:50	1
Acenaphthene	480	U	480	60	ug/Kg	₩	08/26/13 21:27	08/30/13 15:50	1
2,4-Dinitrophenol	2500		2500	1200	ug/Kg		08/26/13 21:27	08/30/13 15:50	1
4-Nitrophenol	2500		2500	480	ug/Kg	₽	08/26/13 21:27	08/30/13 15:50	1
Dibenzofuran	67		480		ug/Kg	₩	08/26/13 21:27	08/30/13 15:50	1
2,4-Dinitrotoluene	480		480		ug/Kg		08/26/13 21:27	08/30/13 15:50	
Diethyl phthalate	480		480		ug/Kg	₩	08/26/13 21:27	08/30/13 15:50	1

TestAmerica Savannah

9/13/2013

Client: ARCADIS U.S., Inc.

Surrogate

o-Terphenyl (Surr)

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB03-02 (0.0-1.0) Lab Sample ID: 680-93498-14

Date Collected: 08/21/13 12:50 Matrix: Solid Date Received: 08/22/13 09:39 Percent Solids: 67.7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
Fluorene	480	U	480	53	ug/Kg	<u> </u>	08/26/13 21:27	08/30/13 15:50	
4-Chlorophenyl phenyl ether	480	U	480	65	ug/Kg		08/26/13 21:27	08/30/13 15:50	,
4-Nitroaniline	2500	U	2500	72	ug/Kg	₽	08/26/13 21:27	08/30/13 15:50	1
4,6-Dinitro-2-methylphenol	2500	U	2500	250	ug/Kg	₽	08/26/13 21:27	08/30/13 15:50	1
N-Nitrosodiphenylamine	480	U *	480	48	ug/Kg		08/26/13 21:27	08/30/13 15:50	1
4-Bromophenyl phenyl ether	480	U	480	53	ug/Kg	☼	08/26/13 21:27	08/30/13 15:50	1
Hexachlorobenzene	480	U	480	57	ug/Kg	₽	08/26/13 21:27	08/30/13 15:50	1
Atrazine	480	U	480	34	ug/Kg		08/26/13 21:27	08/30/13 15:50	1
Pentachlorophenol	2500	U	2500	480	ug/Kg	₽	08/26/13 21:27	08/30/13 15:50	1
Phenanthrene	150	J	480	40	ug/Kg	☼	08/26/13 21:27	08/30/13 15:50	1
Anthracene	49	J	480	37	ug/Kg		08/26/13 21:27	08/30/13 15:50	1
Carbazole	480	U	480	44	ug/Kg	☼	08/26/13 21:27	08/30/13 15:50	1
Di-n-butyl phthalate	480	U	480	44	ug/Kg	₽	08/26/13 21:27	08/30/13 15:50	1
Fluoranthene	160	J	480	47	ug/Kg		08/26/13 21:27	08/30/13 15:50	1
Pyrene	56	J	480	40	ug/Kg	₽	08/26/13 21:27	08/30/13 15:50	1
Butyl benzyl phthalate	480	U	480	38	ug/Kg	₽	08/26/13 21:27	08/30/13 15:50	1
3,3'-Dichlorobenzidine	970	U	970	41	ug/Kg		08/26/13 21:27	08/30/13 15:50	1
Benzo[a]anthracene	50	J	480	40	ug/Kg	₽	08/26/13 21:27	08/30/13 15:50	1
Chrysene	70	J	480	31	ug/Kg	₽	08/26/13 21:27	08/30/13 15:50	1
Bis(2-ethylhexyl) phthalate	480	U	480	43	ug/Kg	\$	08/26/13 21:27	08/30/13 15:50	1
Di-n-octyl phthalate	480	U	480	43	ug/Kg	₽	08/26/13 21:27	08/30/13 15:50	1
Benzo[b]fluoranthene	480	U	480	56	ug/Kg	₽	08/26/13 21:27	08/30/13 15:50	1
Benzo[k]fluoranthene	480	U	480	96	ug/Kg		08/26/13 21:27	08/30/13 15:50	1
Benzo[a]pyrene	480	U	480	76	ug/Kg	☼	08/26/13 21:27	08/30/13 15:50	1
Indeno[1,2,3-cd]pyrene	480	U	480	41	ug/Kg	₽	08/26/13 21:27	08/30/13 15:50	1
Dibenz(a,h)anthracene	480	U	480	57	ug/Kg		08/26/13 21:27	08/30/13 15:50	1
Benzo[g,h,i]perylene	480	U	480	32	ug/Kg	₽	08/26/13 21:27	08/30/13 15:50	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	57		46 - 130				08/26/13 21:27	08/30/13 15:50	
2-Fluorobiphenyl	68		58 - 130				08/26/13 21:27	08/30/13 15:50	1
Terphenyl-d14 (Surr)	54	X	60 - 130				08/26/13 21:27	08/30/13 15:50	1
Phenol-d5 (Surr)	51		49 - 130				08/26/13 21:27	08/30/13 15:50	1
2-Fluorophenol (Surr)	53		40 - 130				08/26/13 21:27	08/30/13 15:50	1
2,4,6-Tribromophenol (Surr)	68		58 <sub>-</sub> 130				08/26/13 21:27	08/30/13 15:50	1
Method: 8015C - Nonhalogenate	d Organica uci	na GC/EID	Modified (Good	olino Bon	ao Oraan	ice)			
Analyte	_	Qualifier	RL		Unit	D D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO) -C6-C10	1100		310	23	ug/Kg	<del></del>	08/22/13 15:07	08/24/13 15:38	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene	128		70 - 131				08/22/13 15:07	08/24/13 15:38	1
Method: 8015C - Nonhalogenate									
Analyte	Result	Qualifier	RL		Unit	— <del>D</del>	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	26000		7200		ug/Kg		08/26/13 14:47	08/29/13 02:38	1

TestAmerica Savannah

9/13/2013

Analyzed

Prepared

TestAmerica Job ID: 680-93498-1

Limits

50 - 150

%Recovery Qualifier

67

Dil Fac

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93498-1

Client Sample ID: SB03-02 (3.0-4.0) Lab Sample ID: 680-93498-15 Date Collected: 08/21/13 13:00 Matrix: Solid

Method: 8260B - Volatile Organi	c Compounds (	GC/MS)							
Analyte		Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
Acetone	7.6	J	23	6.8	ug/Kg	₽	08/26/13 09:52	08/29/13 10:56	
Benzene	4.7	U	4.7	0.46	ug/Kg	₽	08/26/13 09:52	08/29/13 10:56	
Bromodichloromethane	4.7	U	4.7	0.78	ug/Kg	₩	08/26/13 09:52	08/29/13 10:56	
Bromoform	4.7	U	4.7	0.59	ug/Kg	₽	08/26/13 09:52	08/29/13 10:56	
Bromomethane	4.7	U	4.7	1.3	ug/Kg	₽	08/26/13 09:52	08/29/13 10:56	
Carbon disulfide	4.7	U	4.7	1.1	ug/Kg	₽	08/26/13 09:52	08/29/13 10:56	
Carbon tetrachloride	4.7	U	4.7	1.6	ug/Kg	₽	08/26/13 09:52	08/29/13 10:56	
Chlorobenzene	4.7	U	4.7	0.49	ug/Kg	₽	08/26/13 09:52	08/29/13 10:56	
Chloroethane	4.7	U	4.7	1.8	ug/Kg	₽	08/26/13 09:52	08/29/13 10:56	
Chloroform	4.7	U	4.7	0.55	ug/Kg	\$	08/26/13 09:52	08/29/13 10:56	
Chloromethane	4.7	U	4.7	0.93	ug/Kg	₽	08/26/13 09:52	08/29/13 10:56	
cis-1,2-Dichloroethene	4.7	U	4.7	0.71	ug/Kg	₽	08/26/13 09:52	08/29/13 10:56	
cis-1,3-Dichloropropene	4.7	U	4.7	1.1	ug/Kg		08/26/13 09:52	08/29/13 10:56	
Cyclohexane	4.7		4.7	0.88	ug/Kg	₽	08/26/13 09:52	08/29/13 10:56	
Dibromochloromethane	4.7		4.7	0.81		₩	08/26/13 09:52	08/29/13 10:56	
1,2-Dibromo-3-Chloropropane	4.7		4.7	3.1	ug/Kg		08/26/13 09:52	08/29/13 10:56	
1.2-Dichlorobenzene	4.7		4.7		ug/Kg	₽	08/26/13 09:52	08/29/13 10:56	
1.3-Dichlorobenzene	4.7		4.7	0.89	ug/Kg	₽	08/26/13 09:52	08/29/13 10:56	
1,4-Dichlorobenzene	4.7		4.7		ug/Kg		08/26/13 09:52	08/29/13 10:56	
Dichlorodifluoromethane	4.7		4.7		ug/Kg		08/26/13 09:52	08/29/13 10:56	
1,1-Dichloroethane	4.7		4.7		ug/Kg	₩	08/26/13 09:52	08/29/13 10:56	
1,2-Dichloroethane	4.7		4.7		ug/Kg ug/Kg		08/26/13 09:52	08/29/13 10:56	
1,1-Dichloroethene	4.7		4.7		ug/Kg ug/Kg	₩	08/26/13 09:52	08/29/13 10:56	
•	4.7		4.7			₩			
1,2-Dichloropropane				0.69	ug/Kg		08/26/13 09:52	08/29/13 10:56	
Diisopropyl ether	4.7		4.7		ug/Kg		08/26/13 09:52	08/29/13 10:56	
Ethylbenzene	4.7		4.7	0.57	ug/Kg	<b>‡</b>	08/26/13 09:52	08/29/13 10:56	
Ethylene Dibromide	4.7		4.7	0.45	ug/Kg	J	08/26/13 09:52	08/29/13 10:56	
Ethyl tert-butyl ether	4.7		4.7	0.52	ug/Kg		08/26/13 09:52	08/29/13 10:56	
2-Hexanone	23		23	4.7		<b>#</b>	08/26/13 09:52	08/29/13 10:56	
Isopropylbenzene	4.7		4.7	0.64	ug/Kg		08/26/13 09:52	08/29/13 10:56	
Methyl acetate	4.7		4.7	4.3	ug/Kg	₽-	08/26/13 09:52	08/29/13 10:56	
Methylcyclohexane	4.7	U	4.7	0.81	ug/Kg	₽	08/26/13 09:52	08/29/13 10:56	
Methylene Chloride	14	U	14	9.3	ug/Kg		08/26/13 09:52	08/29/13 10:56	
Methyl Ethyl Ketone	23	U	23	3.8	ug/Kg	₩	08/26/13 09:52	08/29/13 10:56	
methyl isobutyl ketone	23	U	23	3.7	ug/Kg	₽	08/26/13 09:52	08/29/13 10:56	
Methyl tert-butyl ether	4.7	U	4.7	0.93	ug/Kg	₽	08/26/13 09:52	08/29/13 10:56	
Naphthalene	4.7	U	4.7	0.93	ug/Kg	\$	08/26/13 09:52	08/29/13 10:56	
Styrene	4.7	U	4.7	0.71	ug/Kg	₽	08/26/13 09:52	08/29/13 10:56	
Tert-amyl methyl ether	4.7	U	4.7	0.41	ug/Kg	₽	08/26/13 09:52	08/29/13 10:56	
tert-Butyl alcohol	4.7	U	4.7	3.2	ug/Kg	₩	08/26/13 09:52	08/29/13 10:56	
1,1,2,2-Tetrachloroethane	4.7	U	4.7	0.67	ug/Kg	₩	08/26/13 09:52	08/29/13 10:56	
Tetrachloroethene	4.7	U	4.7	0.78	ug/Kg	₽	08/26/13 09:52	08/29/13 10:56	
Toluene	4.7	U	4.7	0.65	ug/Kg		08/26/13 09:52	08/29/13 10:56	
trans-1,2-Dichloroethene	4.7		4.7	0.71		₽	08/26/13 09:52	08/29/13 10:56	
trans-1,3-Dichloropropene	4.7	U	4.7		ug/Kg	₩	08/26/13 09:52	08/29/13 10:56	
1,2,4-Trichlorobenzene	4.7		4.7		ug/Kg		08/26/13 09:52	08/29/13 10:56	
1,1,1-Trichloroethane	4.7		4.7		ug/Kg	₩	08/26/13 09:52	08/29/13 10:56	
1,1,2-Trichloroethane	4.7		4.7		ug/Kg	₩	08/26/13 09:52	08/29/13 10:56	
Trichloroethene	4.7		4.7		ug/Kg		08/26/13 09:52	08/29/13 10:56	

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

Lab Sample ID: 680-93498-15

Matrix: Solid

TestAmerica Job ID: 680-93498-1

Percent Solids: 76.2

C	lient	Samp	le ID:	SB03-	-02 (	3.0-4	.0)
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Date Collected: 08/21/13 13:00 Date Received: 08/22/13 09:39

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichlorofluoromethane	1.3	J	4.7	0.89	ug/Kg	₽	08/26/13 09:52	08/29/13 10:56	1
1,1,2-Trichloro-1,2,2-trifluoroethane	4.7	U	4.7	1.9	ug/Kg	₽	08/26/13 09:52	08/29/13 10:56	1
Vinyl chloride	4.7	U	4.7	0.86	ug/Kg	\$	08/26/13 09:52	08/29/13 10:56	1
Xylenes, Total	9.3	U	9.3	1.8	ug/Kg	₽	08/26/13 09:52	08/29/13 10:56	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	100		72 - 122				08/26/13 09:52	08/29/13 10:56	1
Dibromofluoromethane	103		79 - 123				08/26/13 09:52	08/29/13 10:56	1
Toluene-d8 (Surr)	98		80 - 120				08/26/13 09:52	08/29/13 10:56	1

Toluene-d8 (Surr) -	98		80 - 120				08/26/13 09:52	08/29/13 10:56	1
Method: 8270D - Semivolatile Or	ganic Compou	nds (GC/MS	3)						
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzaldehyde	430	U	430	75	ug/Kg	<del>\</del>	08/26/13 21:27	08/30/13 16:15	1
Phenol	430	U	430	44	ug/Kg	₽	08/26/13 21:27	08/30/13 16:15	1
Bis(2-chloroethyl)ether	430	U	430	58	ug/Kg	₽	08/26/13 21:27	08/30/13 16:15	1
2-Chlorophenol	430	U	430	52	ug/Kg	\$	08/26/13 21:27	08/30/13 16:15	1
2-Methylphenol	430	U	430	35	ug/Kg	₩	08/26/13 21:27	08/30/13 16:15	1
bis (2-chloroisopropyl) ether	430	U	430	39	ug/Kg	₩	08/26/13 21:27	08/30/13 16:15	1
Acetophenone	430	U	430	36	ug/Kg	₩	08/26/13 21:27	08/30/13 16:15	1
3 & 4 Methylphenol	430	U	430	56	ug/Kg	₽	08/26/13 21:27	08/30/13 16:15	1
N-Nitrosodi-n-propylamine	430	U	430	41	ug/Kg	₽	08/26/13 21:27	08/30/13 16:15	1
Hexachloroethane	430	U	430	36	ug/Kg	φ.	08/26/13 21:27	08/30/13 16:15	1
Nitrobenzene	430	U	430	34	ug/Kg	₽	08/26/13 21:27	08/30/13 16:15	1
Isophorone	430	U	430	43	ug/Kg	₩	08/26/13 21:27	08/30/13 16:15	1
2-Nitrophenol	430	U	430	53	ug/Kg		08/26/13 21:27	08/30/13 16:15	1
2,4-Dimethylphenol	430	U	430	57	ug/Kg	₩	08/26/13 21:27	08/30/13 16:15	1
Bis(2-chloroethoxy)methane	430	U	430	50	ug/Kg	₩	08/26/13 21:27	08/30/13 16:15	1
2,4-Dichlorophenol	430	U	430	45	ug/Kg		08/26/13 21:27	08/30/13 16:15	1
Naphthalene	120	J	430	39	ug/Kg	₩	08/26/13 21:27	08/30/13 16:15	1
4-Chloroaniline	850	U	850	67	ug/Kg	₩	08/26/13 21:27	08/30/13 16:15	1
Hexachlorobutadiene	430	U	430	47	ug/Kg		08/26/13 21:27	08/30/13 16:15	1
Caprolactam	440		430	85	ug/Kg	₩	08/26/13 21:27	08/30/13 16:15	1
4-Chloro-3-methylphenol	430	U	430	45	ug/Kg	₩	08/26/13 21:27	08/30/13 16:15	1
2-Methylnaphthalene	70	J	430	49	ug/Kg		08/26/13 21:27	08/30/13 16:15	1
Hexachlorocyclopentadiene	430	U	430	53	ug/Kg	₩	08/26/13 21:27	08/30/13 16:15	1
2,4,6-Trichlorophenol	430	U	430	38	ug/Kg	₩	08/26/13 21:27	08/30/13 16:15	1
2,4,5-Trichlorophenol	430	U	430	45	ug/Kg		08/26/13 21:27	08/30/13 16:15	1
1,1'-Biphenyl	960	U	960	960	ug/Kg	₽	08/26/13 21:27	08/30/13 16:15	1
2-Chloronaphthalene	430	U	430	45	ug/Kg	₽	08/26/13 21:27	08/30/13 16:15	1
2-Nitroaniline	2200	U	2200	58	ug/Kg		08/26/13 21:27	08/30/13 16:15	1
Dimethyl phthalate	430	U	430	44	ug/Kg	₽	08/26/13 21:27	08/30/13 16:15	1
2,6-Dinitrotoluene	430	U	430	54	ug/Kg	₽	08/26/13 21:27	08/30/13 16:15	1
Acenaphthylene	430	U	430	47	ug/Kg	φ.	08/26/13 21:27	08/30/13 16:15	1
3-Nitroaniline	2200	U	2200	59	ug/Kg	₩	08/26/13 21:27	08/30/13 16:15	1
Acenaphthene	120	J	430	53	ug/Kg	₩	08/26/13 21:27	08/30/13 16:15	1
2,4-Dinitrophenol	2200		2200	1100	ug/Kg		08/26/13 21:27	08/30/13 16:15	1
4-Nitrophenol	2200		2200	430	ug/Kg	₩	08/26/13 21:27	08/30/13 16:15	1
Dibenzofuran	430		430	43	ug/Kg	₩	08/26/13 21:27	08/30/13 16:15	1
2,4-Dinitrotoluene	430		430		ug/Kg		08/26/13 21:27	08/30/13 16:15	1
Diethyl phthalate	430		430		ug/Kg	₩	08/26/13 21:27	08/30/13 16:15	1

TestAmerica Savannah

3

E

6

8

9

4 4

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB03-02 (3.0-4.0)

Lab Sample ID: 680-93498-15 Date Collected: 08/21/13 13:00 Matrix: Solid Date Received: 08/22/13 09:39 Percent Solids: 76.2

Analyte		Qualifier	RL	MDL		D	Prepared	Analyzed	Dil F
Fluorene	260	J	430	47	ug/Kg	₩	08/26/13 21:27	08/30/13 16:15	
4-Chlorophenyl phenyl ether	430	U	430	57	ug/Kg	₽	08/26/13 21:27	08/30/13 16:15	
4-Nitroaniline	2200	U	2200	63	ug/Kg	₽	08/26/13 21:27	08/30/13 16:15	
4,6-Dinitro-2-methylphenol	2200	U	2200	220	ug/Kg	₽	08/26/13 21:27	08/30/13 16:15	
N-Nitrosodiphenylamine	430	U *	430	43	ug/Kg	₽	08/26/13 21:27	08/30/13 16:15	
4-Bromophenyl phenyl ether	430	U	430	47	ug/Kg	☼	08/26/13 21:27	08/30/13 16:15	
Hexachlorobenzene	430	U	430	50	ug/Kg	☼	08/26/13 21:27	08/30/13 16:15	
Atrazine	430	U	430	30	ug/Kg	₽	08/26/13 21:27	08/30/13 16:15	
Pentachlorophenol	2200	U	2200	430	ug/Kg	₽	08/26/13 21:27	08/30/13 16:15	
Phenanthrene	430	U	430	35	ug/Kg	☼	08/26/13 21:27	08/30/13 16:15	
Anthracene	430	U	430	32	ug/Kg	₽	08/26/13 21:27	08/30/13 16:15	
Carbazole	430	U	430	39	ug/Kg	≎	08/26/13 21:27	08/30/13 16:15	
Di-n-butyl phthalate	430	U	430	39	ug/Kg	₽	08/26/13 21:27	08/30/13 16:15	
Fluoranthene	120		430	41	ug/Kg	Φ.	08/26/13 21:27	08/30/13 16:15	
Pyrene	430	U	430		ug/Kg	₽	08/26/13 21:27	08/30/13 16:15	
Butyl benzyl phthalate	430	U	430		ug/Kg	☼	08/26/13 21:27	08/30/13 16:15	
3,3'-Dichlorobenzidine	850	U	850		ug/Kg		08/26/13 21:27	08/30/13 16:15	
Benzo[a]anthracene	430		430		ug/Kg	₽	08/26/13 21:27	08/30/13 16:15	
Chrysene	430		430	27	ug/Kg	₽	08/26/13 21:27	08/30/13 16:15	
Bis(2-ethylhexyl) phthalate	430		430		ug/Kg	· · · · · · · · · · · · · · · · · · ·	08/26/13 21:27	08/30/13 16:15	
Di-n-octyl phthalate	430		430	38	ug/Kg	₽	08/26/13 21:27	08/30/13 16:15	
Benzo[b]fluoranthene	430		430	49	ug/Kg	₽	08/26/13 21:27	08/30/13 16:15	
Benzo[k]fluoranthene	430		430		ug/Kg		08/26/13 21:27	08/30/13 16:15	
Benzo[a]pyrene	430		430	67		₽	08/26/13 21:27	08/30/13 16:15	
Indeno[1,2,3-cd]pyrene	430		430		ug/Kg	₽	08/26/13 21:27	08/30/13 16:15	
Dibenz(a,h)anthracene	430		430		ug/Kg		08/26/13 21:27	08/30/13 16:15	
Benzo[g,h,i]perylene	430		430		ug/Kg	₩	08/26/13 21:27	08/30/13 16:15	
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil F
Nitrobenzene-d5 (Surr)	62		46 - 130				08/26/13 21:27	08/30/13 16:15	
2-Fluorobiphenyl	81		58 - 130				08/26/13 21:27	08/30/13 16:15	
Terphenyl-d14 (Surr)	68		60 - 130				08/26/13 21:27	08/30/13 16:15	
Phenol-d5 (Surr)	64		49 - 130				08/26/13 21:27	08/30/13 16:15	
2-Fluorophenol (Surr)	63		40 - 130				08/26/13 21:27	08/30/13 16:15	
2,4,6-Tribromophenol (Surr)	83		58 - 130				08/26/13 21:27	08/30/13 16:15	
Method: 8015C - Nonhalogenate	ed Organics usi	ng GC/FID ·	Modified (Gaso	line Ran	ge Organi	cs)			
Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil F
Gasoline Range Organics (GRO) -C6-C10	380		240	18	ug/Kg	<del>\</del>	08/22/13 15:07	08/28/13 18:00	
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil F
a,a,a-Trifluorotoluene	88		70 - 131				08/22/13 15:07	08/28/13 18:00	
Method: 8015C - Nonhalogenate	_	_	•	_	_	•			
Analyte		Qualifier	RL		Unit	D	Prepared	Analyzed	Dil F
Diesel Range Organics [C10-C28]	7200		6500		ug/Kg	<u> </u>	08/26/13 14:47	08/29/13 02:54	
ORO C24-C40	2800	J	6500	1800	ug/Kg	₽	08/26/13 14:47	08/29/13 02:54	
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil I
o-Terphenyl (Surr)	71		50 - 150				08/26/13 14:47	08/29/13 02:54	

Client: ARCADIS U.S., Inc.

Date Collected: 08/21/13 13:20

Toluene

Tert-amyl methyl ether

1,1,2,2-Tetrachloroethane

trans-1,2-Dichloroethene

1,2,4-Trichlorobenzene

1,1,1-Trichloroethane

1,1,2-Trichloroethane

Trichloroethene

trans-1,3-Dichloropropene

tert-Butyl alcohol

Tetrachloroethene

Project/Site: CSX C&O Canal Brunswick, MD Client Sample ID: SB03-03 (0.5-1.5)

TestAmerica Job ID: 680-93498-1

Lab Sample ID: 680-93498-16

Matrix: Solid

Percent Solids: 68.0

	_								
Method: 8260B - Volatile Organic Analyte	•	(GC/MS) Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
Acetone	29		35	10	ug/Kg	<u></u>	08/26/13 09:52	08/29/13 13:27	
Benzene	6.9	U	6.9	0.68	ug/Kg	₽	08/26/13 09:52	08/29/13 13:27	
Bromodichloromethane	6.9	U	6.9	1.2	ug/Kg	₽	08/26/13 09:52	08/29/13 13:27	
Bromoform	6.9	U	6.9	0.87	ug/Kg		08/26/13 09:52	08/29/13 13:27	
Bromomethane	6.9	U	6.9	1.9	ug/Kg	₽	08/26/13 09:52	08/29/13 13:27	
Carbon disulfide	6.9	U	6.9	1.7	ug/Kg	₩	08/26/13 09:52	08/29/13 13:27	
Carbon tetrachloride	6.9	U	6.9	2.4	ug/Kg	\$	08/26/13 09:52	08/29/13 13:27	
Chlorobenzene	6.9	U	6.9	0.72	ug/Kg	₩	08/26/13 09:52	08/29/13 13:27	
Chloroethane	6.9	U	6.9	2.6	ug/Kg	₽	08/26/13 09:52	08/29/13 13:27	
Chloroform	6.9	U	6.9		ug/Kg	\$	08/26/13 09:52	08/29/13 13:27	
Chloromethane	6.9	U	6.9	1.4	ug/Kg	₽	08/26/13 09:52	08/29/13 13:27	
cis-1,2-Dichloroethene	6.9	U	6.9	1.1	ug/Kg	₽	08/26/13 09:52	08/29/13 13:27	
cis-1,3-Dichloropropene	6.9	U	6.9	1.7	ug/Kg	\$	08/26/13 09:52	08/29/13 13:27	
Cyclohexane	6.9	U	6.9	1.3	ug/Kg	₩	08/26/13 09:52	08/29/13 13:27	
Dibromochloromethane	6.9	U	6.9	1.2	ug/Kg	₽	08/26/13 09:52	08/29/13 13:27	
1,2-Dibromo-3-Chloropropane	6.9	U	6.9	4.6	ug/Kg	₽	08/26/13 09:52	08/29/13 13:27	
1,2-Dichlorobenzene	6.9	U	6.9	0.98	ug/Kg	₩	08/26/13 09:52	08/29/13 13:27	
1,3-Dichlorobenzene	6.9	U	6.9		ug/Kg	₽	08/26/13 09:52	08/29/13 13:27	
1,4-Dichlorobenzene	6.9	U	6.9	1.1	ug/Kg	\$	08/26/13 09:52	08/29/13 13:27	
Dichlorodifluoromethane	6.9	U	6.9	1.8	ug/Kg	₽	08/26/13 09:52	08/29/13 13:27	
1,1-Dichloroethane	6.9	U	6.9	1.1	ug/Kg	₩	08/26/13 09:52	08/29/13 13:27	
1,2-Dichloroethane	6.9	U	6.9	1.1	ug/Kg		08/26/13 09:52	08/29/13 13:27	
1,1-Dichloroethene	6.9	U	6.9	1.0	ug/Kg	₩	08/26/13 09:52	08/29/13 13:27	
1,2-Dichloropropane	6.9	U	6.9	1.0	ug/Kg	₽	08/26/13 09:52	08/29/13 13:27	
Diisopropyl ether	6.9	U	6.9	0.76	ug/Kg		08/26/13 09:52	08/29/13 13:27	
Ethylbenzene	6.9	U	6.9	0.84	ug/Kg	₩	08/26/13 09:52	08/29/13 13:27	
Ethylene Dibromide	6.9	U	6.9	0.66	ug/Kg	₽	08/26/13 09:52	08/29/13 13:27	
Ethyl tert-butyl ether	6.9	U	6.9	0.77	ug/Kg	ф.	08/26/13 09:52	08/29/13 13:27	
2-Hexanone	35	U	35	6.9	ug/Kg	₽	08/26/13 09:52	08/29/13 13:27	
Isopropylbenzene	6.9	U	6.9	0.94	ug/Kg	₽	08/26/13 09:52	08/29/13 13:27	
Methyl acetate	6.9	U	6.9	6.4	ug/Kg	ф.	08/26/13 09:52	08/29/13 13:27	
Methylcyclohexane	6.9	U	6.9	1.2	ug/Kg	₽	08/26/13 09:52	08/29/13 13:27	
Methylene Chloride	21	U	21	14	ug/Kg	☼	08/26/13 09:52	08/29/13 13:27	
Methyl Ethyl Ketone	35	U	35				08/26/13 09:52	08/29/13 13:27	
methyl isobutyl ketone	35	U	35		ug/Kg	☼	08/26/13 09:52	08/29/13 13:27	
Methyl tert-butyl ether	6.9	U	6.9	1.4	ug/Kg	☼	08/26/13 09:52	08/29/13 13:27	
- · · · · · · · · · · · · · · · · · · ·									
Naphthalene	6.9	U	6.9	1.4	ug/Kg	₩	08/26/13 09:52	08/29/13 13:27	

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08/29/13 13:27

08/29/13 13:27 08/29/13 13:27

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6.9

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6.9

6.9

6.9 U

0.61 ug/Kg

4.7 ug/Kg

1.0 ug/Kg

1.2 ug/Kg

0.97 ug/Kg

1.1 ug/Kg

1.3 ug/Kg

1.0 ug/Kg

1.5 ug/Kg

1.3 ug/Kg

0.66 ug/Kg

08/26/13 09:52

08/26/13 09:52

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08/26/13 09:52

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Client: ARCADIS U.S., Inc.

Date Collected: 08/21/13 13:20

Date Received: 08/22/13 09:39

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB03-03 (0.5-1.5)

TestAmerica Job ID: 680-93498-1

Lab Sample ID: 680-93498-16

Matrix: Solid

Percent Solids: 68.0

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichlorofluoromethane	6.9	U	6.9	1.3	ug/Kg	₩	08/26/13 09:52	08/29/13 13:27	1
1,1,2-Trichloro-1,2,2-trifluoroethane	6.9	U	6.9	2.8	ug/Kg	₩	08/26/13 09:52	08/29/13 13:27	1
Vinyl chloride	6.9	U	6.9	1.3	ug/Kg	₽	08/26/13 09:52	08/29/13 13:27	1
Xylenes, Total	14	U	14	2.6	ug/Kg	₽	08/26/13 09:52	08/29/13 13:27	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	96		72 - 122	08/26/13 09:52	08/29/13 13:27	1
Dibromofluoromethane	103		79 - 123	08/26/13 09:52	08/29/13 13:27	1
Toluene-d8 (Surr)	98		80 - 120	08/26/13 09:52	08/29/13 13:27	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzaldehyde	480	U	480	84	ug/Kg	*	08/26/13 21:27	08/30/13 16:39	1
Phenol	480	U	480	50	ug/Kg	₩	08/26/13 21:27	08/30/13 16:39	1
Bis(2-chloroethyl)ether	480	U	480	66	ug/Kg	₩	08/26/13 21:27	08/30/13 16:39	1
2-Chlorophenol	480	U	480	58	ug/Kg	₩	08/26/13 21:27	08/30/13 16:39	1
2-Methylphenol	480	U	480	39	ug/Kg	₩	08/26/13 21:27	08/30/13 16:39	1
bis (2-chloroisopropyl) ether	480	U	480	44	ug/Kg	₩	08/26/13 21:27	08/30/13 16:39	1
Acetophenone	53	J	480	41	ug/Kg	₩	08/26/13 21:27	08/30/13 16:39	1
3 & 4 Methylphenol	480	U	480	63	ug/Kg	₩	08/26/13 21:27	08/30/13 16:39	1
N-Nitrosodi-n-propylamine	480	U	480	47	ug/Kg	₩	08/26/13 21:27	08/30/13 16:39	1
Hexachloroethane	480	U	480	41	ug/Kg	₩	08/26/13 21:27	08/30/13 16:39	1
Nitrobenzene	480	U	480	38	ug/Kg	≎	08/26/13 21:27	08/30/13 16:39	1
Isophorone	480	U	480	48	ug/Kg	≎	08/26/13 21:27	08/30/13 16:39	1
2-Nitrophenol	480	U	480	60	ug/Kg	*	08/26/13 21:27	08/30/13 16:39	1
2,4-Dimethylphenol	480	U	480	64	ug/Kg	₩	08/26/13 21:27	08/30/13 16:39	1
Bis(2-chloroethoxy)methane	480	U	480	57	ug/Kg	₩	08/26/13 21:27	08/30/13 16:39	1
2,4-Dichlorophenol	480	U	480	51	ug/Kg	₽	08/26/13 21:27	08/30/13 16:39	1
Naphthalene	560		480	44	ug/Kg	₩	08/26/13 21:27	08/30/13 16:39	1
4-Chloroaniline	960	U	960	76	ug/Kg	₽	08/26/13 21:27	08/30/13 16:39	1
Hexachlorobutadiene	480	U	480	52	ug/Kg	*	08/26/13 21:27	08/30/13 16:39	1
Caprolactam	480	U	480	96	ug/Kg	₩	08/26/13 21:27	08/30/13 16:39	1
4-Chloro-3-methylphenol	480	U	480	51	ug/Kg	₽	08/26/13 21:27	08/30/13 16:39	1
2-Methylnaphthalene	960		480	55	ug/Kg	*	08/26/13 21:27	08/30/13 16:39	1
Hexachlorocyclopentadiene	480	U	480	60	ug/Kg	₽	08/26/13 21:27	08/30/13 16:39	1
2,4,6-Trichlorophenol	480	U	480	42	ug/Kg	₩	08/26/13 21:27	08/30/13 16:39	1
2,4,5-Trichlorophenol	480	U	480	51	ug/Kg	₩	08/26/13 21:27	08/30/13 16:39	1
1,1'-Biphenyl	1100	U	1100	1100	ug/Kg	₽	08/26/13 21:27	08/30/13 16:39	1
2-Chloronaphthalene	480	U	480	51	ug/Kg	₩	08/26/13 21:27	08/30/13 16:39	1
2-Nitroaniline	2500	U	2500	66	ug/Kg	*	08/26/13 21:27	08/30/13 16:39	1
Dimethyl phthalate	480	U	480	50	ug/Kg	₩	08/26/13 21:27	08/30/13 16:39	1
2,6-Dinitrotoluene	480	U	480	61	ug/Kg	₩	08/26/13 21:27	08/30/13 16:39	1
Acenaphthylene	480	U	480	52	ug/Kg	\$	08/26/13 21:27	08/30/13 16:39	1
3-Nitroaniline	2500	U	2500	67	ug/Kg	₽	08/26/13 21:27	08/30/13 16:39	1
Acenaphthene	480	U	480	60	ug/Kg	₩	08/26/13 21:27	08/30/13 16:39	1
2,4-Dinitrophenol	2500	U	2500	1200	ug/Kg	₽	08/26/13 21:27	08/30/13 16:39	1
4-Nitrophenol	2500	U	2500	480	ug/Kg	₽	08/26/13 21:27	08/30/13 16:39	1
Dibenzofuran	100	J	480	48	ug/Kg	☼	08/26/13 21:27	08/30/13 16:39	1
2,4-Dinitrotoluene	480	U	480	71	ug/Kg		08/26/13 21:27	08/30/13 16:39	1
Diethyl phthalate	480	U	480	54	ug/Kg	₩	08/26/13 21:27	08/30/13 16:39	1

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11

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB03-03 (0.5-1.5)

Date Collected: 08/21/13 13:20 Date Received: 08/22/13 09:39

Diesel Range Organics [C10-C28]

ORO C24-C40

o-Terphenyl (Surr)

Surrogate

Lab Sample ID: 680-93498-16

Matrix: Solid

Percent Solids: 68.0

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluorene	480	U	480	52	ug/Kg	<u> </u>	08/26/13 21:27	08/30/13 16:39	1
4-Chlorophenyl phenyl ether	480	U	480	64	ug/Kg	\$	08/26/13 21:27	08/30/13 16:39	1
4-Nitroaniline	2500	U	2500	71	ug/Kg	₽	08/26/13 21:27	08/30/13 16:39	1
4,6-Dinitro-2-methylphenol	2500	U	2500	250	ug/Kg	₽	08/26/13 21:27	08/30/13 16:39	1
N-Nitrosodiphenylamine	480	U *	480	48	ug/Kg	₽	08/26/13 21:27	08/30/13 16:39	1
4-Bromophenyl phenyl ether	480	U	480	52	ug/Kg	₽	08/26/13 21:27	08/30/13 16:39	1
Hexachlorobenzene	480	U	480	57	ug/Kg	₽	08/26/13 21:27	08/30/13 16:39	1
Atrazine	480	U	480	34	ug/Kg	₽	08/26/13 21:27	08/30/13 16:39	1
Pentachlorophenol	2500	U	2500	480	ug/Kg	₽	08/26/13 21:27	08/30/13 16:39	1
Phenanthrene	190	J	480	39	ug/Kg	₽	08/26/13 21:27	08/30/13 16:39	1
Anthracene	480	U	480	36	ug/Kg	₽	08/26/13 21:27	08/30/13 16:39	1
Carbazole	480	U	480	44	ug/Kg	₽	08/26/13 21:27	08/30/13 16:39	1
Di-n-butyl phthalate	480	U	480	44	ug/Kg	₽	08/26/13 21:27	08/30/13 16:39	1
Fluoranthene	150	J	480	47	ug/Kg	₽	08/26/13 21:27	08/30/13 16:39	1
Pyrene	480	U	480	39	ug/Kg	₽	08/26/13 21:27	08/30/13 16:39	1
Butyl benzyl phthalate	480	U	480	38	ug/Kg	₽	08/26/13 21:27	08/30/13 16:39	1
3,3'-Dichlorobenzidine	960	U	960	41	ug/Kg	\$	08/26/13 21:27	08/30/13 16:39	1
Benzo[a]anthracene	480	U	480	39	ug/Kg	₩	08/26/13 21:27	08/30/13 16:39	1
Chrysene	41	J	480	31	ug/Kg	₩	08/26/13 21:27	08/30/13 16:39	1
Bis(2-ethylhexyl) phthalate	480	U	480	42	ug/Kg	\$	08/26/13 21:27	08/30/13 16:39	1
Di-n-octyl phthalate	480	U	480	42	ug/Kg	₩	08/26/13 21:27	08/30/13 16:39	1
Benzo[b]fluoranthene	480	U	480	55	ug/Kg	₽	08/26/13 21:27	08/30/13 16:39	1
Benzo[k]fluoranthene	480	U	480	95	ug/Kg	\$	08/26/13 21:27	08/30/13 16:39	1
Benzo[a]pyrene	480	U	480	76	ug/Kg	₩	08/26/13 21:27	08/30/13 16:39	1
Indeno[1,2,3-cd]pyrene	480	U	480	41	ug/Kg	₩	08/26/13 21:27	08/30/13 16:39	1
Dibenz(a,h)anthracene	480	U	480	57	ug/Kg		08/26/13 21:27	08/30/13 16:39	1
Benzo[g,h,i]perylene	480	U	480	32	ug/Kg	₽	08/26/13 21:27	08/30/13 16:39	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	64	-	46 - 130				08/26/13 21:27	08/30/13 16:39	1
2-Fluorobiphenyl	76		58 - 130				08/26/13 21:27	08/30/13 16:39	1
Terphenyl-d14 (Surr)	58	X	60 - 130				08/26/13 21:27	08/30/13 16:39	1
Phenol-d5 (Surr)	57		49 - 130				08/26/13 21:27	08/30/13 16:39	1
2-Fluorophenol (Surr)	59		40 - 130				08/26/13 21:27	08/30/13 16:39	1
2,4,6-Tribromophenol (Surr)	74		58 <sub>-</sub> 130				08/26/13 21:27	08/30/13 16:39	1
- Method: 8015C - Nonhalogenate	d Organics usi	ng GC/FID	-Modified (Gaso	line Ran	ige Organ	ics)			
Analyte	_	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO) -C6-C10	270	J	320	24	ug/Kg	<del>\</del>	08/22/13 15:07	08/24/13 16:18	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene	119		70 - 131				08/22/13 15:07	08/24/13 16:18	1

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Analyzed

08/29/13 03:10

08/29/13 03:10

Analyzed

08/29/13 03:10

RL

7300

7300

Limits

50 - 150

MDL Unit

2100 ug/Kg

2100 ug/Kg

D

Prepared

08/26/13 14:47

08/26/13 14:47

Prepared

08/26/13 14:47

Method: 8015C - Nonhalogenated Organics using GC/FID -Modified (Diesel Range Organics) Result Qualifier

%Recovery Qualifier

77

60000

71000

Dil Fac

Dil Fac

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93498-1

Lab Sample ID: 680-93498-17

Matrix: Solid

Percent Solids: 80.7

Client Sample	ID: SB03-03 (	(3.0-4.0)
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Date Collected: 08/21/13 13:30 Date Received: 08/22/13 09:39

Analyte	c Compounds Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
Acetone			21	6.1	ug/Kg	<del></del>	08/26/13 09:52	08/29/13 11:21	
Benzene	4.2		4.2	0.41	ug/Kg	₽	08/26/13 09:52	08/29/13 11:21	
Bromodichloromethane	4.2	U	4.2	0.70	ug/Kg	₽	08/26/13 09:52	08/29/13 11:21	
Bromoform	4.2		4.2	0.53	ug/Kg		08/26/13 09:52	08/29/13 11:21	
Bromomethane	4.2		4.2		ug/Kg	₽	08/26/13 09:52	08/29/13 11:21	
Carbon disulfide	4.2		4.2	1.0	ug/Kg	₽	08/26/13 09:52	08/29/13 11:21	
Carbon tetrachloride	4.2		4.2		ug/Kg		08/26/13 09:52	08/29/13 11:21	
Chlorobenzene	4.2		4.2		ug/Kg	₽	08/26/13 09:52	08/29/13 11:21	
Chloroethane	4.2		4.2		ug/Kg ug/Kg	*	08/26/13 09:52	08/29/13 11:21	
Chloroform	4.2		4.2		ug/Kg		08/26/13 09:52	08/29/13 11:21	
Chloromethane	4.2		4.2			₩	08/26/13 09:52	08/29/13 11:21	
cis-1,2-Dichloroethene	4.2		4.2		ug/Kg ug/Kg		08/26/13 09:52	08/29/13 11:21	
	4.2		4.2				08/26/13 09:52	08/29/13 11:21	
cis-1,3-Dichloropropene					ug/Kg	~ ⇔			
Cyclohexane	4.2		4.2	0.79	ug/Kg	₩ \$	08/26/13 09:52	08/29/13 11:21	
Dibromochloromethane	4.2		4.2	0.73	ug/Kg	¥	08/26/13 09:52	08/29/13 11:21	
1,2-Dibromo-3-Chloropropane	4.2		4.2		ug/Kg		08/26/13 09:52	08/29/13 11:21	
1,2-Dichlorobenzene	4.2		4.2	0.60	ug/Kg		08/26/13 09:52	08/29/13 11:21	
1,3-Dichlorobenzene	4.2		4.2	0.80	ug/Kg	<u></u> .	08/26/13 09:52	08/29/13 11:21	
1,4-Dichlorobenzene	4.2		4.2	0.69	ug/Kg	*	08/26/13 09:52	08/29/13 11:21	
Dichlorodifluoromethane	4.2		4.2	1.1	ug/Kg	<b>*</b>	08/26/13 09:52	08/29/13 11:21	
1,1-Dichloroethane	4.2		4.2		ug/Kg		08/26/13 09:52	08/29/13 11:21	
1,2-Dichloroethane	4.2		4.2	0.69	ug/Kg	₽	08/26/13 09:52	08/29/13 11:21	
1,1-Dichloroethene	4.2	U	4.2	0.63	ug/Kg	☼	08/26/13 09:52	08/29/13 11:21	
1,2-Dichloropropane	4.2	U	4.2	0.62	ug/Kg		08/26/13 09:52	08/29/13 11:21	
Diisopropyl ether	4.2	U	4.2	0.46	ug/Kg	₽	08/26/13 09:52	08/29/13 11:21	
Ethylbenzene	4.2	U	4.2	0.51	ug/Kg	₽	08/26/13 09:52	08/29/13 11:21	
Ethylene Dibromide	4.2	U	4.2	0.40	ug/Kg	₽	08/26/13 09:52	08/29/13 11:21	
Ethyl tert-butyl ether	4.2	U	4.2	0.47	ug/Kg	₽	08/26/13 09:52	08/29/13 11:21	
2-Hexanone	21	U	21	4.2	ug/Kg	☼	08/26/13 09:52	08/29/13 11:21	
Isopropylbenzene	4.2	U	4.2	0.57	ug/Kg	₽	08/26/13 09:52	08/29/13 11:21	
Methyl acetate	4.2	U	4.2	3.9	ug/Kg	₽	08/26/13 09:52	08/29/13 11:21	
Methylcyclohexane	4.2	U	4.2	0.73	ug/Kg	₽	08/26/13 09:52	08/29/13 11:21	
Methylene Chloride	13	U	13	8.4	ug/Kg	₽	08/26/13 09:52	08/29/13 11:21	
Methyl Ethyl Ketone	21	U	21	3.4	ug/Kg		08/26/13 09:52	08/29/13 11:21	
methyl isobutyl ketone	21	U	21	3.4	ug/Kg	₽	08/26/13 09:52	08/29/13 11:21	
Methyl tert-butyl ether	4.2	U	4.2	0.84	ug/Kg	₽	08/26/13 09:52	08/29/13 11:21	
Naphthalene	4.2	U	4.2		ug/Kg		08/26/13 09:52	08/29/13 11:21	
Styrene	4.2		4.2		ug/Kg	₽	08/26/13 09:52	08/29/13 11:21	
Tert-amyl methyl ether	4.2		4.2		ug/Kg	₽	08/26/13 09:52	08/29/13 11:21	
tert-Butyl alcohol	4.2		4.2		ug/Kg	<del>-</del>	08/26/13 09:52	08/29/13 11:21	
1,1,2,2-Tetrachloroethane	4.2		4.2		ug/Kg	₽	08/26/13 09:52	08/29/13 11:21	
Tetrachloroethene	4.2		4.2		ug/Kg	₩	08/26/13 09:52	08/29/13 11:21	
Toluene	4.2		4.2		ug/Kg		08/26/13 09:52	08/29/13 11:21	
rans-1,2-Dichloroethene	4.2		4.2		ug/Kg ug/Kg	т Ф	08/26/13 09:52	08/29/13 11:21	
,						т Ф			
rans-1,3-Dichloropropene	4.2		4.2		ug/Kg		08/26/13 09:52	08/29/13 11:21	
1,2,4-Trichlorobenzene	4.2		4.2		ug/Kg	Ÿ ĸ	08/26/13 09:52	08/29/13 11:21	
1,1,1-Trichloroethane	4.2		4.2		ug/Kg	<b>‡</b>	08/26/13 09:52	08/29/13 11:21	
1,1,2-Trichloroethane	4.2	U	4.2	0.77	ug/Kg	₽	08/26/13 09:52	08/29/13 11:21	

TestAmerica Savannah

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB03-03 (3.0-4.0)

Lab Sample ID: 680-93498-17

Date Collected: 08/21/13 13:30

Lab Sample 1D. 680-93496-17

Matrix: Solid

Date Received: 08/22/13 09:39 Percent Solids: 80.7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichlorofluoromethane	2.4	J	4.2	0.80	ug/Kg	₩	08/26/13 09:52	08/29/13 11:21	1
1,1,2-Trichloro-1,2,2-trifluoroethane	4.2	U	4.2	1.7	ug/Kg	₽	08/26/13 09:52	08/29/13 11:21	1
Vinyl chloride	4.2	U	4.2	0.77	ug/Kg	₽	08/26/13 09:52	08/29/13 11:21	1
Xylenes, Total	8.4	U	8.4	1.6	ug/Kg	₩	08/26/13 09:52	08/29/13 11:21	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	100		72 - 122				08/26/13 09:52	08/29/13 11:21	1
Dibromofluoromethane	104		79 - 123				08/26/13 09:52	08/29/13 11:21	1
Toluene-d8 (Surr)	99		80 - 120				08/26/13 09:52	08/29/13 11:21	1

Toluene-as (Surr)	99		80 - 120				08/26/13 09:52	08/29/13 11:21	7
Method: 8270D - Semivolatile C	•	•	•						
Analyte		Qualifier	RL	MDL		— <del>D</del>	Prepared	Analyzed	Dil Fac
Benzaldehyde	400	U	400	71	ug/Kg		08/26/13 21:27	08/30/13 17:04	1
Phenol	400		400	42	ug/Kg	*	08/26/13 21:27	08/30/13 17:04	1
Bis(2-chloroethyl)ether	400		400	55	ug/Kg		08/26/13 21:27	08/30/13 17:04	1
2-Chlorophenol	400		400	49	ug/Kg	₩	08/26/13 21:27	08/30/13 17:04	1
2-Methylphenol	400	U	400	33	ug/Kg	₩	08/26/13 21:27	08/30/13 17:04	1
bis (2-chloroisopropyl) ether	400	U	400	37	ug/Kg	₩	08/26/13 21:27	08/30/13 17:04	1
Acetophenone	400	U	400	34	ug/Kg	₽	08/26/13 21:27	08/30/13 17:04	1
3 & 4 Methylphenol	400	U	400	53	ug/Kg	₩	08/26/13 21:27	08/30/13 17:04	1
N-Nitrosodi-n-propylamine	400	U	400	39	ug/Kg	₩	08/26/13 21:27	08/30/13 17:04	1
Hexachloroethane	400	U	400	34	ug/Kg	₩	08/26/13 21:27	08/30/13 17:04	1
Nitrobenzene	400	U	400	32	ug/Kg	₽	08/26/13 21:27	08/30/13 17:04	1
Isophorone	400	U	400	40	ug/Kg	₽	08/26/13 21:27	08/30/13 17:04	1
2-Nitrophenol	400	U	400	50	ug/Kg	₩	08/26/13 21:27	08/30/13 17:04	1
2,4-Dimethylphenol	400	U	400	54	ug/Kg	₩	08/26/13 21:27	08/30/13 17:04	1
Bis(2-chloroethoxy)methane	400	U	400	48	ug/Kg	₩	08/26/13 21:27	08/30/13 17:04	1
2,4-Dichlorophenol	400	U	400	43	ug/Kg	ф.	08/26/13 21:27	08/30/13 17:04	1
Naphthalene	400	U	400	37	ug/Kg	₽	08/26/13 21:27	08/30/13 17:04	1
4-Chloroaniline	810	U	810	64	ug/Kg	₩	08/26/13 21:27	08/30/13 17:04	1
Hexachlorobutadiene	400		400	44	ug/Kg		08/26/13 21:27	08/30/13 17:04	1
Caprolactam	400	U	400	81	ug/Kg	₩	08/26/13 21:27	08/30/13 17:04	1
4-Chloro-3-methylphenol	400	U	400	43	ug/Kg	₩	08/26/13 21:27	08/30/13 17:04	1
2-Methylnaphthalene	400		400	47	ug/Kg		08/26/13 21:27	08/30/13 17:04	1
Hexachlorocyclopentadiene	400	U	400	50	ug/Kg	₽	08/26/13 21:27	08/30/13 17:04	1
2,4,6-Trichlorophenol	400	U	400	35	ug/Kg	₽	08/26/13 21:27	08/30/13 17:04	1
2,4,5-Trichlorophenol	400		400		ug/Kg		08/26/13 21:27	08/30/13 17:04	1
1,1'-Biphenyl	910		910	910	ug/Kg	₩	08/26/13 21:27	08/30/13 17:04	1
2-Chloronaphthalene	400		400	43	ug/Kg	₽	08/26/13 21:27	08/30/13 17:04	1
2-Nitroaniline	2100		2100		ug/Kg		08/26/13 21:27	08/30/13 17:04	1
Dimethyl phthalate	400		400	42	ug/Kg	₩	08/26/13 21:27	08/30/13 17:04	1
2,6-Dinitrotoluene	400		400		ug/Kg	₩	08/26/13 21:27	08/30/13 17:04	1
Acenaphthylene	400		400	44	ug/Kg		08/26/13 21:27	08/30/13 17:04	 1
3-Nitroaniline	2100		2100	56	ug/Kg	₩	08/26/13 21:27	08/30/13 17:04	1
Acenaphthene	400		400	50	ug/Kg	*	08/26/13 21:27	08/30/13 17:04	1
2,4-Dinitrophenol	2100		2100	1000	ug/Kg	· · · · · · · ·	08/26/13 21:27	08/30/13 17:04	
4-Nitrophenol	2100		2100	400	ug/Kg ug/Kg		08/26/13 21:27	08/30/13 17:04	1
·	400		400						
Dibenzofuran				40	ug/Kg	<del>*</del>	08/26/13 21:27	08/30/13 17:04	
2,4-Dinitrotoluene			400		ug/Kg		08/26/13 21:27	08/30/13 17:04	1
Diethyl phthalate	400	U	400	45	ug/Kg	₩	08/26/13 21:27	08/30/13 17:04	1

TestAmerica Savannah

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TestAmerica Job ID: 680-93498-1

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4 4

Client: ARCADIS U.S., Inc.

Diesel Range Organics [C10-C28]

ORO C24-C40

o-Terphenyl (Surr)

Surrogate

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB03-03 (3.0-4.0) Lab Sample ID: 680-93498-17

Date Collected: 08/21/13 13:30 Matrix: Solid Date Received: 08/22/13 09:39 Percent Solids: 80.7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluorene	400	U	400	44	ug/Kg	₩	08/26/13 21:27	08/30/13 17:04	
4-Chlorophenyl phenyl ether	400	U	400	54	ug/Kg	₽	08/26/13 21:27	08/30/13 17:04	• • • • • • • • • • • • • • • • • • • •
4-Nitroaniline	2100	U	2100	60	ug/Kg	₽	08/26/13 21:27	08/30/13 17:04	1
4,6-Dinitro-2-methylphenol	2100	U	2100	210	ug/Kg	₽	08/26/13 21:27	08/30/13 17:04	1
N-Nitrosodiphenylamine	400	U *	400	40	ug/Kg	₽	08/26/13 21:27	08/30/13 17:04	
4-Bromophenyl phenyl ether	400	U	400	44	ug/Kg	₩	08/26/13 21:27	08/30/13 17:04	1
Hexachlorobenzene	400	U	400	48	ug/Kg	₩	08/26/13 21:27	08/30/13 17:04	1
Atrazine	400	U	400	28	ug/Kg	₩	08/26/13 21:27	08/30/13 17:04	
Pentachlorophenol	2100	U	2100	400	ug/Kg	₽	08/26/13 21:27	08/30/13 17:04	•
Phenanthrene	400	U	400	33	ug/Kg	₩	08/26/13 21:27	08/30/13 17:04	1
Anthracene	400	U	400	31	ug/Kg	₩	08/26/13 21:27	08/30/13 17:04	1
Carbazole	400	U	400	37	ug/Kg	₽	08/26/13 21:27	08/30/13 17:04	1
Di-n-butyl phthalate	400	U	400	37	ug/Kg	₽	08/26/13 21:27	08/30/13 17:04	1
Fluoranthene	400	U	400	39	ug/Kg	₽	08/26/13 21:27	08/30/13 17:04	
Pyrene	400	U	400	33	ug/Kg	₽	08/26/13 21:27	08/30/13 17:04	•
Butyl benzyl phthalate	400	U	400	32	ug/Kg	₽	08/26/13 21:27	08/30/13 17:04	•
3,3'-Dichlorobenzidine	810	U	810	34	ug/Kg	₽	08/26/13 21:27	08/30/13 17:04	
Benzo[a]anthracene	400	U	400	33	ug/Kg	₽	08/26/13 21:27	08/30/13 17:04	•
Chrysene	400	U	400	26	ug/Kg	₽	08/26/13 21:27	08/30/13 17:04	•
Bis(2-ethylhexyl) phthalate	400	U	400	35	ug/Kg	₽	08/26/13 21:27	08/30/13 17:04	
Di-n-octyl phthalate	400	U	400	35	ug/Kg	₽	08/26/13 21:27	08/30/13 17:04	•
Benzo[b]fluoranthene	400	U	400	47	ug/Kg	₽	08/26/13 21:27	08/30/13 17:04	1
Benzo[k]fluoranthene	400	U	400	80	ug/Kg	₽	08/26/13 21:27	08/30/13 17:04	
Benzo[a]pyrene	400	U	400	64	ug/Kg	₽	08/26/13 21:27	08/30/13 17:04	•
Indeno[1,2,3-cd]pyrene	400	U	400	34	ug/Kg	≎	08/26/13 21:27	08/30/13 17:04	
Dibenz(a,h)anthracene	400	U	400	48	ug/Kg	₩	08/26/13 21:27	08/30/13 17:04	,
Benzo[g,h,i]perylene	400	U	400	27	ug/Kg	₩	08/26/13 21:27	08/30/13 17:04	,
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fa
Nitrobenzene-d5 (Surr)	65	-	46 - 130				08/26/13 21:27	08/30/13 17:04	-
2-Fluorobiphenyl	79		58 - 130				08/26/13 21:27	08/30/13 17:04	1
Terphenyl-d14 (Surr)	67		60 - 130				08/26/13 21:27	08/30/13 17:04	
Phenol-d5 (Surr)	62		49 - 130				08/26/13 21:27	08/30/13 17:04	1
2-Fluorophenol (Surr)	65		40 - 130				08/26/13 21:27	08/30/13 17:04	
2,4,6-Tribromophenol (Surr)	81		58 <sub>-</sub> 130				08/26/13 21:27	08/30/13 17:04	1
Method: 8015C - Nonhalogenate	ed Organics usi	ng GC/FID	-Modified (Gaso	oline Ran	ge Organ	ics)			
Analyte		Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
Gasoline Range Organics (GRO) -C6-C10	1100		240	18	ug/Kg	<del></del>	08/22/13 15:07	08/28/13 18:20	
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fa
a,a,a-Trifluorotoluene	106	-	70 - 131				08/22/13 15:07	08/28/13 18:20	
			-						
Method: 8015C - Nonhalogenate		_		_	_	-			
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa

TestAmerica Savannah

6100

6100

Limits

50 - 150

1700 ug/Kg

1700 ug/Kg

5500

2500 J

%Recovery Qualifier

59

TestAmerica Job ID: 680-93498-1

Dil Fac

08/26/13 14:47 08/29/13 03:25 08/26/13 14:47 08/29/13 03:25

Analyzed

Prepared

08/26/13 14:47

08/29/13 03:25

Client: ARCADIS U.S., Inc.

Toluene

trans-1,2-Dichloroethene

trans-1,3-Dichloropropene

1,2,4-Trichlorobenzene

1,1,1-Trichloroethane

1,1,2-Trichloroethane

Trichloroethene

Project/Site: CSX C&O Canal Brunswick, MD

Lab Sample ID: 680-93498-18

Client Sample ID: SB03-04 (0.5-1.5)

Date Collected: 08/21/13 13:50 Matrix: Solid Date Received: 08/22/13 09:39 Percent Solids: 53.9

Method: 8260B - Volatile Organic Compounds (GC/MS) RL MDL D Dil Fac Result Qualifier Unit Prepared Analyzed 45 08/26/13 09:52 Acetone 54 13 ug/Kg 08/29/13 11:47 Benzene 91 U 9 1 08/26/13 09:52 08/29/13 11:47 0.89 ug/Kg ä Bromodichloromethane 9.1 U 9.1 1.5 ug/Kg 08/26/13 09:52 08/29/13 11:47 φ 9.1 U 9.1 1.1 08/26/13 09:52 08/29/13 11:47 Bromoform ug/Kg Bromomethane 9.1 U 9.1 2.5 ug/Kg 08/26/13 09:52 08/29/13 11:47 ф 08/26/13 09:52 Carbon disulfide 91 U 91 22 ug/Kg 08/29/13 11:47 ug/Kg φ Carbon tetrachloride U 9.1 3.1 08/26/13 09:52 08/29/13 11:47 9.1 9.1 U 08/26/13 09:52 Chlorobenzene 9.1 0.94 ug/Kg 08/29/13 11:47 ä Chloroethane 9.1 U 9.1 3.4 ug/Kg 08/26/13 09:52 08/29/13 11:47 φ Chloroform 9.1 9.1 1.1 ug/Kg 08/26/13 09:52 08/29/13 11:47 ġ Chloromethane 9.1 U 9.1 1.8 ug/Kg 08/26/13 09:52 08/29/13 11:47 ď 08/26/13 09:52 cis-1,2-Dichloroethene 9.1 U 9.1 1.4 ug/Kg 08/29/13 11:47 ġ cis-1.3-Dichloropropene 91 U 91 2.2 ug/Kg 08/26/13 09:52 08/29/13 11:47 Cyclohexane 9.1 9.1 1.7 ug/Kg 08/26/13 09:52 08/29/13 11:47 ġ 08/26/13 09:52 08/29/13 11:47 Dibromochloromethane 91 U 9 1 1.6 ug/Kg à 1,2-Dibromo-3-Chloropropane 08/26/13 09:52 08/29/13 11:47 U 9.1 ug/Kg 08/26/13 09:52 1.2-Dichlorobenzene 9.1 U 9.1 1.3 ug/Kg 08/29/13 11:47 1,3-Dichlorobenzene 9.1 08/26/13 09:52 08/29/13 11:47 9.1 U ug/Kg Ü 9.1 ψ 08/26/13 09:52 08/29/13 11:47 1.4-Dichlorobenzene 9.1 1.5 ug/Kg ₩ Dichlorodifluoromethane 9.1 U 9.1 2.4 ug/Kg 08/26/13 09:52 08/29/13 11:47 9.1 U ₽ 08/26/13 09:52 1,1-Dichloroethane 9.1 1.5 ua/Ka 08/29/13 11:47 φ 1.2-Dichloroethane 91 U 9.1 1.5 ug/Kg 08/26/13 09:52 08/29/13 11:47 ₩ 1,1-Dichloroethene 9.1 08/26/13 09:52 08/29/13 11:47 9.1 1.4 ua/Ka ġ 1,2-Dichloropropane 9.1 U 9.1 1.3 ug/Kg 08/26/13 09:52 08/29/13 11:47 Diisopropyl ether 9.1 U 9.1 1.0 08/26/13 09:52 08/29/13 11:47 ug/Kg Ethylbenzene 91 U 08/26/13 09:52 9.1 1.1 ug/Kg 08/29/13 11:47 Ethylene Dibromide 08/26/13 09:52 9.1 0.87 ug/Kg 08/29/13 11:47 ₽ Ethyl tert-butyl ether U 9.1 08/26/13 09:52 08/29/13 11:47 91 1.0 ug/Kg ₩ 45 U 45 08/26/13 09:52 08/29/13 11:47 2-Hexanone ug/Kg 08/26/13 09:52 Isopropylbenzene 9.1 U 9.1 08/29/13 11:47 1.2 ug/Kg Methyl acetate 9.1 U 9.1 8.3 ug/Kg 08/26/13 09:52 08/29/13 11:47 ₽ Methylcyclohexane 9.1 U 9.1 ug/Kg 08/26/13 09:52 08/29/13 11:47 1.6 ₩ Methylene Chloride 27 U 27 18 ug/Kg 08/26/13 09:52 08/29/13 11:47 ₽ Methyl Ethyl Ketone 45 U 45 7.4 08/26/13 09:52 08/29/13 11:47 ua/Ka ₽ methyl isobutyl ketone 45 U 45 ug/Kg 08/26/13 09:52 08/29/13 11:47 ₩ Methyl tert-butyl ether 9 1 9.1 ug/Kg 08/26/13 09:52 08/29/13 11:47 1.8 φ Naphthalene 08/26/13 09:52 9.1 U 9.1 1.8 ug/Kg 08/29/13 11:47 Styrene 9.1 U 9.1 1.4 ug/Kg 08/26/13 09:52 08/29/13 11:47 Tert-amyl methyl ether 91 U 9.1 0.80 08/26/13 09:52 08/29/13 11:47 ug/Kg à 08/26/13 09:52 tert-Butyl alcohol 9.1 6.2 ug/Kg 08/29/13 11:47 1,1,2,2-Tetrachloroethane ug/Kg 9.1 U 9.1 1.3 08/26/13 09:52 08/29/13 11:47 ₩ 9.1 U Tetrachloroethene 9.1 ug/Kg 08/26/13 09:52 08/29/13 11:47

TestAmerica Savannah

08/29/13 11:47

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1.3 ug/Kg

1.7 ug/Kg

1.3 ug/Kg

2.0

1.7 ug/Kg

0.87

ug/Kg

ug/Kg

ug/Kg

91 U

9.1 U

9.1 U

9.1 U

9.1 U

9.1 U

TestAmerica Job ID: 680-93498-1

Client: ARCADIS U.S., Inc.

Date Received: 08/22/13 09:39

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93498-1

Lab Sample ID: 680-93498-18

Matrix: Solid Percent Solids: 53.9

Client Sample ID: SB03-04 (0.5-1.5) Date Collected: 08/21/13 13:50

Method: 8260B - Volatile Organi	ic Compounds	(GC/MS) (C	ontinued)						
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichlorofluoromethane	4.7	J	9.1	1.7	ug/Kg	<u> </u>	08/26/13 09:52	08/29/13 11:47	1
1,1,2-Trichloro-1,2,2-trifluoroethane	9.1	U	9.1	3.6	ug/Kg	₩	08/26/13 09:52	08/29/13 11:47	1
Vinyl chloride	9.1	U	9.1	1.7	ug/Kg		08/26/13 09:52	08/29/13 11:47	1
Xylenes, Total	18	U	18	3.4	ug/Kg	₽	08/26/13 09:52	08/29/13 11:47	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	101		72 - 122				08/26/13 09:52	08/29/13 11:47	1
Dibromofluoromethane	103		79 - 123				08/26/13 09:52	08/29/13 11:47	1
Taluana de (Surr)	102		90 120				00/26/12 00:52	00/20/12 11:47	1

Toluene-d8 (Surr)	102		80 - 120				08/26/13 09:52	08/29/13 11:47	1
Method: 8270D - Semivolatile Org	•	•	•			_	_		
Analyte		Qualifier	RL	MDL		— <del>D</del>	Prepared	Analyzed	Dil Fac
Benzaldehyde	190		600	110	ug/Kg		08/26/13 21:27	08/30/13 17:29	1
Phenol Pic (Out the court to the theory	600		600	62	0 0	*	08/26/13 21:27	08/30/13 17:29	1
Bis(2-chloroethyl)ether	600		600		ug/Kg	 \$	08/26/13 21:27	08/30/13 17:29	
2-Chlorophenol	600	U	600	73	ug/Kg		08/26/13 21:27	08/30/13 17:29	1
2-Methylphenol	600		600	49	ug/Kg	₩	08/26/13 21:27	08/30/13 17:29	1
bis (2-chloroisopropyl) ether	600		600	55	ug/Kg		08/26/13 21:27	08/30/13 17:29	
Acetophenone	110		600	51	ug/Kg	₩	08/26/13 21:27	08/30/13 17:29	1
3 & 4 Methylphenol	600	U	600	79	ug/Kg	₩	08/26/13 21:27	08/30/13 17:29	1
N-Nitrosodi-n-propylamine	600		600	58	ug/Kg		08/26/13 21:27	08/30/13 17:29	1
Hexachloroethane	600		600		ug/Kg	₩	08/26/13 21:27	08/30/13 17:29	1
Nitrobenzene	600		600	48	ug/Kg	₩	08/26/13 21:27	08/30/13 17:29	1
Isophorone	600		600	60	ug/Kg	<b>*</b>	08/26/13 21:27	08/30/13 17:29	1
2-Nitrophenol	600	U	600	75	ug/Kg	₩	08/26/13 21:27	08/30/13 17:29	1
2,4-Dimethylphenol	600	U	600	80	ug/Kg	₩	08/26/13 21:27	08/30/13 17:29	1
Bis(2-chloroethoxy)methane	600	U	600	71	ug/Kg		08/26/13 21:27	08/30/13 17:29	1
2,4-Dichlorophenol	600	U	600	64	ug/Kg	₽	08/26/13 21:27	08/30/13 17:29	1
Naphthalene	900		600	55	ug/Kg	₽	08/26/13 21:27	08/30/13 17:29	1
4-Chloroaniline	1200	U	1200	95	ug/Kg	₩	08/26/13 21:27	08/30/13 17:29	1
Hexachlorobutadiene	600	U	600	66	ug/Kg	₩	08/26/13 21:27	08/30/13 17:29	1
Caprolactam	600	U	600	120	ug/Kg	₩	08/26/13 21:27	08/30/13 17:29	1
4-Chloro-3-methylphenol	600	U	600	64	ug/Kg	₩	08/26/13 21:27	08/30/13 17:29	1
2-Methylnaphthalene	1900		600	69	ug/Kg	<b>\$</b>	08/26/13 21:27	08/30/13 17:29	1
Hexachlorocyclopentadiene	600	U	600	75	ug/Kg	₩	08/26/13 21:27	08/30/13 17:29	1
2,4,6-Trichlorophenol	600	U	600	53	ug/Kg	₽	08/26/13 21:27	08/30/13 17:29	1
2,4,5-Trichlorophenol	600	U	600	64	ug/Kg	φ.	08/26/13 21:27	08/30/13 17:29	1
1,1'-Biphenyl	1400	U	1400	1400	ug/Kg	₩	08/26/13 21:27	08/30/13 17:29	1
2-Chloronaphthalene	600	U	600	64	ug/Kg	₽	08/26/13 21:27	08/30/13 17:29	1
2-Nitroaniline	3100	U	3100	82	ug/Kg		08/26/13 21:27	08/30/13 17:29	1
Dimethyl phthalate	600	U	600	62	ug/Kg	₩	08/26/13 21:27	08/30/13 17:29	1
2,6-Dinitrotoluene	600	U	600	77	ug/Kg	₩	08/26/13 21:27	08/30/13 17:29	1
Acenaphthylene	600	U	600	66	ug/Kg		08/26/13 21:27	08/30/13 17:29	1
3-Nitroaniline	3100	U	3100	84	ug/Kg	₽	08/26/13 21:27	08/30/13 17:29	1
Acenaphthene	600	U	600	75	ug/Kg	₩	08/26/13 21:27	08/30/13 17:29	1
2,4-Dinitrophenol	3100	U	3100	1500	ug/Kg		08/26/13 21:27	08/30/13 17:29	1
4-Nitrophenol	3100	U	3100	600	ug/Kg	₩	08/26/13 21:27	08/30/13 17:29	1
Dibenzofuran	250	J	600	60		₩	08/26/13 21:27	08/30/13 17:29	1
2,4-Dinitrotoluene	600		600	90	ug/Kg		08/26/13 21:27	08/30/13 17:29	1
Diethyl phthalate	600		600		ug/Kg	₩	08/26/13 21:27	08/30/13 17:29	1

TestAmerica Savannah

Client: ARCADIS U.S., Inc.

Surrogate

o-Terphenyl (Surr)

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB03-04 (0.5-1.5)

Date Collected: 08/21/13 13:50 Date Received: 08/22/13 09:39 Lab Sample ID: 680-93498-18

Matrix: Solid

Percent Solids: 53.9

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluorene	90	J	600	66	ug/Kg	<del></del>	08/26/13 21:27	08/30/13 17:29	
4-Chlorophenyl phenyl ether	600	U	600	80	ug/Kg		08/26/13 21:27	08/30/13 17:29	1
4-Nitroaniline	3100	U	3100	90	ug/Kg	₩	08/26/13 21:27	08/30/13 17:29	1
4,6-Dinitro-2-methylphenol	3100	U	3100	310	ug/Kg	₽	08/26/13 21:27	08/30/13 17:29	1
N-Nitrosodiphenylamine	600	U *	600	60	ug/Kg	ф.	08/26/13 21:27	08/30/13 17:29	1
4-Bromophenyl phenyl ether	600	U	600	66	ug/Kg	₩	08/26/13 21:27	08/30/13 17:29	1
Hexachlorobenzene	600	U	600	71	ug/Kg	₽	08/26/13 21:27	08/30/13 17:29	1
Atrazine	600	U	600	42	ug/Kg		08/26/13 21:27	08/30/13 17:29	1
Pentachlorophenol	3100	U	3100	600	ug/Kg	₩	08/26/13 21:27	08/30/13 17:29	1
Phenanthrene	570	J	600	49	ug/Kg	₽	08/26/13 21:27	08/30/13 17:29	1
Anthracene	72		600		ug/Kg	<sub>-</sub>	08/26/13 21:27	08/30/13 17:29	1
Carbazole	600	U	600	55	ug/Kg	₽	08/26/13 21:27	08/30/13 17:29	1
Di-n-butyl phthalate	600		600	55		₩	08/26/13 21:27	08/30/13 17:29	1
Fluoranthene	310		600	58	ug/Kg ug/Kg		08/26/13 21:27	08/30/13 17:29	
Pyrene	140	J	600	49	ug/Kg ug/Kg		08/26/13 21:27	08/30/13 17:29	1
Butyl benzyl phthalate		U	600	48			08/26/13 21:27	08/30/13 17:29	1
3,3'-Dichlorobenzidine	1200		1200	51		<del></del> .	08/26/13 21:27	08/30/13 17:29	
					0 0		08/26/13 21:27		
Benzo[a]anthracene	65	J	600			₩		08/30/13 17:29	1
Chrysene	150	J	600		ug/Kg		08/26/13 21:27	08/30/13 17:29	
Bis(2-ethylhexyl) phthalate	600		600		ug/Kg	<b>₽</b>	08/26/13 21:27	08/30/13 17:29	1
Di-n-octyl phthalate	600	U	600		ug/Kg	<b>₽</b>	08/26/13 21:27	08/30/13 17:29	1
Benzo[b]fluoranthene	160	J	600	69	ug/Kg	<u></u>	08/26/13 21:27	08/30/13 17:29	1
Benzo[k]fluoranthene	600		600	120		₩.	08/26/13 21:27	08/30/13 17:29	1
Benzo[a]pyrene		U	600	95	ug/Kg	<b>#</b>	08/26/13 21:27	08/30/13 17:29	1
Indeno[1,2,3-cd]pyrene		J	600	51	ug/Kg		08/26/13 21:27	08/30/13 17:29	1
Dibenz(a,h)anthracene	600	U	600	71	ug/Kg	₩	08/26/13 21:27	08/30/13 17:29	1
Benzo[g,h,i]perylene	83	J	600	40	ug/Kg	₽	08/26/13 21:27	08/30/13 17:29	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	55		46 - 130				08/26/13 21:27	08/30/13 17:29	1
2-Fluorobiphenyl	68		58 - 130				08/26/13 21:27	08/30/13 17:29	1
Terphenyl-d14 (Surr)	55	X	60 - 130				08/26/13 21:27	08/30/13 17:29	1
Phenol-d5 (Surr)	52		49 - 130				08/26/13 21:27	08/30/13 17:29	
2-Fluorophenol (Surr)	52		40 - 130				08/26/13 21:27	08/30/13 17:29	1
2,4,6-Tribromophenol (Surr)	72		58 - 130				08/26/13 21:27	08/30/13 17:29	1
		00/5/5							
Method: 8015C - Nonhalogenate Analyte	_	ng GC/FID • Qualifier	-Modified (Gasoi RL		ge Organ Unit	ICS) D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)	9300		560		ug/Kg	<u></u>	08/22/13 15:07	08/24/13 16:58	1
-C6-C10									
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene	249	X	70 - 131				08/22/13 15:07	08/24/13 16:58	1
: Method: 8015C - Nonhalogenate	d Organica wai	na GC/EID	Modified (Disco	Danas	Organica	A			
Method: 8015C - Nonnalogenate Analyte	_	ng GC/FID • Qualifier	-Modified (Diese RL	_	Unit	5) D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	8500	J	8900		ug/Kg	— <del>-</del>	08/26/13 14:47	08/29/13 03:41	

TestAmerica Savannah

Analyzed

08/29/13 03:41

Prepared

08/26/13 14:47

Limits

50 - 150

%Recovery Qualifier

50

Dil Fac

Client: ARCADIS U.S., Inc.

Isopropylbenzene

Methylcyclohexane

Methylene Chloride

Methyl Ethyl Ketone

methyl isobutyl ketone

Methyl tert-butyl ether

Tert-amyl methyl ether

1,1,2,2-Tetrachloroethane

trans-1,2-Dichloroethene

1,2,4-Trichlorobenzene

1,1,1-Trichloroethane

1,1,2-Trichloroethane

Trichloroethene

trans-1,3-Dichloropropene

tert-Butyl alcohol

Tetrachloroethene

Naphthalene

Styrene

Toluene

Methyl acetate

Date Collected: 08/21/13 14:00

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB03-04 (4.0-5.0)

TestAmerica Job ID: 680-93498-1

Matrix: Solid Percent Solids: 80.6

Lab Sample ID: 680-93498-19

Method: 8260B - Volatile Organi									
Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Acetone	17	J	24	6.9	ug/Kg	\$	08/26/13 09:52	08/29/13 12:13	1
Benzene	4.8	U	4.8	0.47	ug/Kg	₽	08/26/13 09:52	08/29/13 12:13	1
Bromodichloromethane	4.8	U	4.8	0.80	ug/Kg	₽	08/26/13 09:52	08/29/13 12:13	1
Bromoform	4.8	U	4.8	0.60	ug/Kg	₽	08/26/13 09:52	08/29/13 12:13	1
Bromomethane	4.8	U	4.8	1.3	ug/Kg	₽	08/26/13 09:52	08/29/13 12:13	1
Carbon disulfide	4.8	U	4.8	1.1	ug/Kg	₽	08/26/13 09:52	08/29/13 12:13	1
Carbon tetrachloride	4.8	U	4.8	1.6	ug/Kg	₽	08/26/13 09:52	08/29/13 12:13	1
Chlorobenzene	4.8	U	4.8	0.49	ug/Kg	₽	08/26/13 09:52	08/29/13 12:13	1
Chloroethane	4.8	U	4.8	1.8	ug/Kg	₽	08/26/13 09:52	08/29/13 12:13	1
Chloroform	4.8	U	4.8	0.56	ug/Kg	₽	08/26/13 09:52	08/29/13 12:13	1
Chloromethane	4.8	U	4.8	0.95	ug/Kg	₽	08/26/13 09:52	08/29/13 12:13	1
cis-1,2-Dichloroethene	4.8	U	4.8	0.72	ug/Kg	₽	08/26/13 09:52	08/29/13 12:13	1
cis-1,3-Dichloropropene	4.8	U	4.8	1.1	ug/Kg	₽	08/26/13 09:52	08/29/13 12:13	1
Cyclohexane	4.8	U	4.8	0.89	ug/Kg	₽	08/26/13 09:52	08/29/13 12:13	1
Dibromochloromethane	4.8	U	4.8	0.83	ug/Kg	₽	08/26/13 09:52	08/29/13 12:13	1
1,2-Dibromo-3-Chloropropane	4.8	U	4.8	3.1	ug/Kg	\$	08/26/13 09:52	08/29/13 12:13	1
1,2-Dichlorobenzene	4.8	U	4.8	0.67	ug/Kg	₽	08/26/13 09:52	08/29/13 12:13	1
1,3-Dichlorobenzene	4.8	U	4.8	0.90	ug/Kg	₽	08/26/13 09:52	08/29/13 12:13	1
1,4-Dichlorobenzene	4.8	U	4.8	0.78	ug/Kg	\$	08/26/13 09:52	08/29/13 12:13	1
Dichlorodifluoromethane	4.8	U	4.8	1.2	ug/Kg	₽	08/26/13 09:52	08/29/13 12:13	1
1,1-Dichloroethane	4.8	U	4.8	0.79	ug/Kg	₽	08/26/13 09:52	08/29/13 12:13	1
1,2-Dichloroethane	4.8	U	4.8	0.78	ug/Kg	₽	08/26/13 09:52	08/29/13 12:13	1
1,1-Dichloroethene	4.8	U	4.8	0.71	ug/Kg	₽	08/26/13 09:52	08/29/13 12:13	1
1,2-Dichloropropane	4.8	U	4.8	0.70	ug/Kg	₽	08/26/13 09:52	08/29/13 12:13	1
Diisopropyl ether	4.8	U	4.8	0.52	ug/Kg	₽	08/26/13 09:52	08/29/13 12:13	1
Ethylbenzene	4.8	U	4.8	0.58	ug/Kg	₩	08/26/13 09:52	08/29/13 12:13	1
Ethylene Dibromide	4.8	U	4.8	0.46	ug/Kg	₽	08/26/13 09:52	08/29/13 12:13	1
Ethyl tert-butyl ether	4.8	U	4.8	0.53	ug/Kg	₽	08/26/13 09:52	08/29/13 12:13	1
2-Hexanone	24	U	24	4.8	ug/Kg	₽	08/26/13 09:52	08/29/13 12:13	1

4.8

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14

24

24

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14 U

24 U

24 U

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4.8 U

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4.8 U

4.8 U

4.8 U

4.8 U

4.8 U

4.8 U

0.65 ug/Kg

4.4 ug/Kg

0.83 ug/Kg

9.5 ug/Kg

0.95 ug/Kg

0.72 ug/Kg

0.42 ug/Kg

3.2 ug/Kg

0.68 ug/Kg

0.67 ug/Kg

0.72 ug/Kg

1.0 ug/Kg

0.87 ug/Kg

0.46 ug/Kg

ug/Kg

0.80 ug/Kg

0.87 ug/Kg

0.69

ug/Kg

3.9 ug/Kg

3.8 ug/Kg

0.95

08/26/13 09:52

08/26/13 09:52

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TestAmerica Savannah

Client: ARCADIS U.S., Inc.

Date Collected: 08/21/13 14:00

Date Received: 08/22/13 09:39

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93498-1

Client Sample ID: SB03-04 (4.0-5.0)

Lab Sample ID: 680-93498-19 Matrix: Solid

Percent Solids: 80.6

Compounds (	(GC/MS) (C	ontinued)						
Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4.8	U	4.8	0.90	ug/Kg	<del>\</del>	08/26/13 09:52	08/29/13 12:13	1
4.8	U	4.8	1.9	ug/Kg	₽	08/26/13 09:52	08/29/13 12:13	1
4.8	U	4.8	0.87	ug/Kg	₽	08/26/13 09:52	08/29/13 12:13	1
9.5	U	9.5	1.8	ug/Kg	₽	08/26/13 09:52	08/29/13 12:13	1
%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
102		72 - 122				08/26/13 09:52	08/29/13 12:13	1
104		79 - 123				08/26/13 09:52	08/29/13 12:13	1
97		80 - 120				08/26/13 09:52	08/29/13 12:13	1
	Result 4.8 4.8 4.8 9.5  %Recovery 102 104	Result   Qualifier	4.8 U 4.8 4.8 U 4.8 4.8 U 4.8 9.5 U 9.5   **Recovery Qualifier Limits 102 72 - 122 104 79 - 123	Result         Qualifier         RL         MDL           4.8         U         4.8         0.90           4.8         U         4.8         1.9           4.8         U         4.8         0.87           9.5         U         9.5         1.8           **Recovery*         Qualifier         Limits           102         72 - 122           104         79 - 123	Result         Qualifier         RL         MDL         Unit           4.8         U         4.8         0.90         ug/Kg           4.8         U         4.8         1.9         ug/Kg           4.8         U         4.8         0.87         ug/Kg           9.5         U         9.5         1.8         ug/Kg           **Recovery Qualifier         Limits           102         72 - 122         79 - 123	Result         Qualifier         RL         MDL         Unit         D           4.8         U         4.8         0.90         ug/Kg         Image: square s	Result         Qualifier         RL         MDL unit         D ug/Kg         Prepared           4.8         U         4.8         0.90 ug/Kg         08/26/13 09:52           4.8         U         4.8         0.90 ug/Kg         08/26/13 09:52           4.8         U         4.8         0.87 ug/Kg         08/26/13 09:52           9.5         U         9.5         1.8 ug/Kg         08/26/13 09:52           **Recovery         Qualifier         Limits         Prepared           102         72 - 122         08/26/13 09:52           104         79 - 123         08/26/13 09:52	Result         Qualifier         RL         MDL unit         D ug/Kg         Prepared         Analyzed           4.8         U         4.8         0.90 ug/Kg         08/26/13 09:52         08/29/13 12:13           4.8         U         4.8         0.87 ug/Kg         08/26/13 09:52         08/29/13 12:13           9.5         U         9.5         1.8 ug/Kg         08/26/13 09:52         08/29/13 12:13           %Recovery         Qualifier         Limits         Prepared         Analyzed           102         72 - 122         08/26/13 09:52         08/29/13 12:13           104         79 - 123         08/26/13 09:52         08/29/13 12:13

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzaldehyde	400	U	400	71	ug/Kg	₩	08/26/13 21:27	08/30/13 17:53	1
Phenol	400	U	400	42	ug/Kg	≎	08/26/13 21:27	08/30/13 17:53	1
Bis(2-chloroethyl)ether	400	U	400	55	ug/Kg	₽	08/26/13 21:27	08/30/13 17:53	1
2-Chlorophenol	400	U	400	49	ug/Kg	₽	08/26/13 21:27	08/30/13 17:53	1
2-Methylphenol	400	U	400	33	ug/Kg	₩	08/26/13 21:27	08/30/13 17:53	1
bis (2-chloroisopropyl) ether	400	U	400	37	ug/Kg	≎	08/26/13 21:27	08/30/13 17:53	1
Acetophenone	400	U	400	34	ug/Kg	*	08/26/13 21:27	08/30/13 17:53	1
3 & 4 Methylphenol	400	U	400	53	ug/Kg	≎	08/26/13 21:27	08/30/13 17:53	1
N-Nitrosodi-n-propylamine	400	U	400	39	ug/Kg	≎	08/26/13 21:27	08/30/13 17:53	1
Hexachloroethane	400	U	400	34	ug/Kg	*	08/26/13 21:27	08/30/13 17:53	1
Nitrobenzene	400	U	400	32	ug/Kg	₽	08/26/13 21:27	08/30/13 17:53	1
Isophorone	400	U	400	40	ug/Kg	≎	08/26/13 21:27	08/30/13 17:53	1
2-Nitrophenol	400	U	400	50	ug/Kg	₽	08/26/13 21:27	08/30/13 17:53	1
2,4-Dimethylphenol	400	U	400	54	ug/Kg	₽	08/26/13 21:27	08/30/13 17:53	1
Bis(2-chloroethoxy)methane	400	U	400	48	ug/Kg	₽	08/26/13 21:27	08/30/13 17:53	1
2,4-Dichlorophenol	400	U	400	43	ug/Kg	₽	08/26/13 21:27	08/30/13 17:53	1
Naphthalene	400	U	400	37	ug/Kg	₽	08/26/13 21:27	08/30/13 17:53	1
4-Chloroaniline	810	U	810	63	ug/Kg	₽	08/26/13 21:27	08/30/13 17:53	1
Hexachlorobutadiene	400	U	400	44	ug/Kg	≎	08/26/13 21:27	08/30/13 17:53	1
Caprolactam	400	U	400	81	ug/Kg	₽	08/26/13 21:27	08/30/13 17:53	1
4-Chloro-3-methylphenol	400	U	400	43	ug/Kg	₽	08/26/13 21:27	08/30/13 17:53	1
2-Methylnaphthalene	400	U	400	46	ug/Kg	\$	08/26/13 21:27	08/30/13 17:53	1
Hexachlorocyclopentadiene	400	U	400	50	ug/Kg	₽	08/26/13 21:27	08/30/13 17:53	1
2,4,6-Trichlorophenol	400	U	400	35	ug/Kg	₽	08/26/13 21:27	08/30/13 17:53	1
2,4,5-Trichlorophenol	400	U	400	43	ug/Kg	\$	08/26/13 21:27	08/30/13 17:53	1
1,1'-Biphenyl	900	U	900	900	ug/Kg	₽	08/26/13 21:27	08/30/13 17:53	1
2-Chloronaphthalene	400	U	400	43	ug/Kg	≎	08/26/13 21:27	08/30/13 17:53	1
2-Nitroaniline	2100	U	2100	55	ug/Kg	\$	08/26/13 21:27	08/30/13 17:53	1
Dimethyl phthalate	400	U	400	42	ug/Kg	₽	08/26/13 21:27	08/30/13 17:53	1
2,6-Dinitrotoluene	400	U	400	51	ug/Kg	₽	08/26/13 21:27	08/30/13 17:53	1
Acenaphthylene	400	U	400	44	ug/Kg	₽	08/26/13 21:27	08/30/13 17:53	1
3-Nitroaniline	2100	U	2100	56	ug/Kg	₽	08/26/13 21:27	08/30/13 17:53	1
Acenaphthene	400	U	400	50	ug/Kg	₩	08/26/13 21:27	08/30/13 17:53	1
2,4-Dinitrophenol	2100	U	2100	1000	ug/Kg	₩	08/26/13 21:27	08/30/13 17:53	1
4-Nitrophenol	2100	U	2100	400	ug/Kg	₽	08/26/13 21:27	08/30/13 17:53	1
Dibenzofuran	400	U	400	40	ug/Kg	₩	08/26/13 21:27	08/30/13 17:53	1
2,4-Dinitrotoluene	400	U	400	60	ug/Kg	Φ.	08/26/13 21:27	08/30/13 17:53	1
Diethyl phthalate	400	U	400	45	ug/Kg	₽	08/26/13 21:27	08/30/13 17:53	1

TestAmerica Savannah

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB03-04 (4.0-5.0)

Date Collected: 08/21/13 14:00 Date Received: 08/22/13 09:39

a,a,a-Trifluorotoluene

ORO C24-C40

o-Terphenyl (Surr)

Surrogate

Diesel Range Organics [C10-C28]

Lab Sample ID: 680-93498-19

Matrix: Solid
Percent Solids: 80.6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluorene	400	U	400	44	ug/Kg	<u> </u>	08/26/13 21:27	08/30/13 17:53	1
4-Chlorophenyl phenyl ether	400	U	400	54	ug/Kg	\$	08/26/13 21:27	08/30/13 17:53	1
4-Nitroaniline	2100	U	2100	60	ug/Kg	₽	08/26/13 21:27	08/30/13 17:53	1
4,6-Dinitro-2-methylphenol	2100	U	2100	210	ug/Kg	₽	08/26/13 21:27	08/30/13 17:53	1
N-Nitrosodiphenylamine	400	U *	400	40	ug/Kg	\$	08/26/13 21:27	08/30/13 17:53	1
4-Bromophenyl phenyl ether	400	U	400	44	ug/Kg	₽	08/26/13 21:27	08/30/13 17:53	1
Hexachlorobenzene	400	U	400	48	ug/Kg	₽	08/26/13 21:27	08/30/13 17:53	1
Atrazine	400	U	400	28	ug/Kg	₽	08/26/13 21:27	08/30/13 17:53	1
Pentachlorophenol	2100	U	2100	400	ug/Kg	₽	08/26/13 21:27	08/30/13 17:53	1
Phenanthrene	400	U	400	33	ug/Kg	☼	08/26/13 21:27	08/30/13 17:53	1
Anthracene	400	U	400	31	ug/Kg	₽	08/26/13 21:27	08/30/13 17:53	1
Carbazole	400	U	400	37	ug/Kg	₽	08/26/13 21:27	08/30/13 17:53	1
Di-n-butyl phthalate	400	U	400	37	ug/Kg	₽	08/26/13 21:27	08/30/13 17:53	1
Fluoranthene	95	J	400	39	ug/Kg	<b>\$</b>	08/26/13 21:27	08/30/13 17:53	1
Pyrene	400	U	400	33	ug/Kg	₽	08/26/13 21:27	08/30/13 17:53	1
Butyl benzyl phthalate	400	U	400	32	ug/Kg	₽	08/26/13 21:27	08/30/13 17:53	1
3,3'-Dichlorobenzidine	810	U	810	34	ug/Kg	<b>\$</b>	08/26/13 21:27	08/30/13 17:53	1
Benzo[a]anthracene	400	U	400	33	ug/Kg	₽	08/26/13 21:27	08/30/13 17:53	1
Chrysene	400	U	400	26	ug/Kg	₽	08/26/13 21:27	08/30/13 17:53	1
Bis(2-ethylhexyl) phthalate	400	U	400	35	ug/Kg	\$	08/26/13 21:27	08/30/13 17:53	1
Di-n-octyl phthalate	400	U	400	35	ug/Kg	₽	08/26/13 21:27	08/30/13 17:53	1
Benzo[b]fluoranthene	400	U	400	46	ug/Kg	₽	08/26/13 21:27	08/30/13 17:53	1
Benzo[k]fluoranthene	400	U	400	79	ug/Kg	\$	08/26/13 21:27	08/30/13 17:53	1
Benzo[a]pyrene	400	U	400	63	ug/Kg	₽	08/26/13 21:27	08/30/13 17:53	1
Indeno[1,2,3-cd]pyrene	400	U	400	34	ug/Kg	☼	08/26/13 21:27	08/30/13 17:53	1
Dibenz(a,h)anthracene	400	U	400	48	ug/Kg	₽	08/26/13 21:27	08/30/13 17:53	1
Benzo[g,h,i]perylene	400	U	400	27	ug/Kg	₩	08/26/13 21:27	08/30/13 17:53	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	51		46 - 130				08/26/13 21:27	08/30/13 17:53	1
2-Fluorobiphenyl	60		58 - 130				08/26/13 21:27	08/30/13 17:53	1
Terphenyl-d14 (Surr)	54	Χ	60 - 130				08/26/13 21:27	08/30/13 17:53	1
Phenol-d5 (Surr)	49		49 - 130				08/26/13 21:27	08/30/13 17:53	1
2-Fluorophenol (Surr)	48		40 - 130				08/26/13 21:27	08/30/13 17:53	1
2,4,6-Tribromophenol (Surr)	62		58 - 130				08/26/13 21:27	08/30/13 17:53	1
Method: 8015C - Nonhalogenate Analyte	•	ng GC/FID	-Modified (Gaso RL		ige Organ Unit	nics)	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)	2100		230		ug/Kg	<del>\</del>	08/22/13 15:07	08/24/13 17:17	1
-C6-C10	2100		200	.0	~aa		3.220 10.01	10.2 0 11.11	
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac

TestAmerica Savannah

Analyzed

08/29/13 03:57

08/29/13 03:57

Analyzed

08/29/13 03:57

70 - 131

RL

6100

6100

Limits

50 - 150

MDL Unit

1700 ug/Kg

1700 ug/Kg

D

Prepared

08/26/13 14:47

08/26/13 14:47

Prepared

08/26/13 14:47

69 X

Method: 8015C - Nonhalogenated Organics using GC/FID -Modified (Diesel Range Organics) Result Qualifier

4800

6100 U

%Recovery Qualifier

67

Dil Fac

Dil Fac

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93498-1

Lab Sample ID: 680-93498-20

**Client Sample ID: PZ02-04 (082113) (DRO-SGT)** 

Date Collected: 08/21/13 09:35 Date Received: 08/22/13 09:39

Matrix: Water

Method: 8015C - Nonhalogenate	d Organics usi	ng GC/FID	-Modified (Dies	el Range	Organics	)			
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	320	В	97	27	ug/L		08/28/13 07:23	08/28/13 17:56	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
o-Terphenyl (Surr)	71		50 - 150				08/28/13 07:23	08/28/13 17:56	1

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93498-1

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

Lab Sample ID: MB 400-189997/4

**Matrix: Solid** 

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

	MB	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
Acetone	25	U	25	7.3	ug/Kg			08/28/13 08:15	
Benzene	5.0	U	5.0	0.49	ug/Kg			08/28/13 08:15	
Bromodichloromethane	5.0	U	5.0	0.84	ug/Kg			08/28/13 08:15	
Bromoform	5.0	U	5.0	0.63	ug/Kg			08/28/13 08:15	
Bromomethane	5.0	U	5.0	1.4	ug/Kg			08/28/13 08:15	
Carbon disulfide	5.0	U	5.0	1.2	ug/Kg			08/28/13 08:15	
Carbon tetrachloride	5.0	U	5.0	1.7	ug/Kg			08/28/13 08:15	
Chlorobenzene	5.0	U	5.0	0.52	ug/Kg			08/28/13 08:15	
Chloroethane	5.0	U	5.0	1.9	ug/Kg			08/28/13 08:15	
Chloroform	5.0	U	5.0	0.59				08/28/13 08:15	
Chloromethane	5.0	U	5.0	1.0	ug/Kg			08/28/13 08:15	
cis-1,2-Dichloroethene	5.0	U	5.0	0.76				08/28/13 08:15	
cis-1,3-Dichloropropene	5.0	U	5.0		ug/Kg			08/28/13 08:15	
Cyclohexane	5.0		5.0		ug/Kg			08/28/13 08:15	
Dibromochloromethane	5.0		5.0		ug/Kg			08/28/13 08:15	
1,2-Dibromo-3-Chloropropane	5.0		5.0		ug/Kg			08/28/13 08:15	
1,2-Dichlorobenzene	5.0		5.0					08/28/13 08:15	
1,3-Dichlorobenzene	5.0		5.0		ug/Kg			08/28/13 08:15	
1,4-Dichlorobenzene	5.0		5.0		ug/Kg			08/28/13 08:15	
Dichlorodifluoromethane	5.0		5.0		ug/Kg ug/Kg			08/28/13 08:15	
1,1-Dichloroethane	5.0		5.0		ug/Kg ug/Kg			08/28/13 08:15	
1.2-Dichloroethane	5.0		5.0		ug/Kg ug/Kg			08/28/13 08:15	
,	5.0		5.0					08/28/13 08:15	
1,1-Dichloroethene	5.0				ug/Kg				
1,2-Dichloropropane			5.0		ug/Kg			08/28/13 08:15	
Diisopropyl ether	5.0		5.0		ug/Kg			08/28/13 08:15	
Ethylbenzene	5.0		5.0		ug/Kg			08/28/13 08:15	
Ethylene Dibromide	5.0		5.0		ug/Kg			08/28/13 08:15	
Ethyl tert-butyl ether	5.0		5.0		ug/Kg			08/28/13 08:15	
2-Hexanone	25		25		ug/Kg			08/28/13 08:15	
Isopropylbenzene	5.0		5.0		ug/Kg			08/28/13 08:15	
Methyl acetate	5.0		5.0		ug/Kg			08/28/13 08:15	
Methylcyclohexane	5.0		5.0		ug/Kg			08/28/13 08:15	
Methylene Chloride	15		15		ug/Kg			08/28/13 08:15	
Methyl Ethyl Ketone	25		25		ug/Kg			08/28/13 08:15	
methyl isobutyl ketone	25		25		ug/Kg			08/28/13 08:15	
Methyl tert-butyl ether	5.0	U	5.0	1.0	ug/Kg			08/28/13 08:15	
Naphthalene	5.0		5.0		ug/Kg			08/28/13 08:15	
Styrene	5.0		5.0	0.76	ug/Kg			08/28/13 08:15	
Tert-amyl methyl ether	5.0	U	5.0	0.44	ug/Kg			08/28/13 08:15	
tert-Butyl alcohol	5.0	U	5.0	3.4	ug/Kg			08/28/13 08:15	
1,1,2,2-Tetrachloroethane	5.0	U	5.0	0.72	ug/Kg			08/28/13 08:15	
Tetrachloroethene	5.0	U	5.0	0.84	ug/Kg			08/28/13 08:15	
Toluene	5.0	U	5.0	0.70	ug/Kg			08/28/13 08:15	
rans-1,2-Dichloroethene	5.0	U	5.0	0.76	ug/Kg			08/28/13 08:15	
rans-1,3-Dichloropropene	5.0	U	5.0	0.92	ug/Kg			08/28/13 08:15	
1,2,4-Trichlorobenzene	5.0	U	5.0	0.73	ug/Kg			08/28/13 08:15	
1,1,1-Trichloroethane	5.0		5.0		ug/Kg			08/28/13 08:15	
1,1,2-Trichloroethane	5.0		5.0		ug/Kg			08/28/13 08:15	

TestAmerica Savannah

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

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

Lab Sample ID: MB 400-189997/4

**Matrix: Solid** 

Analysis Batch: 189997

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

	MB	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichloroethene	5.0	U	5.0	0.48	ug/Kg			08/28/13 08:15	1
Trichlorofluoromethane	5.0	U	5.0	0.95	ug/Kg			08/28/13 08:15	1
1,1,2-Trichloro-1,2,2-trifluoroethane	5.0	U	5.0	2.0	ug/Kg			08/28/13 08:15	1
Vinyl chloride	5.0	U	5.0	0.92	ug/Kg			08/28/13 08:15	1
Xylenes, Total	10	U	10	1.9	ug/Kg			08/28/13 08:15	1

MB MB Surrogate %Recovery Qualifier Limits Dil Fac Prepared Analyzed 4-Bromofluorobenzene 97 72 - 122 08/28/13 08:15 Dibromofluoromethane 101 79 - 123 08/28/13 08:15 1 Toluene-d8 (Surr) 98 80 - 120 08/28/13 08:15

Lab Sample ID: LCS 400-189997/1000

**Matrix: Solid** 

Analysis Batch: 189997

**Client Sample ID: Lab Control Sample** 

Prep Type: Total/NA

Analysis Batch: 189997						
	Spike	LCS	LCS			%Rec.
Analyte	Added		Qualifier Unit	D %	Rec	Limits
Acetone	200	287	ug/Kg		144	43 - 150
Benzene	50.0	48.4	ug/Kg		97	74 - 119
Bromodichloromethane	50.0	51.0	ug/Kg		102	68 - 128
Bromoform	50.0	49.2	ug/Kg		98	54 - 125
Bromomethane	50.0	44.1	ug/Kg		88	25 - 150
Carbon disulfide	50.0	49.7	ug/Kg		99	26 - 150
Carbon tetrachloride	50.0	48.9	ug/Kg		98	70 - 128
Chlorobenzene	50.0	47.2	ug/Kg		94	80 - 116
Chloroethane	50.0	53.0	ug/Kg		106	22 _ 150
Chloroform	50.0	48.9	ug/Kg		98	74 - 119
Chloromethane	50.0	54.0	ug/Kg		108	36 - 147
cis-1,2-Dichloroethene	50.0	50.2	ug/Kg		100	68 - 126
cis-1,3-Dichloropropene	50.0	51.1	ug/Kg		102	68 - 125
Cyclohexane	50.0	50.3	ug/Kg		101	62 - 126
Dibromochloromethane	50.0	49.6	ug/Kg		99	65 _ 131
1,2-Dibromo-3-Chloropropane	50.0	50.9	ug/Kg		102	57 <sub>-</sub> 123
1,2-Dichlorobenzene	50.0	47.2	ug/Kg		94	76 - 120
1,3-Dichlorobenzene	50.0	47.6	ug/Kg		95	78 <sub>-</sub> 118
1,4-Dichlorobenzene	50.0	47.8	ug/Kg		96	77 - 118
Dichlorodifluoromethane	50.0	47.5	ug/Kg		95	44 - 145
1,1-Dichloroethane	50.0	49.6	ug/Kg		99	61 - 128
1,2-Dichloroethane	50.0	51.2	ug/Kg		102	70 - 125
1,1-Dichloroethene	50.0	54.1	ug/Kg		108	62 _ 130
1,2-Dichloropropane	50.0	49.1	ug/Kg		98	64 - 129
Diisopropyl ether	50.0	50.3	ug/Kg		101	46 - 144
Ethylbenzene	50.0	47.3	ug/Kg		95	78 <sub>-</sub> 120
Ethylene Dibromide	50.0	50.5	ug/Kg		101	78 - 119
Ethyl tert-butyl ether	50.0	52.2	ug/Kg		104	60 - 128
2-Hexanone	200	224	ug/Kg		112	54 - 140
Isopropylbenzene	50.0	48.8	ug/Kg		98	78 <sub>-</sub> 119
Methyl acetate	250	293	ug/Kg		117	52 - 139
Methylcyclohexane	50.0	49.7	ug/Kg		99	65 - 126

TestAmerica Savannah

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TestAmerica Job ID: 680-93498-1

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

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

Lab Sample ID: LCS 400-189997/1000

**Matrix: Solid** 

Analysis Batch: 189997

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

	Spike	LCS	LCS				%Rec.
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits
Methylene Chloride	50.0	48.9		ug/Kg		98	45 - 150
Methyl Ethyl Ketone	200	237		ug/Kg		119	62 - 126
methyl isobutyl ketone	200	230		ug/Kg		115	56 - 137
Methyl tert-butyl ether	50.0	51.4		ug/Kg		103	69 - 124
Naphthalene	50.0	51.2		ug/Kg		102	64 - 126
Styrene	50.0	49.5		ug/Kg		99	66 - 132
Tert-amyl methyl ether	50.0	52.0		ug/Kg		104	65 - 124
tert-Butyl alcohol	500	432		ug/Kg		86	12 - 150
1,1,2,2-Tetrachloroethane	50.0	50.6		ug/Kg		101	67 - 120
Tetrachloroethene	50.0	48.2		ug/Kg		96	74 - 126
Toluene	50.0	46.5		ug/Kg		93	76 - 120
trans-1,2-Dichloroethene	50.0	48.9		ug/Kg		98	65 - 130
trans-1,3-Dichloropropene	50.0	49.7		ug/Kg		99	65 - 126
1,2,4-Trichlorobenzene	50.0	49.2		ug/Kg		98	72 - 126
1,1,1-Trichloroethane	50.0	50.2		ug/Kg		100	72 - 121
1,1,2-Trichloroethane	50.0	49.7		ug/Kg		99	75 - 118
Trichloroethene	50.0	50.2		ug/Kg		100	76 - 122
Trichlorofluoromethane	50.0	59.3		ug/Kg		119	65 - 132
1,1,2-Trichloro-1,2,2-trifluoroetha	50.0	52.3		ug/Kg		105	74 - 123
ne							
Vinyl chloride	50.0	54.8		ug/Kg		110	52 - 134
Xylenes, Total	100	96.9		ug/Kg		97	70 - 120

LCS LCS

Surrogate	%Recovery (	Qualifier	Limits
4-Bromofluorobenzene	99		72 - 122
Dibromofluoromethane	102		79 - 123
Toluene-d8 (Surr)	97		80 - 120

Lab Sample ID: LCSD 400-189997/5

Matrix: Solid

Analysis Batch: 189997

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

7 maryoto Batom 100001									
	Spike	LCSD	LCSD				%Rec.		RPD
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Acetone	200	307	*	ug/Kg		154	43 - 150	7	30
Benzene	50.0	51.6		ug/Kg		103	74 - 119	6	30
Bromodichloromethane	50.0	53.1		ug/Kg		106	68 - 128	4	30
Bromoform	50.0	52.2		ug/Kg		104	54 - 125	6	30
Bromomethane	50.0	37.0		ug/Kg		74	25 - 150	18	30
Carbon disulfide	50.0	52.2		ug/Kg		104	26 - 150	5	30
Carbon tetrachloride	50.0	51.3		ug/Kg		103	70 - 128	5	30
Chlorobenzene	50.0	50.5		ug/Kg		101	80 - 116	7	30
Chloroethane	50.0	42.4		ug/Kg		85	22 - 150	22	30
Chloroform	50.0	51.6		ug/Kg		103	74 - 119	5	30
Chloromethane	50.0	50.4		ug/Kg		101	36 - 147	7	30
cis-1,2-Dichloroethene	50.0	53.1		ug/Kg		106	68 - 126	6	30
cis-1,3-Dichloropropene	50.0	53.7		ug/Kg		107	68 - 125	5	30
Cyclohexane	50.0	52.6		ug/Kg		105	62 - 126	4	30
Dibromochloromethane	50.0	52.1		ug/Kg		104	65 - 131	5	30

TestAmerica Savannah

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

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

TestAmerica Job ID: 680-93498-1

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Lab Sample ID: LCSD 400-189997/5

Matrix: Solid

Analysis Batch: 189997

Analysis Batch: 169997	Spike	LCSD	LCSD				%Rec.		RPD
Analyte	Added		Qualifier	Unit	D	%Rec	Limits	RPD	Limit
1,2-Dibromo-3-Chloropropane	50.0	54.1		ug/Kg		108	57 <sub>-</sub> 123	6	30
1,2-Dichlorobenzene	50.0	51.8		ug/Kg		104	76 - 120	9	30
1,3-Dichlorobenzene	50.0	51.5		ug/Kg		103	78 <sub>-</sub> 118	8	30
1,4-Dichlorobenzene	50.0	52.0		ug/Kg		104	77 <sub>-</sub> 118	8	30
Dichlorodifluoromethane	50.0	44.0		ug/Kg		88	44 - 145	8	30
1,1-Dichloroethane	50.0	53.0		ug/Kg		106	61 - 128	7	30
1,2-Dichloroethane	50.0	54.4		ug/Kg		109	70 <sub>-</sub> 125	6	30
1,1-Dichloroethene	50.0	56.1		ug/Kg		112	62 <sub>-</sub> 130	3	30
1,2-Dichloropropane	50.0	53.1		ug/Kg		106	64 - 129	8	30
Diisopropyl ether	50.0	53.7		ug/Kg		107	46 - 144	6	30
Ethylbenzene	50.0	51.3		ug/Kg		103	78 - 120	8	30
Ethylene Dibromide	50.0	54.5		ug/Kg		109	78 <sub>-</sub> 119	8	30
Ethyl tert-butyl ether	50.0	54.6		ug/Kg		109	60 - 128	4	30
2-Hexanone	200	237		ug/Kg		119	54 <sub>-</sub> 140	5	30
Isopropylbenzene	50.0	52.4		ug/Kg		105	78 <sub>-</sub> 119	7	30
Methyl acetate	250	297		ug/Kg		119	52 - 139	1	30
Methylcyclohexane	50.0	52.6		ug/Kg		105	65 <sub>-</sub> 126	6	30
Methylene Chloride	50.0	52.2		ug/Kg		104	45 <sub>-</sub> 150	7	30
Methyl Ethyl Ketone	200	243		ug/Kg		122	62 _ 126	3	30
methyl isobutyl ketone	200	235		ug/Kg		118	56 <sub>-</sub> 137	2	30
Methyl tert-butyl ether	50.0	52.6		ug/Kg		105	69 - 124	2	30
Naphthalene	50.0	55.4		ug/Kg		111	64 - 126	8	30
Styrene	50.0	53.8		ug/Kg		108	66 - 132	8	30
Tert-amyl methyl ether	50.0	54.0		ug/Kg		108	65 - 124	4	30
tert-Butyl alcohol	500	523		ug/Kg		105	12 _ 150	19	30
1,1,2,2-Tetrachloroethane	50.0	52.8		ug/Kg		106	67 - 120	4	30
Tetrachloroethene	50.0	50.7		ug/Kg		101	74 - 126	5	30
Toluene	50.0	50.3		ug/Kg		101	76 - 120	8	30
trans-1,2-Dichloroethene	50.0	51.6		ug/Kg		103	65 - 130	5	30
trans-1,3-Dichloropropene	50.0	53.5		ug/Kg		107	65 - 126	7	30
1,2,4-Trichlorobenzene	50.0	52.3		ug/Kg		105	72 - 126	6	30
1,1,1-Trichloroethane	50.0	52.7		ug/Kg		105	72 - 121	5	30
1,1,2-Trichloroethane	50.0	53.8		ug/Kg		108	75 <sub>-</sub> 118	8	30
Trichloroethene	50.0	53.6		ug/Kg		107	76 - 122	7	30
Trichlorofluoromethane	50.0	53.4		ug/Kg		107	65 - 132	10	30
1,1,2-Trichloro-1,2,2-trifluoroetha	50.0	53.4		ug/Kg		107	74 - 123	2	30
ne									
Vinyl chloride	50.0	51.0		ug/Kg		102	52 - 134	7	30
Xylenes, Total	100	105		ug/Kg		105	70 - 120	8	30

LCSD LCSD

Surrogate	%Recovery	Qualifier	Limits
4-Bromofluorobenzene	99		72 - 122
Dibromofluoromethane	102		79 - 123
Toluene-d8 (Surr)	98		80 - 120

TestAmerica Savannah

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3

5

7

9

10

RL

25

1.0

1.0

5.0

1.0

MDL Unit

3.5 ug/L

0.34 ug/L

0.50 ug/L

0.71 ug/L

0.50 ug/L

D

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93498-1

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

MB MB Result Qualifier

25 U

1.0 U

1.0 U

5.0 U

1.0 U

Lab Sample ID: MB 400-190083/4

**Matrix: Water** 

Analyte

Acetone Benzene

Bromoform

Carbon disulfide

**Analysis Batch: 190083** 

Bromodichloromethane

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

	ricp Type. I	OtaliitA
Prepared	Analyzed	Dil Fac
	08/28/13 16:58	1
	08/28/13 16:58	1
	08/28/13 16:58	1
	08/28/13 16:58	1
	08/28/13 16:58	1
	08/28/13 16:58	1
	08/28/13 16:58	1
	08/28/13 16:58	1
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	08/28/13 16:58	1
	08/28/13 16:58	1
	08/28/13 16:58	1
	08/28/13 16:58	1
	08/28/13 16:58	1
	08/28/13 16:58	1

Ga. Dorr G.Gaag			0.50 ug/L		
Carbon tetrachloride	1.0 U	1.0	0.50 ug/L	08/28/13 16:58	1
Chlorobenzene	1.0 U	1.0	0.50 ug/L	08/28/13 16:58	1
Chloroethane	1.0 U	1.0	0.76 ug/L	08/28/13 16:58	1
Chloroform	1.0 U	1.0	0.60 ug/L	08/28/13 16:58	1
Chloromethane	1.0 U	1.0	0.83 ug/L	08/28/13 16:58	1
cis-1,2-Dichloroethene	1.0 U	1.0	0.50 ug/L	08/28/13 16:58	1
cis-1,3-Dichloropropene	5.0 U	5.0	0.50 ug/L	08/28/13 16:58	1
Cyclohexane	1.0 U	1.0	0.50 ug/L	08/28/13 16:58	1
Dibromochloromethane	1.0 U	1.0	0.50 ug/L	08/28/13 16:58	1
1,2-Dibromo-3-Chloropropane	5.0 U	5.0	0.78 ug/L	08/28/13 16:58	1
1,2-Dichlorobenzene	1.0 U	1.0	0.50 ug/L	08/28/13 16:58	1
1,3-Dichlorobenzene	1.0 U	1.0	0.54 ug/L	08/28/13 16:58	1
1,4-Dichlorobenzene	1.0 U	1.0	0.64 ug/L	08/28/13 16:58	1
Dichlorodifluoromethane	1.0 U	1.0	0.85 ug/L	08/28/13 16:58	1
1,1-Dichloroethane	1.0 U	1.0	0.50 ug/L	08/28/13 16:58	1
1,2-Dichloroethane	1.0 U	1.0	0.50 ug/L	08/28/13 16:58	1
1,1-Dichloroethene	1.0 U	1.0	0.50 ug/L	08/28/13 16:58	1
1,2-Dichloropropane	1.0 U	1.0	0.50 ug/L	08/28/13 16:58	1
Diisopropyl ether	1.0 U	1.0	0.50 ug/L	08/28/13 16:58	1
Ethylbenzene	1.0 U	1.0	0.50 ug/L	08/28/13 16:58	1
Ethylene Dibromide	1.0 U	1.0	0.50 ug/L	08/28/13 16:58	1
Ethyl tert-butyl ether	1.0 U	1.0	0.68 ug/L	08/28/13 16:58	1
2-Hexanone	25 U	25	3.1 ug/L	08/28/13 16:58	1
Isopropylbenzene	1.0 U	1.0	0.53 ug/L	08/28/13 16:58	1
Methyl acetate	5.0 U	5.0	2.1 ug/L	08/28/13 16:58	1
Methylcyclohexane	1.0 U	1.0	0.50 ug/L	08/28/13 16:58	1
Methylene Chloride	5.0 U	5.0	3.0 ug/L	08/28/13 16:58	1
Methyl Ethyl Ketone	25 U	25	2.6 ug/L	08/28/13 16:58	1
methyl isobutyl ketone	25 U	25	1.8 ug/L	08/28/13 16:58	1
Methyl tert-butyl ether	1.0 U	1.0	0.74 ug/L	08/28/13 16:58	1
Naphthalene	1.0 U	1.0	1.0 ug/L	08/28/13 16:58	1
Styrene	1.0 U	1.0	1.0 ug/L	08/28/13 16:58	1
Tert-amyl methyl ether	1.0 U	1.0	0.60 ug/L	08/28/13 16:58	1
tert-Butyl alcohol	5.0 U	5.0	4.9 ug/L	08/28/13 16:58	1
1,1,2,2-Tetrachloroethane	1.0 U	1.0	0.50 ug/L	08/28/13 16:58	1
Tetrachloroethene	1.0 U	1.0	0.58 ug/L	08/28/13 16:58	1
Toluene	1.0 U	1.0	0.70 ug/L	08/28/13 16:58	1
trans-1,2-Dichloroethene	1.0 U	1.0	0.50 ug/L	08/28/13 16:58	1
trans-1,3-Dichloropropene	5.0 U	5.0	0.50 ug/L	08/28/13 16:58	1
1,2,4-Trichlorobenzene	1.0 U	1.0	0.82 ug/L	08/28/13 16:58	1
1,1,1-Trichloroethane	1.0 U	1.0	0.50 ug/L	08/28/13 16:58	1
1,1,2-Trichloroethane	5.0 U	5.0	0.50 ug/L	08/28/13 16:58	1
Trichloroethene	1.0 U	1.0	0.50 ug/L	08/28/13 16:58	1

TestAmerica Savannah

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93498-1

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

Lab Sample ID: MB 400-190083/4

**Matrix: Water** 

**Analysis Batch: 190083** 

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

MB MB Analyte Result Qualifier RL MDL Unit D Dil Fac Prepared Analyzed Trichlorofluoromethane 1.0 U 1.0 0.52 ug/L 08/28/13 16:58 1,1,2-Trichloro-1,2,2-trifluoroethane 1.0 U 1.0 0.50 ug/L 08/28/13 16:58 Vinyl chloride 1.0 U 1.0 0.50 ug/L 08/28/13 16:58 Xylenes, Total 10 U 10 1.6 ug/L 08/28/13 16:58

MB MB %Recovery Surrogate Qualifier Limits Prepared Analyzed Dil Fac 4-Bromofluorobenzene 78 - 118 08/28/13 16:58 96 Dibromofluoromethane 102 81 - 121 08/28/13 16:58 Toluene-d8 (Surr) 98 80 - 120 08/28/13 16:58

Lab Sample ID: LCS 400-190083/1000 Client Sample ID: Lab Control Sample
Matrix: Water Prep Type: Total/NA

Analysis Batch: 190083

	Spike	LCS	LCS				%Rec.
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits
Acetone	200	273		ug/L		136	24 - 150
Benzene	50.0	50.0		ug/L		100	79 - 120
Bromodichloromethane	50.0	51.1		ug/L		102	75 - 127
Bromoform	50.0	51.1		ug/L		102	65 - 121
Carbon disulfide	50.0	50.1		ug/L		100	41 - 140
Carbon tetrachloride	50.0	50.6		ug/L		101	46 - 141
Chlorobenzene	50.0	49.3		ug/L		99	85 - 120
Chloroethane	50.0	37.6		ug/L		75	37 - 150
Chloroform	50.0	50.5		ug/L		101	73 _ 122
Chloromethane	50.0	50.2		ug/L		100	49 - 141
cis-1,2-Dichloroethene	50.0	51.7		ug/L		103	78 <sub>-</sub> 122
cis-1,3-Dichloropropene	50.0	52.1		ug/L		104	70 - 122
Cyclohexane	50.0	49.6		ug/L		99	69 - 123
Dibromochloromethane	50.0	51.0		ug/L		102	63 _ 125
1,2-Dibromo-3-Chloropropane	50.0	50.6		ug/L		101	52 <sub>-</sub> 124
1,2-Dichlorobenzene	50.0	49.8		ug/L		100	80 _ 121
1,3-Dichlorobenzene	50.0	50.2		ug/L		100	77 <sub>-</sub> 124
1,4-Dichlorobenzene	50.0	50.7		ug/L		101	79 - 119
Dichlorodifluoromethane	50.0	44.8		ug/L		90	27 <sub>-</sub> 144
1,1-Dichloroethane	50.0	51.5		ug/L		103	75 <sub>-</sub> 126
1,2-Dichloroethane	50.0	53.0		ug/L		106	69 <sub>-</sub> 128
1,1-Dichloroethene	50.0	47.9		ug/L		96	50 <sub>-</sub> 134
1,2-Dichloropropane	50.0	50.8		ug/L		102	77 - 126
Diisopropyl ether	50.0	51.7		ug/L		103	69 - 143
Ethylbenzene	50.0	49.5		ug/L		99	82 - 120
Ethylene Dibromide	50.0	52.9		ug/L		106	82 <sub>-</sub> 119
Ethyl tert-butyl ether	50.0	51.6		ug/L		103	58 <sub>-</sub> 142
2-Hexanone	200	224		ug/L		112	60 <sub>-</sub> 150
sopropylbenzene	50.0	50.8		ug/L		102	76 <sub>-</sub> 118
Methyl acetate	250	286		ug/L		114	58 <sub>-</sub> 150
Methylcyclohexane	50.0	50.3		ug/L		101	72 <sub>-</sub> 121
Methylene Chloride	50.0	52.0		ug/L		104	70 - 130
Methyl Ethyl Ketone	200	229		ug/L		114	62 - 137

TestAmerica Savannah

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9/13/2013

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

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

Lab Sample ID: LCS 400-190083/1000

**Matrix: Water** 

Analysis Batch: 190083

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

	Spike	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
methyl isobutyl ketone	200	227		ug/L		114	63 - 150	
Methyl tert-butyl ether	50.0	51.0		ug/L		102	70 - 124	
Naphthalene	50.0	53.6		ug/L		107	45 - 131	
Styrene	50.0	51.8		ug/L		104	79 <sub>-</sub> 124	
Tert-amyl methyl ether	50.0	50.9		ug/L		102	65 - 125	
tert-Butyl alcohol	500	580		ug/L		116	44 - 150	
1,1,2,2-Tetrachloroethane	50.0	51.4		ug/L		103	68 - 132	
Tetrachloroethene	50.0	49.5		ug/L		99	76 - 124	
Toluene	50.0	48.5		ug/L		97	81 - 120	
trans-1,2-Dichloroethene	50.0	50.9		ug/L		102	70 - 126	
trans-1,3-Dichloropropene	50.0	50.6		ug/L		101	64 - 120	
1,2,4-Trichlorobenzene	50.0	51.4		ug/L		103	69 - 128	
1,1,1-Trichloroethane	50.0	51.0		ug/L		102	66 - 130	
1,1,2-Trichloroethane	50.0	51.3		ug/L		103	81 _ 117	
Trichloroethene	50.0	51.8		ug/L		104	77 - 119	
Trichlorofluoromethane	50.0	53.5		ug/L		107	26 - 150	
1,1,2-Trichloro-1,2,2-trifluoroetha	50.0	49.3		ug/L		99	45 - 138	
ne Vinyl chloride	50.0	50.7		ug/L		101	60 - 128	
Xylenes, Total	100	102		ug/L		102	70 - 130	

LCS LCS

Surrogate	%Recovery Qualifier	Limits
4-Bromofluorobenzene	103	78 - 118
Dibromofluoromethane	101	81 - 121
Toluene-d8 (Surr)	98	80 - 120

Lab Sample ID: MB 400-190126/4

Matrix: Solid

Analysis Batch: 190126

Client Sample ID: Method Blank

Prep Type: Total/NA

	MB	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	25	U	25	7.3	ug/Kg			08/29/13 07:42	1
Benzene	5.0	U	5.0	0.49	ug/Kg			08/29/13 07:42	1
Bromodichloromethane	5.0	U	5.0	0.84	ug/Kg			08/29/13 07:42	1
Bromoform	5.0	U	5.0	0.63	ug/Kg			08/29/13 07:42	1
Bromomethane	5.0	U	5.0	1.4	ug/Kg			08/29/13 07:42	1
Carbon disulfide	5.0	U	5.0	1.2	ug/Kg			08/29/13 07:42	1
Carbon tetrachloride	5.0	U	5.0	1.7	ug/Kg			08/29/13 07:42	1
Chlorobenzene	5.0	U	5.0	0.52	ug/Kg			08/29/13 07:42	1
Chloroethane	5.0	U	5.0	1.9	ug/Kg			08/29/13 07:42	1
Chloroform	5.0	U	5.0	0.59	ug/Kg			08/29/13 07:42	1
Chloromethane	5.0	U	5.0	1.0	ug/Kg			08/29/13 07:42	1
cis-1,2-Dichloroethene	5.0	U	5.0	0.76	ug/Kg			08/29/13 07:42	1
cis-1,3-Dichloropropene	5.0	U	5.0	1.2	ug/Kg			08/29/13 07:42	1
Cyclohexane	5.0	U	5.0	0.94	ug/Kg			08/29/13 07:42	1
Dibromochloromethane	5.0	U	5.0	0.87	ug/Kg			08/29/13 07:42	1
1,2-Dibromo-3-Chloropropane	5.0	U	5.0	3.3	ug/Kg			08/29/13 07:42	1
1,2-Dichlorobenzene	5.0	U	5.0	0.71	ug/Kg			08/29/13 07:42	1

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

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

MR MR

Lab Sample ID: MB 400-190126/4

**Matrix: Solid** 

Analysis Batch: 190126

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

	MB	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,3-Dichlorobenzene	5.0	U	5.0	0.95	ug/Kg			08/29/13 07:42	1
1,4-Dichlorobenzene	5.0	U	5.0	0.82	ug/Kg			08/29/13 07:42	1
Dichlorodifluoromethane	5.0	U	5.0	1.3	ug/Kg			08/29/13 07:42	1
1,1-Dichloroethane	5.0	U	5.0	0.83	ug/Kg			08/29/13 07:42	1
1,2-Dichloroethane	5.0	U	5.0	0.82	ug/Kg			08/29/13 07:42	1
1,1-Dichloroethene	5.0	U	5.0	0.75	ug/Kg			08/29/13 07:42	1
1,2-Dichloropropane	5.0	U	5.0	0.74	ug/Kg			08/29/13 07:42	1
Diisopropyl ether	5.0	U	5.0	0.55	ug/Kg			08/29/13 07:42	1
Ethylbenzene	5.0	U	5.0	0.61	ug/Kg			08/29/13 07:42	1
Ethylene Dibromide	5.0	U	5.0	0.48	ug/Kg			08/29/13 07:42	1
Ethyl tert-butyl ether	5.0	U	5.0	0.56	ug/Kg			08/29/13 07:42	1
2-Hexanone	25	U	25	5.0	ug/Kg			08/29/13 07:42	1
Isopropylbenzene	5.0	U	5.0	0.68	ug/Kg			08/29/13 07:42	1
Methyl acetate	5.0	U	5.0	4.6	ug/Kg			08/29/13 07:42	1
Methylcyclohexane	5.0	U	5.0	0.87	ug/Kg			08/29/13 07:42	1
Methylene Chloride	15	U	15	10	ug/Kg			08/29/13 07:42	1
Methyl Ethyl Ketone	25	U	25	4.1	ug/Kg			08/29/13 07:42	1
methyl isobutyl ketone	25	U	25	4.0	ug/Kg			08/29/13 07:42	1
Methyl tert-butyl ether	5.0	U	5.0	1.0	ug/Kg			08/29/13 07:42	1
Naphthalene	5.0	U	5.0	1.0	ug/Kg			08/29/13 07:42	1
Styrene	5.0	U	5.0	0.76	ug/Kg			08/29/13 07:42	1
Tert-amyl methyl ether	5.0	U	5.0	0.44	ug/Kg			08/29/13 07:42	1
tert-Butyl alcohol	5.0	U	5.0	3.4	ug/Kg			08/29/13 07:42	1
1,1,2,2-Tetrachloroethane	5.0	U	5.0	0.72	ug/Kg			08/29/13 07:42	1
Tetrachloroethene	5.0	U	5.0	0.84	ug/Kg			08/29/13 07:42	1
Toluene	5.0	U	5.0	0.70	ug/Kg			08/29/13 07:42	1
trans-1,2-Dichloroethene	5.0	U	5.0	0.76	ug/Kg			08/29/13 07:42	1
trans-1,3-Dichloropropene	5.0	U	5.0	0.92	ug/Kg			08/29/13 07:42	1
1,2,4-Trichlorobenzene	5.0	U	5.0	0.73	ug/Kg			08/29/13 07:42	1
1,1,1-Trichloroethane	5.0	U	5.0	1.1	ug/Kg			08/29/13 07:42	1
1,1,2-Trichloroethane	5.0	U	5.0	0.92	ug/Kg			08/29/13 07:42	1
Trichloroethene	5.0	U	5.0	0.48	ug/Kg			08/29/13 07:42	1
Trichlorofluoromethane	5.0	U	5.0	0.95	ug/Kg			08/29/13 07:42	1
1,1,2-Trichloro-1,2,2-trifluoroethane	5.0	U	5.0	2.0	ug/Kg			08/29/13 07:42	1
Vinyl chloride	5.0	U	5.0	0.92	ug/Kg			08/29/13 07:42	1
Xylenes, Total	10	U	10	1.9	ug/Kg			08/29/13 07:42	1

ИB	MB	

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	97	·	72 - 122		08/29/13 07:42	1
Dibromofluoromethane	103		79 - 123		08/29/13 07:42	1
Toluene-d8 (Surr)	99		80 - 120		08/29/13 07:42	1

Lab Sample ID: LCS 400-190126/1000

**Matrix: Solid** 

Analysis Batch: 190126

	Spike	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Acetone	200	247		ug/Kg		124	43 - 150	

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Prep Type: Total/NA

**Client Sample ID: Lab Control Sample** 

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93498-1

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

Lab Sample ID: LCS 400-190126/1000

Matrix: Solid

Analysis Batch: 190126

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

	Spike	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Benzene	50.0	50.4		ug/Kg		101	74 - 119	
Bromodichloromethane	50.0	52.2		ug/Kg		104	68 - 128	
Bromoform	50.0	58.3		ug/Kg		117	54 <sub>-</sub> 125	
Bromomethane	50.0	35.2		ug/Kg		70	25 - 150	
Carbon disulfide	50.0	53.0		ug/Kg		106	26 - 150	
Carbon tetrachloride	50.0	54.1		ug/Kg		108	70 - 128	
Chlorobenzene	50.0	50.0		ug/Kg		100	80 - 116	
Chloroethane	50.0	46.7		ug/Kg		93	22 _ 150	
Chloroform	50.0	50.0		ug/Kg		100	74 - 119	
Chloromethane	50.0	48.5		ug/Kg		97	36 - 147	
cis-1,2-Dichloroethene	50.0	50.7		ug/Kg		101	68 - 126	
cis-1,3-Dichloropropene	50.0	54.4		ug/Kg		109	68 - 125	
Cyclohexane	50.0	53.0		ug/Kg		106	62 - 126	
Dibromochloromethane	50.0	54.7		ug/Kg		109	65 - 131	
1,2-Dibromo-3-Chloropropane	50.0	52.9		ug/Kg		106	57 - 123	
1,2-Dichlorobenzene	50.0	49.5		ug/Kg		99	76 - 120	
1,3-Dichlorobenzene	50.0	49.9		ug/Kg		100	78 <sub>-</sub> 118	
1,4-Dichlorobenzene	50.0	50.5		ug/Kg		101	77 <sub>-</sub> 118	
Dichlorodifluoromethane	50.0	43.8		ug/Kg		88	44 - 145	
1,1-Dichloroethane	50.0	51.9		ug/Kg		104	61 <sub>-</sub> 128	
1,2-Dichloroethane	50.0	48.7		ug/Kg		97	70 - 125	
1,1-Dichloroethene	50.0	51.4		ug/Kg		103	62 _ 130	
1,2-Dichloropropane	50.0	50.5		ug/Kg		101	64 <sub>-</sub> 129	
Diisopropyl ether	50.0	52.0		ug/Kg		104	46 - 144	
Ethylbenzene	50.0	49.8		ug/Kg		100	78 <sub>-</sub> 120	
Ethylene Dibromide	50.0	52.7		ug/Kg		105	78 <sub>-</sub> 119	
Ethyl tert-butyl ether	50.0	59.2		ug/Kg		118	60 <sub>-</sub> 128	
2-Hexanone	200	205		ug/Kg		103	54 <sub>-</sub> 140	
Isopropylbenzene	50.0	50.5		ug/Kg		101	78 <sub>-</sub> 119	
Methyl acetate	250	262		ug/Kg		105	52 <sub>-</sub> 139	
Methylcyclohexane	50.0	51.0		ug/Kg		102	65 - 126	
Methylene Chloride	50.0	52.7		ug/Kg		105	45 <sub>-</sub> 150	
Methyl Ethyl Ketone	200	221		ug/Kg		111	62 - 126	
methyl isobutyl ketone	200	199		ug/Kg		100	56 - 137	
Methyl tert-butyl ether	50.0	54.7		ug/Kg		109	69 - 124	
Naphthalene	50.0	50.5		ug/Kg		101	64 - 126	
Styrene	50.0	52.6		ug/Kg		105	66 _ 132	
Tert-amyl methyl ether	50.0	57.6		ug/Kg		115	65 _ 124	
tert-Butyl alcohol	500	488		ug/Kg		98	12 - 150	
1,1,2,2-Tetrachloroethane	50.0	49.8		ug/Kg		100	67 - 120	
Tetrachloroethene	50.0	52.4		ug/Kg		105	74 - 126	
Toluene	50.0	50.5		ug/Kg		101	76 - 120	
trans-1,2-Dichloroethene	50.0	52.7		ug/Kg		105	65 - 130	
trans-1,3-Dichloropropene	50.0	56.8		ug/Kg ug/Kg		114	65 <sub>-</sub> 126	
1,2,4-Trichlorobenzene	50.0	50.5		ug/Kg ug/Kg		101	72 - 126	
1,1,1-Trichloroethane	50.0	52.5		ug/Kg ug/Kg		105	72 - 120 72 - 121	
1,1,2-Trichloroethane	50.0	52.1		ug/Kg ug/Kg		103	75 <sub>-</sub> 118	
Trichloroethene	50.0	52.5		ug/Kg ug/Kg		104	76 <sub>-</sub> 122	

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

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

Lab Sample ID: LCS 400-190126/1000

**Matrix: Solid** 

Analyte

Vinyl chloride

Xylenes, Total

Analysis Batch: 190126

1,1,2-Trichloro-1,2,2-trifluoroetha

Trichlorofluoromethane

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

LCS LCS %Rec. Spike Added Result Qualifier %Rec Limits Unit 50.0 52.9 106 65 - 132 ug/Kg 50.0 51.2 ug/Kg 102 74 - 123 50.0 52.1 ug/Kg 104 52 - 134 100 101 ug/Kg 101 70 - 120

LCS LCS %Recovery Qualifier 98

Surrogate Limits 4-Bromofluorobenzene 72 - 122 Dibromofluoromethane 102 79 - 123 Toluene-d8 (Surr) 101 80 - 120

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Lab Sample ID: LCSD 400-190126/5

**Matrix: Solid** 

Analysis Batch: 190126	Spike	LCSD	LCSD			%Rec.		RPD
Analyte	Added		Qualifier Unit	D	%Rec	Limits	RPD	Limit
Acetone	200	215	ug/Kg	_ =	107	43 - 150	14	30
Benzene	50.0	47.4	ug/Kg		95	74 - 119	6	30
Bromodichloromethane	50.0	50.3	ug/Kg		101	68 - 128	4	30
Bromoform	50.0	53.6	ug/Kg		107	54 <sub>-</sub> 125	8	30
Bromomethane	50.0	43.0	ug/Kg		86	25 <sub>-</sub> 150	20	30
Carbon disulfide	50.0	50.3	ug/Kg		101	26 - 150	5	30
Carbon tetrachloride	50.0	51.0	ug/Kg		102	70 - 128	6	30
Chlorobenzene	50.0	46.0	ug/Kg		92	80 - 116	8	30
Chloroethane	50.0	47.3	ug/Kg		95	22 - 150	1	30
Chloroform	50.0	47.7	ug/Kg		95	74 - 119	5	30
Chloromethane	50.0	46.1	ug/Kg		92	36 - 147	5	30
cis-1,2-Dichloroethene	50.0	48.0	ug/Kg		96	68 - 126	5	30
cis-1,3-Dichloropropene	50.0	52.2	ug/Kg		104	68 - 125	4	30
Cyclohexane	50.0	49.7	ug/Kg		99	62 - 126	6	30
Dibromochloromethane	50.0	51.6	ug/Kg		103	65 - 131	6	30
1,2-Dibromo-3-Chloropropane	50.0	47.6	ug/Kg		95	57 - 123	11	30
1,2-Dichlorobenzene	50.0	45.6	ug/Kg		91	76 - 120	8	30
1,3-Dichlorobenzene	50.0	45.0	ug/Kg		90	78 <sub>-</sub> 118	10	30
1,4-Dichlorobenzene	50.0	45.5	ug/Kg		91	77 - 118	11	30
Dichlorodifluoromethane	50.0	40.4	ug/Kg		81	44 - 145	8	30
1,1-Dichloroethane	50.0	49.3	ug/Kg		99	61 - 128	5	30
1,2-Dichloroethane	50.0	46.8	ug/Kg		94	70 - 125	4	30
1,1-Dichloroethene	50.0	47.3	ug/Kg		95	62 - 130	8	30
1,2-Dichloropropane	50.0	49.5	ug/Kg		99	64 - 129	2	30
Diisopropyl ether	50.0	49.0	ug/Kg		98	46 - 144	6	30
Ethylbenzene	50.0	46.4	ug/Kg		93	78 - 120	7	30
Ethylene Dibromide	50.0	48.5	ug/Kg		97	78 - 119	8	30
Ethyl tert-butyl ether	50.0	54.9	ug/Kg		110	60 - 128	8	30
2-Hexanone	200	187	ug/Kg		94	54 - 140	9	30
Isopropylbenzene	50.0	46.4	ug/Kg		93	78 <sub>-</sub> 119	8	30
Methyl acetate	250	243	ug/Kg		97	52 - 139	8	30
Methylcyclohexane	50.0	48.9	ug/Kg		98	65 - 126	4	30

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

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

Lab Sample ID: LCSD 400-190126/5

Matrix: Solid

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

Analysis Batch: 190126									
	Spike	LCSD	LCSD				%Rec.		RPD
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Methylene Chloride	50.0	49.4		ug/Kg		99	45 - 150	7	30
Methyl Ethyl Ketone	200	202		ug/Kg		101	62 - 126	9	30
methyl isobutyl ketone	200	189		ug/Kg		95	56 - 137	5	30
Methyl tert-butyl ether	50.0	51.9		ug/Kg		104	69 - 124	5	30
Naphthalene	50.0	46.0		ug/Kg		92	64 - 126	9	30
Styrene	50.0	48.7		ug/Kg		97	66 - 132	8	30
Tert-amyl methyl ether	50.0	54.0		ug/Kg		108	65 - 124	7	30
tert-Butyl alcohol	500	436		ug/Kg		87	12 - 150	11	30
1,1,2,2-Tetrachloroethane	50.0	46.2		ug/Kg		92	67 - 120	8	30
Tetrachloroethene	50.0	48.5		ug/Kg		97	74 - 126	8	30
Toluene	50.0	46.7		ug/Kg		93	76 - 120	8	30
trans-1,2-Dichloroethene	50.0	49.0		ug/Kg		98	65 - 130	7	30
trans-1,3-Dichloropropene	50.0	53.4		ug/Kg		107	65 - 126	6	30
1,2,4-Trichlorobenzene	50.0	44.7		ug/Kg		89	72 - 126	12	30
1,1,1-Trichloroethane	50.0	50.4		ug/Kg		101	72 - 121	4	30
1,1,2-Trichloroethane	50.0	48.3		ug/Kg		97	75 - 118	8	30
Trichloroethene	50.0	50.2		ug/Kg		100	76 - 122	4	30
Trichlorofluoromethane	50.0	50.6		ug/Kg		101	65 - 132	5	30
1,1,2-Trichloro-1,2,2-trifluoroetha	50.0	48.9		ug/Kg		98	74 - 123	5	30
ne									
Vinyl chloride	50.0	49.0		ug/Kg		98	52 - 134	6	30

100

93.1

ug/Kg

LCSD LCSD

MD MD

Surrogate	%Recovery Qualifie	r Limits
4-Bromofluorobenzene	101	72 - 122
Dibromofluoromethane	102	79 - 123
Toluene-d8 (Surr)	100	80 - 120

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

Lab Sample ID: MB 680-290552/3-A

**Matrix: Water** 

Xylenes, Total

Analysis Batch: 290916

Client Sample ID: Method Blank Prep Type: Total/NA **Prep Batch: 290552** 

70 - 120

	MB	MR							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzaldehyde	10	U	10	1.1	ug/L		08/23/13 15:49	08/26/13 17:45	1
Acetophenone	10	U	10	0.57	ug/L		08/23/13 15:49	08/26/13 17:45	1
Bis(2-chloroethyl)ether	10	U	10	1.1	ug/L		08/23/13 15:49	08/26/13 17:45	1
bis (2-chloroisopropyl) ether	10	U	10	0.78	ug/L		08/23/13 15:49	08/26/13 17:45	1
Bis(2-chloroethoxy)methane	10	U	10	0.94	ug/L		08/23/13 15:49	08/26/13 17:45	1
Caprolactam	10	U	10	0.79	ug/L		08/23/13 15:49	08/26/13 17:45	1
4-Chloroaniline	20	U	20	2.2	ug/L		08/23/13 15:49	08/26/13 17:45	1
4-Chloro-3-methylphenol	10	U	10	1.0	ug/L		08/23/13 15:49	08/26/13 17:45	1
2-Chlorophenol	10	U	10	0.87	ug/L		08/23/13 15:49	08/26/13 17:45	1
1,1'-Biphenyl	10	U	10	0.58	ug/L		08/23/13 15:49	08/26/13 17:45	1
2-Chloronaphthalene	10	U	10	0.80	ug/L		08/23/13 15:49	08/26/13 17:45	1
2,4-Dichlorophenol	10	U	10	1.1	ug/L		08/23/13 15:49	08/26/13 17:45	1
Acenaphthylene	10	U	10	0.85	ug/L		08/23/13 15:49	08/26/13 17:45	1
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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93498-1

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

MB MB

Lab Sample ID: MB 680-290552/3-A

**Matrix: Water** 

Pentachlorophenol

Phenanthrene

Dibenz(a,h)anthracene

Benzo[g,h,i]perylene

Analysis Batch: 290916

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

Prep Batch: 290552

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4-Dimethylphenol		U	10	4.0	ug/L		08/23/13 15:49	08/26/13 17:45	1
Acenaphthene	10	U	10	0.76	ug/L		08/23/13 15:49	08/26/13 17:45	1
Dimethyl phthalate	10	U	10	0.99	ug/L		08/23/13 15:49	08/26/13 17:45	1
2,4-Dinitrophenol	50	U	50	10	ug/L		08/23/13 15:49	08/26/13 17:45	1
Dibenzofuran	10	U	10	0.79	ug/L		08/23/13 15:49	08/26/13 17:45	1
2,4-Dinitrotoluene	10	U	10	1.2	ug/L		08/23/13 15:49	08/26/13 17:45	1
2,6-Dinitrotoluene	10	U	10	1.1	ug/L		08/23/13 15:49	08/26/13 17:45	1
Diethyl phthalate	10	U	10	0.88	ug/L		08/23/13 15:49	08/26/13 17:45	1
4-Chlorophenyl phenyl ether	10	U	10	0.84	ug/L		08/23/13 15:49	08/26/13 17:45	1
Fluorene	10	U	10	0.96	ug/L		08/23/13 15:49	08/26/13 17:45	1
4,6-Dinitro-2-methylphenol	50	U	50	10	ug/L		08/23/13 15:49	08/26/13 17:45	1
4-Bromophenyl phenyl ether	10	U	10	0.77	ug/L		08/23/13 15:49	08/26/13 17:45	1
Hexachlorobenzene	10	U	10	0.79	ug/L		08/23/13 15:49	08/26/13 17:45	1
Hexachlorobutadiene	10	U	10	0.62	ug/L		08/23/13 15:49	08/26/13 17:45	1
Atrazine	10	U	10	1.2	ug/L		08/23/13 15:49	08/26/13 17:45	1
Hexachlorocyclopentadiene	10	U	10	2.5	ug/L		08/23/13 15:49	08/26/13 17:45	1
Hexachloroethane	10	U	10	0.76	ug/L		08/23/13 15:49	08/26/13 17:45	1
Anthracene	10	U	10	0.69	ug/L		08/23/13 15:49	08/26/13 17:45	1
Isophorone	10	U	10	0.90	ug/L		08/23/13 15:49	08/26/13 17:45	1
2-Methylnaphthalene	10	U	10	0.78	ug/L		08/23/13 15:49	08/26/13 17:45	1
Carbazole	10	U	10	0.71	ug/L		08/23/13 15:49	08/26/13 17:45	1
2-Methylphenol	10	U	10	0.89	ug/L		08/23/13 15:49	08/26/13 17:45	1
Di-n-butyl phthalate	10	U	10	0.83	ug/L		08/23/13 15:49	08/26/13 17:45	1
3 & 4 Methylphenol	10	U	10	1.3	ug/L		08/23/13 15:49	08/26/13 17:45	1
Fluoranthene	10	U	10	0.74	ug/L		08/23/13 15:49	08/26/13 17:45	1
Naphthalene	10	U	10	0.70	ug/L		08/23/13 15:49	08/26/13 17:45	1
2-Nitroaniline	50	U	50	1.3	ug/L		08/23/13 15:49	08/26/13 17:45	1
Butyl benzyl phthalate	10	U	10	1.2	ug/L		08/23/13 15:49	08/26/13 17:45	1
3,3'-Dichlorobenzidine	60	U	60	30	ug/L		08/23/13 15:49	08/26/13 17:45	1
3-Nitroaniline	50	U	50	5.0	ug/L		08/23/13 15:49	08/26/13 17:45	1
4-Nitroaniline	50	U	50	5.0	ug/L		08/23/13 15:49	08/26/13 17:45	1
Benzo[a]anthracene	10	U	10	0.55	ug/L		08/23/13 15:49	08/26/13 17:45	1
Chrysene	10	U	10	0.51	ug/L		08/23/13 15:49	08/26/13 17:45	1
Nitrobenzene	10	U	10	0.73	ug/L		08/23/13 15:49	08/26/13 17:45	1
Bis(2-ethylhexyl) phthalate	10	U	10	1.6	ug/L		08/23/13 15:49	08/26/13 17:45	1
2-Nitrophenol	10	U	10	0.76	ug/L		08/23/13 15:49	08/26/13 17:45	1
Di-n-octyl phthalate	10	U	10	1.4	ug/L		08/23/13 15:49	08/26/13 17:45	1
4-Nitrophenol	50		50		ug/L		08/23/13 15:49	08/26/13 17:45	1
Benzo[b]fluoranthene	10		10		ug/L		08/23/13 15:49	08/26/13 17:45	1
Benzo[k]fluoranthene	10		10		ug/L		08/23/13 15:49	08/26/13 17:45	1
N-Nitrosodi-n-propylamine	10		10		ug/L		08/23/13 15:49	08/26/13 17:45	1
Benzo[a]pyrene	10		10		ug/L		08/23/13 15:49	08/26/13 17:45	1
N-Nitrosodiphenylamine	10		10		ug/L		08/23/13 15:49	08/26/13 17:45	1
Indeno[1,2,3-cd]pyrene	10		10		ug/L		08/23/13 15:49	08/26/13 17:45	1

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08/26/13 17:45

08/26/13 17:45

08/26/13 17:45

08/26/13 17:45

08/23/13 15:49

08/23/13 15:49

08/23/13 15:49

08/23/13 15:49

50

10

10

10

2.0 ug/L

1.0 ug/L

0.77 ug/L

0.87 ug/L

50 U

10 U

10 U

10 U

9

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

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

Lab Sample ID: MB 680-290552/3-A

**Matrix: Water** 

Analysis Batch: 290916

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

Prep Batch: 290552

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phenol	10	U	10	0.83	ug/L		08/23/13 15:49	08/26/13 17:45	1
Pyrene	10	U	10	0.63	ug/L		08/23/13 15:49	08/26/13 17:45	1
2,4,5-Trichlorophenol	10	U	10	1.2	ug/L		08/23/13 15:49	08/26/13 17:45	1
2,4,6-Trichlorophenol	10	U	10	0.85	ug/L		08/23/13 15:49	08/26/13 17:45	1

MB MB

MB MB

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	81		39 _ 130	08/23/13 15:49	08/26/13 17:45	1
2-Fluorobiphenyl	78		38 - 130	08/23/13 15:49	08/26/13 17:45	1
Terphenyl-d14 (Surr)	86		10 - 143	08/23/13 15:49	08/26/13 17:45	1
Phenol-d5 (Surr)	70		25 - 130	08/23/13 15:49	08/26/13 17:45	1
2-Fluorophenol (Surr)	74		25 - 130	08/23/13 15:49	08/26/13 17:45	1
2,4,6-Tribromophenol (Surr)	86		31 - 141	08/23/13 15:49	08/26/13 17:45	1

Lab Sample ID: LCS 680-290552/4-A

**Matrix: Water** 

Analysis Batch: 290916

**Client Sample ID: Lab Control Sample** 

Prep Type: Total/NA

Prep Batch: 290552

Analysis Batch: 290916							Prep Batch	: 290552
	Spike	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Benzaldehyde	100	124		ug/L		124	59 - 142	
Acetophenone	100	85.4		ug/L		85	54 - 130	
Bis(2-chloroethyl)ether	100	81.0		ug/L		81	56 - 130	
bis (2-chloroisopropyl) ether	100	76.8		ug/L		77	55 - 130	
Bis(2-chloroethoxy)methane	100	93.6		ug/L		94	64 - 130	
Caprolactam	100	72.6		ug/L		73	34 - 130	
4-Chloroaniline	100	50.4		ug/L		50	42 - 130	
4-Chloro-3-methylphenol	100	96.7		ug/L		97	60 - 130	
2-Chlorophenol	100	80.4		ug/L		80	57 - 130	
1,1'-Biphenyl	100	85.9		ug/L		86	54 - 130	
2-Chloronaphthalene	100	88.0		ug/L		88	53 - 130	
2,4-Dichlorophenol	100	93.2		ug/L		93	54 - 130	
Acenaphthylene	100	91.8		ug/L		92	60 - 130	
2,4-Dimethylphenol	100	84.4		ug/L		84	40 - 130	
Acenaphthene	100	79.4		ug/L		79	55 - 130	
Dimethyl phthalate	100	98.3		ug/L		98	69 - 130	
2,4-Dinitrophenol	100	107		ug/L		107	20 - 165	
Dibenzofuran	100	89.4		ug/L		89	58 - 130	
2,4-Dinitrotoluene	100	93.1		ug/L		93	63 - 130	
2,6-Dinitrotoluene	100	91.4		ug/L		91	65 - 130	
Diethyl phthalate	100	97.3		ug/L		97	70 - 130	
4-Chlorophenyl phenyl ether	100	98.7		ug/L		99	57 - 130	
Fluorene	100	95.3		ug/L		95	61 - 130	
4,6-Dinitro-2-methylphenol	100	104		ug/L		104	45 - 134	
4-Bromophenyl phenyl ether	100	98.8		ug/L		99	61 - 130	
Hexachlorobenzene	100	88.5		ug/L		88	52 - 130	
Hexachlorobutadiene	100	77.4		ug/L		77	36 - 130	
Atrazine	100	105		ug/L		105	66 - 130	
Hexachlorocyclopentadiene	100	43.8		ug/L		44	10 - 130	
Hexachloroethane	100	62.4		ug/L		62	39 - 130	

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Spike

LCS LCS

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93498-1

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

Lab Sample ID: LCS 680-290552/4-A

Matrix: Water

Analysis Batch: 290916

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 290552

	Spike	LUS	LUS				MRec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Anthracene	100	88.5		ug/L		88	61 - 130	
Isophorone	100	86.9		ug/L		87	59 - 130	
2-Methylnaphthalene	100	81.1		ug/L		81	52 - 130	
Carbazole	100	98.8		ug/L		99	67 _ 130	
2-Methylphenol	100	83.1		ug/L		83	55 - 130	
Di-n-butyl phthalate	100	96.1		ug/L		96	66 - 130	
3 & 4 Methylphenol	100	85.8		ug/L		86	35 _ 130	
Fluoranthene	100	91.6		ug/L		92	56 - 130	
Naphthalene	100	80.4		ug/L		80	50 - 130	
2-Nitroaniline	100	97.8		ug/L		98	60 - 130	
Butyl benzyl phthalate	100	90.1		ug/L		90	66 - 130	
3,3'-Dichlorobenzidine	100	52.8	J	ug/L		53	27 - 130	
3-Nitroaniline	100	83.4		ug/L		83	54 - 130	
4-Nitroaniline	100	93.8		ug/L		94	54 - 130	
Benzo[a]anthracene	100	83.0		ug/L		83	58 <sub>-</sub> 130	
Chrysene	100	86.8		ug/L		87	59 - 130	
Nitrobenzene	100	86.2		ug/L		86	56 - 130	
Bis(2-ethylhexyl) phthalate	100	84.9		ug/L		85	62 _ 130	
2-Nitrophenol	100	92.0		ug/L		92	54 - 130	
Di-n-octyl phthalate	100	86.3		ug/L		86	64 - 130	
4-Nitrophenol	100	85.9		ug/L		86	38 - 130	
Benzo[b]fluoranthene	100	80.7		ug/L		81	51 <sub>-</sub> 130	
Benzo[k]fluoranthene	100	79.4		ug/L		79	53 _ 130	
N-Nitrosodi-n-propylamine	100	88.4		ug/L		88	64 - 130	
Benzo[a]pyrene	100	76.5		ug/L		77	61 - 130	
N-Nitrosodiphenylamine	100	101		ug/L		101	68 - 130	
Indeno[1,2,3-cd]pyrene	100	77.1		ug/L		77	47 - 130	
Pentachlorophenol	100	112		ug/L		112	42 - 138	
Dibenz(a,h)anthracene	100	78.2		ug/L		78	55 - 130	
Phenanthrene	100	92.9		ug/L		93	62 - 130	
Benzo[g,h,i]perylene	100	78.0		ug/L		78	54 - 130	
Phenol	100	73.5		ug/L		73	29 - 130	
Pyrene	100	84.4		ug/L		84	60 _ 130	
2,4,5-Trichlorophenol	100	105		ug/L		105	61 <sub>-</sub> 130	
2,4,6-Trichlorophenol	100	105		ug/L		105	57 <sub>-</sub> 130	

.cs	LCS

Surrogate	%Recovery	Qualifier	Limits
Nitrobenzene-d5 (Surr)	89		39 _ 130
2-Fluorobiphenyl	90		38 - 130
Terphenyl-d14 (Surr)	92		10 - 143
Phenol-d5 (Surr)	74		25 - 130
2-Fluorophenol (Surr)	74		25 - 130
2,4,6-Tribromophenol (Surr)	98		31 - 141

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93498-1

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

Lab Sample ID: 680-93498-1 MS

**Matrix: Water** 

<b>Client Sample II</b>	D: PZ02-04 (082113)
F	Prep Type: Total/NA

Analysis Batch: 290916 **Prep Batch: 290552** Spike MS MS Sample Sample Result Qualifier Added Result Qualifier %Rec Limits Analyte Unit Benzaldehyde 9.9 U ^ 99.2 62.0 ug/L 62 59 - 142 ug/L Acetophenone 9.9 U 99.2 63.6 64 54 - 130 Bis(2-chloroethyl)ether 9.9 U 99.2 57.1 ug/L 58 56 - 130 bis (2-chloroisopropyl) ether 9.9 U 99.2 55.4 ug/L 56 55 - 130 Bis(2-chloroethoxy)methane 9.9 U 99.2 64.2 ug/L 65 64 - 130 Caprolactam 9.9 U 99.2 53.5 ug/L 54 34 - 130 Ü 99.2 6.04 JF 6 42 - 130 4-Chloroaniline 20 ug/L 4-Chloro-3-methylphenol 9.9 99.2 68.4 ug/L 69 60 - 130 U 99 2 63.3 64 57 - 130 2-Chlorophenol 9.9 ug/L Ü 99.2 62.5 63 54 - 130 1,1'-Biphenyl 9.9 ug/L 2-Chloronaphthalene 9.9 U 99.2 61.4 ug/L 62 53 - 130 2,4-Dichlorophenol 9.9 U 99.2 70.6 ug/L 71 54 - 130 Acenaphthylene 99 Ū 99.2 69.8 ug/L 70 60 - 130 2,4-Dimethylphenol 9.9 U 99.2 72.3 ug/L 73 40 - 130 99.2 62 Acenaphthene 9.9 U 61.6 ug/L 55 - 13074 Dimethyl phthalate 9.9 U 99.2 73.8 ug/L 69 - 130 2,4-Dinitrophenol 50 U 99.2 80.4 ug/L 81 20 - 165 Dibenzofuran 9.9 U 99.2 68.7 ug/L 69 58 - 130 2,4-Dinitrotoluene 9.9 Ü 99.2 71.0 ug/L 72 63 - 130 2,6-Dinitrotoluene U 99 2 70.2 71 65 - 130 9.9 ug/L 73 Diethyl phthalate 9.9 U 99.2 72.1 ug/L 70 - 130 9.9 U 99.2 73 57 - 130 4-Chlorophenyl phenyl ether 72.9 ug/L 9.9 U 99.2 72.7 73 Fluorene ug/L 61 - 1304,6-Dinitro-2-methylphenol 50 U 99.2 81.3 82 45 - 134 ug/L 4-Bromophenyl phenyl ether 9.9 U 99.2 74.7 ug/L 75 61 - 130 ug/L Hexachlorobenzene 99 U 99.2 58.3 59 52 - 130 Hexachlorobutadiene 9.9 U 99.2 54.6 ug/L 55 36 - 130 9.9 Ü 99.2 20.9 F 21 66 - 130 Atrazine ug/L Hexachlorocyclopentadiene 9.9 U 99.2 32.7 ug/L 33 10 - 130 ug/L Hexachloroethane 9.9 U 99.2 45 39 - 130 44.4 9.9 U 67 Anthracene 99.2 66.9 ug/L 61 - 130Isophorone 9.9 U 99.2 62.9 ug/L 63 59 - 130 2-Methylnaphthalene 9.9 U 99 2 57 2 ug/L 58 52 - 130 Carbazole 9.9 99.2 60.7 ug/L 61 67 - 130 2-Methylphenol 9.9 U 99.2 63.0 63 55 \_ 130 ug/L Di-n-butyl phthalate U 99.2 69.9 70 66 - 130 9.9 ug/L 67 3 & 4 Methylphenol 9.9 Ü 99 2 66.8 35 - 130 ug/L Fluoranthene 9.9 U 99.2 68.7 69 56 - 130 ug/L ug/L Naphthalene U 99.2 57.8 58 50 - 130 9.9 2-Nitroaniline 50 U 99.2 66.7 ug/L 67 60 - 130 ug/L Butyl benzyl phthalate 9.9 U 99.2 67.8 68 66 - 130 3,3'-Dichlorobenzidine 60 U 99.2 60 UF ug/L 0 27 - 130 ug/L 3-Nitroaniline 50 Ù 99.2 6.89 JF 54 - 130 4-Nitroaniline 99.2 32 50 U 31.3 JF ug/L 54 - 130 Benzo[a]anthracene 9.9 U 99.2 53.0 F ug/L 53 58 - 130 54.6 F ug/L 55 Chrysene 9.9 U 992 59 - 130Nitrobenzene 9.9 99.2 61 7 ug/L 62 56 - 130 Bis(2-ethylhexyl) phthalate 9.9 U 99.2 51.4 F ug/L 52 62 \_ 130

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TestAmerica Job ID: 680-93498-1

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

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

Lab Sample ID: 680-93498-1 MS

**Matrix: Water** 

Analysis Batch: 290916

Client Sample ID: PZ02-04 (082113) **Prep Type: Total/NA** 

Prep Batch: 290552

Analysis Batom 2000 to	Sample	Sample	Spike	MS	MS				%Rec.	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	
2-Nitrophenol	9.9	U	99.2	69.3		ug/L		70	54 - 130	
Di-n-octyl phthalate	9.9	U	99.2	51.6	F	ug/L		52	64 - 130	
4-Nitrophenol	50	U	99.2	58.8		ug/L		59	38 - 130	
Benzo[b]fluoranthene	9.9	U	99.2	65.2		ug/L		66	51 <sub>-</sub> 130	
Benzo[k]fluoranthene	9.9	U	99.2	63.6		ug/L		64	53 <sub>-</sub> 130	
N-Nitrosodi-n-propylamine	9.9	U	99.2	65.0		ug/L		65	64 - 130	
Benzo[a]pyrene	9.9	U	99.2	55.0	F	ug/L		55	61 - 130	
N-Nitrosodiphenylamine	9.9	U	99.2	26.6	F	ug/L		27	68 - 130	
Indeno[1,2,3-cd]pyrene	9.9	U	99.2	42.4	F	ug/L		43	47 - 130	
Pentachlorophenol	50	U	99.2	87.4		ug/L		88	42 - 138	
Dibenz(a,h)anthracene	9.9	U	99.2	58.1		ug/L		59	55 - 130	
Phenanthrene	9.9	U	99.2	72.5		ug/L		73	62 _ 130	
Benzo[g,h,i]perylene	9.9	U	99.2	52.2	F	ug/L		53	54 <sub>-</sub> 130	
Phenol	9.9	U	99.2	53.8		ug/L		54	29 - 130	
Pyrene	9.9	U	99.2	63.9		ug/L		64	60 - 130	
2,4,5-Trichlorophenol	9.9	U	99.2	77.5		ug/L		78	61 - 130	
2,4,6-Trichlorophenol	9.9	U	99.2	79.9		ug/L		81	57 <sub>-</sub> 130	

MS MS

Surrogate	%Recovery	Qualifier	Limits
Nitrobenzene-d5 (Surr)	63		39 - 130
2-Fluorobiphenyl	64		38 - 130
Terphenyl-d14 (Surr)	30		10 - 143
Phenol-d5 (Surr)	52		25 _ 130
2-Fluorophenol (Surr)	56		25 _ 130
2,4,6-Tribromophenol (Surr)	75		31 - 141

Lab Sample ID: 680-93498-1 MSD

**Matrix: Water** 

Analysis Batch: 291040

Client Sample ID: PZ02-04 (	(082113)
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Prep Type: Total/NA **Prep Batch: 290552** 

, , , , , , , , , , , , , , , , , , , ,	Sample	Sample	Spike	MSD	MSD				%Rec.		RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Benzaldehyde	9.9	U ^	95.5	67.4	٨	ug/L		71	59 - 142	8	50
Acetophenone	9.9	U	95.5	65.4		ug/L		68	54 - 130	3	50
Bis(2-chloroethyl)ether	9.9	U	95.5	65.1		ug/L		68	56 <sub>-</sub> 130	13	50
bis (2-chloroisopropyl) ether	9.9	U	95.5	55.0		ug/L		58	55 - 130	1	50
Bis(2-chloroethoxy)methane	9.9	U	95.5	48.6	F	ug/L		51	64 - 130	28	50
Caprolactam	9.9	U	95.5	53.8		ug/L		56	34 - 130	1	50
4-Chloroaniline	20	U	95.5	3.11	JF	ug/L		3	42 - 130	64	50
4-Chloro-3-methylphenol	9.9	U	95.5	74.5		ug/L		78	60 - 130	8	50
2-Chlorophenol	9.9	U	95.5	67.6		ug/L		71	57 <sub>-</sub> 130	7	50
1,1'-Biphenyl	9.9	U	95.5	65.2		ug/L		68	54 - 130	4	50
2-Chloronaphthalene	9.9	U	95.5	62.4		ug/L		65	53 - 130	2	50
2,4-Dichlorophenol	9.9	U	95.5	77.1		ug/L		81	54 - 130	9	50
Acenaphthylene	9.9	Ü	95.5	63.2		ug/L		66	60 - 130	10	50
2,4-Dimethylphenol	9.9	U	95.5	74.3		ug/L		78	40 - 130	3	50
Acenaphthene	9.9	U	95.5	61.1		ug/L		64	55 <sub>-</sub> 130	1	50
Dimethyl phthalate	9.9	U	95.5	77.8		ug/L		82	69 - 130	5	50
2,4-Dinitrophenol	50	U	95.5	48	UF	ug/L		0	20 - 165	NC	50

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93498-1

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

Lab Sample ID: 680-93498-1 MSD

**Matrix: Water** 

2,4,6-Trichlorophenol

Analysis Batch: 291040

Client Sample ID: PZ02-04 (082113)

**Prep Type: Total/NA** 

**Prep Batch: 290552** 

Analysis Batch: 291040	Sample	Sample	Spike	MSD	MSD				%Rec.	Batch: 2	SUSS2 RPD
Analyte	•	Qualifier	Added		Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Dibenzofuran	9.9		95.5	71.6		ug/L	— <u>-</u>	75	58 - 130	4	50
2,4-Dinitrotoluene	9.9		95.5	75.5		ug/L		79	63 - 130	6	50
2,6-Dinitrotoluene	9.9		95.5	76.5		ug/L		80	65 - 130	9	50
Diethyl phthalate	9.9		95.5	77.5		ug/L		81	70 - 130	7	50
4-Chlorophenyl phenyl ether	9.9		95.5	74.8		ug/L		78	57 <sub>-</sub> 130	3	50
Fluorene	9.9		95.5	74.4		ug/L		78	61 - 130	2	50
	50		95.5 95.5	91.2		-		96	45 - 134	12	50
4,6-Dinitro-2-methylphenol	9.9		95.5		UF	ug/L		0	61 - 130	NC	50
4-Bromophenyl phenyl ether					UF	ug/L					
Hexachlorobenzene	9.9		95.5 05.5	67.2		ug/L		70 50	52 - 130 36 - 130	14	50
Hexachlorobutadiene	9.9		95.5	56.2	. <u>.</u>	ug/L		59	36 - 130	3	50
Atrazine	9.9		95.5	18.2	F	ug/L		19	66 - 130	14	50
Hexachlorocyclopentadiene	9.9		95.5	31.2		ug/L		33	10 - 130	5	50
Hexachloroethane	9.9		95.5	43.9		ug/L		46	39 - 130	1	50
Anthracene	9.9		95.5	65.1		ug/L		68	61 <sub>-</sub> 130	3	50
Isophorone	9.9		95.5	65.9		ug/L		69	59 <sub>-</sub> 130	5	50
2-Methylnaphthalene	9.9		95.5	60.4		ug/L		63	52 - 130	5	50
Carbazole	9.9		95.5	52.6	F	ug/L		55	67 <sub>-</sub> 130	14	50
2-Methylphenol	9.9	U	95.5	68.9		ug/L		72	55 - 130	9	50
Di-n-butyl phthalate	9.9	U	95.5	72.0		ug/L		75	66 - 130	3	50
3 & 4 Methylphenol	9.9	U	95.5	74.2		ug/L		78	35 - 130	11	50
Fluoranthene	9.9	U	95.5	66.9		ug/L		70	56 - 130	3	50
Naphthalene	9.9	U	95.5	58.1		ug/L		61	50 - 130	1	50
2-Nitroaniline	50	U	95.5	66.5		ug/L		70	60 - 130	0	50
Butyl benzyl phthalate	9.9	U	95.5	62.6		ug/L		66	66 - 130	8	50
3,3'-Dichlorobenzidine	60	U	95.5	57	UF	ug/L		0	27 _ 130	NC	50
3-Nitroaniline	50	U	95.5	5.43	JF	ug/L		6	54 - 130	24	50
4-Nitroaniline	50	U	95.5	25.1	JF	ug/L		26	54 <sub>-</sub> 130	22	50
Benzo[a]anthracene	9.9	U	95.5	56.0		ug/L		59	58 - 130	6	50
Chrysene	9.9	U	95.5	58.5		ug/L		61	59 - 130	7	50
Nitrobenzene	9.9	U	95.5	61.2		ug/L		64	56 <sub>-</sub> 130	1	50
Bis(2-ethylhexyl) phthalate	9.9	U	95.5	54.3	F	ug/L		57	62 - 130	6	50
2-Nitrophenol	9.9	U	95.5	67.4		ug/L		71	54 - 130	3	50
Di-n-octyl phthalate	9.9	U	95.5	55.8	F	ug/L		58	64 - 130	8	50
4-Nitrophenol	50	U	95.5	64.9		ug/L		68	38 - 130	10	50
Benzo[b]fluoranthene	9.9		95.5	52.5		ug/L		55	51 <sub>-</sub> 130	22	50
Benzo[k]fluoranthene	9.9		95.5	53.3		ug/L		56	53 - 130	18	50
N-Nitrosodi-n-propylamine	9.9		95.5	72.5		ug/L		76	64 - 130	11	50
Benzo[a]pyrene	9.9		95.5	44.4		ug/L		46	61 - 130	21	50
N-Nitrosodiphenylamine	9.9		95.5	30.2		ug/L		32	68 - 130	13	50
Indeno[1,2,3-cd]pyrene	9.9		95.5 95.5	50.2	•	ug/L		53	47 - 130	17	50
Pentachlorophenol	50		95.5	94.8				99	42 - 138	8	50
·	9.9		95.5 95.5	50.2	_	ug/L					
Dibenz(a,h)anthracene					ı	ug/L		53 75	55 <sub>-</sub> 130	15	50 50
Phenanthrene	9.9		95.5	71.4		ug/L		75	62 - 130	2	50
Benzo[g,h,i]perylene	9.9		95.5	49.6	٢	ug/L		52	54 - 130	5	50
Phenol	9.9		95.5	57.3		ug/L		60	29 - 130	6	50
Pyrene	9.9		95.5	59.3		ug/L		62	60 - 130	7	50
2,4,5-Trichlorophenol	9.9	U	95.5	82.3		ug/L		86	61 <sub>-</sub> 130	6	50

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89

57 - 130

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85.2

95.5

9.9 U

ug/L

9/13/2013

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

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

Lab Sample ID: 680-93498-1 MSD

**Matrix: Water** 

Analysis Batch: 291040

Client Sample ID: PZ02-04 (082113)

**Prep Type: Total/NA** 

Prep Batch: 290552

	MSD	MSD	
Surrogate	%Recovery	Qualifier	Limits
Nitrobenzene-d5 (Surr)	74		39 - 130
2-Fluorobiphenyl	76		38 - 130
Terphenyl-d14 (Surr)	36		10 - 143
Phenol-d5 (Surr)	64		25 - 130
2-Fluorophenol (Surr)	64		25 - 130
2,4,6-Tribromophenol (Surr)	93		31 - 141

Lab Sample ID: MB 680-290873/21-A

**Matrix: Solid** 

**Client Sample ID: Method Blank** 

**Prep Type: Total/NA** 

	2000.0	
ed	Dil Fac	

Analysis Batch: 291613	МВ	мв						Prep Batch:	290073
Analyte		Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzaldehyde	330	U	330	57	ug/Kg		08/26/13 21:27	08/30/13 10:45	1
Acetophenone	330	U	330	28	ug/Kg		08/26/13 21:27	08/30/13 10:45	1
Bis(2-chloroethyl)ether	330	U	330	44	ug/Kg		08/26/13 21:27	08/30/13 10:45	1
bis (2-chloroisopropyl) ether	330	U	330	30	ug/Kg		08/26/13 21:27	08/30/13 10:45	1
Bis(2-chloroethoxy)methane	330	U	330	38	ug/Kg		08/26/13 21:27	08/30/13 10:45	1
Caprolactam	330	U	330	65	ug/Kg		08/26/13 21:27	08/30/13 10:45	1
4-Chloroaniline	650	U	650	51	ug/Kg		08/26/13 21:27	08/30/13 10:45	1
4-Chloro-3-methylphenol	330	U	330	35	ug/Kg		08/26/13 21:27	08/30/13 10:45	1
2-Chlorophenol	330	U	330	39	ug/Kg		08/26/13 21:27	08/30/13 10:45	1
1,1'-Biphenyl	730	U	730	730	ug/Kg		08/26/13 21:27	08/30/13 10:45	1
2-Chloronaphthalene	330	U	330	35	ug/Kg		08/26/13 21:27	08/30/13 10:45	1
2,4-Dichlorophenol	330	U	330	35	ug/Kg		08/26/13 21:27	08/30/13 10:45	1
Acenaphthylene	330	U	330	36	ug/Kg		08/26/13 21:27	08/30/13 10:45	1
2,4-Dimethylphenol	330	U	330	43	ug/Kg		08/26/13 21:27	08/30/13 10:45	1
Acenaphthene	330	U	330	40	ug/Kg		08/26/13 21:27	08/30/13 10:45	1
Dimethyl phthalate	330	U	330	34	ug/Kg		08/26/13 21:27	08/30/13 10:45	1
2,4-Dinitrophenol	1700	U	1700	820	ug/Kg		08/26/13 21:27	08/30/13 10:45	1
Dibenzofuran	330	U	330	33	ug/Kg		08/26/13 21:27	08/30/13 10:45	1
2,4-Dinitrotoluene	330	U	330	48	ug/Kg		08/26/13 21:27	08/30/13 10:45	1
2,6-Dinitrotoluene	330	U	330	41	ug/Kg		08/26/13 21:27	08/30/13 10:45	1
Diethyl phthalate	330	U	330	37	ug/Kg		08/26/13 21:27	08/30/13 10:45	1
4-Chlorophenyl phenyl ether	330	U	330	43	ug/Kg		08/26/13 21:27	08/30/13 10:45	1
Fluorene	330	U	330	36	ug/Kg		08/26/13 21:27	08/30/13 10:45	1
4,6-Dinitro-2-methylphenol	1700	U	1700	170	ug/Kg		08/26/13 21:27	08/30/13 10:45	1
4-Bromophenyl phenyl ether	330	U	330	36	ug/Kg		08/26/13 21:27	08/30/13 10:45	1
Hexachlorobenzene	330	U	330	38	ug/Kg		08/26/13 21:27	08/30/13 10:45	1
Hexachlorobutadiene	330	U	330	36	ug/Kg		08/26/13 21:27	08/30/13 10:45	1
Atrazine	330	U	330	23	ug/Kg		08/26/13 21:27	08/30/13 10:45	1
Hexachlorocyclopentadiene	330	U	330	40	ug/Kg		08/26/13 21:27	08/30/13 10:45	1
Hexachloroethane	330	U	330	28	ug/Kg		08/26/13 21:27	08/30/13 10:45	1
Anthracene	330	U	330	25	ug/Kg		08/26/13 21:27	08/30/13 10:45	1
Isophorone	330	U	330	33	ug/Kg		08/26/13 21:27	08/30/13 10:45	1
2-Methylnaphthalene	330	U	330	37	ug/Kg		08/26/13 21:27	08/30/13 10:45	1
Carbazole	330	U	330	30	ug/Kg		08/26/13 21:27	08/30/13 10:45	1
2-Methylphenol	330	U	330	27	ug/Kg		08/26/13 21:27	08/30/13 10:45	1
Di-n-butyl phthalate	330	U	330	30	ug/Kg		08/26/13 21:27	08/30/13 10:45	1

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

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

Lab Sample ID: MB 680-290873/21-A

**Matrix: Solid** 

Analysis Batch: 291613

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

**Prep Batch: 290873** 

	MB	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
3 & 4 Methylphenol	330	U	330	42	ug/Kg		08/26/13 21:27	08/30/13 10:45	1
Fluoranthene	330	U	330	32	ug/Kg		08/26/13 21:27	08/30/13 10:45	1
Naphthalene	330	U	330	30	ug/Kg		08/26/13 21:27	08/30/13 10:45	1
2-Nitroaniline	1700	U	1700	44	ug/Kg		08/26/13 21:27	08/30/13 10:45	1
Butyl benzyl phthalate	330	U	330	26	ug/Kg		08/26/13 21:27	08/30/13 10:45	1
3,3'-Dichlorobenzidine	650	U	650	28	ug/Kg		08/26/13 21:27	08/30/13 10:45	1
3-Nitroaniline	1700	U	1700	45	ug/Kg		08/26/13 21:27	08/30/13 10:45	1
4-Nitroaniline	1700	U	1700	48	ug/Kg		08/26/13 21:27	08/30/13 10:45	1
Benzo[a]anthracene	330	U	330	27	ug/Kg		08/26/13 21:27	08/30/13 10:45	1
Chrysene	330	U	330	21	ug/Kg		08/26/13 21:27	08/30/13 10:45	1
Nitrobenzene	330	U	330	26	ug/Kg		08/26/13 21:27	08/30/13 10:45	1
Bis(2-ethylhexyl) phthalate	330	U	330	29	ug/Kg		08/26/13 21:27	08/30/13 10:45	1
2-Nitrophenol	330	U	330	40	ug/Kg		08/26/13 21:27	08/30/13 10:45	1
Di-n-octyl phthalate	330	U	330	29	ug/Kg		08/26/13 21:27	08/30/13 10:45	1
4-Nitrophenol	1700	U	1700	330	ug/Kg		08/26/13 21:27	08/30/13 10:45	1
Benzo[b]fluoranthene	330	U	330	37	ug/Kg		08/26/13 21:27	08/30/13 10:45	1
Benzo[k]fluoranthene	330	U	330	64	ug/Kg		08/26/13 21:27	08/30/13 10:45	1
N-Nitrosodi-n-propylamine	330	U	330	32	ug/Kg		08/26/13 21:27	08/30/13 10:45	1
Benzo[a]pyrene	330	U	330	51	ug/Kg		08/26/13 21:27	08/30/13 10:45	1
N-Nitrosodiphenylamine	330	U	330	33	ug/Kg		08/26/13 21:27	08/30/13 10:45	1
Indeno[1,2,3-cd]pyrene	330	U	330	28	ug/Kg		08/26/13 21:27	08/30/13 10:45	1
Pentachlorophenol	1700	U	1700	330	ug/Kg		08/26/13 21:27	08/30/13 10:45	1
Dibenz(a,h)anthracene	330	U	330	38	ug/Kg		08/26/13 21:27	08/30/13 10:45	1
Phenanthrene	330	U	330	27	ug/Kg		08/26/13 21:27	08/30/13 10:45	1
Benzo[g,h,i]perylene	330	U	330	22	ug/Kg		08/26/13 21:27	08/30/13 10:45	1
Phenol	330	U	330	34	ug/Kg		08/26/13 21:27	08/30/13 10:45	1
Pyrene	330	U	330	27	ug/Kg		08/26/13 21:27	08/30/13 10:45	1
2,4,5-Trichlorophenol	330	U	330	35	ug/Kg		08/26/13 21:27	08/30/13 10:45	1
2,4,6-Trichlorophenol	330	U	330	29	ug/Kg		08/26/13 21:27	08/30/13 10:45	1

ИB	MB

	IND	W.D				
Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	78		46 - 130	08/26/13 21:27	08/30/13 10:45	1
2-Fluorobiphenyl	63		58 - 130	08/26/13 21:27	08/30/13 10:45	1
Terphenyl-d14 (Surr)	82		60 - 130	08/26/13 21:27	08/30/13 10:45	1
Phenol-d5 (Surr)	96		49 - 130	08/26/13 21:27	08/30/13 10:45	1
2-Fluorophenol (Surr)	103		40 - 130	08/26/13 21:27	08/30/13 10:45	1
2,4,6-Tribromophenol (Surr)	77		58 - 130	08/26/13 21:27	08/30/13 10:45	1

Lab Sample ID: LCS 680-290873/22-A

Matrix: Solid

Analysis Batch: 291613

Client Sample ID: Lab Control Sample Prep Type: Total/NA **Prep Batch: 290873** 

	Spike	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Benzaldehyde	3300	741		ug/Kg		22	10 - 130	
Acetophenone	3300	2250		ug/Kg		68	42 - 130	
Bis(2-chloroethyl)ether	3300	2280		ug/Kg		69	42 - 130	
bis (2-chloroisopropyl) ether	3300	2380		ug/Kg		72	44 - 130	
Bis(2-chloroethoxy)methane	3300	2880		ug/Kg		87	56 - 130	

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93498-1

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

Lab Sample ID: LCS 680-290873/22-A

**Matrix: Solid** 

<b>Client Sample ID: Lab Control Sample</b>
Prep Type: Total/NA
Prep Batch: 290873

Analysis Batch: 291613	Spike	LCS	LCS				%Rec.	Batch: 290873
Analyte	Added		Qualifier	Unit	D	%Rec	Limits	
Caprolactam	3300	3370		ug/Kg		102	52 - 130	
4-Chloroaniline	3300	2400		ug/Kg		73	36 - 130	
4-Chloro-3-methylphenol	3300	3210		ug/Kg		97	52 - 130	
2-Chlorophenol	3300	2590		ug/Kg		78	51 - 130	
1,1'-Biphenyl	3300	2870		ug/Kg		87	57 <sub>-</sub> 130	
2-Chloronaphthalene	3300	2690		ug/Kg		82	55 - 130	
2,4-Dichlorophenol	3300	2860		ug/Kg ug/Kg		87	53 - 130	
Acenaphthylene	3300	3120		ug/Kg		94	58 - 130	
2,4-Dimethylphenol	3300	2940		ug/Kg ug/Kg		89	47 - 130	
Acenaphthene	3300	2640		ug/Kg ug/Kg		80	58 <sub>-</sub> 130	
	3300							
Dimethyl phthalate	3300	3150 2780		ug/Kg		95 84	63 <sub>-</sub> 130 10 <sub>-</sub> 154	
2,4-Dinitrophenol				ug/Kg				
Dibenzofuran	3300	2750		ug/Kg		83	56 - 130	
2,4-Dinitrotoluene	3300	2930		ug/Kg		89	55 <sub>-</sub> 130	
2,6-Dinitrotoluene	3300	3130		ug/Kg		95	57 <sub>-</sub> 130	
Diethyl phthalate	3300	3020		ug/Kg		92	62 - 130	
4-Chlorophenyl phenyl ether	3300	2880		ug/Kg		87	61 - 130	
Fluorene	3300	2720		ug/Kg		82	58 - 130	
4,6-Dinitro-2-methylphenol	3300	1920		ug/Kg		58	14 - 137	
4-Bromophenyl phenyl ether	3300	2720		ug/Kg		82	65 - 130	
Hexachlorobenzene	3300	2610		ug/Kg		79	59 - 130	
Hexachlorobutadiene	3300	2770		ug/Kg		84	47 - 130	
Atrazine	3300	2540		ug/Kg		77	54 - 141	
Hexachlorocyclopentadiene	3300	2730		ug/Kg		83	35 _ 130	
Hexachloroethane	3300	2350		ug/Kg		71	44 - 130	
Anthracene	3300	2940		ug/Kg		89	60 - 130	
Isophorone	3300	2570		ug/Kg		78	48 - 130	
2-Methylnaphthalene	3300	2560		ug/Kg		77	55 - 130	
Carbazole	3300	2660		ug/Kg		81	60 - 130	
2-Methylphenol	3300	2800		ug/Kg		85	49 - 130	
Di-n-butyl phthalate	3300	3010		ug/Kg		91	65 - 130	
3 & 4 Methylphenol	3300	2910		ug/Kg		88	50 - 130	
Fluoranthene	3300	3090		ug/Kg		93	62 _ 130	
Naphthalene	3300	2650		ug/Kg		80	54 - 130	
2-Nitroaniline	3300	2990		ug/Kg		91	52 - 130	
Butyl benzyl phthalate	3300	2870		ug/Kg		87	65 - 134	
3,3'-Dichlorobenzidine	3300	3030		ug/Kg		92	45 - 130	
3-Nitroaniline	3300	2810		ug/Kg		85	42 - 130	
4-Nitroaniline	3300	2790		ug/Kg		85	49 - 130	
Benzo[a]anthracene	3300	3130		ug/Kg		95	62 - 130	
Chrysene	3300	3200		ug/Kg		97	62 - 130	
Nitrobenzene	3300	2530		ug/Kg		77	43 - 130	
Bis(2-ethylhexyl) phthalate	3300	3510		ug/Kg		106	62 - 132	
2-Nitrophenol	3300	2770		ug/Kg		84	45 _ 130	
Di-n-octyl phthalate	3300	4310		ug/Kg		131	59 - 146	
4-Nitrophenol	3300	2680		ug/Kg		81	30 - 130	
Benzo[b]fluoranthene	3300	3030		ug/Kg		92	53 - 130	
Benzo[k]fluoranthene	3300	3010		ug/Kg ug/Kg		91	57 <sub>-</sub> 130	

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2

4

6

8

9

3300

TestAmerica Job ID: 680-93498-1

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

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

Lab Sample ID: LCS 680-290873/22-A

Matrix: Solid

2,4,5-Trichlorophenol 2,4,6-Trichlorophenol

Analysis Batch: 291613

**Client Sample ID: Lab Control Sample** Prep Type: Total/NA **Prep Batch: 290873** 

53 - 130

-	Spike	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
N-Nitrosodi-n-propylamine	3300	2750		ug/Kg		83	48 - 130	
Benzo[a]pyrene	3300	3040		ug/Kg		92	68 - 131	
N-Nitrosodiphenylamine	3300	2020	*	ug/Kg		61	62 _ 130	
Indeno[1,2,3-cd]pyrene	3300	2210		ug/Kg		67	52 - 130	
Pentachlorophenol	3300	2970		ug/Kg		90	38 - 131	
Dibenz(a,h)anthracene	3300	3060		ug/Kg		93	56 - 130	
Phenanthrene	3300	3080		ug/Kg		93	61 - 130	
Benzo[g,h,i]perylene	3300	3060		ug/Kg		93	54 - 130	
Phenol	3300	2590		ug/Kg		78	46 - 130	
Pyrene	3300	2490		ug/Kg		75	59 - 130	
2,4,5-Trichlorophenol	3300	3320		ug/Kg		100	60 - 130	

3200

ug/Kg

LCS LCS

Surrogate	%Recovery	Qualifier	Limits
Nitrobenzene-d5 (Surr)	76		46 - 130
2-Fluorobiphenyl	89		58 - 130
Terphenyl-d14 (Surr)	80		60 - 130
Phenol-d5 (Surr)	75		49 - 130
2-Fluorophenol (Surr)	110		40 - 130
2,4,6-Tribromophenol (Surr)	111		58 - 130

Lab Sample ID: MB 680-292846/7-A

**Matrix: Solid** 

Analysis Batch: 293167

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

Prep Batch: 292846

Analysis Dateil. 250101								i icp Batcii.	232040
	MB	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzaldehyde	330	U	330	57	ug/Kg		09/09/13 19:28	09/11/13 17:09	1
Acetophenone	330	U	330	28	ug/Kg		09/09/13 19:28	09/11/13 17:09	1
Bis(2-chloroethyl)ether	330	U	330	44	ug/Kg		09/09/13 19:28	09/11/13 17:09	1
bis (2-chloroisopropyl) ether	330	U	330	30	ug/Kg		09/09/13 19:28	09/11/13 17:09	1
Bis(2-chloroethoxy)methane	330	U	330	39	ug/Kg		09/09/13 19:28	09/11/13 17:09	1
Caprolactam	330	U	330	65	ug/Kg		09/09/13 19:28	09/11/13 17:09	1
4-Chloroaniline	650	U	650	51	ug/Kg		09/09/13 19:28	09/11/13 17:09	1
4-Chloro-3-methylphenol	330	U	330	35	ug/Kg		09/09/13 19:28	09/11/13 17:09	1
2-Chlorophenol	330	U	330	40	ug/Kg		09/09/13 19:28	09/11/13 17:09	1
1,1'-Biphenyl	730	U	730	730	ug/Kg		09/09/13 19:28	09/11/13 17:09	1
2-Chloronaphthalene	330	U	330	35	ug/Kg		09/09/13 19:28	09/11/13 17:09	1
2,4-Dichlorophenol	330	U	330	35	ug/Kg		09/09/13 19:28	09/11/13 17:09	1
Acenaphthylene	330	U	330	36	ug/Kg		09/09/13 19:28	09/11/13 17:09	
2,4-Dimethylphenol	330	U	330	44	ug/Kg		09/09/13 19:28	09/11/13 17:09	1
Acenaphthene	330	U	330	41	ug/Kg		09/09/13 19:28	09/11/13 17:09	1
Dimethyl phthalate	330	U	330	34	ug/Kg		09/09/13 19:28	09/11/13 17:09	1
2,4-Dinitrophenol	1700	U	1700	820	ug/Kg		09/09/13 19:28	09/11/13 17:09	1
Dibenzofuran	330	U	330	33	ug/Kg		09/09/13 19:28	09/11/13 17:09	1
2,4-Dinitrotoluene	330	U	330	48	ug/Kg		09/09/13 19:28	09/11/13 17:09	1
2,6-Dinitrotoluene	330	U	330	42	ug/Kg		09/09/13 19:28	09/11/13 17:09	1
Diethyl phthalate	330	U	330	37	ug/Kg		09/09/13 19:28	09/11/13 17:09	1
4-Chlorophenyl phenyl ether	330	U	330	44	ug/Kg		09/09/13 19:28	09/11/13 17:09	1

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

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

Lab Sample ID: MB 680-292846/7-A

**Matrix: Solid** 

Analysis Batch: 293167

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

**Prep Batch: 292846** 

•	MB	МВ						Prep Batch.	
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluorene	330	U	330	36	ug/Kg		09/09/13 19:28	09/11/13 17:09	1
4,6-Dinitro-2-methylphenol	1700	U	1700	170	ug/Kg		09/09/13 19:28	09/11/13 17:09	1
4-Bromophenyl phenyl ether	51.1	J	330	36	ug/Kg		09/09/13 19:28	09/11/13 17:09	1
Hexachlorobenzene	330	U	330	39	ug/Kg		09/09/13 19:28	09/11/13 17:09	1
Hexachlorobutadiene	330	U	330	36	ug/Kg		09/09/13 19:28	09/11/13 17:09	1
Atrazine	330	U	330	23	ug/Kg		09/09/13 19:28	09/11/13 17:09	1
Hexachlorocyclopentadiene	330	U	330	41	ug/Kg		09/09/13 19:28	09/11/13 17:09	1
Hexachloroethane	330	U	330	28	ug/Kg		09/09/13 19:28	09/11/13 17:09	1
Anthracene	330	U	330	25	ug/Kg		09/09/13 19:28	09/11/13 17:09	1
Isophorone	330	U	330	33	ug/Kg		09/09/13 19:28	09/11/13 17:09	1
2-Methylnaphthalene	330	U	330	38	ug/Kg		09/09/13 19:28	09/11/13 17:09	1
Carbazole	330	U	330	30	ug/Kg		09/09/13 19:28	09/11/13 17:09	1
2-Methylphenol	330	U	330	27	ug/Kg		09/09/13 19:28	09/11/13 17:09	1
Di-n-butyl phthalate	330	U	330	30	ug/Kg		09/09/13 19:28	09/11/13 17:09	1
3 & 4 Methylphenol	330	U	330	43	ug/Kg		09/09/13 19:28	09/11/13 17:09	1
Fluoranthene	330	U	330	32	ug/Kg		09/09/13 19:28	09/11/13 17:09	1
Naphthalene	330	U	330	30	ug/Kg		09/09/13 19:28	09/11/13 17:09	1
2-Nitroaniline	1700		1700	44	ug/Kg		09/09/13 19:28	09/11/13 17:09	1
Butyl benzyl phthalate	330	U	330	26	ug/Kg		09/09/13 19:28	09/11/13 17:09	1
3,3'-Dichlorobenzidine	650	U	650	28	ug/Kg		09/09/13 19:28	09/11/13 17:09	1
3-Nitroaniline	1700		1700	45	ug/Kg		09/09/13 19:28	09/11/13 17:09	1
4-Nitroaniline	1700	U	1700	48	ug/Kg		09/09/13 19:28	09/11/13 17:09	1
Benzo[a]anthracene	330	U	330	27	ug/Kg		09/09/13 19:28	09/11/13 17:09	1
Chrysene	330		330	21	ug/Kg		09/09/13 19:28	09/11/13 17:09	1
Nitrobenzene	330	U	330	26	ug/Kg		09/09/13 19:28	09/11/13 17:09	1
Bis(2-ethylhexyl) phthalate	330	U	330	29	ug/Kg		09/09/13 19:28	09/11/13 17:09	1
2-Nitrophenol	330	U	330	41	ug/Kg		09/09/13 19:28	09/11/13 17:09	1
Di-n-octyl phthalate	330	U	330	29	ug/Kg		09/09/13 19:28	09/11/13 17:09	1
4-Nitrophenol	1700	U	1700	330	ug/Kg		09/09/13 19:28	09/11/13 17:09	1
Benzo[b]fluoranthene	330	U	330	38	ug/Kg		09/09/13 19:28	09/11/13 17:09	
Benzo[k]fluoranthene	330	U	330	64			09/09/13 19:28	09/11/13 17:09	1
N-Nitrosodi-n-propylamine	330	U	330				09/09/13 19:28	09/11/13 17:09	1
Benzo[a]pyrene	330		330		ug/Kg		09/09/13 19:28	09/11/13 17:09	1
N-Nitrosodiphenylamine	330	U	330	33	ug/Kg		09/09/13 19:28	09/11/13 17:09	1
Indeno[1,2,3-cd]pyrene	330		330	28	ug/Kg		09/09/13 19:28	09/11/13 17:09	1
Pentachlorophenol	1700		1700	330	ug/Kg		09/09/13 19:28	09/11/13 17:09	1
Dibenz(a,h)anthracene	330	U	330		ug/Kg		09/09/13 19:28	09/11/13 17:09	1
Phenanthrene	330		330		ug/Kg		09/09/13 19:28	09/11/13 17:09	1
Benzo[g,h,i]perylene	330		330		ug/Kg		09/09/13 19:28	09/11/13 17:09	1
Phenol	330		330		ug/Kg		09/09/13 19:28	09/11/13 17:09	1
Pyrene	330		330		ug/Kg		09/09/13 19:28	09/11/13 17:09	
2,4,5-Trichlorophenol	330		330		ug/Kg		09/09/13 19:28	09/11/13 17:09	· · · · · · · · · · · · · · · · · · ·
2,4,6-Trichlorophenol	330		330		ug/Kg ug/Kg		09/09/13 19:28	09/11/13 17:09	1

	MB	MB	
Surrogate	%Recovery	Qualifier	Limits
Nitrobenzene-d5 (Surr)	53		46 - 130
2-Fluorobiphenyl	52	X	58 - 130
Terphenyl-d14 (Surr)	56	X	60 - 130

Prepared	Analyzed	Dil Fac
09/09/13 19:28	09/11/13 17:09	1
09/09/13 19:28	09/11/13 17:09	1
09/09/13 19:28	09/11/13 17:09	1

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93498-1

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

Lab Sample ID: MB 680-292846/7-A

Lab Sample ID: LCS 680-292846/8-A

**Matrix: Solid** 

**Matrix: Solid** 

3 & 4 Methylphenol

Fluoranthene

Naphthalene

**Analysis Batch: 293167** 

Analysis Batch: 293167

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

Prep Batch: 292846

	IVID IVID				
Surrogate	%Recovery Qualifier	Limits	Prepared	Analyzed	Dil Fac
Phenol-d5 (Surr)	52	49 - 130	09/09/13 19:28	09/11/13 17:09	1
2-Fluorophenol (Surr)	50	40 - 130	09/09/13 19:28	09/11/13 17:09	1
2,4,6-Tribromophenol (Surr)	50 X	58 <sub>-</sub> 130	09/09/13 19:28	09/11/13 17:09	1

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 292846

Spike LCS LCS %Rec. Analyte Added Result Qualifier Unit %Rec Limits Benzaldehyde 3290 678 21 10 - 130 ug/Kg 3290 Acetophenone 1510 ug/Kg 46 42 \_ 130 Bis(2-chloroethyl)ether 3290 1730 ug/Kg 53 42 - 130 bis (2-chloroisopropyl) ether 3290 1830 56 44 - 130 ug/Kg Bis(2-chloroethoxy)methane 3290 1770 ug/Kg 54 56 - 130 3290 61 Caprolactam 2000 ug/Kg 52 - 130 4-Chloroaniline 3290 1050 ug/Kg 32 36 - 130 4-Chloro-3-methylphenol 3290 1790 55 52 - 130 ug/Kg 2-Chlorophenol 3290 1680 ug/Kg 51 51 - 130

1,1'-Biphenyl 3290 1570 ug/Kg 48 57 - 130 3290 50 2-Chloronaphthalene 1630 ug/Kg 55 - 130 3290 2,4-Dichlorophenol 1720 ug/Kg 52 53 - 130 3290 1750 53 58 - 130 Acenaphthylene ug/Kg 2,4-Dimethylphenol 3290 52 47 - 130 1730 ug/Kg Acenaphthene 3290 1660 50 58 - 130 ug/Kg Dimethyl phthalate 3290 1790 ug/Kg 54 63 - 130 2,4-Dinitrophenol 3290 1550 J ug/Kg 47 10 \_ 154 Dibenzofuran 3290 1670 ug/Kg 51 56 - 130 2,4-Dinitrotoluene 3290 1790 54 55 - 130 ug/Kg 3290 50 2,6-Dinitrotoluene 1660 ug/Kg 57 - 130 Diethyl phthalate 3290 1830 56 62 - 130 ug/Kg 3290 52 4-Chlorophenyl phenyl ether 1710 ug/Kg 61 - 1303290 53 Fluorene 1740 ug/Kg 58 - 130 4,6-Dinitro-2-methylphenol 3290 1860 ug/Kg 57 14 - 137 4-Bromophenyl phenyl ether 3290 1790 ug/Kg 54 65 - 130 Hexachlorobenzene 3290 1740 53 59 - 130 ug/Kg Hexachlorobutadiene 3290 1560 47 47 - 130 ug/Kg

3290 54 1790 54 - 141 Atrazine ug/Kg Hexachlorocyclopentadiene 3290 40 35 - 130 1310 ug/Kg Hexachloroethane 3290 47 44 - 130 1540 ug/Kg Anthracene 3290 1780 ug/Kg 54 60 - 130 Isophorone 3290 1570 ug/Kg 48 48 - 130 3290 46 55 - 130 2-Methylnaphthalene 1510 ug/Kg Carbazole 3290 2020 61 60 - 130 ug/Kg 3290 49 - 130 2-Methylphenol 1700 ug/Kg 52 Di-n-butyl phthalate 3290 2000 ug/Kg 61 65 - 130

3290

3290

3290

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57

61

47

50 - 130

62 \_ 130

54 \_ 130

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1880

2000

1550

ug/Kg

ug/Kg

ug/Kg

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

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

Lab Sample ID: LCS 680-292846/8-A **Client Sample ID: Lab Control Sample Matrix: Solid** Prep Type: Total/NA **Prep Batch: 292846** Analysis Batch: 293167

	Spike	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
2-Nitroaniline	3290	1890		ug/Kg		57	52 - 130	
Butyl benzyl phthalate	3290	2010	*	ug/Kg		61	65 - 134	
3,3'-Dichlorobenzidine	3290	1550		ug/Kg		47	45 - 130	
3-Nitroaniline	3290	1520	J	ug/Kg		46	42 - 130	
4-Nitroaniline	3290	1970		ug/Kg		60	49 - 130	
Benzo[a]anthracene	3290	2010	*	ug/Kg		61	62 - 130	
Chrysene	3290	2000	*	ug/Kg		61	62 - 130	
Nitrobenzene	3290	1600		ug/Kg		49	43 - 130	
Bis(2-ethylhexyl) phthalate	3290	2050		ug/Kg		62	62 - 132	
2-Nitrophenol	3290	1640		ug/Kg		50	45 - 130	
Di-n-octyl phthalate	3290	2110		ug/Kg		64	59 - 146	
4-Nitrophenol	3290	2110		ug/Kg		64	30 - 130	
Benzo[b]fluoranthene	3290	1650	*	ug/Kg		50	53 - 130	
Benzo[k]fluoranthene	3290	1760	*	ug/Kg		54	57 - 130	
N-Nitrosodi-n-propylamine	3290	1750		ug/Kg		53	48 - 130	
Benzo[a]pyrene	3290	1730	*	ug/Kg		53	68 - 131	
N-Nitrosodiphenylamine	3290	1900	*	ug/Kg		58	62 - 130	
Indeno[1,2,3-cd]pyrene	3290	2090		ug/Kg		64	52 - 130	
Pentachlorophenol	3290	2130		ug/Kg		65	38 - 131	
Dibenz(a,h)anthracene	3290	1800	*	ug/Kg		55	56 - 130	
Phenanthrene	3290	1840	*	ug/Kg		56	61 - 130	
Benzo[g,h,i]perylene	3290	1840		ug/Kg		56	54 - 130	
Phenol	3290	1760		ug/Kg		54	46 - 130	
Pyrene	3290	1790	*	ug/Kg		54	59 - 130	
2,4,5-Trichlorophenol	3290	1840	*	ug/Kg		56	60 - 130	
2,4,6-Trichlorophenol	3290	1730		ug/Kg		53	53 - 130	

	LCS	LCS		
Surrogate	%Recovery	Qualifier	Limits	
Nitrobenzene-d5 (Surr)	47		46 - 130	
2-Fluorobiphenyl	49	X	58 - 130	
Terphenyl-d14 (Surr)	52	X	60 - 130	
Phenol-d5 (Surr)	53		49 - 130	
2-Fluorophenol (Surr)	51		40 - 130	
2,4,6-Tribromophenol (Surr)	53	X	58 <sub>-</sub> 130	

#### Method: 8015C - Nonhalogenated Organics using GC/FID -Modified (Gasoline Range Organics)

мв мв

Lab Sample ID: MB 680-290531/7 Client Sample ID: Method Blank **Matrix: Solid** Prep Type: Total/NA

Analysis Batch: 290531

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)	250	U	250	19	ug/Kg			08/23/13 12:05	1
-C6-C10									
	МВ	МВ							
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene	80		70 - 131			_		08/23/13 12:05	1

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Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93498-1

Method: 8015C - Nonhalogenated Organics using GC/FID -Modified (Gasoline Range Organics) (Continued)

Lab Sample ID: LCS 680-290531/5

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

**Matrix: Solid** 

Analysis Batch: 290531

	Spike	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Gasoline Range Organics (GRO)	1000	784	-	ug/Kg		78	64 - 133	
-C6-C10								

LCS LCS Surrogate %Recovery Qualifier Limits 70 - 131 a,a,a-Trifluorotoluene 87

Lab Sample ID: LCSD 680-290531/6

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

Matrix: Solid

Analysis Batch: 290531

	Spike	LCSD	LCSD				%Rec.		RPD
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Gasoline Range Organics (GRO)	 1000	879		ug/Kg		88	64 - 133	11	50

-C6-C10

LCSD LCSD

Surrogate	%Recovery Qualitier	Limits
a,a,a-Trifluorotoluene	90	70 - 131

Lab Sample ID: MB 680-290726/5

**Matrix: Solid** 

Analysis Batch: 290726

MB MB

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)	250	U	250	19	ug/Kg			08/24/13 13:39	1

-C6-C10

	IVID IVID				
Surrogate	%Recovery Qualifier	Limits	Prepared	Analyzed	Dil Fac
a a a-Trifluorotoluene	90	70 - 131		08/24/13 13:39	1

Lab Sample ID: LCS 680-290726/6

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

Client Sample ID: Method Blank

Prep Type: Total/NA

**Matrix: Solid** 

Analysis Batch: 290726

	Spike	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Gasoline Range Organics (GRO)	1000	905		ug/Kg		91	64 - 133	

-C6-C10

LCS LCS

Surrogate	%Recovery Qualifier	Limits
a.a.a-Trifluorotoluene	91	70 - 131

Lab Sample ID: LCSD 680-290726/7

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Matrix: Solid

Analysis Batch: 290726

-	Spike	LCSD	LCSD				%Rec.		RPD
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Gasoline Range Organics (GRO)	1000	1290		ug/Kg		129	64 - 133	35	50
-C6-C10									

Client Sample ID: Method Blank

Client Sample ID: Lab Control Sample

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Type: Total/NA

Prep Type: Total/NA

Dil Fac

Client Sample ID: Lab Control Sample Dup

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

Method: 8015C - Nonhalogenated Organics using GC/FID -Modified (Gasoline Range Organics) (Continued)

Lab Sample ID: LCSD 680-290726/7

**Matrix: Solid** 

Analysis Batch: 290726

LCSD LCSD

MB MB

Surrogate %Recovery Qualifier Limits a,a,a-Trifluorotoluene 87 70 - 131

Lab Sample ID: MB 680-291184/5

**Matrix: Water** 

Analysis Batch: 291184

MB MB

Result Qualifier MDL Unit Analyte RL D Prepared Analyzed 50 08/28/13 10:51 12 8 11 ug/L Gasoline Range Organics (GRO)

-C6-C10

Surrogate %Recovery Qualifier Limits Prepared Analyzed Dil Fac 70 - 130 08/28/13 10:51 a,a,a-Trifluorotoluene 92

Lab Sample ID: LCS 680-291184/6

**Matrix: Water** 

Analysis Batch: 291184

Spike LCS LCS %Rec. Added Analyte Result Qualifier Unit %Rec Limits 200 156 ug/L 78 70 - 148

Gasoline Range Organics (GRO) -C6-C10

LCS LCS

%Recovery Qualifier Limits Surrogate 70 - 130 a,a,a-Trifluorotoluene 87

Lab Sample ID: LCSD 680-291184/7

**Matrix: Water** 

Analysis Batch: 291184

LCSD LCSD Spike %Rec. Analyte Added Result Qualifier Unit Limits RPD Limit %Rec Gasoline Range Organics (GRO) 200 156 ug/L 78 70 - 148

-C6-C10

LCSD LCSD

Qualifier Limits Surrogate %Recovery a,a,a-Trifluorotoluene 88 70 - 130

Lab Sample ID: MB 680-291258/7

**Matrix: Solid** 

Analysis Batch: 291258

MB MB

Analyte Result Qualifier RL MDL Unit D Prepared Analyzed Dil Fac 250 Ū 250 19 ug/Kg 08/28/13 16:41 Gasoline Range Organics (GRO)

-C6-C10

MB MB

Prepared Surrogate %Recovery Qualifier Limits Analyzed Dil Fac a,a,a-Trifluorotoluene 99 70 - 131 08/28/13 16:41

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Prep Type: Total/NA RPD

Prep Type: Total/NA

Client Sample ID: Method Blank

TestAmerica Job ID: 680-93498-1

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

Method: 8015C - Nonhalogenated Organics using GC/FID -Modified (Gasoline Range Organics) (Continued)

Lab Sample ID: LCS 680-291258/6

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

**Matrix: Solid** 

Analysis Batch: 291258

	Spike	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Gasoline Range Organics (GRO)	1000	995		ug/Kg		99	64 - 133	

LCS LCS Surrogate %Recovery Qualifier

Limits

70 - 131

Lab Sample ID: LCSD 680-291258/8

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

**Matrix: Solid** 

a,a,a-Trifluorotoluene

Analysis Batch: 291258

	Spike	LCSD	LCSD				%Rec.		RPD
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Gasoline Range Organics (GRO)	1000	954		ug/Kg	_	95	64 - 133	4	50

-C6-C10

LCSD LCSD

MB MB

90

%Recovery Qualifier Limits Surrogate a,a,a-Trifluorotoluene 70 - 131 86

Method: 8015C - Nonhalogenated Organics using GC/FID -Modified (Diesel Range Organics)

Lab Sample ID: MB 490-102687/1-A

**Matrix: Solid** 

Analysis Batch: 103307

Client Sample ID: Method Blank Prep Type: Total/NA Prep Batch: 102687

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	5000	U	5000	1400	ug/Kg		08/26/13 14:47	08/28/13 22:58	1
ORO C24-C40	5000	U	5000	1400	ug/Kg		08/26/13 14:47	08/28/13 22:58	1

MB MB %Recovery Qualifier Limits Surrogate 50 - 150 o-Terphenyl (Surr) 79

Dil Fac Prepared Analyzed 

Lab Sample ID: LCS 490-102687/2-A

**Matrix: Solid** 

Analysis Batch: 103307

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

Prep Batch: 102687 %Rec.

Spike LCS LCS Analyte Added Result Qualifier Unit D %Rec Limits Diesel Range Organics 40000 37400 ug/Kg 54 - 130

[C10-C28]

LCS LCS

%Recovery Qualifier Limits Surrogate o-Terphenyl (Surr) 95 50 - 150

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93498-1

Method: 8015C - Nonhalogenated Organics using GC/FID -Modified (Diesel Range Organics) (Continued)

Lab Sample ID: 680-93498-5 MS

**Matrix: Solid** 

Analysis Batch: 103307

Diesel Range Organics

Client Sample ID: SB02-07 (5.5-6.5) Prep Type: Total/NA Prep Batch: 102687

MS MS Spike Added Result Qualifier Unit %Rec 48500 38900 ug/Kg ₩ 80 10 - 142

[C10-C28]

Analyte

MS MS

Surrogate %Recovery Qualifier o-Terphenyl (Surr) 77

Limits 50 - 150

Lab Sample ID: 680-93498-5 MSD

**Matrix: Solid** 

Analysis Batch: 103307

Diesel Range Organics

Sample Sample Result Qualifier

Spike Added 48100

MSD MSD Result Qualifier 38200

Unit ug/Kg

%Rec 79

Limits RPD 10 - 142

Client Sample ID: Method Blank

%Rec.

Client Sample ID: SB02-07 (5.5-6.5)

Prep Type: Total/NA

Prep Batch: 102687

Prep Type: Total/NA **Prep Batch: 103111** 

**RPD** 

Limit

47

[C10-C28]

Analyte

MSD MSD

3100 J.

Sample Sample

3100

Result Qualifier

Qualifier Limits Surrogate %Recovery o-Terphenyl (Surr) 50 - 150 78

Lab Sample ID: MB 490-103111/1-A

**Matrix: Water** 

Analysis Batch: 103307

MB MB

Result Qualifier Analyte 36.2 J Diesel Range Organics [C10-C28]

MB MB

Surrogate %Recovery Qualifier o-Terphenyl (Surr) 85

Limits 50 - 150

RL

100

08/28/13 07:23 08/28/13 17:09 Prepared

08/28/13 07:23

Prepared

Analyzed

Client Sample ID: Lab Control Sample

46 - 132

Analyzed

Dil Fac 08/28/13 17:09

Dil Fac

Lab Sample ID: LCS 490-103111/2-A

**Matrix: Water** 

Analysis Batch: 103307

Spike Added

1000

LCS LCS Result

Qualifier 542

MDL Unit

28 ug/L

> Unit ug/L

D

%Rec 54

**Prep Batch: 103111** %Rec. Limits

Prep Type: Total/NA

Diesel Range Organics [C10-C28]

Analyte

LCS LCS

Surrogate %Recovery Qualifier Limits o-Terphenyl (Surr) 77 50 - 150

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93498-1

# **GC/MS VOA**

# **Prep Batch: 189784**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93498-4	SB02-07 (0.5-1.5)	Total/NA	Solid	5035	_
680-93498-5	SB02-07 (5.5-6.5)	Total/NA	Solid	5035	
680-93498-6	SB02-08 (0.5-1.5)	Total/NA	Solid	5035	
680-93498-7	SB02-08 (7.0-8.0)	Total/NA	Solid	5035	
680-93498-8	SB02-09 (0.5-1.5)	Total/NA	Solid	5035	
680-93498-9	SB02-09 (4.5-5.5)	Total/NA	Solid	5035	
680-93498-10	SB02-10 (0.5-1.5)	Total/NA	Solid	5035	
680-93498-11	SB02-10 (5.0-6.0)	Total/NA	Solid	5035	
680-93498-12	SB03-01 (0.5-1.5)	Total/NA	Solid	5035	
680-93498-13	SB03-01 (5.0-6.0)	Total/NA	Solid	5035	
680-93498-14	SB03-02 (0.0-1.0)	Total/NA	Solid	5035	
680-93498-15	SB03-02 (3.0-4.0)	Total/NA	Solid	5035	
680-93498-16	SB03-03 (0.5-1.5)	Total/NA	Solid	5035	
680-93498-17	SB03-03 (3.0-4.0)	Total/NA	Solid	5035	
680-93498-18	SB03-04 (0.5-1.5)	Total/NA	Solid	5035	
680-93498-19	SB03-04 (4.0-5.0)	Total/NA	Solid	5035	

# Analysis Batch: 189997

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93498-4	SB02-07 (0.5-1.5)	Total/NA	Solid	8260B	189784
680-93498-5	SB02-07 (5.5-6.5)	Total/NA	Solid	8260B	189784
680-93498-6	SB02-08 (0.5-1.5)	Total/NA	Solid	8260B	189784
680-93498-7	SB02-08 (7.0-8.0)	Total/NA	Solid	8260B	189784
680-93498-8	SB02-09 (0.5-1.5)	Total/NA	Solid	8260B	189784
680-93498-9	SB02-09 (4.5-5.5)	Total/NA	Solid	8260B	189784
LCS 400-189997/1000	Lab Control Sample	Total/NA	Solid	8260B	
LCSD 400-189997/5	Lab Control Sample Dup	Total/NA	Solid	8260B	
MB 400-189997/4	Method Blank	Total/NA	Solid	8260B	

# Analysis Batch: 190083

Lab Camula ID	Client Comple ID	Dran Tura	Matrix	Method	Duan Datah
Lab Sample ID	Client Sample ID	Prep Type	Watrix	wethou	Prep Batch
680-93498-1	PZ02-04 (082113)	Total/NA	Water	8260B	
680-93498-3	TB01 (0802113)	Total/NA	Water	8260B	
LCS 400-190083/1000	Lab Control Sample	Total/NA	Water	8260B	
MB 400-190083/4	Method Blank	Total/NA	Water	8260B	

# Analysis Batch: 190126

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93498-10	SB02-10 (0.5-1.5)	Total/NA	Solid	8260B	189784
680-93498-11	SB02-10 (5.0-6.0)	Total/NA	Solid	8260B	189784
680-93498-12	SB03-01 (0.5-1.5)	Total/NA	Solid	8260B	189784
680-93498-13	SB03-01 (5.0-6.0)	Total/NA	Solid	8260B	189784
680-93498-14	SB03-02 (0.0-1.0)	Total/NA	Solid	8260B	189784
680-93498-15	SB03-02 (3.0-4.0)	Total/NA	Solid	8260B	189784
680-93498-16	SB03-03 (0.5-1.5)	Total/NA	Solid	8260B	189784
680-93498-17	SB03-03 (3.0-4.0)	Total/NA	Solid	8260B	189784
680-93498-18	SB03-04 (0.5-1.5)	Total/NA	Solid	8260B	189784
680-93498-19	SB03-04 (4.0-5.0)	Total/NA	Solid	8260B	189784
LCS 400-190126/1000	Lab Control Sample	Total/NA	Solid	8260B	
LCSD 400-190126/5	Lab Control Sample Dup	Total/NA	Solid	8260B	
MB 400-190126/4	Method Blank	Total/NA	Solid	8260B	

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93498-1

# GC/MS Semi VOA

Prep	Batcl	h: 290552
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Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93498-1	PZ02-04 (082113)	Total/NA	Water	3520C	
680-93498-1 MS	PZ02-04 (082113)	Total/NA	Water	3520C	
680-93498-1 MSD	PZ02-04 (082113)	Total/NA	Water	3520C	
LCS 680-290552/4-A	Lab Control Sample	Total/NA	Water	3520C	
MB 680-290552/3-A	Method Blank	Total/NA	Water	3520C	

# **Prep Batch: 290873**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batcl
680-93498-4	SB02-07 (0.5-1.5)	Total/NA	Solid	3546	
680-93498-5	SB02-07 (5.5-6.5)	Total/NA	Solid	3546	
680-93498-6	SB02-08 (0.5-1.5)	Total/NA	Solid	3546	
680-93498-7	SB02-08 (7.0-8.0)	Total/NA	Solid	3546	
680-93498-8	SB02-09 (0.5-1.5)	Total/NA	Solid	3546	
680-93498-9	SB02-09 (4.5-5.5)	Total/NA	Solid	3546	
680-93498-10	SB02-10 (0.5-1.5)	Total/NA	Solid	3546	
680-93498-11	SB02-10 (5.0-6.0)	Total/NA	Solid	3546	
680-93498-12	SB03-01 (0.5-1.5)	Total/NA	Solid	3546	
680-93498-13	SB03-01 (5.0-6.0)	Total/NA	Solid	3546	
680-93498-14	SB03-02 (0.0-1.0)	Total/NA	Solid	3546	
680-93498-15	SB03-02 (3.0-4.0)	Total/NA	Solid	3546	
680-93498-16	SB03-03 (0.5-1.5)	Total/NA	Solid	3546	
680-93498-17	SB03-03 (3.0-4.0)	Total/NA	Solid	3546	
680-93498-18	SB03-04 (0.5-1.5)	Total/NA	Solid	3546	
680-93498-19	SB03-04 (4.0-5.0)	Total/NA	Solid	3546	
LCS 680-290873/22-A	Lab Control Sample	Total/NA	Solid	3546	
MB 680-290873/21-A	Method Blank	Total/NA	Solid	3546	

# Analysis Batch: 290916

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93498-1	PZ02-04 (082113)	Total/NA	Water	8270D	290552
680-93498-1 MS	PZ02-04 (082113)	Total/NA	Water	8270D	290552
LCS 680-290552/4-A	Lab Control Sample	Total/NA	Water	8270D	290552
MB 680-290552/3-A	Method Blank	Total/NA	Water	8270D	290552

# Analysis Batch: 291040

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93498-1 MSD	PZ02-04 (082113)	Total/NA	Water	8270D	290552

# Analysis Batch: 291613

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93498-4	SB02-07 (0.5-1.5)	Total/NA	Solid	8270D	290873
680-93498-5	SB02-07 (5.5-6.5)	Total/NA	Solid	8270D	290873
680-93498-6	SB02-08 (0.5-1.5)	Total/NA	Solid	8270D	290873
680-93498-7	SB02-08 (7.0-8.0)	Total/NA	Solid	8270D	290873
680-93498-8	SB02-09 (0.5-1.5)	Total/NA	Solid	8270D	290873
680-93498-9	SB02-09 (4.5-5.5)	Total/NA	Solid	8270D	290873
680-93498-10	SB02-10 (0.5-1.5)	Total/NA	Solid	8270D	290873
680-93498-12	SB03-01 (0.5-1.5)	Total/NA	Solid	8270D	290873
680-93498-13	SB03-01 (5.0-6.0)	Total/NA	Solid	8270D	290873
680-93498-14	SB03-02 (0.0-1.0)	Total/NA	Solid	8270D	290873
680-93498-15	SB03-02 (3.0-4.0)	Total/NA	Solid	8270D	290873

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93498-1

# GC/MS Semi VOA (Continued)

# **Analysis Batch: 291613 (Continued)**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93498-16	SB03-03 (0.5-1.5)	Total/NA	Solid	8270D	290873
680-93498-17	SB03-03 (3.0-4.0)	Total/NA	Solid	8270D	290873
680-93498-18	SB03-04 (0.5-1.5)	Total/NA	Solid	8270D	290873
680-93498-19	SB03-04 (4.0-5.0)	Total/NA	Solid	8270D	290873
LCS 680-290873/22-A	Lab Control Sample	Total/NA	Solid	8270D	290873
MB 680-290873/21-A	Method Blank	Total/NA	Solid	8270D	290873

# **Analysis Batch: 291788**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93498-11	SB02-10 (5.0-6.0)	Total/NA	Solid	8270D	290873

# **Prep Batch: 292846**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93498-6 - RE	SB02-08 (0.5-1.5)	Total/NA	Solid	3546	
LCS 680-292846/8-A	Lab Control Sample	Total/NA	Solid	3546	
MB 680-292846/7-A	Method Blank	Total/NA	Solid	3546	

# Analysis Batch: 293167

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93498-6 - RE	SB02-08 (0.5-1.5)	Total/NA	Solid	8270D	292846
LCS 680-292846/8-A	Lab Control Sample	Total/NA	Solid	8270D	292846
MB 680-292846/7-A	Method Blank	Total/NA	Solid	8270D	292846

# **GC VOA**

# Prep Batch: 290431

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93498-4	SB02-07 (0.5-1.5)	Total/NA	Solid	5035	_
680-93498-5	SB02-07 (5.5-6.5)	Total/NA	Solid	5035	
680-93498-6	SB02-08 (0.5-1.5)	Total/NA	Solid	5035	
680-93498-7	SB02-08 (7.0-8.0)	Total/NA	Solid	5035	
680-93498-8	SB02-09 (0.5-1.5)	Total/NA	Solid	5035	
680-93498-9	SB02-09 (4.5-5.5)	Total/NA	Solid	5035	
680-93498-10	SB02-10 (0.5-1.5)	Total/NA	Solid	5035	
680-93498-11	SB02-10 (5.0-6.0)	Total/NA	Solid	5035	
680-93498-12	SB03-01 (0.5-1.5)	Total/NA	Solid	5035	
680-93498-13	SB03-01 (5.0-6.0)	Total/NA	Solid	5035	
680-93498-14	SB03-02 (0.0-1.0)	Total/NA	Solid	5035	
680-93498-15	SB03-02 (3.0-4.0)	Total/NA	Solid	5035	
680-93498-16	SB03-03 (0.5-1.5)	Total/NA	Solid	5035	
680-93498-17	SB03-03 (3.0-4.0)	Total/NA	Solid	5035	
680-93498-18	SB03-04 (0.5-1.5)	Total/NA	Solid	5035	
680-93498-19	SB03-04 (4.0-5.0)	Total/NA	Solid	5035	

# Analysis Batch: 290531

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93498-4	SB02-07 (0.5-1.5)	Total/NA	Solid	8015C	290431
680-93498-5	SB02-07 (5.5-6.5)	Total/NA	Solid	8015C	290431
680-93498-6	SB02-08 (0.5-1.5)	Total/NA	Solid	8015C	290431
680-93498-7	SB02-08 (7.0-8.0)	Total/NA	Solid	8015C	290431

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93498-1

# GC VOA (Continued)

# Analysis Batch: 290531 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93498-8	SB02-09 (0.5-1.5)	Total/NA	Solid	8015C	290431
680-93498-9	SB02-09 (4.5-5.5)	Total/NA	Solid	8015C	290431
680-93498-10	SB02-10 (0.5-1.5)	Total/NA	Solid	8015C	290431
LCS 680-290531/5	Lab Control Sample	Total/NA	Solid	8015C	
LCSD 680-290531/6	Lab Control Sample Dup	Total/NA	Solid	8015C	
MB 680-290531/7	Method Blank	Total/NA	Solid	8015C	

# Analysis Batch: 290726

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93498-11	SB02-10 (5.0-6.0)	Total/NA	Solid	8015C	290431
680-93498-13	SB03-01 (5.0-6.0)	Total/NA	Solid	8015C	290431
680-93498-14	SB03-02 (0.0-1.0)	Total/NA	Solid	8015C	290431
680-93498-16	SB03-03 (0.5-1.5)	Total/NA	Solid	8015C	290431
680-93498-18	SB03-04 (0.5-1.5)	Total/NA	Solid	8015C	290431
680-93498-19	SB03-04 (4.0-5.0)	Total/NA	Solid	8015C	290431
LCS 680-290726/6	Lab Control Sample	Total/NA	Solid	8015C	
LCSD 680-290726/7	Lab Control Sample Dup	Total/NA	Solid	8015C	
MB 680-290726/5	Method Blank	Total/NA	Solid	8015C	

# Analysis Batch: 291184

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93498-1	PZ02-04 (082113)	Total/NA	Water	8015C	
LCS 680-291184/6	Lab Control Sample	Total/NA	Water	8015C	
LCSD 680-291184/7	Lab Control Sample Dup	Total/NA	Water	8015C	
MB 680-291184/5	Method Blank	Total/NA	Water	8015C	

# Analysis Batch: 291258

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93498-12	SB03-01 (0.5-1.5)	Total/NA	Solid	8015C	290431
680-93498-15	SB03-02 (3.0-4.0)	Total/NA	Solid	8015C	290431
680-93498-17	SB03-03 (3.0-4.0)	Total/NA	Solid	8015C	290431
LCS 680-291258/6	Lab Control Sample	Total/NA	Solid	8015C	
LCSD 680-291258/8	Lab Control Sample Dup	Total/NA	Solid	8015C	
MB 680-291258/7	Method Blank	Total/NA	Solid	8015C	

# **GC Semi VOA**

# **Prep Batch: 102687**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93498-4	SB02-07 (0.5-1.5)	Total/NA	Solid	3550C	
680-93498-5	SB02-07 (5.5-6.5)	Total/NA	Solid	3550C	
680-93498-5 MS	SB02-07 (5.5-6.5)	Total/NA	Solid	3550C	
680-93498-5 MSD	SB02-07 (5.5-6.5)	Total/NA	Solid	3550C	
680-93498-6	SB02-08 (0.5-1.5)	Total/NA	Solid	3550C	
680-93498-7	SB02-08 (7.0-8.0)	Total/NA	Solid	3550C	
680-93498-8	SB02-09 (0.5-1.5)	Total/NA	Solid	3550C	
680-93498-9	SB02-09 (4.5-5.5)	Total/NA	Solid	3550C	
680-93498-10	SB02-10 (0.5-1.5)	Total/NA	Solid	3550C	
680-93498-11	SB02-10 (5.0-6.0)	Total/NA	Solid	3550C	
680-93498-12	SB03-01 (0.5-1.5)	Total/NA	Solid	3550C	

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93498-1

# GC Semi VOA (Continued)

# Prep Batch: 102687 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93498-13	SB03-01 (5.0-6.0)	Total/NA	Solid	3550C	
680-93498-14	SB03-02 (0.0-1.0)	Total/NA	Solid	3550C	
680-93498-15	SB03-02 (3.0-4.0)	Total/NA	Solid	3550C	
680-93498-16	SB03-03 (0.5-1.5)	Total/NA	Solid	3550C	
680-93498-17	SB03-03 (3.0-4.0)	Total/NA	Solid	3550C	
680-93498-18	SB03-04 (0.5-1.5)	Total/NA	Solid	3550C	
680-93498-19	SB03-04 (4.0-5.0)	Total/NA	Solid	3550C	
LCS 490-102687/2-A	Lab Control Sample	Total/NA	Solid	3550C	
MB 490-102687/1-A	Method Blank	Total/NA	Solid	3550C	

# **Prep Batch: 103111**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93498-1	PZ02-04 (082113)	Total/NA	Water	3510C	
680-93498-20	PZ02-04 (082113) (DRO-SGT)	Total/NA	Water	3510C	
LCS 490-103111/2-A	Lab Control Sample	Total/NA	Water	3510C	
MB 490-103111/1-A	Method Blank	Total/NA	Water	3510C	

# Analysis Batch: 103307

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93498-1	PZ02-04 (082113)	Total/NA	Water	8015C	103111
680-93498-4	SB02-07 (0.5-1.5)	Total/NA	Solid	8015C	102687
680-93498-5	SB02-07 (5.5-6.5)	Total/NA	Solid	8015C	102687
680-93498-5 MS	SB02-07 (5.5-6.5)	Total/NA	Solid	8015C	102687
680-93498-5 MSD	SB02-07 (5.5-6.5)	Total/NA	Solid	8015C	102687
680-93498-6	SB02-08 (0.5-1.5)	Total/NA	Solid	8015C	102687
680-93498-7	SB02-08 (7.0-8.0)	Total/NA	Solid	8015C	102687
680-93498-8	SB02-09 (0.5-1.5)	Total/NA	Solid	8015C	102687
680-93498-9	SB02-09 (4.5-5.5)	Total/NA	Solid	8015C	102687
680-93498-10	SB02-10 (0.5-1.5)	Total/NA	Solid	8015C	102687
680-93498-11	SB02-10 (5.0-6.0)	Total/NA	Solid	8015C	102687
680-93498-12	SB03-01 (0.5-1.5)	Total/NA	Solid	8015C	102687
680-93498-13	SB03-01 (5.0-6.0)	Total/NA	Solid	8015C	102687
680-93498-14	SB03-02 (0.0-1.0)	Total/NA	Solid	8015C	102687
680-93498-15	SB03-02 (3.0-4.0)	Total/NA	Solid	8015C	102687
680-93498-16	SB03-03 (0.5-1.5)	Total/NA	Solid	8015C	102687
680-93498-17	SB03-03 (3.0-4.0)	Total/NA	Solid	8015C	102687
680-93498-18	SB03-04 (0.5-1.5)	Total/NA	Solid	8015C	102687
680-93498-19	SB03-04 (4.0-5.0)	Total/NA	Solid	8015C	102687
680-93498-20	PZ02-04 (082113) (DRO-SGT)	Total/NA	Water	8015C	103111
LCS 490-102687/2-A	Lab Control Sample	Total/NA	Solid	8015C	102687
LCS 490-103111/2-A	Lab Control Sample	Total/NA	Water	8015C	103111
MB 490-102687/1-A	Method Blank	Total/NA	Solid	8015C	102687
MB 490-103111/1-A	Method Blank	Total/NA	Water	8015C	103111

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: PZ02-04 (082113)

Lab Sample ID: 680-93498-1

**Matrix: Water** 

Date Collected: 08/21/13 09:35 Date Received: 08/22/13 09:39

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	190083	08/29/13 00:33	WPD	TAL PEN
Total/NA	Prep	3520C			290552	08/23/13 15:49	RBS	TAL SAV
Total/NA	Analysis	8270D		1	290916	08/26/13 19:50	SMC	TAL SAV
Total/NA	Analysis	8015C		1	291184	08/28/13 12:08	AJMC	TAL SAV
Total/NA	Prep	3510C			103111	08/28/13 07:23	CLH	TAL NSH
Total/NA	Analysis	8015C		1	103307	08/28/13 17:40	JML	TAL NSH

**Client Sample ID: TB01 (0802113)** 

Lab Sample ID: 680-93498-3

Matelian Mate

Date Collected: 08/21/13 00:00 Date Received: 08/22/13 09:39

Matrix: Water

Batch Batch Dilution Batch Prepared Prep Type Туре Method Run Factor Number or Analyzed Analyst 8260B WPD TAL PEN Total/NA Analysis 190083 08/29/13 01:24

Client Sample ID: SB02-07 (0.5-1.5)

Lab Sample ID: 680-93498-4

Matrix: Solid
Percent Solids: 52.6

Date Collected: 08/21/13 08:50 Date Received: 08/22/13 09:39

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035			189784	08/26/13 09:52	ARM	TAL PEN
Total/NA	Analysis	8260B		1	189997	08/28/13 13:11	WPD	TAL PEN
Total/NA	Prep	3546			290873	08/26/13 21:27	JCS	TAL SAV
Total/NA	Analysis	8270D		1	291613	08/30/13 11:35	SMC	TAL SAV
Total/NA	Prep	5035			290431	08/22/13 14:33	FES	TAL SAV
Total/NA	Analysis	8015C		1	290531	08/23/13 16:26	AJMC	TAL SAV
Total/NA	Prep	3550C			102687	08/26/13 14:47	AJK	TAL NSH
Total/NA	Analysis	8015C		1	103307	08/29/13 00:17	JML	TAL NSH

Client Sample ID: SB02-07 (5.5-6.5)

Lab Sample ID: 680-93498-5

Matrix: Solid Percent Solids: 82.0

Date Collected: 08/21/13 09:00
Date Received: 08/22/13 09:39

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035			189784	08/26/13 09:52	ARM	TAL PEN
Total/NA	Analysis	8260B		1	189997	08/28/13 13:34	WPD	TAL PEN
Total/NA	Prep	3546			290873	08/26/13 21:27	JCS	TAL SAV
Total/NA	Analysis	8270D		1	291613	08/30/13 11:59	SMC	TAL SAV
Total/NA	Prep	5035			290431	08/22/13 14:33	FES	TAL SAV
Total/NA	Analysis	8015C		1	290531	08/23/13 16:46	AJMC	TAL SAV
Total/NA	Prep	3550C			102687	08/26/13 14:47	AJK	TAL NSH
Total/NA	Analysis	8015C		1	103307	08/29/13 00:01	JML	TAL NSH

4

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB02-08 (0.5-1.5)

Lab Sample ID: 680-93498-6

Date Collected: 08/21/13 09:10

Date Received: 08/22/13 09:39

Percent Solids: 72.5

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035	<del></del>		189784	08/26/13 09:52	ARM	TAL PEN
Total/NA	Analysis	8260B		1	189997	08/28/13 14:00	WPD	TAL PEN
Total/NA	Prep	3546			290873	08/26/13 21:27	JCS	TAL SAV
Total/NA	Analysis	8270D		1	291613	08/30/13 12:23	SMC	TAL SAV
Total/NA	Prep	3546	RE		292846	09/09/13 19:28	JCS	TAL SAV
Total/NA	Analysis	8270D	RE	1	293167	09/11/13 15:52	SMC	TAL SAV
Total/NA	Prep	5035			290431	08/22/13 14:33	FES	TAL SAV
Total/NA	Analysis	8015C		1	290531	08/23/13 17:06	AJMC	TAL SAV
Total/NA	Prep	3550C			102687	08/26/13 14:47	AJK	TAL NSH
Total/NA	Analysis	8015C		1	103307	08/29/13 00:33	JML	TAL NSH

Client Sample ID: SB02-08 (7.0-8.0)

Lab Sample ID: 680-93498-7

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035			189784	08/26/13 09:52	ARM	TAL PEN
Total/NA	Analysis	8260B		1	189997	08/28/13 14:23	WPD	TAL PEN
Total/NA	Prep	3546			290873	08/26/13 21:27	JCS	TAL SAV
Total/NA	Analysis	8270D		1	291613	08/30/13 12:48	SMC	TAL SAV
Total/NA	Prep	5035			290431	08/22/13 14:33	FES	TAL SAV
Total/NA	Analysis	8015C		1	290531	08/23/13 17:26	AJMC	TAL SAV
Total/NA	Prep	3550C			102687	08/26/13 14:47	AJK	TAL NSH
Total/NA	Analysis	8015C		1	103307	08/29/13 00:49	JML	TAL NSH

Client Sample ID: SB02-09 (0.5-1.5)

Lab Sample ID: 680-93498-8

Date Collected: 08/21/13 10:00 Matrix: Solid
Date Received: 08/22/13 09:39 Percent Solids: 52.6

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035			189784	08/26/13 09:52	ARM	TAL PEN
Total/NA	Analysis	8260B		1	189997	08/28/13 14:46	WPD	TAL PEN
Total/NA	Prep	3546			290873	08/26/13 21:27	JCS	TAL SAV
Total/NA	Analysis	8270D		1	291613	08/30/13 13:12	SMC	TAL SAV
Total/NA	Prep	5035			290431	08/22/13 14:33	FES	TAL SAV
Total/NA	Analysis	8015C		1	290531	08/23/13 17:46	AJMC	TAL SAV
Total/NA	Prep	3550C			102687	08/26/13 14:47	AJK	TAL NSH
Total/NA	Analysis	8015C		1	103307	08/29/13 01:04	JML	TAL NSH

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB02-09 (4.5-5.5)

Date Collected: 08/21/13 10:10 Date Received: 08/22/13 09:39

Lab Sample ID: 680-93498-9

**Matrix: Solid** Percent Solids: 82.8

_	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035			189784	08/26/13 09:52	ARM	TAL PEN
Total/NA	Analysis	8260B		1	189997	08/28/13 15:09	WPD	TAL PEN
Total/NA	Prep	3546			290873	08/26/13 21:27	JCS	TAL SAV
Total/NA	Analysis	8270D		1	291613	08/30/13 13:37	SMC	TAL SAV
Total/NA	Prep	5035			290431	08/22/13 14:33	FES	TAL SAV
Total/NA	Analysis	8015C		1	290531	08/23/13 18:06	AJMC	TAL SAV
Total/NA	Prep	3550C			102687	08/26/13 14:47	AJK	TAL NSH
Total/NA	Analysis	8015C		1	103307	08/29/13 01:20	JML	TAL NSH

Client Sample ID: SB02-10 (0.5-1.5) Lab Sample ID: 680-93498-10

Date Collected: 08/21/13 10:20

**Matrix: Solid** Date Received: 08/22/13 09:39 Percent Solids: 57.0

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035			189784	08/26/13 09:52	ARM	TAL PEN
Total/NA	Analysis	8260B		1	190126	08/29/13 08:56	WPD	TAL PEN
Total/NA	Prep	3546			290873	08/26/13 21:27	JCS	TAL SAV
Total/NA	Analysis	8270D		1	291613	08/30/13 14:01	SMC	TAL SAV
Total/NA	Prep	5035			290431	08/22/13 14:33	FES	TAL SAV
Total/NA	Analysis	8015C		1	290531	08/23/13 18:25	AJMC	TAL SAV
Total/NA	Prep	3550C			102687	08/26/13 14:47	AJK	TAL NSH
Total/NA	Analysis	8015C		1	103307	08/29/13 01:36	JML	TAL NSH

Client Sample ID: SB02-10 (5.0-6.0) Lab Sample ID: 680-93498-11

Date Collected: 08/21/13 10:30 **Matrix: Solid** Date Received: 08/22/13 09:39 Percent Solids: 81.5

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035			189784	08/26/13 09:52	ARM	TAL PEN
Total/NA	Analysis	8260B		1	190126	08/29/13 09:21	WPD	TAL PEN
Total/NA	Prep	3546			290873	08/26/13 21:27	JCS	TAL SAV
Total/NA	Analysis	8270D		1	291788	09/01/13 02:58	SMP	TAL SAV
Total/NA	Prep	5035			290431	08/22/13 14:33	FES	TAL SAV
Total/NA	Analysis	8015C		1	290726	08/24/13 14:39	AJMC	TAL SAV
Total/NA	Prep	3550C			102687	08/26/13 14:47	AJK	TAL NSH
Total/NA	Analysis	8015C		1	103307	08/29/13 01:51	JML	TAL NSH

Lab Sample ID: 680-93498-12 Client Sample ID: SB03-01 (0.5-1.5)

Date Collected: 08/21/13 12:30 **Matrix: Solid** Date Received: 08/22/13 09:39 Percent Solids: 74.6

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035			189784	08/26/13 09:52	ARM	TAL PEN

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB03-01 (0.5-1.5)

Lab Sample ID: 680-93498-12

Matrix: Solid Percent Solids: 74.6

Date Collected: 08/21/13 12:30 Date Received: 08/22/13 09:39

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	190126	08/29/13 09:43	WPD	TAL PEN
Total/NA	Prep	3546			290873	08/26/13 21:27	JCS	TAL SAV
Total/NA	Analysis	8270D		1	291613	08/30/13 15:01	SMC	TAL SAV
Total/NA	Prep	5035			290431	08/22/13 14:33	FES	TAL SAV
Total/NA	Analysis	8015C		1	291258	08/28/13 17:20	AJMC	TAL SAV
Total/NA	Prep	3550C			102687	08/26/13 14:47	AJK	TAL NSH
Total/NA	Analysis	8015C		1	103307	08/29/13 02:07	JML	TAL NSH

Lab Sample ID: 680-93498-13

Client Sample ID: SB03-01 (5.0-6.0) Date Collected: 08/21/13 12:40 Matrix: Solid Date Received: 08/22/13 09:39 Percent Solids: 80.3

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035			189784	08/26/13 09:52	ARM	TAL PEN
Total/NA	Analysis	8260B		1	190126	08/29/13 10:08	WPD	TAL PEN
Total/NA	Prep	3546			290873	08/26/13 21:27	JCS	TAL SAV
Total/NA	Analysis	8270D		1	291613	08/30/13 15:26	SMC	TAL SAV
Total/NA	Prep	5035			290431	08/22/13 14:33	FES	TAL SAV
Total/NA	Analysis	8015C		1	290726	08/24/13 15:18	AJMC	TAL SAV
Total/NA	Prep	3550C			102687	08/26/13 14:47	AJK	TAL NSH
Total/NA	Analysis	8015C		1	103307	08/29/13 02:23	JML	TAL NSH

Client Sample ID: SB03-02 (0.0-1.0) Lab Sample ID: 680-93498-14

Date Collected: 08/21/13 12:50 **Matrix: Solid** Date Received: 08/22/13 09:39 Percent Solids: 67.7

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035	<del></del>		189784	08/26/13 09:52	ARM	TAL PEN
Total/NA	Analysis	8260B		1	190126	08/29/13 10:32	WPD	TAL PEN
Total/NA	Prep	3546			290873	08/26/13 21:27	JCS	TAL SAV
Total/NA	Analysis	8270D		1	291613	08/30/13 15:50	SMC	TAL SAV
Total/NA	Prep	5035			290431	08/22/13 15:07	FES	TAL SAV
Total/NA	Analysis	8015C		1	290726	08/24/13 15:38	AJMC	TAL SAV
Total/NA	Prep	3550C			102687	08/26/13 14:47	AJK	TAL NSH
Total/NA	Analysis	8015C		1	103307	08/29/13 02:38	JML	TAL NSH

Lab Sample ID: 680-93498-15 Client Sample ID: SB03-02 (3.0-4.0)

Date Collected: 08/21/13 13:00 **Matrix: Solid** Date Received: 08/22/13 09:39 Percent Solids: 76.2

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035			189784	08/26/13 09:52	ARM	TAL PEN
Total/NA	Analysis	8260B		1	190126	08/29/13 10:56	WPD	TAL PEN

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB03-02 (3.0-4.0)

Date Collected: 08/21/13 13:00

Date Received: 08/22/13 09:39

Lab Sample ID: 680-93498-15

Matrix: Solid

Percent Solids: 76.2

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	3546			290873	08/26/13 21:27	JCS	TAL SAV
Total/NA	Analysis	8270D		1	291613	08/30/13 16:15	SMC	TAL SAV
Total/NA	Prep	5035			290431	08/22/13 15:07	FES	TAL SAV
Total/NA	Analysis	8015C		1	291258	08/28/13 18:00	AJMC	TAL SAV
Total/NA	Prep	3550C			102687	08/26/13 14:47	AJK	TAL NSH
Total/NA	Analysis	8015C		1	103307	08/29/13 02:54	JML	TAL NSH

Client Sample ID: SB03-03 (0.5-1.5)

Date Collected: 08/21/13 13:20

Date Received: 08/22/13 09:39

Lab Sample ID: 680-93498-16

Lab Sample ID: 680-93498-17

**Matrix: Solid** 

Percent Solids: 68.0

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035	<del></del> -		189784	08/26/13 09:52	ARM	TAL PEN
Total/NA	Analysis	8260B		1	190126	08/29/13 13:27	WPD	TAL PEN
Total/NA	Prep	3546			290873	08/26/13 21:27	JCS	TAL SAV
Total/NA	Analysis	8270D		1	291613	08/30/13 16:39	SMC	TAL SAV
Total/NA	Prep	5035			290431	08/22/13 15:07	FES	TAL SAV
Total/NA	Analysis	8015C		1	290726	08/24/13 16:18	AJMC	TAL SAV
Total/NA	Prep	3550C			102687	08/26/13 14:47	AJK	TAL NSH
Total/NA	Analysis	8015C		1	103307	08/29/13 03:10	JML	TAL NSH

Client Sample ID: SB03-03 (3.0-4.0)

Date Collected: 08/21/13 13:30

**Matrix: Solid** Date Received: 08/22/13 09:39 Percent Solids: 80.7

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035			189784	08/26/13 09:52	ARM	TAL PEN
Total/NA	Analysis	8260B		1	190126	08/29/13 11:21	WPD	TAL PEN
Total/NA	Prep	3546			290873	08/26/13 21:27	JCS	TAL SAV
Total/NA	Analysis	8270D		1	291613	08/30/13 17:04	SMC	TAL SAV
Total/NA	Prep	5035			290431	08/22/13 15:07	FES	TAL SAV
Total/NA	Analysis	8015C		1	291258	08/28/13 18:20	AJMC	TAL SAV
Total/NA	Prep	3550C			102687	08/26/13 14:47	AJK	TAL NSH
Total/NA	Analysis	8015C		1	103307	08/29/13 03:25	JML	TAL NSH

Client Sample ID: SB03-04 (0.5-1.5)

Date Collected: 08/21/13 13:50

Date Received: 08/22/13 09:39

Lab Sample ID: 680-93498-18

**Matrix: Solid** 

Percent Solids: 53.9

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035			189784	08/26/13 09:52	ARM	TAL PEN
Total/NA	Analysis	8260B		1	190126	08/29/13 11:47	WPD	TAL PEN
Total/NA	Prep	3546			290873	08/26/13 21:27	JCS	TAL SAV

# **Lab Chronicle**

Client: ARCADIS U.S., Inc.

Date Collected: 08/21/13 13:50

Date Received: 08/22/13 09:39

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB03-04 (0.5-1.5)

TestAmerica Job ID: 680-93498-1

Lab Sample ID: 680-93498-18

Matrix: Solid

Percent Solids: 53.9

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	8270D		1	291613	08/30/13 17:29	SMC	TAL SAV
Total/NA	Prep	5035			290431	08/22/13 15:07	FES	TAL SAV
Total/NA	Analysis	8015C		1	290726	08/24/13 16:58	AJMC	TAL SAV
Total/NA	Prep	3550C			102687	08/26/13 14:47	AJK	TAL NSH
Total/NA	Analysis	8015C		1	103307	08/29/13 03:41	JML	TAL NSH

Client Sample ID: SB03-04 (4.0-5.0)

Date Collected: 08/21/13 14:00

Date Received: 08/22/13 09:39

Lab Sample ID: 680-93498-19
Matrix: Solid

Lab Sample ID: 680-93498-20

**Matrix: Water** 

Percent Solids: 80.6

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035			189784	08/26/13 09:52	ARM	TAL PEN
Total/NA	Analysis	8260B		1	190126	08/29/13 12:13	WPD	TAL PEN
Total/NA	Prep	3546			290873	08/26/13 21:27	JCS	TAL SAV
Total/NA	Analysis	8270D		1	291613	08/30/13 17:53	SMC	TAL SAV
Total/NA	Prep	5035			290431	08/22/13 15:07	FES	TAL SAV
Total/NA	Analysis	8015C		1	290726	08/24/13 17:17	AJMC	TAL SAV
Total/NA	Prep	3550C			102687	08/26/13 14:47	AJK	TAL NSH
Total/NA	Analysis	8015C		1	103307	08/29/13 03:57	JML	TAL NSH

**Client Sample ID: PZ02-04 (082113) (DRO-SGT)** 

Date Collected: 08/21/13 09:35

Date Received: 08/22/13 09:39

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			103111	08/28/13 07:23	CLH	TAL NSH
Total/NA	Analysis	8015C		1	103307	08/28/13 17:56	JML	TAL NSH

#### **Laboratory References:**

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

TAL PEN = TestAmerica Pensacola, 3355 McLemore Drive, Pensacola, FL 32514, TEL (850)474-1001

TAL SAV = TestAmerica Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

TestAmerica Savannah

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Level Level IV

A ARCADIS
Infrastructure Victor Environment-Buildings

130821-1

# CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM Page

Page  $\frac{2}{3}$  of  $\frac{3}{3}$ 

Lab Work Order#

2	A. H.SO. 1. 40 ml Vial L. H.C. 2. 1 LAmber C. HNO. 3. 250 m Passic	Nach Nach Nach	F. Other:	G. Other 8, 8 oz. Glass H. Other 9, Other	Ľ.	T-Tissue A-Ar Other Other		A CONTRACTOR OF THE PROPERTY O	Total Control of the	The state of the s			The state of the s					To provide the second s			ns(1):	Relinquished By Laboratory Received By	Printed Name: Printed	Signature: Signature:	Firm/Courter. Firm:	
Preservative Treek (C.C. NONE	۱.	Container Tマグシェ 5分れ	2	>OA: \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	2840	Matrix S S S S S S S S S S S S S S S S S S S	x 35	<i>X</i>	X		×	X	×	×	X	X	×	X	X	X MB	Luch // FNV33683	Received By Received By	Printed Name:	Storage Signal	Finite CAID: S	
Tolophono:	Fex:		Zip E-mail Addross:	Project #;	Sampier's Signature:	Collection Type (*)	> 8/21/15 1230	\ 0\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	<>		0531	->	8/12/8	) (	(	0		<b>A</b>	5.5) 8/21/13/1010	//9415381	atory Information and Receipt	SAUTANAH Cooler Custody Seal (*/)	☐ Infact ☐ Not Infact	Sample Receipt:	
Contact & Company Name:	Saults Address	5	Sen	Project Namo/Location (City, State):	Sampler's Printed Name;	Sample ID	5803-01 (1.0-1.5	5803-01 (5.5-6.6	5803-02 (0,5-1.0	28-82	5803-63 (	1 5803-63 (3.5-4.0)		SBC3-04 (4,0-4,5	5802-07 105-15	5802-07 (5.5-6-5	5802-08 (0.5-1.5	5302-08 (7.0-8.0	5302-09 (0,54.5	5802-09 (4,5-5.5	Special Instructions/Commonts:		Lab Name: TEST AMERICAL SA	6/13	Spacify Tumaround Roquiroments:	_

20730826 CofC AR Form 01.12,2007

PINK – Retained by ARCADIS

YELLOW 1 ab copy

WHITE - Laboratory returns with results

A ARCADIS Intrastructure Water-Environment - Buildings

# **CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM**

Page 2 of 3

Lab Work Order#

Keys Container Information Key: 1. 40 ml Vial 2. 11 Amber 3. 250 ml Pistic 4. 4. 500 ml Pistic 5. Encore 6. 2 oz. Gless	77. 4 02. Glass 77. 4 02. Glass 8 8 02. Glass 9 Other	SE - Sediment NL - NAPL/OII SL Sludge SW - Sample Wipe	A-Air	A CONTRACTOR OF THE PROPERTY O									Bo-1718	Laboratory Received By Printed Name:	Signaturo:	1,	Date/Time:
	G. Othor	Matrix Key: SO-Soil W-Water	Tissue								, , , , , , , , , , , , , , , , , , , ,			Relinquished By Printed Name: Printed Name:		Firm/Courior. Firm:	Date/Time: Dat
PROCE None   PROCE LACTION  PR											The state of the s		.5	Printed Warmer: Control Market Printed Market Print	Signaturo.	Firmicourier,   22   13 0431 Firm	1
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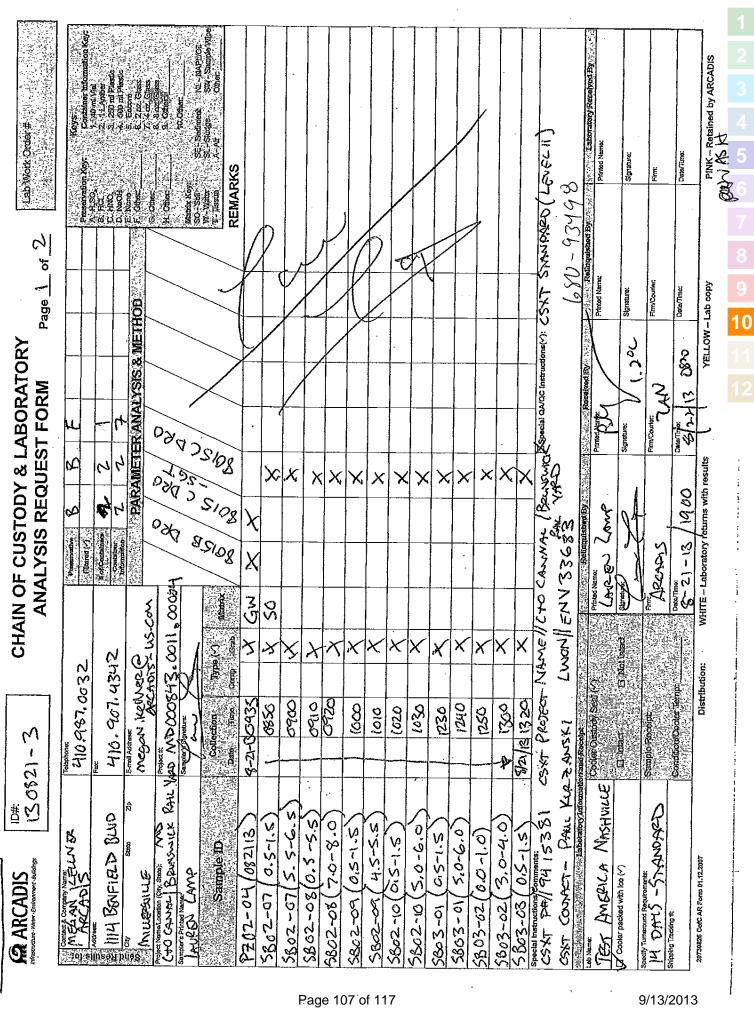
PINK - Retained by ARCADIS

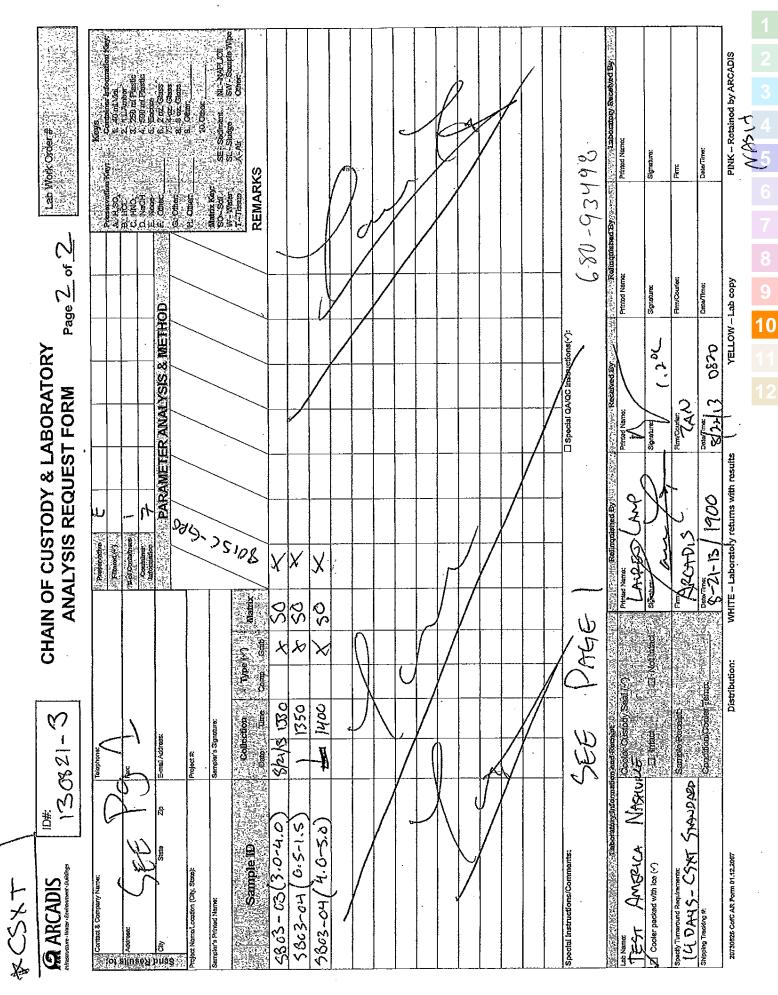
YELLOW—Lab copy

WHITE - Laboratory returns with results

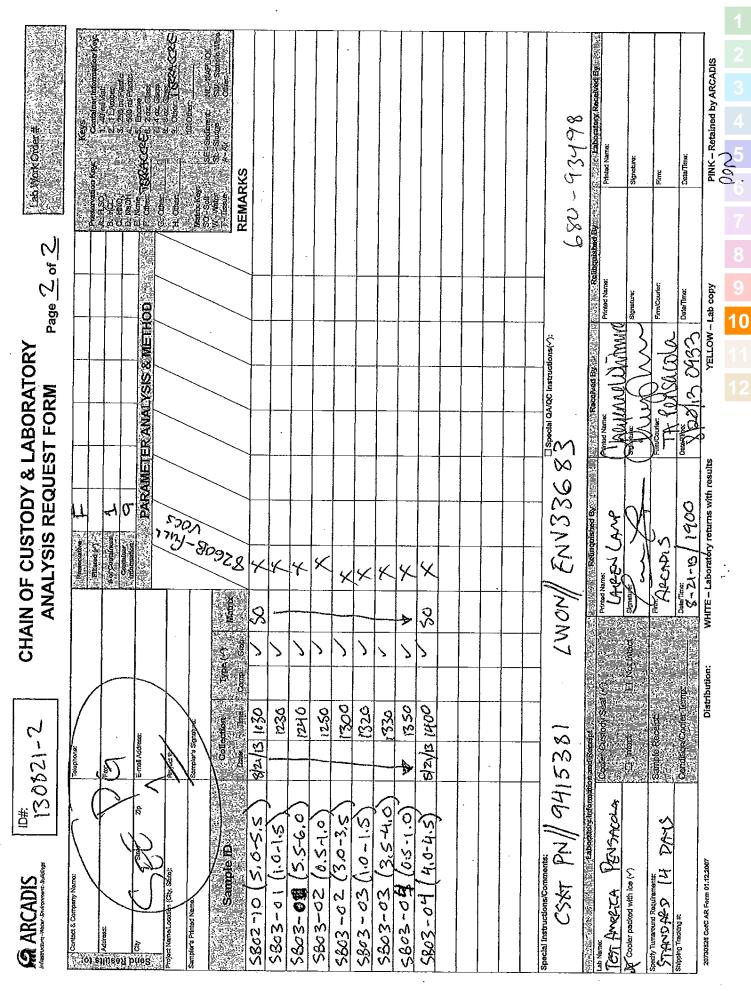
Distribution:

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	-	LABORATORY	LABORATORY INFORMATION			-	C d	
		TestAmerica Sava	nnab - 5102 LaRoche Av	enue. Savannah, GA 31404 P.	☐ TestAmerica Savannati - 5102 LaRoche Avenue, Savannati, GA 31404 P. 912-354-7858 F. 912-352-0165	17808   2087	7-17	
SHA CHA		TestAmerica Nort TestAmerica Tama	n Canton - 4101 Shuffel I	Drive NW, North Canton, OH 443	20 P: 330-497-9396 F: 330-4	7-0772 SHIPMENT INFORMATION		_
TRANSPORTATION CUS	CUSTODY	TestAmerica Pens	acola - 3355 McLemore	i, suite 100, tampa, r.L. 33634 Drive, Pensacola, FL 32514 P.	P: 813-885-7427   F: 813-885-70 850-474-1001   F: 850-478-967-	Shipment Method:		_~
		<ul> <li>TestAmerica Buffs</li> <li>TestAmerica Chia</li> </ul>	tlo - 10 Hazelwdod Drive	, Sufte 106, Amherst, NY 14228	DisstAmerica Buffalo - 10 Hazelwood Drive, Sutte 106, Amherst, NY 14228 P. 716-691-2600 F. 716-981-7991	991 Shloment Tracking No.		70-
CSXT DRO LECT INECOMATION		Proi State (State of Origin)	ago - 2417 Bond Street,	University Park, IL 60466 P: 7	38-534-5200 P: 708-534-5211			
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CSXT Contact PAINL KURZANSK		LWON: ENK	ENW 33683	City, State, Zip:		Phones, 25-1 5,200 Feet of the Control of the Contr	AKGO 15 -UA> . CCN	7
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Received By Laboratory:	Date/Time	-	Lab Remarks:		LAB USE: Custody Imace	Custody Seal-#	LAB Log Number #	<del></del>
ORIGINAL - RETURN TO LABORATORY WITH SAMPLES	WPLES '				INVOICE MUST BE SUBIN	INVOICE MUST BE SUBMITTED TO CSXT WITH ORIGINAL COC	TAI -6008-04T	<b>-</b>
						* F T 1		_



Client: ARCADIS U.S., Inc.

Job Number: 680-93498-1

Login Number: 93498 List Source: TestAmerica Savannah

List Number: 1

Creator: Conner, Keaton

Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>N/A</td> <td></td>	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	Sample -2 was received for GRO, scratched from COC.
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	False	TB received in Savannah
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

TestAmerica Savannah
Page 111 of 117
9/13/2013

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Client: ARCADIS U.S., Inc.

Job Number: 680-93498-1

List Source: TestAmerica Nashville
List Number: 1
List Creation: 08/23/13 02:07 PM

Creator: Buckingham, Paul

Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>True</td> <td></td>	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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Client: ARCADIS U.S., Inc. Job Number: 680-93498-1

List Source: TestAmerica Pensacola
List Number: 1
List Creation: 08/22/13 03:53 PM

Creator: Meade, Chris J

Question Answer Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td
The cooler's custody seal, if present, is intact.
Sample custody seals, if present, are intact.  N/A
The cooler or samples do not appear to have been compromised or tampered with.
Samples were received on ice. True
Cooler Temperature is acceptable. True
Cooler Temperature is recorded. True 0.8°C IR2
COC is present. True
COC is filled out in ink and legible.
COC is filled out with all pertinent information.
Is the Field Sampler's name present on COC?
There are no discrepancies between the containers received and the COC.
Samples are received within Holding Time.
Sample containers have legible labels.
Containers are not broken or leaking.
Sample collection date/times are provided. True
Appropriate sample containers are used. True
Sample bottles are completely filled. True
Sample Preservation Verified. True
There is sufficient vol. for all requested analyses, incl. any requested  MS/MSDs  True
Containers requiring zero headspace have no headspace or bubble is N/A <6mm (1/4").
Multiphasic samples are not present. True
Samples do not require splitting or compositing.
Residual Chlorine Checked. N/A

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Client: ARCADIS U.S., Inc. Job Number: 680-93498-1

List Source: TestAmerica Pensacola
List Number: 2
List Source: TestAmerica Pensacola
List Creation: 08/22/13 03:58 PM

Creator: Meade, Chris J

Question       Answer       Comment         Radioactivity wasn't checked or is        = background as measured by a survey meter.       N/A         The cooler's custody seal, if present, is intact.       True         Sample custody seals, if present, are intact.       N/A         The cooler or samples do not appear to have been compromised or tampered with.       True         Samples were received on ice.       True         Cooler Temperature is acceptable.       True         Cooler Temperature is recorded.       True         COC is present.       True         COC is filled out in ink and legible.       True         COC is filled out with all pertinent information.       True         Is the Field Sampler's name present on COC?       True         There are no discrepancies between the containers received and the COC.       True         Samples are received within Holding Time.       True         Sample containers have legible labels.       True         Containers are not broken or leaking.       True         Sample collection date/times are provided.       True         Appropriate sample containers are used.       True
survey meter. The cooler's custody seal, if present, is intact.  True Sample custody seals, if present, are intact.  The cooler or samples do not appear to have been compromised or tampered with.  Samples were received on ice.  True Cooler Temperature is acceptable.  True Cooler Temperature is recorded.  True COC is present.  True COC is filled out in ink and legible.  True COC is filled out with all pertinent information.  Is the Field Sampler's name present on COC?  True There are no discrepancies between the containers received and the COC.  True Sample containers have legible labels.  True Containers are not broken or leaking.  Sample collection date/times are provided.  Appropriate sample containers are used.
Sample custody seals, if present, are intact.  The cooler or samples do not appear to have been compromised or tampered with.  Samples were received on ice.  True  Cooler Temperature is acceptable.  True  Cooler Temperature is recorded.  True  COC is present.  True  COC is filled out in ink and legible.  True  COC is filled out with all pertinent information.  Is the Field Sampler's name present on COC?  True  There are no discrepancies between the containers received and the COC.  True  Samples are received within Holding Time.  Sample containers have legible labels.  True  Containers are not broken or leaking.  True  Sample collection date/times are provided.  Appropriate sample containers are used.
The cooler or samples do not appear to have been compromised or tampered with.  Samples were received on ice.  Cooler Temperature is acceptable.  True  Cooler Temperature is recorded.  True  COC is present.  COC is filled out in ink and legible.  True  COC is filled out with all pertinent information.  Is the Field Sampler's name present on COC?  True  There are no discrepancies between the containers received and the COC.  Samples are received within Holding Time.  Sample containers have legible labels.  True  Containers are not broken or leaking.  True  Sample collection date/times are provided.  Appropriate sample containers are used.
tampered with.  Samples were received on ice.  Cooler Temperature is acceptable.  True  Cooler Temperature is recorded.  True  COC is present.  COC is filled out in ink and legible.  COC is filled out with all pertinent information.  Irue  COC is filled Sampler's name present on COC?  True  There are no discrepancies between the containers received and the COC.  True  Samples are received within Holding Time.  Sample containers have legible labels.  True  Containers are not broken or leaking.  True  Sample collection date/times are provided.  Appropriate sample containers are used.
Cooler Temperature is acceptable.  Cooler Temperature is recorded.  COC is present.  COC is filled out in ink and legible.  COC is filled out with all pertinent information.  In true  COC is filled Sampler's name present on COC?  True  There are no discrepancies between the containers received and the COC.  True  Samples are received within Holding Time.  True  Sample containers have legible labels.  Containers are not broken or leaking.  True  Sample collection date/times are provided.  Appropriate sample containers are used.
Cooler Temperature is recorded.  COC is present.  True  COC is filled out in ink and legible.  COC is filled out with all pertinent information.  Is the Field Sampler's name present on COC?  True  There are no discrepancies between the containers received and the COC.  True  Samples are received within Holding Time.  True  Sample containers have legible labels.  True  Containers are not broken or leaking.  True  Sample collection date/times are provided.  True  Appropriate sample containers are used.
COC is present.  COC is filled out in ink and legible.  True  COC is filled out with all pertinent information.  Is the Field Sampler's name present on COC?  True  There are no discrepancies between the containers received and the COC.  True  Samples are received within Holding Time.  True  Sample containers have legible labels.  True  Containers are not broken or leaking.  True  Sample collection date/times are provided.  Appropriate sample containers are used.  True
COC is filled out in ink and legible.  COC is filled out with all pertinent information.  In the Field Sampler's name present on COC?  There are no discrepancies between the containers received and the COC.  True  Samples are received within Holding Time.  True  Sample containers have legible labels.  True  Containers are not broken or leaking.  True  Sample collection date/times are provided.  True  Appropriate sample containers are used.  True
COC is filled out with all pertinent information.  Is the Field Sampler's name present on COC?  True  There are no discrepancies between the containers received and the COC.  True  Samples are received within Holding Time.  True  Sample containers have legible labels.  Containers are not broken or leaking.  True  Sample collection date/times are provided.  True  Appropriate sample containers are used.  True
Is the Field Sampler's name present on COC?  True There are no discrepancies between the containers received and the COC.  True Samples are received within Holding Time.  True Sample containers have legible labels.  True Containers are not broken or leaking.  True Sample collection date/times are provided.  Appropriate sample containers are used.  True
There are no discrepancies between the containers received and the COC.  Samples are received within Holding Time.  True  Sample containers have legible labels.  Containers are not broken or leaking.  True  Sample collection date/times are provided.  Appropriate sample containers are used.  True
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Appropriate sample containers are used.  True
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Consula hattles are consulately filled
Sample bottles are completely filled.  True
Sample Preservation Verified. True
There is sufficient vol. for all requested analyses, incl. any requested  MS/MSDs  True
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").
Multiphasic samples are not present. True
Samples do not require splitting or compositing.
Residual Chlorine Checked. N/A

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TestAmerica Job ID: 680-93498-1

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

# **Laboratory: TestAmerica Savannah**

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

Authority	Program	EPA Region	Certification ID	Expiration Date
	AFCEE		SAVLAB	
2LA	DoD ELAP		399.01	07-31-14
LA	ISO/IEC 17025		399.01	02-28-15
abama	State Program	4	41450	06-30-14
kansas DEQ	State Program	6	88-0692	02-01-14 *
lifornia	NELAP	9	3217CA	07-31-14 *
olorado	State Program	8	N/A	12-31-13
nnecticut	State Program	1	PH-0161	03-31-15
orida	NELAP	4	E87052	06-30-14
Dept. of Agriculture	State Program	4	N/A	12-31-13
eorgia	State Program	4	N/A	06-30-14
orgia	State Program	4	803	06-30-14
am	State Program	9	09-005r	06-17-14
waii	State Program	9	N/A	06-30-14
ois	NELAP	5	200022	11-30-13
iana	State Program	5	N/A	06-30-14
/a	State Program	7	353	07-01-15
ntucky	State Program	4	90084	12-31-13
ntucky (UST)	State Program		18	06-30-14
isiana	NELAP	6	30690	06-30-14
ne	State Program	1	GA00006	08-16-14
rland	State Program		250	12-31-13
sachusetts	State Program	1	M-GA006	06-30-14
igan	State Program	5	9925	06-30-14
Ī			N/A	06-30-14
issippi tana	State Program	8	CERT0081	01-01-14
raska	State Program	o 7	TestAmerica-Savannah	
	State Program			06-30-14
Jersey	NELAP	2	GA769	06-30-14
Mexico	State Program	6	N/A	06-30-14
York	NELAP	2	10842	04-01-14
th Carolina DENR	State Program	4	269	12-31-13
th Carolina DHHS	State Program	4	13701	07-31-14
ahoma	State Program	6	9984	08-31-13 *
nnsylvania	NELAP	3	68-00474	06-30-14
erto Rico	State Program	2	GA00006	01-01-14
th Carolina	State Program	4	98001	06-30-13 *
inessee	State Program	4	TN02961	06-30-14
as	NELAP	6	T104704185-08-TX	11-30-13
)A	Federal		SAV 3-04	04-07-14
inia	NELAP	3	460161	06-14-14
shington	State Program	10	C1794	06-10-14
st Virginia	State Program	3	9950C	12-31-13
st Virginia DEP	State Program	3	94	09-30-13 *
sconsin	State Program	5	999819810	08-31-14
oming	State Program	8	8TMS-L	06-30-14

# Laboratory: TestAmerica Nashville

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

TestAmerica Savannah

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 $<sup>\</sup>ensuremath{^{\star}}$  Expired certification is currently pending renewal and is considered valid.

TestAmerica Job ID: 680-93498-1

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

# Laboratory: TestAmerica Nashville (Continued)

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

Authority	Program	EPA Region	Certification ID	<b>Expiration Date</b>
A2LA	ISO/IEC 17025		0453.07	12-31-13
AIHA	IHLAP		100790	09-01-13
Alaska (UST)	State Program	10	UST-087	07-24-14
Arizona	State Program	9	AZ0473	05-05-14
Arizona	State Program	9	AZ0473	05-05-14 *
Arkansas DEQ	State Program	6	88-0737	04-25-14
California	NELAP	9	1168CA	10-31-13
Canadian Assoc Lab Accred (CALA)	Canada		3744	03-08-14
Connecticut	State Program	1	PH-0220	12-31-13
Florida	NELAP	4	E87358	06-30-14
Illinois	NELAP	5	200010	12-09-13
lowa	State Program	7	131	05-01-14
Kansas	NELAP	7	E-10229	10-31-13
Kentucky (UST)	State Program	4	19	06-30-14
Louisiana	NELAP	6	30613	06-30-14
Maryland	State Program	3	316	03-31-14
Massachusetts	State Program	1	M-TN032	06-30-14
Minnesota	NELAP	5	047-999-345	12-31-13
Mississippi	State Program	4	N/A	06-30-14
Montana (UST)	State Program	8	NA	01-01-15
Nevada	State Program	9	TN00032	07-31-14
New Hampshire	NELAP	1	2963	10-10-13
New Jersey	NELAP	2	TN965	06-30-14
New York	NELAP	2	11342	04-01-14
North Carolina DENR	State Program	4	387	12-31-13
North Dakota	State Program	8	R-146	06-30-14
Ohio VAP	State Program	5	CL0033	01-19-14
Oklahoma	State Program	6	9412	08-31-14
Oregon	NELAP	10	TN200001	04-29-14
Pennsylvania	NELAP	3	68-00585	06-30-14
Rhode Island	State Program	1	LAO00268	12-30-13
South Carolina	State Program	4	84009 (001)	02-28-14
Tennessee	State Program	4	2008	02-23-14
Texas	NELAP	6	T104704077-09-TX	08-31-14
USDA	Federal		S-48469	11-02-13
Utah	NELAP	8	TN00032	07-31-14
Virginia	NELAP	3	460152	06-14-14
Washington	State Program	10	C789	07-19-14
West Virginia DEP	State Program	3	219	02-28-14
Wisconsin	State Program	5	998020430	08-31-14
Wyoming (UST)	A2LA	8	453.07	12-31-13

# **Laboratory: TestAmerica Pensacola**

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

Authority Alabama	Program State Program	EPA Region 4	Certification ID 40150	Expiration Date 06-30-14
Arizona	State Program	9	AZ0710	01-11-14
Arkansas DEQ	State Program	6	88-0689	09-01-13
Florida	NELAP	4	E81010	06-30-14

<sup>\*</sup> Expired certification is currently pending renewal and is considered valid.

TestAmerica Savannah

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# **Certification Summary**

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93498-1

# Laboratory: TestAmerica Pensacola (Continued)

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

Authority	Program	EPA Region	Certification ID	<b>Expiration Date</b>
Georgia	State Program	4	N/A	06-30-14
Illinois	NELAP	5	200041	10-09-13
lowa	State Program	7	367	08-01-14
Kansas	NELAP	7	E-10253	10-31-13
Kentucky (UST)	State Program	4	53	06-30-14
Louisiana	NELAP	6	30976	06-30-14
Maryland	State Program	3	233	09-30-14
Massachusetts	State Program	1	M-FL094	06-30-13 *
Michigan	State Program	5	9912	06-30-13 *
New Jersey	NELAP	2	FL006	06-30-13 *
North Carolina DENR	State Program	4	314	12-31-13
Oklahoma	State Program	6	9810	08-31-14
Pennsylvania	NELAP	3	68-00467	01-31-14
Rhode Island	State Program	1	LAO00307	12-31-13
South Carolina	State Program	4	96026	06-30-13 *
Tennessee	State Program	4	TN02907	06-30-14
Texas	NELAP	6	T104704286-12-5	09-30-13
USDA	Federal		P330-10-00407	12-10-13
Virginia	NELAP	3	460166	06-14-14
West Virginia DEP	State Program	3	136	06-30-14

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<sup>\*</sup> Expired certification is currently pending renewal and is considered valid.

TestAmerica Savannah



THE LEADER IN ENVIRONMENTAL TESTING

# ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Savannah 5102 LaRoche Avenue Savannah, GA 31404 Tel: (912)354-7858

TestAmerica Job ID: 680-93550-1

Client Project/Site: CSX C&O Canal Brunswick, MD

For:

ARCADIS U.S., Inc. 1114 Benfield Blvd. Suite A Millersville, Maryland 21108

Attn: Ms. Megan Kellner

Subal Novey

Authorized for release by: 9/9/2013 4:11:12 PM

Lisa Harvey, Project Manager II lisa.harvey@testamericainc.com

.....LINKS .....

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**Have a Question?** 



Visit us at: www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

#### **Case Narrative**

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93550-1

Job ID: 680-93550-1

Laboratory: TestAmerica Savannah

Narrative

# CASE NARRATIVE Client: ARCADIS U.S., Inc.

Project: CSX C&O Canal Brunswick, MD Report Number: 680-93550-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

#### **RECEIPT**

The samples were received on 8/23/2013 9:28 AM and 8/24/2013 8:38 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 1.6° C, 2.8° C and 4.0° C.

The footage on the COC for the VOCs and GRO is a shorter range than what was indicated for the SVOCs and DRO. For consistency in reporting moisture values, the specific soil boring was logged in for all tests based on the sample ID and date/time sampled, and were subsequently logged in so as to report at the largest of the depth range.

#### **VOLATILE ORGANIC COMPOUNDS (GC-MS)**

Samples SB03-06 (0.0-1.0) (680-93550-1), SB03-06 (2.5-3.5) (680-93550-2), SB03-07 (1.5-2.5) (680-93550-3), SB03-07 (4.5-5.5) (680-93550-4), SB03-08 (1.0-2.0) (680-93550-5), SB03-08 (3.0-4.0) (680-93550-6), SB03-09 (1.0-2.0) (680-93550-7), SB03-09 (3.5-4.5) (680-93550-8), SB03-10 (0.5-1.5) (680-93550-9), SB03-10 (5.5-6.5) (680-93550-10), SB03-05 (0.0-1.0) (680-93550-11) and SB03-05 (3.5-4.5) (680-93550-12) were analyzed for Volatile Organic Compounds (GC-MS) in accordance with EPA SW-846 Method 8260B.

Surrogate recovery for the following sample was outside control limits: SB03-05 (3.5-4.5) (680-93550-12). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

The following sample are underweight: 93550-1E (H2O) and 93550-5C (MeOH). See batch 680-290836.

#### **VOLATILE ORGANIC COMPOUNDS (GC-MS)**

 $Samples\ PZ02-08\ (680-93550-13),\ PZ03-04\ (680-93550-14),\ PZ03-08\ (680-93550-15)\ and\ TB01\ (082213)\ (680-93550-16)\ were\ analyzed\ for\ Volatile\ Organic\ Compounds\ (GC-MS)\ in\ accordance\ with\ EPA\ SW-846\ Method\ 8260B.$ 

# SEMIVOLATILE ORGANIC COMPOUNDS

Samples SB03-06 (0.0-1.0) (680-93550-1), SB03-06 (2.5-3.5) (680-93550-2), SB03-07 (1.5-2.5) (680-93550-3), SB03-07 (4.5-5.5) (680-93550-4), SB03-08 (1.0-2.0) (680-93550-5), SB03-08 (3.0-4.0) (680-93550-6), SB03-09 (1.0-2.0) (680-93550-7), SB03-09 (3.5-4.5) (680-93550-8), SB03-10 (0.5-1.5) (680-93550-9), SB03-10 (5.5-6.5) (680-93550-10), SB03-05 (0.0-1.0) (680-93550-11) and SB03-05 (3.5-4.5) (680-93550-12) were analyzed for Semivolatile Organic Compounds (Solid) in accordance with EPA SW-846 Method 8270D.

Samples PZ03-04 (680-93588-1), PZ02-08 (680-93550-13) and PZ03-08 (680-93550-15) were analyzed for Semivolatile Organic Compounds (Aqueous) in accordance with EPA SW-846 Method 8270D.

The following sample(s) contained one acid and/or one base surrogate outside acceptance limits: SB03-06 (0.0-1.0) (680-93550-1). The laboratory's SOP allows one acid surrogate and/or one base surrogate to be outside acceptance limits; therefore, re-extraction/re-analysis was not performed. These results have been reported and qualified.

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# Job ID: 680-93550-1 (Continued)

Project/Site: CSX C&O Canal Brunswick, MD

#### Laboratory: TestAmerica Savannah (Continued)

Method(s) 8270D: The matrix spike / matrix spike duplicate (MS/MSD) recoveries and/or precision for sample PZ03-08MS (680-93550-15) were outside control limits. The associated laboratory control sample (LCS) recovery met acceptance criteria.

Method(s) 8270D: The following analytes have been identified, in the reference method and/or via historical data, to be poor and/or erratic performers: Famphur, 1,4-Napthaguinone, Methane sulfonate, Benzaldehyde, 1-naphthylamine, 2-naphthylamine, p-Dimethylamino azobenzene, p-phenylenediamine, a,a-dimethylphenethylamine, Methapyriline, 2-picoline (2-methylpyridine), 3,3'-dimethylbenzidine, 3,3'-dichlorobenzidine, Benzidine, Benzaldehyde, Benzoic acid, Dinoseb, Hexachlorophene, Hexachlorocyclopentadiene, o,o,o-triethylphosphoro-thioate. These analytes may have a %D >60% if the average %D of all the analytes in the continuing calibration verification (CCV) is 30%, all the analytes in the initial calibration verification (ICV) is 30%.

Method(s) 8270D: The initial calibration curve analyzed in batch 290879 was outside method criteria for the following analyte(s): benzaldehyde, benzidine. As indicated in the reference method, sample analysis may proceed; however, any detection or non-detection for the affected analyte(s) is considered an estimated concentration.

Method(s) 8270D: The initial calibration curve analyzed in batch 291781 was outside method criteria for the following analyte(s): benzoic acid. As indicated in the reference method, sample analysis may proceed; however, any detection or non-detection for the affected analyte(s) is considered an estimated concentration.

Method(s) 8270D: The continuing calibration verification (CCV) analyzed in batch 291044 was outside the method criteria for the following analyte(s): indeno (1,2,3-cd) pyrene. A CCV standard at or below the reporting limit (RL) was analyzed with the affected samples and found to be acceptable. As indicated in the reference method, sample analysis may proceed; however, any detection for the affected analyte(s) is considered estimated.

Method(s) 8270D: The continuing calibration verification (CCV) analyzed in batch 291919 was outside the method criteria for the following analyte(s): 1,4 Dioxane, 2,3,4,6 Tetrachlorophenol, 2,4 Dinitrophenol, 2,4 Dinitrotoluene, 4,6-Dintro-2-methylphenol, 4 Nitroaniline, Caprolactum, Fluoranthene, N-Nitrosodimethylamine, and Pyridine. A CCV standard at or below the reporting limit (RL) was analyzed with the affected samples and found to be acceptable. As indicated in the reference method, sample analysis may proceed; however, any detection for the affected analyte(s) is considered estimated.

Method(s) 8270D: The continuing calibration verification (CCV) analyzed in batch 292070 was outside the method criteria for the following analyte(s): 1,3 Dinitrobenzene, 1,4 Dioxane, 2,3,4,6 Tetrachlorophenol, 2,4,6 Tribromophenol, 2,4 Dinitrophenol, 2,4, Dintrotoluene, 4 Nitroaniline, 4 Nitrophenol, Caprolactum, N-Nitrosodimethylamine, and Pyridine. A CCV standard at or below the reporting limit (RL) was analyzed with the affected samples and found to be acceptable. As indicated in the reference method, sample analysis may proceed; however, any detection for the affected analyte(s) is considered estimated.

#### **GASOLINE RANGE ORGANICS (GRO)**

Samples SB03-06 (0.0-1.0) (680-93550-1), SB03-06 (2.5-3.5) (680-93550-2), SB03-07 (1.5-2.5) (680-93550-3), SB03-07 (4.5-5.5) (680-93550-4), SB03-08 (1.0-2.0) (680-93550-5), SB03-08 (3.0-4.0) (680-93550-6), SB03-09 (1.0-2.0) (680-93550-7), SB03-09 (3.5-4.5) (680-93550-8), SB03-10 (0.5-1.5) (680-93550-9), SB03-10 (5.5-6.5) (680-93550-10), SB03-05 (0.0-1.0) (680-93550-11) and SB03-05 (3.5-4.5) (680-93550-12) were analyzed for gasoline range organics (GRO) in accordance with EPA SW-846 Method 8015B.

Samples PZ02-08 (680-93550-13), PZ03-04 (680-93550-14) and PZ03-08 (680-93550-15) were analyzed for gasoline range organics (GRO) in accordance with EPA SW-846 Method 8015C. The samples were analyzed on 08/28/2013.

Due to the nature of this analysis which involves a total area sum over the entire retention time range, manual integrations are routinely performed for target analytes and surrogates to ensure consistent integration.

Internal standard (ISTD) response for the following samples was outside of acceptance limits: SB03-06 (0.0-1.0) (680-93550-1). Similar recoveries were found throughout the project, and appear a site-related issue.

Surrogate recovery for the following sample was outside control limits: SB03-05 (3.5-4.5) (680-93550-12). Re-analysis was performed with concurring results. The original analysis has been reported.

Surrogate recovery for the following samples were outside control limits: SB03-06 (0.0-1.0) (680-93550-1). Evidence of matrix interference is present; therefore re-analysis was not performed.

#### **Case Narrative**

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93550-1

# Job ID: 680-93550-1 (Continued)

#### Laboratory: TestAmerica Savannah (Continued)

Surrogate recovery for the following sample was outside control limits: SB03-07 (1.5-2.5) (680-93550-3). Evidence of matrix interference is present throughout the project; therefore, re-analysis was not performed. Data have been reported.

The method blank for batch 291184 contained C6-C10 the method detection limit (MDL). This target analyte concentration was less than one-half the reporting limit (RL); therefore, re-extraction and/or re-analysis of samples was not performed.

Internal standard responses were outside of acceptance limits for the following sample: SB03-08 (1.0-2.0) (680-93550-5). The project shows evidence of matrix interference. This sample was reanalyzed confirming the internal standard reponse outside acceptance limites; data have been reported.

#### **DIESEL RANGE ORGANICS (DRO)**

Samples SB03-06 (0.0-1.0) (680-93550-1), SB03-06 (2.5-3.5) (680-93550-2), SB03-07 (1.5-2.5) (680-93550-3), SB03-07 (4.5-5.5) (680-93550-4), SB03-08 (1.0-2.0) (680-93550-5), SB03-08 (3.0-4.0) (680-93550-6), SB03-09 (1.0-2.0) (680-93550-7), SB03-09 (3.5-4.5) (680-93550-8), SB03-10 (0.5-1.5) (680-93550-9), SB03-10 (5.5-6.5) (680-93550-10), SB03-05 (0.0-1.0) (680-93550-11) and SB03-05 (3.5-4.5) (680-93550-12) were analyzed for Diesel Range Organics (DRO) in accordance with EPA SW-846 Method 8015C.

Samples PZ03-04 (680-93588-1), PZ03-04 (DRO-SGT) (680-93588-2), PZ02-08 (680-93550-13), PZ03-08 (680-93550-15), PZ02-08 (DRO-SGT) (680-93550-17) and PZ03-08 (DRO-SGT) (680-93550-19) were analyzed for Diesel Range Organics (DRO) in accordance with EPA SW-846 Method 8015C.

Due to the nature of this analysis which involves a total area sum over the entire retention time range, manual integrations are routinely performed for target analytes and surrogates to ensure consistent integration.

Method(s) 8015C: Surrogate recovery for the following sample(s) was outside control limits: PZ03-08 (680-93550-15), PZ03-08 (DRO-SGT) (680-93550-19). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

Method(s) 8015C: Due to the level of dilution required for the following sample(s), surrogate recoveries are not accurate: PZ03-04 (680-93588-1), PZ03-04 (DRO-SGT) (680-93588-2).

Method(s) 8015C: The method blank for batch 103111 and 103148 contained C10-C28 above the method detection limit. This target analyte concentration was less than the reporting limit (RL); therefore, re-extraction and/or re-analysis of samples was not performed.

Method(s) 8015C: The method blank for batch 104903 contained C24-C40 above the method detection limit. This target analyte concentration was less than half the reporting limit (RL); therefore, re-extraction and/or re-analysis of samples was not performed.

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# **Sample Summary**

Client: ARCADIS U.S., Inc.

680-93588-2

Project/Site: CSX C&O Canal Brunswick, MD

PZ03-04 (DRO-SGT)

TestAmerica Job ID: 680-93550-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
680-93550-1	SB03-06 (0.0-1.0)	Solid	08/22/13 08:45	08/23/13 09:28
680-93550-2	SB03-06 (2.5-3.5)	Solid	08/22/13 08:55	08/23/13 09:2
680-93550-3	SB03-07 (1.5-2.5)	Solid	08/22/13 10:00	08/23/13 09:2
680-93550-4	SB03-07 (4.5-5.5)	Solid	08/22/13 10:10	08/23/13 09:2
680-93550-5	SB03-08 (1.0-2.0)	Solid	08/22/13 10:30	08/23/13 09:2
680-93550-6	SB03-08 (3.0-4.0)	Solid	08/22/13 10:40	08/23/13 09:2
680-93550-7	SB03-09 (1.0-2.0)	Solid	08/22/13 10:50	08/23/13 09:2
680-93550-8	SB03-09 (3.5-4.5)	Solid	08/22/13 11:00	08/23/13 09:2
680-93550-9	SB03-10 (0.5-1.5)	Solid	08/22/13 11:30	08/23/13 09:2
680-93550-10	SB03-10 (5.5-6.5)	Solid	08/22/13 11:40	08/23/13 09:2
680-93550-11	SB03-05 (0.0-1.0)	Solid	08/22/13 09:15	08/23/13 09:2
680-93550-12	SB03-05 (3.5-4.5)	Solid	08/22/13 09:25	08/23/13 09:2
680-93550-13	PZ02-08	Water	08/22/13 14:00	08/23/13 09:2
680-93550-14	PZ03-04	Water	08/22/13 12:30	08/23/13 09:2
680-93550-15	PZ03-08	Water	08/22/13 13:08	08/23/13 09:2
680-93550-16	TB01 (082213)	Water	08/22/13 00:00	08/23/13 09:2
680-93550-17	PZ02-08 (DRO-SGT)	Water	08/22/13 14:00	08/23/13 09:2
680-93550-19	PZ03-08 (DRO-SGT)	Water	08/22/13 13:08	08/23/13 09:2
680-93588-1	PZ03-04	Water	08/22/13 12:30	08/24/13 08:3

Water

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# **Method Summary**

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93550-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL PEN
8270D	Semivolatile Organic Compounds (GC/MS)	SW846	TAL SAV
8015C	Nonhalogenated Organics using GC/FID -Modified (Gasoline Range Organics)	SW846	TAL SAV
8015C	Nonhalogenated Organics using GC/FID -Modified (Diesel Range Organics)	SW846	TAL NSH
Moisture	Percent Moisture	EPA	TAL SAV

#### Protocol References:

EPA = US Environmental Protection Agency

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

#### Laboratory References:

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

TAL PEN = TestAmerica Pensacola, 3355 McLemore Drive, Pensacola, FL 32514, TEL (850)474-1001

TAL SAV = TestAmerica Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

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# **Definitions/Glossary**

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93550-1

# **Qualifiers**

# **GC/MS VOA**

Q	ualitier	Qualifier Description
U		Indicates the analyte was analyzed for but not detected.
J		Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
Χ		Surrogate is outside control limits
_	CC/MS Som: VOA	

# GC/MS Semi VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
X	Surrogate is outside control limits
F	MS/MSD Recovery and/or RPD exceeds the control limits
GC VOA	

Qualifier	Qualifier Description
X	Surrogate is outside control limits
U	Indicates the analyte was analyzed for but not detected.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
В	Compound was found in the blank and sample.
GC Semi V	Ο Δ

Qualifier	Qualifier Description
В	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
Χ	Surrogate is outside control limits
U	Indicates the analyte was analyzed for but not detected.

These commonly used abbreviations may or may not be present in this report.

# **Glossary**

Abbreviation

¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB03-06 (0.0-1.0)

TestAmerica Job ID: 680-93550-1

Lab Sample ID: 680-93550-1

Matrix: Solid
Percent Solids: 65.7

#### Date Collected: 08/22/13 08:45 Date Received: 08/23/13 09:28

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	62	U	62	18	ug/Kg	<u> </u>	08/26/13 08:10	08/28/13 18:26	1
Benzene	12	U	12	1.2	ug/Kg	₽	08/26/13 08:10	08/28/13 18:26	1
Bromodichloromethane	12	U	12	2.1	ug/Kg	₽	08/26/13 08:10	08/28/13 18:26	1
Bromoform	12	U	12	1.6	ug/Kg		08/26/13 08:10	08/28/13 18:26	1
Bromomethane	12	U	12	3.5	ug/Kg	₽	08/26/13 08:10	08/28/13 18:26	1
Carbon disulfide	12	U	12	3.0	ug/Kg	₽	08/26/13 08:10	08/28/13 18:26	1
Carbon tetrachloride	12	U	12	4.2	ug/Kg	₽	08/26/13 08:10	08/28/13 18:26	1
Chlorobenzene	12	U	12	1.3	ug/Kg	₽	08/26/13 08:10	08/28/13 18:26	1
Chloroethane	12	U	12	4.7	ug/Kg	₽	08/26/13 08:10	08/28/13 18:26	1
Chloroform	12	U	12	1.5	ug/Kg	\$	08/26/13 08:10	08/28/13 18:26	1
Chloromethane	12	U	12	2.5	ug/Kg	₽	08/26/13 08:10	08/28/13 18:26	1
cis-1,2-Dichloroethene	12	U	12	1.9	ug/Kg	₽	08/26/13 08:10	08/28/13 18:26	1
cis-1,3-Dichloropropene	12	U	12	3.0	ug/Kg	₽	08/26/13 08:10	08/28/13 18:26	1
Cyclohexane	12	U	12	2.3	ug/Kg	₽	08/26/13 08:10	08/28/13 18:26	1
Dibromochloromethane	12	U	12	2.1	ug/Kg	₽	08/26/13 08:10	08/28/13 18:26	1
1,2-Dibromo-3-Chloropropane	12	U	12	8.1	ug/Kg		08/26/13 08:10	08/28/13 18:26	1
1,2-Dichlorobenzene	13		12	1.7	ug/Kg	₽	08/26/13 08:10	08/28/13 18:26	1
1,3-Dichlorobenzene	3.7	J	12	2.3	ug/Kg	₩	08/26/13 08:10	08/28/13 18:26	1
1,4-Dichlorobenzene	12	U	12	2.0	ug/Kg		08/26/13 08:10	08/28/13 18:26	1
Dichlorodifluoromethane	12	U	12	3.2	ug/Kg	₩	08/26/13 08:10	08/28/13 18:26	1
1,1-Dichloroethane	12	U	12	2.0	ug/Kg	₽	08/26/13 08:10	08/28/13 18:26	1
1,2-Dichloroethane	12	U	12	2.0	ug/Kg		08/26/13 08:10	08/28/13 18:26	1
1,1-Dichloroethene	12	U	12	1.8	ug/Kg	₽	08/26/13 08:10	08/28/13 18:26	1
1,2-Dichloropropane	12	U	12	1.8	ug/Kg	₽	08/26/13 08:10	08/28/13 18:26	1
Diisopropyl ether	12	U	12	1.4	ug/Kg	\$	08/26/13 08:10	08/28/13 18:26	1
Ethylbenzene	2.0	J	12	1.5	ug/Kg	₩	08/26/13 08:10	08/28/13 18:26	1
Ethylene Dibromide	12	U	12	1.2	ug/Kg	₩	08/26/13 08:10	08/28/13 18:26	1
Ethyl tert-butyl ether	12	U	12	1.4	ug/Kg		08/26/13 08:10	08/28/13 18:26	1
2-Hexanone	62	U	62	12	ug/Kg	₽	08/26/13 08:10	08/28/13 18:26	1
Isopropylbenzene	12	U	12	1.7	ug/Kg	₩	08/26/13 08:10	08/28/13 18:26	1
Methyl acetate	12	U	12	11	ug/Kg		08/26/13 08:10	08/28/13 18:26	1
Methylcyclohexane	2.2	J	12	2.1	ug/Kg	₩	08/26/13 08:10	08/28/13 18:26	1
Methylene Chloride	37	U	37	25	ug/Kg	₽	08/26/13 08:10	08/28/13 18:26	1
Methyl Ethyl Ketone	62	U	62	10	ug/Kg		08/26/13 08:10	08/28/13 18:26	1
methyl isobutyl ketone	62	U	62	9.9	ug/Kg	₽	08/26/13 08:10	08/28/13 18:26	1
Methyl tert-butyl ether	12	U	12	2.5	ug/Kg	₩	08/26/13 08:10	08/28/13 18:26	1
Naphthalene	12	U	12	2.5	ug/Kg		08/26/13 08:10	08/28/13 18:26	1
Styrene	12	U	12	1.9	ug/Kg	₽	08/26/13 08:10	08/28/13 18:26	1
Tert-amyl methyl ether	12	U	12		ug/Kg	₽	08/26/13 08:10	08/28/13 18:26	1
tert-Butyl alcohol	12	U	12	8.4	ug/Kg	\$	08/26/13 08:10	08/28/13 18:26	1
1,1,2,2-Tetrachloroethane	12	U	12	1.8	ug/Kg	₽	08/26/13 08:10	08/28/13 18:26	1
Tetrachloroethene	12	U	12	2.1	ug/Kg	₽	08/26/13 08:10	08/28/13 18:26	1
Toluene	2.3	J	12	1.7	ug/Kg		08/26/13 08:10	08/28/13 18:26	1
trans-1,2-Dichloroethene	12	U	12	1.9	ug/Kg	₽	08/26/13 08:10	08/28/13 18:26	1
trans-1,3-Dichloropropene	12	U	12		ug/Kg	₽	08/26/13 08:10	08/28/13 18:26	1
1,2,4-Trichlorobenzene	12	U	12	1.8	ug/Kg		08/26/13 08:10	08/28/13 18:26	1
1,1,1-Trichloroethane	12		12		ug/Kg	₽	08/26/13 08:10	08/28/13 18:26	1
1,1,2-Trichloroethane	12		12		ug/Kg	₽	08/26/13 08:10	08/28/13 18:26	1
Trichloroethene	12		12		ug/Kg		08/26/13 08:10	08/28/13 18:26	1

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93550-1

Lab Sample ID: 680-93550-1

Matrix: Solid Percent Solids: 65.7

Client Sample ID: SB03-06 (0.0-1.0)

Date Collected: 08/22/13 08:45 Date Received: 08/23/13 09:28

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichlorofluoromethane	12	U	12	2.3	ug/Kg	₩	08/26/13 08:10	08/28/13 18:26	1
1,1,2-Trichloro-1,2,2-trifluoroethane	12	U	12	4.9	ug/Kg	₽	08/26/13 08:10	08/28/13 18:26	1
Vinyl chloride	12	U	12	2.3	ug/Kg	₽	08/26/13 08:10	08/28/13 18:26	1
Xylenes, Total	11	J	25	4.7	ug/Kg	₩	08/26/13 08:10	08/28/13 18:26	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	100		72 - 122				08/26/13 08:10	08/28/13 18:26	1
Dibromofluoromethane	96		79 - 123				08/26/13 08:10	08/28/13 18:26	1
Toluene-d8 (Surr)	106		80 - 120				08/26/13 08:10	08/28/13 18:26	1

- Toldene-do (Sull)	100		00 - 120				00/20/13 00.10	00/20/13 10:20	,
Method: 8270D - Semivolatile C				MDI	11-4		Dunnand	Austral	D!! E
Analyte	Result	Qualifier J	RL	MDL 88	ug/Kg	— <del>D</del>	Prepared 08/26/13 14:24	Analyzed 08/27/13 20:13	Dil Fac
Benzaldehyde	140 500		500			₩		08/27/13 20:13	1
Phenol  Pia/2 chloroothyl)othor	500		500		ug/Kg	~ ⇔	08/26/13 14:24		1
Bis(2-chloroethyl)ether				68	ug/Kg		08/26/13 14:24	08/27/13 20:13	
2-Chlorophenol	500		500	61	ug/Kg	<i>*</i>	08/26/13 14:24	08/27/13 20:13	1
2-Methylphenol	500		500	41	ug/Kg	<b>~</b>	08/26/13 14:24	08/27/13 20:13	1
bis (2-chloroisopropyl) ether	500		500		ug/Kg		08/26/13 14:24	08/27/13 20:13	1
Acetophenone	93		500		ug/Kg	<b>*</b>	08/26/13 14:24	08/27/13 20:13	1
3 & 4 Methylphenol	500		500	65	ug/Kg	*	08/26/13 14:24	08/27/13 20:13	1
N-Nitrosodi-n-propylamine	500		500	48	ug/Kg		08/26/13 14:24	08/27/13 20:13	1
Hexachloroethane	500	U	500	42	ug/Kg	₩	08/26/13 14:24	08/27/13 20:13	1
Nitrobenzene	500		500	39	ug/Kg	₩	08/26/13 14:24	08/27/13 20:13	1
Isophorone	500	U	500	50	ug/Kg		08/26/13 14:24	08/27/13 20:13	1
2-Nitrophenol	500	U	500	62	ug/Kg	₩	08/26/13 14:24	08/27/13 20:13	1
2,4-Dimethylphenol	500	U	500	67	ug/Kg	₽	08/26/13 14:24	08/27/13 20:13	1
Bis(2-chloroethoxy)methane	500	U	500	59	ug/Kg	₩	08/26/13 14:24	08/27/13 20:13	1
2,4-Dichlorophenol	500	U	500	53	ug/Kg	₽	08/26/13 14:24	08/27/13 20:13	1
Naphthalene	1400		500	45	ug/Kg	₽	08/26/13 14:24	08/27/13 20:13	1
4-Chloroaniline	1000	U	1000	79	ug/Kg	₩	08/26/13 14:24	08/27/13 20:13	1
Hexachlorobutadiene	500	U	500	55	ug/Kg		08/26/13 14:24	08/27/13 20:13	1
Caprolactam	740		500	100	ug/Kg	₩	08/26/13 14:24	08/27/13 20:13	1
4-Chloro-3-methylphenol	500	U	500	53	ug/Kg	₩	08/26/13 14:24	08/27/13 20:13	1
2-Methylnaphthalene	2800		500	58	ug/Kg		08/26/13 14:24	08/27/13 20:13	1
Hexachlorocyclopentadiene	500	U	500	62	ug/Kg	₽	08/26/13 14:24	08/27/13 20:13	1
2,4,6-Trichlorophenol	500	U	500	44	ug/Kg	₽	08/26/13 14:24	08/27/13 20:13	1
2,4,5-Trichlorophenol	500		500	53	ug/Kg	ф	08/26/13 14:24	08/27/13 20:13	1
1,1'-Biphenyl	1100	U	1100	1100	ug/Kg	₩	08/26/13 14:24	08/27/13 20:13	1
2-Chloronaphthalene	500	U	500	53	ug/Kg	₽	08/26/13 14:24	08/27/13 20:13	1
2-Nitroaniline	2600		2600		ug/Kg		08/26/13 14:24	08/27/13 20:13	1
Dimethyl phthalate	500	U	500	52	ug/Kg	₩	08/26/13 14:24	08/27/13 20:13	1
2,6-Dinitrotoluene	500	U	500	64	ug/Kg	₩	08/26/13 14:24	08/27/13 20:13	1
Acenaphthylene	110		500		ug/Kg		08/26/13 14:24	08/27/13 20:13	1
3-Nitroaniline	2600		2600	70	ug/Kg	₩	08/26/13 14:24	08/27/13 20:13	1
Acenaphthene	500		500		ug/Kg	₩	08/26/13 14:24	08/27/13 20:13	1
2,4-Dinitrophenol	2600		2600	1300	ug/Kg		08/26/13 14:24	08/27/13 20:13	· · · · · · · · · · · · · · · · · · ·
4-Nitrophenol	2600		2600	500	ug/Kg ug/Kg	₩	08/26/13 14:24	08/27/13 20:13	1
Dibenzofuran	540	•	500	50	ug/Kg ug/Kg	*	08/26/13 14:24	08/27/13 20:13	1
2,4-Dinitrotoluene	500		500		ug/Kg ug/Kg	· · · · · · · ·	08/26/13 14:24	08/27/13 20:13	
	500		500			~ \$	08/26/13 14:24	08/27/13 20:13	1
Diethyl phthalate	500	U	500	90	ug/Kg	**	00/20/13 14:24	00/2//13 20:13	1

TestAmerica Savannah

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Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB03-06 (0.0-1.0)

Date Collected: 08/22/13 08:45 Date Received: 08/23/13 09:28

Diesel Range Organics [C10-C28]

ORO C24-C40

o-Terphenyl (Surr)

Surrogate

Lab Sample ID: 680-93550-1

Matrix: Solid

Percent Solids: 65.7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluorene	190	J	500	55	ug/Kg	\$	08/26/13 14:24	08/27/13 20:13	1
4-Chlorophenyl phenyl ether	500	U	500	67	ug/Kg	\$	08/26/13 14:24	08/27/13 20:13	1
4-Nitroaniline	2600	U	2600	74	ug/Kg	₽	08/26/13 14:24	08/27/13 20:13	1
4,6-Dinitro-2-methylphenol	2600	U	2600	260	ug/Kg	₽	08/26/13 14:24	08/27/13 20:13	1
N-Nitrosodiphenylamine	500	U	500	50	ug/Kg		08/26/13 14:24	08/27/13 20:13	1
4-Bromophenyl phenyl ether	500	U	500	55	ug/Kg	☼	08/26/13 14:24	08/27/13 20:13	1
Hexachlorobenzene	500	U	500	59	ug/Kg	₽	08/26/13 14:24	08/27/13 20:13	1
Atrazine	500	U	500	35	ug/Kg		08/26/13 14:24	08/27/13 20:13	1
Pentachlorophenol	2600	U	2600	500	ug/Kg	☼	08/26/13 14:24	08/27/13 20:13	1
Phenanthrene	1000		500	41	ug/Kg	₽	08/26/13 14:24	08/27/13 20:13	1
Anthracene	240	J	500	38	ug/Kg		08/26/13 14:24	08/27/13 20:13	1
Carbazole	500	U	500	45	ug/Kg	₽	08/26/13 14:24	08/27/13 20:13	1
Di-n-butyl phthalate	500	U	500	45	ug/Kg	₩	08/26/13 14:24	08/27/13 20:13	1
Fluoranthene	200	<b>J</b>	500	48			08/26/13 14:24	08/27/13 20:13	1
Pyrene	300	J	500	41	ug/Kg	₽	08/26/13 14:24	08/27/13 20:13	1
Butyl benzyl phthalate	500	U	500	39	ug/Kg	₽	08/26/13 14:24	08/27/13 20:13	1
3,3'-Dichlorobenzidine	1000	U	1000	42	ug/Kg		08/26/13 14:24	08/27/13 20:13	1
Benzo[a]anthracene	88	J	500	41	ug/Kg	₽	08/26/13 14:24	08/27/13 20:13	1
Chrysene	150	J	500	32	ug/Kg	₽	08/26/13 14:24	08/27/13 20:13	1
Bis(2-ethylhexyl) phthalate			500	44			08/26/13 14:24	08/27/13 20:13	1
Di-n-octyl phthalate	140	J	500	44	ug/Kg	₽	08/26/13 14:24	08/27/13 20:13	1
Benzo[b]fluoranthene	140	J	500	58	ug/Kg	₽	08/26/13 14:24	08/27/13 20:13	1
Benzo[k]fluoranthene	500		500	99	ug/Kg		08/26/13 14:24	08/27/13 20:13	1
Benzo[a]pyrene	500	U	500	79	ug/Kg	₽	08/26/13 14:24	08/27/13 20:13	1
Indeno[1,2,3-cd]pyrene	79	J	500	42	ug/Kg	₽	08/26/13 14:24	08/27/13 20:13	1
Dibenz(a,h)anthracene	500		500	59	ug/Kg		08/26/13 14:24	08/27/13 20:13	1
Benzo[g,h,i]perylene	51	J	500		ug/Kg	₽	08/26/13 14:24	08/27/13 20:13	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	64		46 - 130				08/26/13 14:24	08/27/13 20:13	1
2-Fluorobiphenyl	61		58 - 130				08/26/13 14:24	08/27/13 20:13	1
Terphenyl-d14 (Surr)	75		60 - 130				08/26/13 14:24	08/27/13 20:13	1
Phenol-d5 (Surr)	48	X	49 - 130				08/26/13 14:24	08/27/13 20:13	1
2-Fluorophenol (Surr)	46		40 - 130				08/26/13 14:24	08/27/13 20:13	1
2,4,6-Tribromophenol (Surr)	69		58 - 130				08/26/13 14:24	08/27/13 20:13	1
Method: 8015C - Nonhalogenate	_	_	-Modified (Gasol		ge Organ Unit	ics)	Dropored	Analyzad	Dil Fac
Analyte  Gasoline Range Organics (GRO)	1000	Qualifier	390		ug/Kg	— <del>ÿ</del>	Prepared 08/26/13 09:31	Analyzed 08/26/13 15:50	1
-C6-C10	7000			30	- 33				
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene	182	X	70 - 131				08/26/13 09:31	08/26/13 15:50	1
Method: 8015C - Nonhalogenate	_	_	-Modified (Diese	l Range	Organics	s)			
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac

TestAmerica Savannah

08/29/13 18:52

08/29/13 18:52

Analyzed

08/29/13 18:52

08/28/13 08:56

08/28/13 08:56

Prepared

08/28/13 08:56

7500

7500

Limits

50 - 150

2100 ug/Kg

2100 ug/Kg

230000

12000 B

%Recovery Qualifier

113

Client: ARCADIS U.S., Inc.

Date Collected: 08/22/13 08:55

1,1,2-Trichloroethane

Trichloroethene

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB03-06 (2.5-3.5)

Lab Sample ID: 680-93550-2

TestAmerica Job ID: 680-93550-1

Matrix: Solid

Percent Solids: 81.7

Pate Received: 08/23/13 09:28								Percent Soli	ds: 81.
		(00/140)							
Method: 8260B - Volatile Organi <sup>Analyte</sup>		(GC/MS) Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
Acetone	19	J	21	6.3	ug/Kg	<u></u>	08/26/13 08:10	08/28/13 18:49	
Benzene	4.3	U	4.3	0.42	ug/Kg	₩	08/26/13 08:10	08/28/13 18:49	
Bromodichloromethane	4.3	U	4.3	0.72	ug/Kg	₩	08/26/13 08:10	08/28/13 18:49	
Bromoform	4.3	U	4.3	0.54	ug/Kg		08/26/13 08:10	08/28/13 18:49	
Bromomethane	4.3	U	4.3	1.2	ug/Kg	₩	08/26/13 08:10	08/28/13 18:49	
Carbon disulfide	4.3	U	4.3	1.0	ug/Kg	₩	08/26/13 08:10	08/28/13 18:49	
Carbon tetrachloride	4.3		4.3		ug/Kg		08/26/13 08:10	08/28/13 18:49	
Chlorobenzene	4.3	U	4.3	0.45	ug/Kg	₩	08/26/13 08:10	08/28/13 18:49	
Chloroethane	4.3		4.3		ug/Kg	₽	08/26/13 08:10	08/28/13 18:49	
Chloroform	4.3		4.3	0.51			08/26/13 08:10	08/28/13 18:49	
Chloromethane	4.3		4.3		ug/Kg	₽	08/26/13 08:10	08/28/13 18:49	
cis-1,2-Dichloroethene	4.3		4.3		ug/Kg	₽	08/26/13 08:10	08/28/13 18:49	
cis-1,3-Dichloropropene	4.3		4.3	1.0	ug/Kg		08/26/13 08:10	08/28/13 18:49	
Cyclohexane	4.3		4.3	0.81	ug/Kg ug/Kg	₩	08/26/13 08:10	08/28/13 18:49	
Dibromochloromethane	4.3		4.3		ug/Kg	₩	08/26/13 08:10	08/28/13 18:49	
1,2-Dibromo-3-Chloropropane	4.3		4.3		ug/Kg	· · · · · · · · · · · · · · · · · · ·	08/26/13 08:10	08/28/13 18:49	
1.2-Dichlorobenzene	2.2		4.3	0.61			08/26/13 08:10	08/28/13 18:49	
1,3-Dichlorobenzene	4.3		4.3		ug/Kg ug/Kg		08/26/13 08:10	08/28/13 18:49	
	4.3		4.3		ug/Kg ug/Kg		08/26/13 08:10	08/28/13 18:49	
1,4-Dichlorobenzene Dichlorodifluoromethane	4.3		4.3	1.1	ug/Kg ug/Kg			08/28/13 18:49	
						₩	08/26/13 08:10		
1,1-Dichloroethane	4.3		4.3	0.71	ug/Kg		08/26/13 08:10	08/28/13 18:49	
1,2-Dichloroethane	4.3		4.3		ug/Kg		08/26/13 08:10	08/28/13 18:49	
1,1-Dichloroethene	4.3		4.3	0.64		<b>₽</b>	08/26/13 08:10	08/28/13 18:49	
1,2-Dichloropropane	4.3		4.3	0.64	ug/Kg	<u></u>	08/26/13 08:10	08/28/13 18:49	
Diisopropyl ether	4.3		4.3		ug/Kg		08/26/13 08:10	08/28/13 18:49	
Ethylbenzene	4.3		4.3	0.52	ug/Kg	*	08/26/13 08:10	08/28/13 18:49	
Ethylene Dibromide	4.3		4.3	0.41	ug/Kg		08/26/13 08:10	08/28/13 18:49	
Ethyl tert-butyl ether	4.3		4.3	0.48	ug/Kg	<b>‡</b>	08/26/13 08:10	08/28/13 18:49	
2-Hexanone	21		21		ug/Kg	<b>‡</b>	08/26/13 08:10	08/28/13 18:49	
Isopropylbenzene	4.3		4.3	0.58	ug/Kg		08/26/13 08:10	08/28/13 18:49	
Methyl acetate	4.3	U	4.3		ug/Kg	₩	08/26/13 08:10	08/28/13 18:49	
Methylcyclohexane	4.3	U	4.3	0.75	ug/Kg	₩	08/26/13 08:10	08/28/13 18:49	
Methylene Chloride	13	U	13		ug/Kg		08/26/13 08:10	08/28/13 18:49	
Methyl Ethyl Ketone	21	U	21	3.5	ug/Kg	₩	08/26/13 08:10	08/28/13 18:49	
methyl isobutyl ketone	21	U	21	3.4	ug/Kg	₩	08/26/13 08:10	08/28/13 18:49	
Methyl tert-butyl ether	4.3	U	4.3	0.86	ug/Kg	₩	08/26/13 08:10	08/28/13 18:49	
Naphthalene	4.3	U	4.3	0.86	ug/Kg	₽	08/26/13 08:10	08/28/13 18:49	
Styrene	4.3	U	4.3	0.65	ug/Kg	₽	08/26/13 08:10	08/28/13 18:49	
Tert-amyl methyl ether	4.3	U	4.3	0.38	ug/Kg	₽	08/26/13 08:10	08/28/13 18:49	
ert-Butyl alcohol	4.3	U	4.3	2.9	ug/Kg		08/26/13 08:10	08/28/13 18:49	
1,1,2,2-Tetrachloroethane	4.3	U	4.3	0.62	ug/Kg	₩	08/26/13 08:10	08/28/13 18:49	
Tetrachloroethene	4.3	U	4.3	0.72	ug/Kg	₩	08/26/13 08:10	08/28/13 18:49	
Toluene	4.3	U	4.3		ug/Kg		08/26/13 08:10	08/28/13 18:49	
rans-1,2-Dichloroethene	4.3		4.3		ug/Kg	₩	08/26/13 08:10	08/28/13 18:49	
rans-1,3-Dichloropropene	4.3		4.3		ug/Kg	₩	08/26/13 08:10	08/28/13 18:49	
1,2,4-Trichlorobenzene	4.3		4.3		ug/Kg		08/26/13 08:10	08/28/13 18:49	
1,1,1-Trichloroethane	4.3		4.3		ug/Kg	₽	08/26/13 08:10	08/28/13 18:49	
1 1 2 Trichloroothano	13		13		ua/Ka	ŭ	08/26/13 08:10	08/28/13 18:40	

TestAmerica Savannah

08/28/13 18:49

08/28/13 18:49

08/26/13 08:10

08/26/13 08:10

4.3

0.79 ug/Kg

0.41 ug/Kg

4.3 U

4.3 U

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93550-1

Client Sample ID: SB03-06 (2.5-3.5)

Lab Sample ID: 680-93550-2

Date Collected: 08/22/13 08:55

Date Received: 08/23/13 09:28

Matrix: Solid
Percent Solids: 81.7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichlorofluoromethane	4.3	U	4.3	0.82	ug/Kg	<u> </u>	08/26/13 08:10	08/28/13 18:49	1
1,1,2-Trichloro-1,2,2-trifluoroethane	4.3	U	4.3	1.7	ug/Kg	₩	08/26/13 08:10	08/28/13 18:49	1
Vinyl chloride	4.3	U	4.3	0.79	ug/Kg	₽	08/26/13 08:10	08/28/13 18:49	1
Xylenes, Total	2.4	J	8.6	1.6	ug/Kg	₽	08/26/13 08:10	08/28/13 18:49	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	88		72 - 122				08/26/13 08:10	08/28/13 18:49	1
Dibromofluoromethane	99		79 - 123				08/26/13 08:10	08/28/13 18:49	1
Toluene-d8 (Surr)	107		80 - 120				08/26/13 08:10	08/28/13 18:49	1

Toluene-a8 (Surr)	107		80 - 120				08/26/13 08:10	08/28/13 18:49	,
Method: 8270D - Semivolatile O	•	nds (GC/MS	S) RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Analyte Benzaldehyde	400	U	400	71	ug/Kg	— <del>¤</del>	08/26/13 14:24	08/27/13 14:36	1
Phenol	400	-	400	41	ug/Kg ug/Kg		08/26/13 14:24	08/27/13 14:36	1
Bis(2-chloroethyl)ether	400		400	55	ug/Kg ug/Kg	*	08/26/13 14:24	08/27/13 14:36	1
2-Chlorophenol	400		400	49	ug/Kg	· · · · · · · ·	08/26/13 14:24	08/27/13 14:36	
2-Methylphenol	400		400	33	ug/Kg ug/Kg		08/26/13 14:24	08/27/13 14:36	1
bis (2-chloroisopropyl) ether	400		400	37	ug/Kg ug/Kg		08/26/13 14:24	08/27/13 14:36	1
Acetophenone	400		400		ug/Kg	· · · · · · · · · · · · · · · · · · ·	08/26/13 14:24	08/27/13 14:36	
3 & 4 Methylphenol	400		400		ug/Kg	*	08/26/13 14:24	08/27/13 14:36	1
N-Nitrosodi-n-propylamine	400		400	39	ug/Kg		08/26/13 14:24	08/27/13 14:36	1
Hexachloroethane	400	U	400	34	ug/Kg	· · · · · · · ·	08/26/13 14:24	08/27/13 14:36	
Nitrobenzene	400		400	32	ug/Kg ug/Kg	*	08/26/13 14:24	08/27/13 14:36	1
Isophorone	400		400	40	ug/Kg ug/Kg	₩	08/26/13 14:24	08/27/13 14:36	1
2-Nitrophenol	400		400	50	ug/Kg		08/26/13 14:24	08/27/13 14:36	
2,4-Dimethylphenol	400		400	54	ug/Kg		08/26/13 14:24	08/27/13 14:36	1
Bis(2-chloroethoxy)methane	400		400	47	ug/Kg ug/Kg	₩	08/26/13 14:24	08/27/13 14:36	1
2,4-Dichlorophenol	400		400		ug/Kg	· · · · · · · · · · · · · · · · · · ·	08/26/13 14:24	08/27/13 14:36	
Naphthalene	58	J	400	37	ug/Kg	₩	08/26/13 14:24	08/27/13 14:36	1
4-Chloroaniline	800	-	800	63	ug/Kg	₩	08/26/13 14:24	08/27/13 14:36	1
Hexachlorobutadiene			400	44	ug/Kg	· · · · · · · · · · · · · · · · · · ·	08/26/13 14:24	08/27/13 14:36	
Caprolactam	400		400	80	ug/Kg	₩	08/26/13 14:24	08/27/13 14:36	1
4-Chloro-3-methylphenol	400		400		ug/Kg	₩	08/26/13 14:24	08/27/13 14:36	1
2-Methylnaphthalene	89		400		ug/Kg		08/26/13 14:24	08/27/13 14:36	
Hexachlorocyclopentadiene	400		400	50	ug/Kg	₩	08/26/13 14:24	08/27/13 14:36	1
2,4,6-Trichlorophenol	400		400	35	ug/Kg	₩	08/26/13 14:24	08/27/13 14:36	1
2,4,5-Trichlorophenol	400		400		ug/Kg		08/26/13 14:24	08/27/13 14:36	
1,1'-Biphenyl	900		900	900	ug/Kg	₩	08/26/13 14:24	08/27/13 14:36	1
2-Chloronaphthalene	400		400	43	ug/Kg	₩	08/26/13 14:24	08/27/13 14:36	1
2-Nitroaniline	2100		2100		ug/Kg		08/26/13 14:24	08/27/13 14:36	
Dimethyl phthalate	400		400	41	ug/Kg	₩	08/26/13 14:24	08/27/13 14:36	1
2,6-Dinitrotoluene	400		400		ug/Kg	₩	08/26/13 14:24	08/27/13 14:36	1
Acenaphthylene	400		400	44	ug/Kg		08/26/13 14:24	08/27/13 14:36	
3-Nitroaniline	2100		2100	56	ug/Kg	₩	08/26/13 14:24	08/27/13 14:36	1
Acenaphthene	120	J	400	50	ug/Kg	₩	08/26/13 14:24	08/27/13 14:36	1
2,4-Dinitrophenol	2100		2100	1000	ug/Kg		08/26/13 14:24	08/27/13 14:36	1
4-Nitrophenol	2100		2100	400	ug/Kg	₽	08/26/13 14:24	08/27/13 14:36	1
Dibenzofuran	400		400	40	ug/Kg	₩	08/26/13 14:24	08/27/13 14:36	1
2,4-Dinitrotoluene	400		400		ug/Kg		08/26/13 14:24	08/27/13 14:36	
_, 0.0.000110	<del>-</del> 00	U	700	00	ug/Kg ug/Kg		55/E5/10 17.ET	08/27/13 14:36	1

TestAmerica Savannah

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4 6

Client: ARCADIS U.S., Inc.

o-Terphenyl (Surr)

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93550-1

Client Sample ID: SB03-06 (2.5-3.5)

Lab Sample ID: 680-93550-2 Date Collected: 08/22/13 08:55 Date Received: 08/23/13 09:28

Matrix: Solid Percent Solids: 81.7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluorene	200	J	400	44	ug/Kg	<del>\</del>	08/26/13 14:24	08/27/13 14:36	1
4-Chlorophenyl phenyl ether	400	U	400	54	ug/Kg	₽	08/26/13 14:24	08/27/13 14:36	1
4-Nitroaniline	2100	U	2100	60	ug/Kg	₽	08/26/13 14:24	08/27/13 14:36	1
4,6-Dinitro-2-methylphenol	2100	U	2100	210	ug/Kg	₽	08/26/13 14:24	08/27/13 14:36	1
N-Nitrosodiphenylamine	400	U	400	40	ug/Kg	\$	08/26/13 14:24	08/27/13 14:36	1
4-Bromophenyl phenyl ether	400	U	400	44	ug/Kg	₽	08/26/13 14:24	08/27/13 14:36	1
Hexachlorobenzene	400	U	400	47	ug/Kg	₽	08/26/13 14:24	08/27/13 14:36	1
Atrazine	400	U	400	28	ug/Kg	₽	08/26/13 14:24	08/27/13 14:36	1
Pentachlorophenol	2100	U	2100	400	ug/Kg	₽	08/26/13 14:24	08/27/13 14:36	1
Phenanthrene	400	U	400	33	ug/Kg	☼	08/26/13 14:24	08/27/13 14:36	1
Anthracene	400	U	400	30	ug/Kg		08/26/13 14:24	08/27/13 14:36	1
Carbazole	400	U	400	37	ug/Kg	≎	08/26/13 14:24	08/27/13 14:36	1
Di-n-butyl phthalate	400	U	400	37	ug/Kg	₽	08/26/13 14:24	08/27/13 14:36	1
Fluoranthene	400	U	400	39	ug/Kg	Φ.	08/26/13 14:24	08/27/13 14:36	1
Pyrene	45	J	400	33	ug/Kg	₽	08/26/13 14:24	08/27/13 14:36	1
Butyl benzyl phthalate	400	U	400	32	ug/Kg	₽	08/26/13 14:24	08/27/13 14:36	1
3,3'-Dichlorobenzidine	800	U	800	34	ug/Kg	<del>.</del>	08/26/13 14:24	08/27/13 14:36	1
Benzo[a]anthracene	400	U	400	33	ug/Kg	₽	08/26/13 14:24	08/27/13 14:36	1
Chrysene	400	U	400	26	ug/Kg	₽	08/26/13 14:24	08/27/13 14:36	1
Bis(2-ethylhexyl) phthalate	400	U	400	35	ug/Kg	φ.	08/26/13 14:24	08/27/13 14:36	1
Di-n-octyl phthalate	400	U	400	35	ug/Kg	₽	08/26/13 14:24	08/27/13 14:36	1
Benzo[b]fluoranthene	400	U	400	46	ug/Kg	₽	08/26/13 14:24	08/27/13 14:36	1
Benzo[k]fluoranthene	400	U	400	79	ug/Kg	Φ.	08/26/13 14:24	08/27/13 14:36	1
Benzo[a]pyrene	400	U	400	63	ug/Kg	₽	08/26/13 14:24	08/27/13 14:36	1
Indeno[1,2,3-cd]pyrene	400	U	400	34	ug/Kg	₽	08/26/13 14:24	08/27/13 14:36	1
Dibenz(a,h)anthracene	400	U	400	47	ug/Kg		08/26/13 14:24	08/27/13 14:36	1
Benzo[g,h,i]perylene	400	U	400	27	ug/Kg	₩	08/26/13 14:24	08/27/13 14:36	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	62		46 - 130				08/26/13 14:24	08/27/13 14:36	1
2-Fluorobiphenyl	73		58 - 130				08/26/13 14:24	08/27/13 14:36	1
Terphenyl-d14 (Surr)	62		60 - 130				08/26/13 14:24	08/27/13 14:36	1
Phenol-d5 (Surr)	75		49 - 130				08/26/13 14:24	08/27/13 14:36	1
2-Fluorophenol (Surr)	64		40 - 130				08/26/13 14:24	08/27/13 14:36	1
2,4,6-Tribromophenol (Surr)	82		58 - 130				08/26/13 14:24	08/27/13 14:36	1
- Method: 8015C - Nonhalogenated	_	ng GC/FID Qualifier	-Modified (Gasol		ge Organi Unit	cs)	Prepared	Analyzed	Dil Fac
	Result				ug/Kg	<del>-</del>	08/26/13 09:31	08/26/13 16:10	1
Analyte			260	20					
Analyte Gasoline Range Organics (GRO)	Result 880		260	20	agritg				
Analyte Gasoline Range Organics (GRO)		Qualifier	260 Limits	20	ugmg		Prepared	Analyzed	Dil Fac
Analyte  Gasoline Range Organics (GRO)  -C6-C10  Surrogate	880	Qualifier		20	ugnig		Prepared 08/26/13 09:31	Analyzed 08/26/13 16:10	
Analyte  Gasoline Range Organics (GRO)  -C6-C10  Surrogate  a,a,a-Trifluorotoluene	%Recovery 92  I Organics usi	ng GC/FID	Limits 70 - 131	Range	Organics)		08/26/13 09:31		1
Analyte Gasoline Range Organics (GRO) -C6-C10 Surrogate a,a,a-Trifluorotoluene Method: 8015C - Nonhalogenated	%Recovery 92  I Organics usi		Limits 70 - 131  -Modified (Diesel	Range	Organics) Unit	D	08/26/13 09:31  Prepared		1
Analyte  Gasoline Range Organics (GRO)  -C6-C10	%Recovery 92  I Organics usi	ng GC/FID	-Modified (Diese	Range	Organics)		08/26/13 09:31	08/26/13 16:10	Dil Fac  Dil Fac
Analyte Gasoline Range Organics (GRO) -C6-C10 Surrogate a,a,a-Trifluorotoluene Method: 8015C - Nonhalogenated Analyte	%Recovery 92  Organics usi Result	ng GC/FID Qualifier	Limits 70 - 131  -Modified (Diesel	Range MDL 1700	Organics) Unit	D	08/26/13 09:31  Prepared	08/26/13 16:10 Analyzed	Dil Fac

TestAmerica Savannah

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93550-1

Client Sample ID: SB03-07 (1.5-2.5)

Date Collected: 08/22/13 10:00

Date Received: 08/23/13 09:28

Lab Sample ID: 680-93550-3

Matrix: Solid Percent Solids: 79.2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil
Acetone		U	22	6.3	ug/Kg	<del></del>	08/26/13 08:12	08/30/13 13:06	
Benzene	4.3	U	4.3	0.42	ug/Kg	₽	08/26/13 08:12	08/30/13 13:06	
Bromodichloromethane	4.3	U	4.3	0.72	ug/Kg	₩	08/26/13 08:12	08/30/13 13:06	
Bromoform	4.3	U	4.3	0.54	ug/Kg		08/26/13 08:12	08/30/13 13:06	
Bromomethane	4.3	U	4.3	1.2	ug/Kg	₽	08/26/13 08:12	08/30/13 13:06	
Carbon disulfide	4.3	U	4.3	1.0	ug/Kg	₽	08/26/13 08:12	08/30/13 13:06	
Carbon tetrachloride	4.3	U	4.3	1.5	ug/Kg	φ.	08/26/13 08:12	08/30/13 13:06	
Chlorobenzene	4.3	U	4.3	0.45	ug/Kg	₽	08/26/13 08:12	08/30/13 13:06	
Chloroethane	4.3	U	4.3	1.6	ug/Kg	₽	08/26/13 08:12	08/30/13 13:06	
Chloroform	4.3	U	4.3	0.51	ug/Kg		08/26/13 08:12	08/30/13 13:06	
Chloromethane	4.3	U	4.3	0.86	ug/Kg	₽	08/26/13 08:12	08/30/13 13:06	
sis-1,2-Dichloroethene	4.3	U	4.3	0.66	ug/Kg	₩	08/26/13 08:12	08/30/13 13:06	
sis-1,3-Dichloropropene	4.3	U	4.3	1.0	ug/Kg		08/26/13 08:12	08/30/13 13:06	
Cyclohexane	4.3		4.3	0.81	ug/Kg	₽	08/26/13 08:12	08/30/13 13:06	
Dibromochloromethane	4.3		4.3		ug/Kg	₽	08/26/13 08:12	08/30/13 13:06	
,2-Dibromo-3-Chloropropane	4.3		4.3		ug/Kg		08/26/13 08:12	08/30/13 13:06	
,2-Dichlorobenzene	4.3		4.3	0.61	ug/Kg	₽	08/26/13 08:12	08/30/13 13:06	
,3-Dichlorobenzene	4.3	U	4.3	0.82	ug/Kg	₽	08/26/13 08:12	08/30/13 13:06	
.4-Dichlorobenzene	4.3		4.3	0.71	ug/Kg		08/26/13 08:12	08/30/13 13:06	
vichlorodifluoromethane	4.3		4.3	1.1	ug/Kg	₩	08/26/13 08:12	08/30/13 13:06	
,1-Dichloroethane	4.3		4.3	0.72	ug/Kg	₩	08/26/13 08:12	08/30/13 13:06	
,2-Dichloroethane	4.3		4.3	0.71	ug/Kg		08/26/13 08:12	08/30/13 13:06	
,1-Dichloroethene	4.3		4.3	0.65	ug/Kg	₽	08/26/13 08:12	08/30/13 13:06	
,2-Dichloropropane	4.3		4.3	0.64	ug/Kg	*	08/26/13 08:12	08/30/13 13:06	
Diisopropyl ether	4.3		4.3	0.47	ug/Kg		08/26/13 08:12	08/30/13 13:06	
thylbenzene	4.3		4.3	0.53	ug/Kg ug/Kg	*	08/26/13 08:12	08/30/13 13:06	
thylene Dibromide	4.3		4.3	0.41	ug/Kg ug/Kg	*	08/26/13 08:12	08/30/13 13:06	
thyl tert-butyl ether	4.3		4.3	0.48	ug/Kg		08/26/13 08:12	08/30/13 13:06	
-Hexanone	4.3		22	4.3	ug/Kg ug/Kg		08/26/13 08:12	08/30/13 13:06	
sopropylbenzene	4.3		4.3	0.59	ug/Kg ug/Kg	₩	08/26/13 08:12	08/30/13 13:06	
	4.3		4.3		ug/Kg ug/Kg		08/26/13 08:12	08/30/13 13:06	
Methyl acetate						₩			
Methylcyclohexane	4.3		4.3	0.75	ug/Kg		08/26/13 08:12	08/30/13 13:06	
Methylene Chloride	13		13	8.6	ug/Kg	<del>.</del> .	08/26/13 08:12	08/30/13 13:06	
lethyl Ethyl Ketone	22		22		ug/Kg	<b>\$</b>	08/26/13 08:12	08/30/13 13:06	
nethyl isobutyl ketone	22		22		ug/Kg	<b>\$</b>	08/26/13 08:12	08/30/13 13:06	
Methyl tert-butyl ether	4.3		4.3		ug/Kg	**	08/26/13 08:12	08/30/13 13:06	
laphthalene	4.3		4.3		ug/Kg	₩.	08/26/13 08:12	08/30/13 13:06	
ityrene	4.3		4.3		ug/Kg	<b>\$</b>	08/26/13 08:12	08/30/13 13:06	
ert-amyl methyl ether	4.3		4.3		ug/Kg	<u></u> .	08/26/13 08:12	08/30/13 13:06	
ert-Butyl alcohol	4.3		4.3		ug/Kg		08/26/13 08:12	08/30/13 13:06	
,1,2,2-Tetrachloroethane	4.3		4.3		ug/Kg	<b>\$</b>	08/26/13 08:12	08/30/13 13:06	
etrachloroethene	4.3		4.3		ug/Kg	T.	08/26/13 08:12	08/30/13 13:06	
oluene	4.3		4.3		ug/Kg	₩.	08/26/13 08:12	08/30/13 13:06	
ans-1,2-Dichloroethene	4.3		4.3		ug/Kg	<b>*</b>	08/26/13 08:12	08/30/13 13:06	
ans-1,3-Dichloropropene	4.3	U	4.3	0.79	ug/Kg		08/26/13 08:12	08/30/13 13:06	
,2,4-Trichlorobenzene	4.3		4.3		ug/Kg	₽	08/26/13 08:12	08/30/13 13:06	
,1,1-Trichloroethane	4.3	U	4.3	0.95	ug/Kg	₩	08/26/13 08:12	08/30/13 13:06	
,1,2-Trichloroethane	4.3	U	4.3	0.79	ug/Kg	₽	08/26/13 08:12	08/30/13 13:06	

TestAmerica Savannah

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93550-1

Lab Sample ID: 680-93550-3 Matrix: Solid

Percent Solids: 79.2

Client Sample ID: SB03-07 (1.5-2.5)

Date Collected: 08/22/13 10:00 Date Received: 08/23/13 09:28

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichlorofluoromethane	4.8		4.3	0.82	ug/Kg	\$	08/26/13 08:12	08/30/13 13:06	1
1,1,2-Trichloro-1,2,2-trifluoroethane	4.3	U	4.3	1.7	ug/Kg	₽	08/26/13 08:12	08/30/13 13:06	1
Vinyl chloride	4.3	U	4.3	0.79	ug/Kg	₽	08/26/13 08:12	08/30/13 13:06	1
Xylenes, Total	8.6	U	8.6	1.6	ug/Kg	₽	08/26/13 08:12	08/30/13 13:06	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	97		72 - 122				08/26/13 08:12	08/30/13 13:06	1
Dibromofluoromethane	90		79 - 123				08/26/13 08:12	08/30/13 13:06	1
Toluene-d8 (Surr)	98		80 <sub>-</sub> 120				08/26/13 08:12	08/30/13 13:06	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzaldehyde	410	U	410	72	ug/Kg	<u></u>	08/30/13 14:23	09/03/13 20:23	1
Phenol	410	U	410	42	ug/Kg	₽	08/30/13 14:23	09/03/13 20:23	1
Bis(2-chloroethyl)ether	410	U	410	56	ug/Kg	₽	08/30/13 14:23	09/03/13 20:23	1
2-Chlorophenol	410	U	410	50	ug/Kg	₽	08/30/13 14:23	09/03/13 20:23	1
2-Methylphenol	410	U	410	34	ug/Kg	₩	08/30/13 14:23	09/03/13 20:23	1
bis (2-chloroisopropyl) ether	410	U	410	37	ug/Kg	₩	08/30/13 14:23	09/03/13 20:23	1
Acetophenone	35	J	410	35	ug/Kg	₽	08/30/13 14:23	09/03/13 20:23	1
3 & 4 Methylphenol	410	U	410	53	ug/Kg	≎	08/30/13 14:23	09/03/13 20:23	1
N-Nitrosodi-n-propylamine	410	U	410	40	ug/Kg	₩	08/30/13 14:23	09/03/13 20:23	1
Hexachloroethane	410	U	410	35	ug/Kg	*	08/30/13 14:23	09/03/13 20:23	1
Nitrobenzene	410	U	410	32	ug/Kg	₽	08/30/13 14:23	09/03/13 20:23	1
Isophorone	410	U	410	41	ug/Kg	≎	08/30/13 14:23	09/03/13 20:23	1
2-Nitrophenol	410	U	410	51	ug/Kg	\$	08/30/13 14:23	09/03/13 20:23	1
2,4-Dimethylphenol	410	U	410	55	ug/Kg	₽	08/30/13 14:23	09/03/13 20:23	1
Bis(2-chloroethoxy)methane	410	U	410	48	ug/Kg	₽	08/30/13 14:23	09/03/13 20:23	1
2,4-Dichlorophenol	410	U	410	43	ug/Kg	₽	08/30/13 14:23	09/03/13 20:23	1
Naphthalene	330	J	410	37	ug/Kg	₽	08/30/13 14:23	09/03/13 20:23	1
4-Chloroaniline	820	U	820	65	ug/Kg	₽	08/30/13 14:23	09/03/13 20:23	1
Hexachlorobutadiene	410	U	410	45	ug/Kg	₽	08/30/13 14:23	09/03/13 20:23	1
Caprolactam	410	U	410	82	ug/Kg	₽	08/30/13 14:23	09/03/13 20:23	1
4-Chloro-3-methylphenol	410	U	410	43	ug/Kg	₽	08/30/13 14:23	09/03/13 20:23	1
2-Methylnaphthalene	690		410	47	ug/Kg	\$	08/30/13 14:23	09/03/13 20:23	1
Hexachlorocyclopentadiene	410	U	410	51	ug/Kg	₽	08/30/13 14:23	09/03/13 20:23	1
2,4,6-Trichlorophenol	410	U	410	36	ug/Kg	₽	08/30/13 14:23	09/03/13 20:23	1
2,4,5-Trichlorophenol	410	U	410	43	ug/Kg	*	08/30/13 14:23	09/03/13 20:23	1
1,1'-Biphenyl	920	U	920	920	ug/Kg	₽	08/30/13 14:23	09/03/13 20:23	1
2-Chloronaphthalene	410	U	410	43	ug/Kg	₩	08/30/13 14:23	09/03/13 20:23	1
2-Nitroaniline	2100	U	2100	56	ug/Kg	₽	08/30/13 14:23	09/03/13 20:23	1
Dimethyl phthalate	410	U	410	42	ug/Kg	≎	08/30/13 14:23	09/03/13 20:23	1
2,6-Dinitrotoluene	410	U	410	52	ug/Kg	≎	08/30/13 14:23	09/03/13 20:23	1
Acenaphthylene	410	U	410	45	ug/Kg	₽	08/30/13 14:23	09/03/13 20:23	1
3-Nitroaniline	2100	U	2100	57	ug/Kg	≎	08/30/13 14:23	09/03/13 20:23	1
Acenaphthene	410	U	410	51	ug/Kg	₽	08/30/13 14:23	09/03/13 20:23	1
2,4-Dinitrophenol	2100	U	2100	1000	ug/Kg	₽	08/30/13 14:23	09/03/13 20:23	1
4-Nitrophenol	2100	U	2100	410	ug/Kg	₽	08/30/13 14:23	09/03/13 20:23	1
Dibenzofuran	130	J	410	41	ug/Kg	₩	08/30/13 14:23	09/03/13 20:23	1
2,4-Dinitrotoluene	410	U	410	61	ug/Kg	₽	08/30/13 14:23	09/03/13 20:23	1
Diethyl phthalate	410	U	410	46	ug/Kg	₽	08/30/13 14:23	09/03/13 20:23	1

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10

Surrogate

o-Terphenyl (Surr)

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB03-07 (1.5-2.5)

Date Collected: 08/22/13 10:00 Date Received: 08/23/13 09:28 Lab Sample ID: 680-93550-3

Matrix: Solid

Percent Solids: 79.2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
Fluorene	170	J	410	45	ug/Kg	<del></del>	08/30/13 14:23	09/03/13 20:23	
4-Chlorophenyl phenyl ether	410	U	410	55	ug/Kg		08/30/13 14:23	09/03/13 20:23	
4-Nitroaniline	2100	U	2100	61	ug/Kg	₽	08/30/13 14:23	09/03/13 20:23	
4,6-Dinitro-2-methylphenol	2100	U	2100	210	ug/Kg	₽	08/30/13 14:23	09/03/13 20:23	
N-Nitrosodiphenylamine	410		410	41	ug/Kg		08/30/13 14:23	09/03/13 20:23	
4-Bromophenyl phenyl ether	410	U	410	45		₩	08/30/13 14:23	09/03/13 20:23	
Hexachlorobenzene	410	U	410	48		₩	08/30/13 14:23	09/03/13 20:23	
Atrazine	410		410	29	ug/Kg		08/30/13 14:23	09/03/13 20:23	
Pentachlorophenol	2100	U	2100	410	ug/Kg	₩	08/30/13 14:23	09/03/13 20:23	
Phenanthrene	250	J	410	34		₽	08/30/13 14:23	09/03/13 20:23	
Anthracene	76		410	31			08/30/13 14:23	09/03/13 20:23	
Carbazole	410	U	410	37	0 0	₽	08/30/13 14:23	09/03/13 20:23	
Di-n-butyl phthalate	410	U	410	37	0 0	₽	08/30/13 14:23	09/03/13 20:23	
Fluoranthene	96		410	40			08/30/13 14:23	09/03/13 20:23	
Pyrene	65	J	410	34	ug/Kg	₽	08/30/13 14:23	09/03/13 20:23	
Butyl benzyl phthalate	410		410		ug/Kg	₩	08/30/13 14:23	09/03/13 20:23	
3,3'-Dichlorobenzidine	820		820		ug/Kg		08/30/13 14:23	09/03/13 20:23	
Benzo[a]anthracene	410		410		ug/Kg	₩	08/30/13 14:23	09/03/13 20:23	
Chrysene	62	J	410	26		₩	08/30/13 14:23	09/03/13 20:23	
Bis(2-ethylhexyl) phthalate	410		410		ug/Kg		08/30/13 14:23	09/03/13 20:23	
Di-n-octyl phthalate	410	-	410	36		₽	08/30/13 14:23	09/03/13 20:23	
• •	48	J	410		ug/Kg	₽	08/30/13 14:23	09/03/13 20:23	
Benzo[b]fluoranthene Benzo[k]fluoranthene	410		410	81			08/30/13 14:23	09/03/13 20:23	
• •	410	U	410	65	0 0		08/30/13 14:23	09/03/13 20:23	
Benzo[a]pyrene Indeno[1,2,3-cd]pyrene	410	U	410		ug/Kg ug/Kg		08/30/13 14:23	09/03/13 20:23	
	410		410	48			08/30/13 14:23	09/03/13 20:23	
Dibenz(a,h)anthracene	410		410		0 0		08/30/13 14:23	09/03/13 20:23	
Benzo[g,h,i]perylene	410	U	410	21	ug/Kg	~	06/30/13 14.23	09/03/13 20.23	
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fa
Nitrobenzene-d5 (Surr)	55		46 - 130				08/30/13 14:23	09/03/13 20:23	
2-Fluorobiphenyl	66		58 - 130				08/30/13 14:23	09/03/13 20:23	
Terphenyl-d14 (Surr)	67		60 - 130				08/30/13 14:23	09/03/13 20:23	
Phenol-d5 (Surr)	63		49 - 130				08/30/13 14:23	09/03/13 20:23	
2-Fluorophenol (Surr)	76		40 - 130				08/30/13 14:23	09/03/13 20:23	
2,4,6-Tribromophenol (Surr)	92		58 - 130				08/30/13 14:23	09/03/13 20:23	
Method: 8015C - Nonhalogenate <sup>Analyte</sup>	_	ng GC/FID Qualifier	-Modified (Gaso RL		ige Organi Unit	ics) D	Prepared	Analyzed	Dil Fa
Gasoline Range Organics (GRO)	17000	Qualifier	12000		ug/Kg	— <del>¤</del>	08/26/13 09:31	08/27/13 18:31	
-C6-C10	17000		12000	310	ug/itg		00/20/13 09.51	00/21/13 10.31	
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fa
a,a,a-Trifluorotoluene			70 - 131				08/26/13 09:31	08/27/13 18:31	
	30		70-101				30, 20, 10 00.01	33,2,7,10 10.01	
.,.,									
Method: 8015C - Nonhalogenate		_			_	-	_		
Method: 8015C - Nonhalogenate Analyte Diesel Range Organics [C10-C28]		ng GC/FID Qualifier	-Modified (Dieso RL 6100	MDL	Organics Unit ug/Kg	D ====================================	Prepared 08/28/13 08:56	Analyzed 08/29/13 19:24	Dil Fa

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Analyzed

08/29/13 19:24

Prepared

08/28/13 08:56

Limits

50 - 150

%Recovery Qualifier

68

Client: ARCADIS U.S., Inc.

Date Received: 08/23/13 09:28

1,1,2-Trichloroethane

Trichloroethene

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93550-1

Lab Sample ID: 680-93550-4

Matrix: Solid Percent Solids: 74.4

Client Sample ID: SB03-07 (4.5-5.5)

Date Collected: 08/22/13 10:10

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	25		23	6.7	ug/Kg	<del></del>	08/26/13 08:12	08/30/13 13:34	1
Benzene	4.6	U	4.6	0.45	ug/Kg	₩	08/26/13 08:12	08/30/13 13:34	1
Bromodichloromethane	4.6	U	4.6	0.77	ug/Kg	₩	08/26/13 08:12	08/30/13 13:34	1
Bromoform	4.6	U	4.6	0.58	ug/Kg	₩.	08/26/13 08:12	08/30/13 13:34	1
Bromomethane	4.6	U	4.6	1.3	ug/Kg	₽	08/26/13 08:12	08/30/13 13:34	1
Carbon disulfide	4.6	U	4.6	1.1	ug/Kg	₽	08/26/13 08:12	08/30/13 13:34	1
Carbon tetrachloride	4.6	U	4.6	1.6	ug/Kg	\$	08/26/13 08:12	08/30/13 13:34	1
Chlorobenzene	4.6	U	4.6	0.48	ug/Kg	₽	08/26/13 08:12	08/30/13 13:34	1
Chloroethane	4.6	U	4.6	1.7	ug/Kg	₩	08/26/13 08:12	08/30/13 13:34	1
Chloroform	4.6	U	4.6	0.54	ug/Kg	₩	08/26/13 08:12	08/30/13 13:34	1
Chloromethane	4.6	U	4.6	0.92	ug/Kg	₩	08/26/13 08:12	08/30/13 13:34	1
cis-1,2-Dichloroethene	4.6	U	4.6	0.70	ug/Kg	₩	08/26/13 08:12	08/30/13 13:34	1
cis-1,3-Dichloropropene	4.6	U	4.6	1.1	ug/Kg		08/26/13 08:12	08/30/13 13:34	1
Cyclohexane	4.6	U	4.6	0.86	ug/Kg	₽	08/26/13 08:12	08/30/13 13:34	1
Dibromochloromethane	4.6	U	4.6	0.80		₽	08/26/13 08:12	08/30/13 13:34	1
1,2-Dibromo-3-Chloropropane	4.6		4.6	3.0	ug/Kg	ф.	08/26/13 08:12	08/30/13 13:34	1
1,2-Dichlorobenzene	4.6	U	4.6	0.65	ug/Kg	₽	08/26/13 08:12	08/30/13 13:34	1
1,3-Dichlorobenzene	4.6	U	4.6	0.87	ug/Kg	₩	08/26/13 08:12	08/30/13 13:34	1
1,4-Dichlorobenzene	4.6	U	4.6	0.75	ug/Kg		08/26/13 08:12	08/30/13 13:34	1
Dichlorodifluoromethane	4.6	U	4.6		ug/Kg	₽	08/26/13 08:12	08/30/13 13:34	1
1,1-Dichloroethane	4.6	U	4.6		ug/Kg	₩	08/26/13 08:12	08/30/13 13:34	1
1,2-Dichloroethane			4.6		ug/Kg		08/26/13 08:12	08/30/13 13:34	1
1,1-Dichloroethene	4.6	U	4.6	0.69	ug/Kg	₽	08/26/13 08:12	08/30/13 13:34	1
1,2-Dichloropropane		U	4.6		ug/Kg	₽	08/26/13 08:12	08/30/13 13:34	1
Diisopropyl ether	4.6		4.6		ug/Kg		08/26/13 08:12	08/30/13 13:34	1
Ethylbenzene		U	4.6	0.56		₽	08/26/13 08:12	08/30/13 13:34	1
Ethylene Dibromide		U	4.6	0.44		₽	08/26/13 08:12	08/30/13 13:34	1
Ethyl tert-butyl ether	4.6		4.6	0.51			08/26/13 08:12	08/30/13 13:34	1
2-Hexanone	23		23	4.6	ug/Kg	₩	08/26/13 08:12	08/30/13 13:34	1
Isopropylbenzene	4.6		4.6		ug/Kg	₩	08/26/13 08:12	08/30/13 13:34	1
Methyl acetate	4.6		4.6		ug/Kg		08/26/13 08:12	08/30/13 13:34	1
Methylcyclohexane	1.1		4.6	0.80		₩	08/26/13 08:12	08/30/13 13:34	1
Methylene Chloride	14		14		ug/Kg	₩	08/26/13 08:12	08/30/13 13:34	1
Methyl Ethyl Ketone	6.1		23		ug/Kg	· · · · · · · · ·	08/26/13 08:12	08/30/13 13:34	· · · · · · · · · · · · · · · · · · ·
methyl isobutyl ketone	23		23	3.7		*	08/26/13 08:12	08/30/13 13:34	1
Methyl tert-butyl ether	4.6		4.6		ug/Kg ug/Kg	*	08/26/13 08:12	08/30/13 13:34	1
Naphthalene	4.6		4.6		ug/Kg		08/26/13 08:12	08/30/13 13:34	
Styrene	4.6		4.6		ug/Kg	₩	08/26/13 08:12	08/30/13 13:34	1
Tert-amyl methyl ether	4.6		4.6		ug/Kg ug/Kg	₩	08/26/13 08:12	08/30/13 13:34	1
	4.6				ug/Kg		08/26/13 08:12		
tert-Butyl alcohol 1,1,2,2-Tetrachloroethane	4.6		4.6 4.6		ug/Kg ug/Kg	₽	08/26/13 08:12	08/30/13 13:34	1
, , ,	4.6		4.6		• •	₽		08/30/13 13:34	1
Tetrachloroethene					ug/Kg		08/26/13 08:12 08/26/13 08:12	08/30/13 13:34	
Toluene	4.6		4.6		ug/Kg	<b>₩</b>		08/30/13 13:34	1
trans-1,2-Dichloroethene	4.6		4.6		ug/Kg		08/26/13 08:12	08/30/13 13:34	1
trans-1,3-Dichloropropene	4.6		4.6		ug/Kg	<del>%</del>	08/26/13 08:12	08/30/13 13:34	
1,2,4-Trichlorobenzene	4.6		4.6		ug/Kg	<b>‡</b>	08/26/13 08:12	08/30/13 13:34	1
1,1,1-Trichloroethane	4.6	U	4.6	1.0	ug/Kg	₽	08/26/13 08:12	08/30/13 13:34	1

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08/30/13 13:34

08/30/13 13:34

4.6

0.84 ug/Kg

0.44 ug/Kg

© 08/26/13 08:12

08/26/13 08:12

4.6 U

4.6 U

3

6

8

10

11

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93550-1

Client Sample ID: SB03-07 (4.5-5.5)

Lab Sample ID: 680-93550-4 Date Collected: 08/22/13 10:10 **Matrix: Solid** Date Received: 08/23/13 09:28 Percent Solids: 74.4

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued) Analyte Result Qualifier MDL Unit D Prepared Analyzed Dil Fac ₩ Trichlorofluoromethane 4.6 0.87 ug/Kg 08/26/13 08:12 08/30/13 13:34 5.0 1,1,2-Trichloro-1,2,2-trifluoroethane 4.6 U 08/26/13 08:12 08/30/13 13:34 4.6 1.8 ug/Kg ₽ Vinyl chloride 4.6 U 4.6 0.84 ug/Kg 08/26/13 08:12 08/30/13 13:34 Xylenes, Total 9.2 U 9.2 1.7 ug/Kg 08/26/13 08:12 08/30/13 13:34 %Recovery Qualifier Prepared Surrogate Limits Analyzed Dil Fac 4-Bromofluorobenzene 97 72 - 122 08/26/13 08:12 08/30/13 13:34 Dibromofluoromethane 91 79 - 123 08/26/13 08:12 08/30/13 13:34 80 - 120 08/26/13 08:12 Toluene-d8 (Surr) 99 08/30/13 13:34

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzaldehyde	440	U	440	78	ug/Kg	<del></del>	08/26/13 14:24	08/27/13 15:24	1
Phenol	440	U	440	46	ug/Kg	₩	08/26/13 14:24	08/27/13 15:24	1
Bis(2-chloroethyl)ether	440	U	440	60	ug/Kg	₽	08/26/13 14:24	08/27/13 15:24	1
2-Chlorophenol	440	U	440	54	ug/Kg	₽	08/26/13 14:24	08/27/13 15:24	1
2-Methylphenol	440	U	440	36	ug/Kg	₩	08/26/13 14:24	08/27/13 15:24	1
bis (2-chloroisopropyl) ether	440	U	440	40	ug/Kg	₩	08/26/13 14:24	08/27/13 15:24	1
Acetophenone	440	U	440	38	ug/Kg	*	08/26/13 14:24	08/27/13 15:24	1
3 & 4 Methylphenol	440	U	440	58	ug/Kg	₽	08/26/13 14:24	08/27/13 15:24	1
N-Nitrosodi-n-propylamine	440	U	440	43	ug/Kg	₽	08/26/13 14:24	08/27/13 15:24	1
Hexachloroethane	440	U	440	38	ug/Kg	\$	08/26/13 14:24	08/27/13 15:24	1
Nitrobenzene	440	U	440	35	ug/Kg	₽	08/26/13 14:24	08/27/13 15:24	1
Isophorone	440	U	440	44	ug/Kg	₽	08/26/13 14:24	08/27/13 15:24	1
2-Nitrophenol	440	U	440	55	ug/Kg	₽	08/26/13 14:24	08/27/13 15:24	1
2,4-Dimethylphenol	440	U	440	59	ug/Kg	₽	08/26/13 14:24	08/27/13 15:24	1
Bis(2-chloroethoxy)methane	440	U	440	52	ug/Kg	₽	08/26/13 14:24	08/27/13 15:24	1
2,4-Dichlorophenol	440	U	440	47	ug/Kg	₽	08/26/13 14:24	08/27/13 15:24	1
Naphthalene	420	J	440	40	ug/Kg	₽	08/26/13 14:24	08/27/13 15:24	1
4-Chloroaniline	890	U	890	70	ug/Kg	₽	08/26/13 14:24	08/27/13 15:24	1
Hexachlorobutadiene	440	U	440	48	ug/Kg	₽	08/26/13 14:24	08/27/13 15:24	1
Caprolactam	440	U	440	89	ug/Kg	₽	08/26/13 14:24	08/27/13 15:24	1
4-Chloro-3-methylphenol	440	U	440	47	ug/Kg	₩	08/26/13 14:24	08/27/13 15:24	1
2-Methylnaphthalene	800		440	51	ug/Kg	\$	08/26/13 14:24	08/27/13 15:24	1
Hexachlorocyclopentadiene	440	U	440	55	ug/Kg	₩	08/26/13 14:24	08/27/13 15:24	1
2,4,6-Trichlorophenol	440	U	440	39	ug/Kg	₽	08/26/13 14:24	08/27/13 15:24	1
2,4,5-Trichlorophenol	440	U	440	47	ug/Kg	\$	08/26/13 14:24	08/27/13 15:24	1
1,1'-Biphenyl	990	U	990	990	ug/Kg	₽	08/26/13 14:24	08/27/13 15:24	1
2-Chloronaphthalene	440	U	440	47	ug/Kg	₽	08/26/13 14:24	08/27/13 15:24	1
2-Nitroaniline	2300	U	2300	60	ug/Kg	₽	08/26/13 14:24	08/27/13 15:24	1
Dimethyl phthalate	440	U	440	46	ug/Kg	₩	08/26/13 14:24	08/27/13 15:24	1
2,6-Dinitrotoluene	440	U	440	56	ug/Kg	₽	08/26/13 14:24	08/27/13 15:24	1
Acenaphthylene	440	U	440	48	ug/Kg	₩	08/26/13 14:24	08/27/13 15:24	1
3-Nitroaniline	2300	U	2300	62	ug/Kg	₩	08/26/13 14:24	08/27/13 15:24	1
Acenaphthene	440	U	440	55	ug/Kg	₽	08/26/13 14:24	08/27/13 15:24	1
2,4-Dinitrophenol	2300	U	2300	1100	ug/Kg		08/26/13 14:24	08/27/13 15:24	1
4-Nitrophenol	2300	U	2300	440	ug/Kg	₩	08/26/13 14:24	08/27/13 15:24	1
Dibenzofuran	120	J	440	44	ug/Kg	₩	08/26/13 14:24	08/27/13 15:24	1
2,4-Dinitrotoluene	440	U	440	66	ug/Kg	φ.	08/26/13 14:24	08/27/13 15:24	1
Diethyl phthalate	440	U	440		ug/Kg	₽	08/26/13 14:24	08/27/13 15:24	1

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o-Terphenyl (Surr)

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB03-07 (4.5-5.5)

Date Collected: 08/22/13 10:10 Date Received: 08/23/13 09:28 Lab Sample ID: 680-93550-4

Matrix: Solid

Percent Solids: 74.4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluorene	140	J	440	48	ug/Kg	₩	08/26/13 14:24	08/27/13 15:24	
4-Chlorophenyl phenyl ether	440	U	440	59	ug/Kg	₽	08/26/13 14:24	08/27/13 15:24	1
4-Nitroaniline	2300	U	2300	66	ug/Kg	₩	08/26/13 14:24	08/27/13 15:24	1
4,6-Dinitro-2-methylphenol	2300	U	2300	230	ug/Kg	₩	08/26/13 14:24	08/27/13 15:24	1
N-Nitrosodiphenylamine	440	U	440	44	ug/Kg	₽	08/26/13 14:24	08/27/13 15:24	1
4-Bromophenyl phenyl ether	440	U	440	48	ug/Kg	☼	08/26/13 14:24	08/27/13 15:24	1
Hexachlorobenzene	440	U	440	52	ug/Kg	₽	08/26/13 14:24	08/27/13 15:24	1
Atrazine	440	U	440	31	ug/Kg	₩	08/26/13 14:24	08/27/13 15:24	1
Pentachlorophenol	2300	U	2300	440	ug/Kg	☼	08/26/13 14:24	08/27/13 15:24	1
Phenanthrene	210	J	440	36	ug/Kg	₽	08/26/13 14:24	08/27/13 15:24	1
Anthracene	77		440	34	ug/Kg	φ.	08/26/13 14:24	08/27/13 15:24	1
Carbazole	40	J	440	40	ug/Kg	₩	08/26/13 14:24	08/27/13 15:24	1
Di-n-butyl phthalate	440	U	440	40	ug/Kg	₩	08/26/13 14:24	08/27/13 15:24	1
Fluoranthene	60		440	43	ug/Kg	· · · · · · · · · · · · · · · · · · ·	08/26/13 14:24	08/27/13 15:24	1
Pyrene	58	J	440	36	ug/Kg	₽	08/26/13 14:24	08/27/13 15:24	1
Butyl benzyl phthalate	440		440	35		₽	08/26/13 14:24	08/27/13 15:24	1
3,3'-Dichlorobenzidine			890	38		· · · · · · · · · · · · · · · · · · ·	08/26/13 14:24	08/27/13 15:24	
Benzo[a]anthracene			440	36	ug/Kg	₩	08/26/13 14:24	08/27/13 15:24	1
Chrysene	41		440	28	ug/Kg	₽	08/26/13 14:24	08/27/13 15:24	1
Bis(2-ethylhexyl) phthalate	440		440	39	ug/Kg	 \$	08/26/13 14:24	08/27/13 15:24	 1
Di-n-octyl phthalate	440	U	440	39	ug/Kg	₽	08/26/13 14:24	08/27/13 15:24	1
Benzo[b]fluoranthene	440		440	51	ug/Kg	₽	08/26/13 14:24	08/27/13 15:24	
Benzo[k]fluoranthene	440		440	87			08/26/13 14:24	08/27/13 15:24	· 1
Benzo[a]pyrene			440	70	0 0		08/26/13 14:24	08/27/13 15:24	1
Indeno[1,2,3-cd]pyrene	440		440		ug/Kg		08/26/13 14:24	08/27/13 15:24	1
Dibenz(a,h)anthracene			440		ug/Kg	· · · · · · · · · · · · · · · · · · ·	08/26/13 14:24	08/27/13 15:24	
Benzo[g,h,i]perylene	440		440		ug/Kg	\$	08/26/13 14:24	08/27/13 15:24	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	59		46 - 130				08/26/13 14:24	08/27/13 15:24	1
2-Fluorobiphenyl	84		58 - 130				08/26/13 14:24	08/27/13 15:24	1
Terphenyl-d14 (Surr)	83		60 - 130				08/26/13 14:24	08/27/13 15:24	1
Phenol-d5 (Surr)	76		49 - 130				08/26/13 14:24	08/27/13 15:24	
2-Fluorophenol (Surr)	75		40 - 130				08/26/13 14:24	08/27/13 15:24	1
2,4,6-Tribromophenol (Surr)	98		58 - 130				08/26/13 14:24	08/27/13 15:24	1
Method: 8015C - Nonhalogenate Analyte	_	ng GC/FID Qualifier	-Modified (Gaso	line Ran MDL	-	cs)	Prepared	Analyzed	Dil Fac
<u> </u>	450		250		ug/Kg	— <del>¤</del>	08/26/13 09:31	08/26/13 16:49	— DII FAC
Gasoline Range Organics (GRO) -C6-C10	450		250	19	ug/Kg	T	06/20/13 09.31	06/20/13 10.49	,
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene	126		70 - 131				08/26/13 09:31	08/26/13 16:49	1
Method: 8015C - Nonhalogenate	d Organics usi	ng GC/FID	-Modified (Diese	el Range	Organics	)			
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	120000		6600	1800	ug/Kg	₩	08/28/13 08:56	08/29/13 19:40	1
ORO C24-C40	18000	В	6600	1800	ug/Kg	₩	08/28/13 08:56	08/29/13 19:40	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93550-1

Lab Sample ID: 680-93550-5

Matrix: Solid Percent Solids: 75.4

Client Sample ID: SB03-08 (1.0-2.0)

Date Collected: 08/22/13 10:30 Date Received: 08/23/13 09:28

Method: 8260B - Volatile Organio Analyte		Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil F
Acetone			25	7.4	ug/Kg	<del>\</del>	08/26/13 08:12	08/30/13 14:02	
Benzene	5.1		5.1	0.50	ug/Kg	₽	08/26/13 08:12	08/30/13 14:02	
Bromodichloromethane	5.1		5.1		ug/Kg	₩	08/26/13 08:12	08/30/13 14:02	
romoform	5.1		5.1	0.64	ug/Kg		08/26/13 08:12	08/30/13 14:02	
romomethane	5.1		5.1	1.4	ug/Kg	₽	08/26/13 08:12	08/30/13 14:02	
arbon disulfide	5.1		5.1		ug/Kg	₽	08/26/13 08:12	08/30/13 14:02	
arbon tetrachloride	5.1		5.1	1.7	ug/Kg		08/26/13 08:12	08/30/13 14:02	
hlorobenzene	5.1	U	5.1	0.53	ug/Kg	₽	08/26/13 08:12	08/30/13 14:02	
hloroethane	5.1	U	5.1	1.9	ug/Kg	₩	08/26/13 08:12	08/30/13 14:02	
hloroform	5.1		5.1	0.60	ug/Kg		08/26/13 08:12	08/30/13 14:02	
hloromethane	5.1		5.1	1.0	ug/Kg	₽	08/26/13 08:12	08/30/13 14:02	
s-1,2-Dichloroethene	5.1		5.1	0.77	ug/Kg ug/Kg	₽	08/26/13 08:12	08/30/13 14:02	
s-1,3-Dichloropropene	5.1		5.1		ug/Kg		08/26/13 08:12	08/30/13 14:02	
yclohexane	5.1		5.1		ug/Kg ug/Kg		08/26/13 08:12	08/30/13 14:02	
ibromochloromethane	5.1		5.1	0.89	ug/Kg ug/Kg		08/26/13 08:12	08/30/13 14:02	
2-Dibromo-3-Chloropropane	5.1		5.1		ug/Kg ug/Kg		08/26/13 08:12	08/30/13 14:02	
2-Dibromo-3-Chioropropane 2-Dichlorobenzene	5.1		5.1		ug/Kg ug/Kg		08/26/13 08:12	08/30/13 14:02	
		-							
3-Dichlorobenzene	5.1		5.1	0.97			08/26/13 08:12	08/30/13 14:02	
4-Dichlorobenzene	5.1		5.1	0.84	ug/Kg		08/26/13 08:12	08/30/13 14:02	
chlorodifluoromethane	5.1	U	5.1	1.3	ug/Kg	<b>‡</b>	08/26/13 08:12	08/30/13 14:02	
1-Dichloroethane	5.1	U	5.1	0.85	ug/Kg		08/26/13 08:12	08/30/13 14:02	
2-Dichloroethane	5.1		5.1	0.84	ug/Kg	<b>*</b>	08/26/13 08:12	08/30/13 14:02	
1-Dichloroethene	5.1	U	5.1	0.76	ug/Kg	<b>*</b>	08/26/13 08:12	08/30/13 14:02	
2-Dichloropropane	5.1	U	5.1	0.75	ug/Kg		08/26/13 08:12	08/30/13 14:02	
isopropyl ether	5.1		5.1	0.56	ug/Kg	<b>*</b>	08/26/13 08:12	08/30/13 14:02	
hylbenzene	5.1		5.1	0.62	ug/Kg	<b>*</b>	08/26/13 08:12	08/30/13 14:02	
hylene Dibromide	5.1	U	5.1	0.49	ug/Kg		08/26/13 08:12	08/30/13 14:02	
hyl tert-butyl ether	5.1	U	5.1	0.57	ug/Kg	₽	08/26/13 08:12	08/30/13 14:02	
Hexanone	25	U	25	5.1	ug/Kg	₩	08/26/13 08:12	08/30/13 14:02	
opropylbenzene	5.1	U	5.1	0.69	ug/Kg	₽	08/26/13 08:12	08/30/13 14:02	
ethyl acetate	5.1	U	5.1	4.7	ug/Kg	₽	08/26/13 08:12	08/30/13 14:02	
ethylcyclohexane	5.1	U	5.1	0.89	ug/Kg	₽	08/26/13 08:12	08/30/13 14:02	
ethylene Chloride	15	U	15	10	ug/Kg	₽	08/26/13 08:12	08/30/13 14:02	
ethyl Ethyl Ketone	25	U	25	4.2	ug/Kg	\$	08/26/13 08:12	08/30/13 14:02	
ethyl isobutyl ketone	25	U	25	4.1	ug/Kg	₽	08/26/13 08:12	08/30/13 14:02	
ethyl tert-butyl ether	5.1	U	5.1	1.0	ug/Kg	₽	08/26/13 08:12	08/30/13 14:02	
aphthalene	5.1	U	5.1	1.0	ug/Kg	₽	08/26/13 08:12	08/30/13 14:02	
yrene	5.1	U	5.1	0.77	ug/Kg	₩	08/26/13 08:12	08/30/13 14:02	
ert-amyl methyl ether	5.1	U	5.1	0.45	ug/Kg	₩	08/26/13 08:12	08/30/13 14:02	
rt-Butyl alcohol	5.1	U	5.1	3.5	ug/Kg	₽	08/26/13 08:12	08/30/13 14:02	
1,2,2-Tetrachloroethane	5.1	U	5.1	0.73	ug/Kg	₽	08/26/13 08:12	08/30/13 14:02	
etrachloroethene	5.1	U	5.1	0.86	ug/Kg	₽	08/26/13 08:12	08/30/13 14:02	
luene	5.1	U	5.1	0.71	ug/Kg		08/26/13 08:12	08/30/13 14:02	
ans-1,2-Dichloroethene	5.1		5.1		ug/Kg	₽	08/26/13 08:12	08/30/13 14:02	
ans-1,3-Dichloropropene	5.1		5.1		ug/Kg	₽	08/26/13 08:12	08/30/13 14:02	
2,4-Trichlorobenzene	5.1		5.1		ug/Kg		08/26/13 08:12	08/30/13 14:02	
1,1-Trichloroethane	5.1		5.1	1.1	ug/Kg ug/Kg	₽	08/26/13 08:12	08/30/13 14:02	
1,2-Trichloroethane	5.1		5.1	0.94	ug/Kg ug/Kg	<b>#</b>	08/26/13 08:12	08/30/13 14:02	
richloroethene	5.1		5.1		ug/Kg ug/Kg		08/26/13 08:12	08/30/13 14:02	

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93550-1

Client Sample ID: SB03-08 (1.0-2.0)

Lab Sample ID: 680-93550-5 Matrix: Solid

Date Collected: 08/22/13 10:30 Date Received: 08/23/13 09:28

Percent Solids: 75.4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichlorofluoromethane	7.7		5.1	0.97	ug/Kg	₩	08/26/13 08:12	08/30/13 14:02	1
1,1,2-Trichloro-1,2,2-trifluoroethane	5.1	U	5.1	2.0	ug/Kg	₽	08/26/13 08:12	08/30/13 14:02	1
Vinyl chloride	5.1	U	5.1	0.94	ug/Kg	₽	08/26/13 08:12	08/30/13 14:02	1
Xylenes, Total	10	U	10	1.9	ug/Kg	₽	08/26/13 08:12	08/30/13 14:02	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	108		72 - 122				08/26/13 08:12	08/30/13 14:02	1
Dibromofluoromethane	87		79 - 123				08/26/13 08:12	08/30/13 14:02	1
Toluene-d8 (Surr)	97		80 - 120				08/26/13 08:12	08/30/13 14:02	1

Toluene-as (Surr)	97		80 - 120				08/26/13 08:12	08/30/13 14:02	1
Method: 8270D - Semivolatile O	•	nds (GC/M	S)	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Analyte Benzaldehyde		U	430	76	ug/Kg	— <del>ö</del>	08/26/13 14:24	Analyzed 08/27/13 15:48	1
Phenol	430	-	430	45	ug/Kg ug/Kg		08/26/13 14:24	08/27/13 15:48	1
Bis(2-chloroethyl)ether	430		430	59	ug/Kg ug/Kg		08/26/13 14:24	08/27/13 15:48	1
2-Chlorophenol	430		430	53	ug/Kg		08/26/13 14:24	08/27/13 15:48	
2-Methylphenol	430		430	36	ug/Kg ug/Kg	₽	08/26/13 14:24	08/27/13 15:48	1
bis (2-chloroisopropyl) ether	430		430	40	ug/Kg ug/Kg	₩	08/26/13 14:24	08/27/13 15:48	1
Acetophenone	430		430		ug/Kg ug/Kg	· · · · · · · · · · · ·	08/26/13 14:24	08/27/13 15:48	
3 & 4 Methylphenol	430		430		ug/Kg ug/Kg		08/26/13 14:24	08/27/13 15:48	1
N-Nitrosodi-n-propylamine	430		430		ug/Kg ug/Kg		08/26/13 14:24	08/27/13 15:48	1
Hexachloroethane	430		430	37	ug/Kg ug/Kg	· · · · · · · · · · ·	08/26/13 14:24	08/27/13 15:48	<mark>'</mark> 1
Nitrobenzene	430		430	34	ug/Kg ug/Kg		08/26/13 14:24	08/27/13 15:48	1
	430		430	43	ug/Kg ug/Kg		08/26/13 14:24	08/27/13 15:48	1
Isophorone 2 Nitrophonol	430		430	54	ug/Kg ug/Kg		08/26/13 14:24	08/27/13 15:48	1
2-Nitrophenol			430			~ \$			1
2,4-Dimethylphenol	430 430		430	58 54	ug/Kg	~ \$	08/26/13 14:24 08/26/13 14:24	08/27/13 15:48	1
Bis(2-chloroethoxy)methane				51	ug/Kg			08/27/13 15:48	
2,4-Dichlorophenol	430		430		ug/Kg	<b>₩</b>	08/26/13 14:24	08/27/13 15:48	1
Naphthalene	94		430	40	ug/Kg		08/26/13 14:24	08/27/13 15:48	1
4-Chloroaniline	870		870	69	ug/Kg	<u></u>	08/26/13 14:24	08/27/13 15:48	
Hexachlorobutadiene	430		430	47	0 0	₩	08/26/13 14:24	08/27/13 15:48	1
Caprolactam	430		430	87	ug/Kg	₩	08/26/13 14:24	08/27/13 15:48	1
4-Chloro-3-methylphenol	430		430	46	ug/Kg	<u></u>	08/26/13 14:24	08/27/13 15:48	1
2-Methylnaphthalene	220		430	50	ug/Kg	*	08/26/13 14:24	08/27/13 15:48	1
Hexachlorocyclopentadiene	430		430	54	ug/Kg	₩	08/26/13 14:24	08/27/13 15:48	1
2,4,6-Trichlorophenol	430		430	38	ug/Kg		08/26/13 14:24	08/27/13 15:48	
2,4,5-Trichlorophenol	430	U	430	46	ug/Kg	₩	08/26/13 14:24	08/27/13 15:48	1
1,1'-Biphenyl	980	U	980	980	ug/Kg	₩	08/26/13 14:24	08/27/13 15:48	1
2-Chloronaphthalene	430	U	430	46	ug/Kg		08/26/13 14:24	08/27/13 15:48	1
2-Nitroaniline	2200	U	2200	59	ug/Kg	₩	08/26/13 14:24	08/27/13 15:48	1
Dimethyl phthalate	430	U	430	45	ug/Kg	₩	08/26/13 14:24	08/27/13 15:48	1
2,6-Dinitrotoluene	430	U	430	55	ug/Kg	₽	08/26/13 14:24	08/27/13 15:48	1
Acenaphthylene	430	U	430	47	ug/Kg	₩	08/26/13 14:24	08/27/13 15:48	1
3-Nitroaniline	2200	U	2200	61	ug/Kg	₩	08/26/13 14:24	08/27/13 15:48	1
Acenaphthene	430	U	430	54	ug/Kg	₩	08/26/13 14:24	08/27/13 15:48	1
2,4-Dinitrophenol	2200	U	2200	1100	ug/Kg	₩	08/26/13 14:24	08/27/13 15:48	1
4-Nitrophenol	2200	U	2200	430	ug/Kg	₩	08/26/13 14:24	08/27/13 15:48	1
Dibenzofuran	430	U	430	43	ug/Kg	₩	08/26/13 14:24	08/27/13 15:48	1
2,4-Dinitrotoluene	430	U	430	65	ug/Kg	₩.	08/26/13 14:24	08/27/13 15:48	1
Diethyl phthalate	430	U	430	49	ug/Kg	₩	08/26/13 14:24	08/27/13 15:48	1

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Analyte

ORO C24-C40

o-Terphenyl (Surr)

Surrogate

Diesel Range Organics [C10-C28]

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB03-08 (1.0-2.0)

Date Collected: 08/22/13 10:30 Date Received: 08/23/13 09:28 Lab Sample ID: 680-93550-5

Matrix: Solid

Percent Solids: 75.4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluorene	430	U	430	47	ug/Kg	₽	08/26/13 14:24	08/27/13 15:48	
4-Chlorophenyl phenyl ether	430	U	430	58	ug/Kg	₽	08/26/13 14:24	08/27/13 15:48	
4-Nitroaniline	2200	U	2200	65	ug/Kg	₩	08/26/13 14:24	08/27/13 15:48	
4,6-Dinitro-2-methylphenol	2200	U	2200	220	ug/Kg	₩	08/26/13 14:24	08/27/13 15:48	
N-Nitrosodiphenylamine	430	U	430	43	ug/Kg	*	08/26/13 14:24	08/27/13 15:48	
4-Bromophenyl phenyl ether	430	U	430	47	ug/Kg	₩	08/26/13 14:24	08/27/13 15:48	
Hexachlorobenzene	430	U	430	51	ug/Kg	₩	08/26/13 14:24	08/27/13 15:48	
Atrazine	430	U	430	30	ug/Kg	₽	08/26/13 14:24	08/27/13 15:48	
Pentachlorophenol	2200	U	2200	430	ug/Kg	₽	08/26/13 14:24	08/27/13 15:48	
Phenanthrene	39	J	430	36	ug/Kg	₽	08/26/13 14:24	08/27/13 15:48	
Anthracene	430	U	430	33	ug/Kg	₽	08/26/13 14:24	08/27/13 15:48	
Carbazole	430	U	430	40	ug/Kg	₽	08/26/13 14:24	08/27/13 15:48	
Di-n-butyl phthalate	430	U	430	40	ug/Kg	☼	08/26/13 14:24	08/27/13 15:48	
Fluoranthene	430	U	430	42	ug/Kg	₩	08/26/13 14:24	08/27/13 15:48	
Pyrene	430	U	430	36	ug/Kg	₽	08/26/13 14:24	08/27/13 15:48	
Butyl benzyl phthalate	430	U	430	34	ug/Kg	₽	08/26/13 14:24	08/27/13 15:48	
3,3'-Dichlorobenzidine	870	U	870	37	ug/Kg		08/26/13 14:24	08/27/13 15:48	
Benzo[a]anthracene	430	U	430	36	ug/Kg	₽	08/26/13 14:24	08/27/13 15:48	
Chrysene	430	U	430	28	ug/Kg	₽	08/26/13 14:24	08/27/13 15:48	
Bis(2-ethylhexyl) phthalate	430	U	430	38	ug/Kg	\$	08/26/13 14:24	08/27/13 15:48	
Di-n-octyl phthalate	430	U	430	38	ug/Kg	₽	08/26/13 14:24	08/27/13 15:48	
Benzo[b]fluoranthene	430	U	430	50	ug/Kg	₽	08/26/13 14:24	08/27/13 15:48	
Benzo[k]fluoranthene	430	U	430	86	ug/Kg		08/26/13 14:24	08/27/13 15:48	
Benzo[a]pyrene	430	U	430	69	ug/Kg	₽	08/26/13 14:24	08/27/13 15:48	
Indeno[1,2,3-cd]pyrene	430	U	430	37	ug/Kg	₽	08/26/13 14:24	08/27/13 15:48	
Dibenz(a,h)anthracene	430	U	430	51	ug/Kg		08/26/13 14:24	08/27/13 15:48	
Benzo[g,h,i]perylene	430	U	430	29	ug/Kg	₽	08/26/13 14:24	08/27/13 15:48	
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fa
Nitrobenzene-d5 (Surr)	71		46 - 130				08/26/13 14:24	08/27/13 15:48	
2-Fluorobiphenyl	81		58 - 130				08/26/13 14:24	08/27/13 15:48	
Terphenyl-d14 (Surr)	84		60 - 130				08/26/13 14:24	08/27/13 15:48	
Phenol-d5 (Surr)	80		49 - 130				08/26/13 14:24	08/27/13 15:48	
2-Fluorophenol (Surr)	71		40 - 130				08/26/13 14:24	08/27/13 15:48	
2,4,6-Tribromophenol (Surr)	90		58 <sub>-</sub> 130				08/26/13 14:24	08/27/13 15:48	
					_				
Method: 8015C - Nonhalogenate <sup>Analyte</sup>	_	ng GC/FID - Qualifier	Modified (Gaso RL		ge Organ Unit	ics) D	Prepared	Analyzed	Dil Fa
Gasoline Range Organics (GRO)	2300		250		ug/Kg	<u> </u>	08/26/13 09:31	08/26/13 17:09	
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fa
a,a,a-Trifluorotoluene	95		70 - 131				08/26/13 09:31	08/26/13 17:09	

TestAmerica Savannah

Analyzed

08/29/13 19:56

08/29/13 19:56

Analyzed

08/29/13 19:56

RL

6500

6500

Limits

50 - 150

MDL Unit

1800 ug/Kg

ug/Kg

1800

D

Prepared

08/28/13 08:56

08/28/13 08:56

Prepared

08/28/13 08:56

Result Qualifier

32000

37000 B

%Recovery Qualifier

68

Dil Fac

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93550-1

Client Sample ID: SB03-08 (3.0-4.0)

Lab Sample ID: 680-93550-6

Date Collected: 08/22/13 10:40

Date Received: 08/23/13 09:28

Matrix: Solid
Percent Solids: 81.5

Method: 8260B - Volatile Organi <sup>Analyte</sup>	-	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil F
Acetone		J	23	6.8	ug/Kg	— <del>-</del>	08/26/13 08:12	08/30/13 14:29	
Benzene	4.7		4.7	0.46	ug/Kg	₩	08/26/13 08:12	08/30/13 14:29	
Bromodichloromethane	4.7		4.7	0.78	ug/Kg	⇔	08/26/13 08:12	08/30/13 14:29	
Bromoform	4.7		4.7	0.59	ug/Kg		08/26/13 08:12	08/30/13 14:29	
Bromomethane	4.7		4.7	1.3	ug/Kg	*	08/26/13 08:12	08/30/13 14:29	
Carbon disulfide	4.7		4.7	1.1	ug/Kg	*	08/26/13 08:12	08/30/13 14:29	
Carbon tetrachloride	4.7		4.7		ug/Kg	· · · · · · · · · · · · · · · · · · ·	08/26/13 08:12	08/30/13 14:29	
Chlorobenzene	4.7		4.7	0.49	ug/Kg	₽	08/26/13 08:12	08/30/13 14:29	
Chloroethane	4.7		4.7	1.8	ug/Kg ug/Kg	*	08/26/13 08:12	08/30/13 14:29	
Chloroform	4.7		4.7	0.55	ug/Kg		08/26/13 08:12	08/30/13 14:29	
Chloromethane	4.7		4.7	0.93	ug/Kg ug/Kg		08/26/13 08:12	08/30/13 14:29	
cis-1,2-Dichloroethene	4.7		4.7	0.93	ug/Kg ug/Kg		08/26/13 08:12	08/30/13 14:29	
cis-1,3-Dichloropropene	4.7 4.7		4.7 4.7	1.1	ug/Kg	~ \$	08/26/13 08:12 08/26/13 08:12	08/30/13 14:29 08/30/13 14:29	
Cyclohexane Dibromochloromethane	4.7		4.7	0.88	ug/Kg	~ \$		08/30/13 14:29	
				0.81	ug/Kg	<del></del> .	08/26/13 08:12 08/26/13 08:12	08/30/13 14:29	
1,2-Dibromo-3-Chloropropane	4.7		4.7		ug/Kg	~ \$			
1,2-Dichlorobenzene	4.7		4.7	0.66	ug/Kg		08/26/13 08:12	08/30/13 14:29	
1,3-Dichlorobenzene	4.7		4.7	0.89	ug/Kg	 	08/26/13 08:12	08/30/13 14:29	
1,4-Dichlorobenzene	4.7		4.7	0.77	ug/Kg		08/26/13 08:12	08/30/13 14:29	
Dichlorodifluoromethane	4.7		4.7		ug/Kg	*	08/26/13 08:12	08/30/13 14:29	
I,1-Dichloroethane	4.7		4.7	0.77	ug/Kg	<u>.</u>	08/26/13 08:12	08/30/13 14:29	
I,2-Dichloroethane	4.7		4.7	0.77	ug/Kg	₽	08/26/13 08:12	08/30/13 14:29	
1,1-Dichloroethene	4.7		4.7	0.70	ug/Kg	<b>*</b>	08/26/13 08:12	08/30/13 14:29	
1,2-Dichloropropane	4.7		4.7	0.69	ug/Kg	<u>.</u>	08/26/13 08:12	08/30/13 14:29	
Diisopropyl ether	4.7		4.7	0.51	ug/Kg	<b>.</b>	08/26/13 08:12	08/30/13 14:29	
Ethylbenzene	4.7		4.7	0.57	ug/Kg	<b>.</b>	08/26/13 08:12	08/30/13 14:29	
Ethylene Dibromide	4.7		4.7	0.45	ug/Kg		08/26/13 08:12	08/30/13 14:29	
Ethyl tert-butyl ether	4.7		4.7	0.52		₽	08/26/13 08:12	08/30/13 14:29	
2-Hexanone	23	U	23	4.7	ug/Kg	₩	08/26/13 08:12	08/30/13 14:29	
sopropylbenzene	4.7	U	4.7	0.63	0 0		08/26/13 08:12	08/30/13 14:29	
Methyl acetate	4.7		4.7	4.3	0 0	₩	08/26/13 08:12	08/30/13 14:29	
Methylcyclohexane	4.7	U	4.7	0.81	ug/Kg	₩	08/26/13 08:12	08/30/13 14:29	
Methylene Chloride	14	U	14	9.3	ug/Kg	≎	08/26/13 08:12	08/30/13 14:29	
Methyl Ethyl Ketone	23	U	23	3.8	ug/Kg	₽	08/26/13 08:12	08/30/13 14:29	
methyl isobutyl ketone	23	U	23	3.7	ug/Kg	₽	08/26/13 08:12	08/30/13 14:29	
Methyl tert-butyl ether	4.7	U	4.7	0.93	ug/Kg	₽	08/26/13 08:12	08/30/13 14:29	
Naphthalene	4.7	U	4.7	0.93	ug/Kg	₩	08/26/13 08:12	08/30/13 14:29	
Styrene	4.7	U	4.7	0.71	ug/Kg	₩	08/26/13 08:12	08/30/13 14:29	
ert-amyl methyl ether	4.7	U	4.7	0.41	ug/Kg	₩	08/26/13 08:12	08/30/13 14:29	
ert-Butyl alcohol	4.7	U	4.7	3.2	ug/Kg	₽	08/26/13 08:12	08/30/13 14:29	
,1,2,2-Tetrachloroethane	4.7	U	4.7	0.67	ug/Kg	₽	08/26/13 08:12	08/30/13 14:29	
Fetrachloroethene	4.7	U	4.7	0.78	ug/Kg	₽	08/26/13 08:12	08/30/13 14:29	
Toluene	4.7	U	4.7	0.65	ug/Kg		08/26/13 08:12	08/30/13 14:29	
rans-1,2-Dichloroethene	4.7	U	4.7	0.71	ug/Kg	₽	08/26/13 08:12	08/30/13 14:29	
rans-1,3-Dichloropropene	4.7	U	4.7	0.86	ug/Kg	₽	08/26/13 08:12	08/30/13 14:29	
,2,4-Trichlorobenzene	4.7		4.7		ug/Kg		08/26/13 08:12	08/30/13 14:29	
,1,1-Trichloroethane	4.7		4.7		ug/Kg	₽	08/26/13 08:12	08/30/13 14:29	
,1,2-Trichloroethane	4.7		4.7		ug/Kg	₽	08/26/13 08:12	08/30/13 14:29	
Frichloroethene	4.7		4.7		ug/Kg	<del>.</del> .	08/26/13 08:12	08/30/13 14:29	

TestAmerica Savannah

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

Lab Cample ID: COO COEEO C

TestAmerica Job ID: 680-93550-1

Client Sample ID: SB03-08 (3.0-4.0)

Lab Sample ID: 680-93550-6

Date Collected: 08/22/13 10:40
Date Received: 08/23/13 09:28

Matrix: Solid
Percent Solids: 81.5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichlorofluoromethane	5.1		4.7	0.89	ug/Kg	₩	08/26/13 08:12	08/30/13 14:29	1
1,1,2-Trichloro-1,2,2-trifluoroethane	4.7	U	4.7	1.9	ug/Kg	₽	08/26/13 08:12	08/30/13 14:29	1
Vinyl chloride	4.7	U	4.7	0.86	ug/Kg	₽	08/26/13 08:12	08/30/13 14:29	1
Xylenes, Total	9.3	U	9.3	1.8	ug/Kg	₽	08/26/13 08:12	08/30/13 14:29	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	110		72 - 122				08/26/13 08:12	08/30/13 14:29	1
Dibromofluoromethane	88		79 - 123				08/26/13 08:12	08/30/13 14:29	1
Toluene-d8 (Surr)	101		80 - 120				08/26/13 08:12	08/30/13 14:29	1

Toluene-d8 (Surr) -	101		80 - 120				08/26/13 08:12	08/30/13 14:29	1
- Method: 8270D - Semivolatile C	rganic Compou	nds (GC/M	5)						
Analyte		Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzaldehyde	400	U	400	70	ug/Kg	<del></del>	08/26/13 14:24	08/27/13 16:13	1
Phenol	400	U	400	41	ug/Kg	₩	08/26/13 14:24	08/27/13 16:13	1
Bis(2-chloroethyl)ether	400	U	400	54	ug/Kg	₩	08/26/13 14:24	08/27/13 16:13	1
2-Chlorophenol	400	U	400	48	ug/Kg	₽	08/26/13 14:24	08/27/13 16:13	1
2-Methylphenol	400	U	400	33	ug/Kg	₽	08/26/13 14:24	08/27/13 16:13	1
bis (2-chloroisopropyl) ether	400	U	400	36	ug/Kg	₽	08/26/13 14:24	08/27/13 16:13	1
Acetophenone	400	U	400	34	ug/Kg	₽	08/26/13 14:24	08/27/13 16:13	1
3 & 4 Methylphenol	400	U	400	52	ug/Kg	₽	08/26/13 14:24	08/27/13 16:13	1
N-Nitrosodi-n-propylamine	400	U	400	39	ug/Kg	₽	08/26/13 14:24	08/27/13 16:13	1
Hexachloroethane	400	U	400	34	ug/Kg	₽	08/26/13 14:24	08/27/13 16:13	1
Nitrobenzene	400	U	400	31	ug/Kg	₩	08/26/13 14:24	08/27/13 16:13	1
Isophorone	400	U	400	40	ug/Kg	₽	08/26/13 14:24	08/27/13 16:13	1
2-Nitrophenol	400	U	400	50	ug/Kg	\$	08/26/13 14:24	08/27/13 16:13	1
2,4-Dimethylphenol	400	U	400	53	ug/Kg	☼	08/26/13 14:24	08/27/13 16:13	1
Bis(2-chloroethoxy)methane	400	U	400	47	ug/Kg	☼	08/26/13 14:24	08/27/13 16:13	1
2,4-Dichlorophenol	400	U	400	42	ug/Kg	\$	08/26/13 14:24	08/27/13 16:13	1
Naphthalene	400	U	400	36	ug/Kg	₽	08/26/13 14:24	08/27/13 16:13	1
4-Chloroaniline	800	U	800	63	ug/Kg	₽	08/26/13 14:24	08/27/13 16:13	1
Hexachlorobutadiene	400	U	400	44	ug/Kg		08/26/13 14:24	08/27/13 16:13	1
Caprolactam	400	U	400	80	ug/Kg	₽	08/26/13 14:24	08/27/13 16:13	1
4-Chloro-3-methylphenol	400	U	400	42	ug/Kg	₩	08/26/13 14:24	08/27/13 16:13	1
2-Methylnaphthalene	400	U	400	46	ug/Kg	φ	08/26/13 14:24	08/27/13 16:13	1
Hexachlorocyclopentadiene	400	U	400	50	ug/Kg	₩	08/26/13 14:24	08/27/13 16:13	1
2,4,6-Trichlorophenol	400	U	400	35	ug/Kg	₽	08/26/13 14:24	08/27/13 16:13	1
2,4,5-Trichlorophenol	400	U	400	42	ug/Kg	φ	08/26/13 14:24	08/27/13 16:13	1
1,1'-Biphenyl	900	U	900	900	ug/Kg	₽	08/26/13 14:24	08/27/13 16:13	1
2-Chloronaphthalene	400	U	400	42	ug/Kg	₽	08/26/13 14:24	08/27/13 16:13	1
2-Nitroaniline	2100	U	2100	54	ug/Kg	φ.	08/26/13 14:24	08/27/13 16:13	1
Dimethyl phthalate	400	U	400	41	ug/Kg	₽	08/26/13 14:24	08/27/13 16:13	1
2,6-Dinitrotoluene	400	U	400	51	ug/Kg	₽	08/26/13 14:24	08/27/13 16:13	1
Acenaphthylene	400	U	400	44			08/26/13 14:24	08/27/13 16:13	1
3-Nitroaniline	2100	U	2100	56	ug/Kg	₽	08/26/13 14:24	08/27/13 16:13	1
Acenaphthene	93		400	50	ug/Kg	₽	08/26/13 14:24	08/27/13 16:13	1
2,4-Dinitrophenol	2100		2100	1000	ug/Kg		08/26/13 14:24	08/27/13 16:13	1
4-Nitrophenol	2100		2100	400	ug/Kg	₩	08/26/13 14:24	08/27/13 16:13	1
Dibenzofuran	400		400	40	ug/Kg	₩	08/26/13 14:24	08/27/13 16:13	1
2,4-Dinitrotoluene	400		400	59	ug/Kg		08/26/13 14:24	08/27/13 16:13	· · · · · · · · · · · · · · · · · · ·
Diethyl phthalate	400		400		ug/Kg		08/26/13 14:24	08/27/13 16:13	1
Dietityi prittialate	400	J	400	40	ug/itg	-0	00/20/10 14.24	00/21/13 10.13	1

TestAmerica Savannah

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11

ORO C24-C40

o-Terphenyl (Surr)

Surrogate

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB03-08 (3.0-4.0)

Date Collected: 08/22/13 10:40

Date Received: 08/23/13 09:28

Lab Sample ID: 680-93550-6

Matrix: Solid

Percent Solids: 81.5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluorene	200	J	400	44	ug/Kg	₩	08/26/13 14:24	08/27/13 16:13	1
4-Chlorophenyl phenyl ether	400	U	400	53	ug/Kg	₽	08/26/13 14:24	08/27/13 16:13	1
4-Nitroaniline	2100	U	2100	59	ug/Kg	₩	08/26/13 14:24	08/27/13 16:13	1
4,6-Dinitro-2-methylphenol	2100	U	2100	210	ug/Kg	₩	08/26/13 14:24	08/27/13 16:13	1
N-Nitrosodiphenylamine	400	U	400	40	ug/Kg	₽	08/26/13 14:24	08/27/13 16:13	1
4-Bromophenyl phenyl ether	400	U	400	44	ug/Kg	☼	08/26/13 14:24	08/27/13 16:13	1
Hexachlorobenzene	400	U	400	47	ug/Kg	₩	08/26/13 14:24	08/27/13 16:13	1
Atrazine	400	U	400	28	ug/Kg	₽	08/26/13 14:24	08/27/13 16:13	1
Pentachlorophenol	2100	U	2100	400	ug/Kg	₽	08/26/13 14:24	08/27/13 16:13	1
Phenanthrene	400	U	400	33	ug/Kg	₽	08/26/13 14:24	08/27/13 16:13	1
Anthracene	400	U	400	30	ug/Kg	₩.	08/26/13 14:24	08/27/13 16:13	1
Carbazole	400	U	400	36	ug/Kg	₽	08/26/13 14:24	08/27/13 16:13	1
Di-n-butyl phthalate	400	U	400	36	ug/Kg	₽	08/26/13 14:24	08/27/13 16:13	1
Fluoranthene	400	U	400	39	ug/Kg	φ.	08/26/13 14:24	08/27/13 16:13	1
Pyrene	400	U	400	33	ug/Kg	₽	08/26/13 14:24	08/27/13 16:13	1
Butyl benzyl phthalate	400	U	400	31	ug/Kg	₽	08/26/13 14:24	08/27/13 16:13	1
3,3'-Dichlorobenzidine	800	U	800	34	ug/Kg		08/26/13 14:24	08/27/13 16:13	1
Benzo[a]anthracene	400	U	400	33	ug/Kg	₩	08/26/13 14:24	08/27/13 16:13	1
Chrysene	400	U	400	25		₩	08/26/13 14:24	08/27/13 16:13	1
Bis(2-ethylhexyl) phthalate	400	U	400	35			08/26/13 14:24	08/27/13 16:13	1
Di-n-octyl phthalate	400	U	400	35		₩	08/26/13 14:24	08/27/13 16:13	1
Benzo[b]fluoranthene	400	U	400	46		₩	08/26/13 14:24	08/27/13 16:13	1
Benzo[k]fluoranthene	400	U	400	79	ug/Kg		08/26/13 14:24	08/27/13 16:13	1
Benzo[a]pyrene	400	U	400	63		₩	08/26/13 14:24	08/27/13 16:13	1
Indeno[1,2,3-cd]pyrene	400	U	400	34		₩	08/26/13 14:24	08/27/13 16:13	1
Dibenz(a,h)anthracene	400		400	47	ug/Kg		08/26/13 14:24	08/27/13 16:13	1
Benzo[g,h,i]perylene	400	U	400		ug/Kg	₽	08/26/13 14:24	08/27/13 16:13	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	63		46 - 130				08/26/13 14:24	08/27/13 16:13	1
2-Fluorobiphenyl	86		58 - 130				08/26/13 14:24	08/27/13 16:13	1
Terphenyl-d14 (Surr)	86		60 - 130				08/26/13 14:24	08/27/13 16:13	1
Phenol-d5 (Surr)	78		49 - 130				08/26/13 14:24	08/27/13 16:13	1
2-Fluorophenol (Surr)	68		40 - 130				08/26/13 14:24	08/27/13 16:13	1
2,4,6-Tribromophenol (Surr)	91		58 - 130				08/26/13 14:24	08/27/13 16:13	1
Method: 8015C - Nonhalogenate	d Organics usi	ng GC/FID	-Modified (Gaso	oline Ran	ige Organ	ics)			
Analyte	_	Qualifier	RL		Unit	Ď	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO) -C6-C10	180	J	230	18	ug/Kg	<del></del>	08/26/13 09:31	08/28/13 22:59	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene	77		70 - 131				08/26/13 09:31	08/28/13 22:59	1
Method: 8015C - Nonhalogenate	d Organics usi	ng GC/FID	-Modified (Dies	el Range	Organics	s)			
Analyte		Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	57000		6000	1700	ug/Kg	<u></u>	08/28/13 08:56	08/29/13 20:12	1
			0000			· ·	00/00/40 00:50	00/00/40 00 40	

TestAmerica Savannah

08/29/13 20:12

Analyzed

08/29/13 20:12

08/28/13 08:56

Prepared

08/28/13 08:56

6000

Limits

50 - 150

1700 ug/Kg

79000 B

%Recovery Qualifier

74

Client: ARCADIS U.S., Inc.

Methyl Ethyl Ketone

methyl isobutyl ketone

Methyl tert-butyl ether

Tert-amyl methyl ether

1,1,2,2-Tetrachloroethane

trans-1,2-Dichloroethene

trans-1,3-Dichloropropene

1,2,4-Trichlorobenzene

1,1,1-Trichloroethane

1,1,2-Trichloroethane

Trichloroethene

tert-Butyl alcohol

Tetrachloroethene

Naphthalene

Styrene

Toluene

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93550-1

Client Sample ID: SB03-09 (1.0-2.0) Lab Sample ID: 680-93550-7 Date Collected: 08/22/13 10:50 Matrix: Solid

Percent Solids: 76.3

Date Received: 08/23/13 09:28 Method: 8260B - Volatile Organic Compounds (GC/MS) RL MDL D Dil Fac Result Qualifier Unit Prepared Analyzed 28 Ū 28 08/26/13 08:13 Acetone 8.2 ug/Kg 08/30/13 14:57 Benzene 56 U 56 ug/Kg 08/26/13 08:13 08/30/13 14:57 0.55 ä Bromodichloromethane 5.6 U 5.6 0.94 ug/Kg 08/26/13 08:13 08/30/13 14:57 φ 5.6 U 5.6 0.71 08/26/13 08:13 08/30/13 14:57 Bromoform ug/Kg Bromomethane 5.6 U 5.6 ug/Kg 08/26/13 08:13 08/30/13 14:57 \$ 08/26/13 08:13 Carbon disulfide 56 U 56 13 ug/Kg 08/30/13 14:57 φ Carbon tetrachloride 5.6 U 5.6 1.9 ug/Kg 08/26/13 08:13 08/30/13 14:57 5.6 U 5.6 08/26/13 08:13 Chlorobenzene 0.58 ug/Kg 08/30/13 14:57 ä Chloroethane 5.6 U 5.6 2.1 ug/Kg 08/26/13 08:13 08/30/13 14:57 ġ Chloroform 5.6 U 5.6 0.66 ug/Kg 08/26/13 08:13 08/30/13 14:57 ġ Chloromethane 5.6 U 5.6 1.1 ug/Kg 08/26/13 08:13 08/30/13 14:57 ď 08/26/13 08:13 cis-1,2-Dichloroethene 5.6 U 5.6 0.85 ug/Kg 08/30/13 14:57 ġ cis-1,3-Dichloropropene 56 U 56 1.3 ug/Kg 08/26/13 08:13 08/30/13 14:57 Cyclohexane 5.6 5.6 1.1 ug/Kg 08/26/13 08:13 08/30/13 14:57 ġ 56 U 0.98 08/26/13 08:13 08/30/13 14:57 Dibromochloromethane 56 ug/Kg à 1,2-Dibromo-3-Chloropropane 5.6 U 5.6 08/26/13 08:13 08/30/13 14:57 3.7 ug/Kg 08/26/13 08:13 1.2-Dichlorobenzene 5.6 U 5.6 0.80 ug/Kg 08/30/13 14:57 1,3-Dichlorobenzene 5.6 U 08/26/13 08:13 08/30/13 14:57 5.6 1.1 ug/Kg 5.6 U ψ 08/26/13 08:13 08/30/13 14:57 1.4-Dichlorobenzene 5.6 0.92 ug/Kg ₩ Dichlorodifluoromethane 5.6 U 5.6 1.5 ug/Kg 08/26/13 08:13 08/30/13 14:57 ₽ 08/30/13 14:57 1,1-Dichloroethane 5.6 U 5.6 0.93 ua/Ka 08/26/13 08:13 ψ 56 U 1.2-Dichloroethane 5.6 0.92 ug/Kg 08/26/13 08:13 08/30/13 14:57 ₩ 1,1-Dichloroethene 5.6 U 5.6 08/26/13 08:13 08/30/13 14:57 0.84 ua/Ka ġ 1,2-Dichloropropane 5.6 U 5.6 0.83 ug/Kg 08/26/13 08:13 08/30/13 14:57 Diisopropyl ether 5.6 U 5.6 0.62 ug/Kg 08/26/13 08:13 08/30/13 14:57 0.69 56 U 5.6 08/26/13 08:13 08/30/13 14:57 Ethylbenzene ug/Kg Ethylene Dibromide 08/26/13 08:13 5.6 U 5.6 0.54 ug/Kg 08/30/13 14:57 Ethyl tert-butyl ether 5.6 U 0.63 08/26/13 08:13 08/30/13 14:57 5.6 ug/Kg ₩ 28 U 28 08/26/13 08:13 08/30/13 14:57 2-Hexanone ug/Kg 5.6 U 0.76 08/26/13 08:13 Isopropylbenzene 5.6 08/30/13 14:57 ug/Kg Methyl acetate 5.6 U 5.6 5.2 ug/Kg 08/26/13 08:13 08/30/13 14:57 ₽ Methylcyclohexane 5.6 U 5.6 0.98 ug/Kg 08/26/13 08:13 08/30/13 14:57 ₩ Methylene Chloride 17 U 17 ug/Kg 08/26/13 08:13 08/30/13 14:57

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4.5 ug/Kg

1.1 ua/Ka

1.1 ug/Kg

0.85 ug/Kg

0.49

3.8 ug/Kg

0.81

0.94

0.79

0.85

1.0 ug/Kg

0.82 ug/Kg

1.2 ug/Kg

1.0 ug/Kg

0.54 ug/Kg

ua/Ka

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08/30/13 14:57

08/30/13 14:57

28 U

28 U

5.6 U

5.6 U

5.6 U

56 U

5.6 
Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

Lab Sample ID: 680-93550-7

TestAmerica Job ID: 680-93550-1

Client Sample ID: SB03-09 (1.0-2.0)
Date Collected: 08/22/13 10:50

Matrix: Solid

Date Received: 08/23/13 09:28 Percent Solids: 76.3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichlorofluoromethane	6.0		5.6	1.1	ug/Kg	₩	08/26/13 08:13	08/30/13 14:57	1
1,1,2-Trichloro-1,2,2-trifluoroethane	5.6	U	5.6	2.2	ug/Kg	₽	08/26/13 08:13	08/30/13 14:57	1
Vinyl chloride	5.6	U	5.6	1.0	ug/Kg	₽	08/26/13 08:13	08/30/13 14:57	1
Xylenes, Total	11	U	11	2.1	ug/Kg	₩	08/26/13 08:13	08/30/13 14:57	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	102		72 - 122				08/26/13 08:13	08/30/13 14:57	1
Dibromofluoromethane	86		79 - 123				08/26/13 08:13	08/30/13 14:57	1
Toluene-d8 (Surr)	101		80 - 120				08/26/13 08:13	08/30/13 14:57	1

Toluene-as (Surr) -	101		80 - 120				08/26/13 08:13	08/30/13 14:57	7
Method: 8270D - Semivolatile C	•	nds (GC/M	S)	MDL	l l m i á	D	Prepared	Amalumad	Dil Fac
Analyte Benzaldehyde	430	U	430	76	ug/Kg	— <del>ÿ</del>	08/26/13 14:24	Analyzed 08/27/13 16:37	1
Phenol	430	-	430	45	ug/Kg ug/Kg		08/26/13 14:24	08/27/13 16:37	1
Bis(2-chloroethyl)ether	430		430	59	ug/Kg ug/Kg		08/26/13 14:24	08/27/13 16:37	1
2-Chlorophenol	430		430		ug/Kg ug/Kg		08/26/13 14:24	08/27/13 16:37	
2-Methylphenol	430		430	35	ug/Kg ug/Kg		08/26/13 14:24	08/27/13 16:37	1
bis (2-chloroisopropyl) ether	430		430	39	ug/Kg ug/Kg		08/26/13 14:24	08/27/13 16:37	1
Acetophenone	430		430		ug/Kg ug/Kg		08/26/13 14:24	08/27/13 16:37	· · · · · · · · · · · · · · · · · · ·
3 & 4 Methylphenol	430		430		ug/Kg ug/Kg		08/26/13 14:24	08/27/13 16:37	1
• •	430		430			~ ⇔	08/26/13 14:24		1
N-Nitrosodi-n-propylamine	430	U			ug/Kg	<del></del>	08/26/13 14:24	08/27/13 16:37	
Hexachloroethane			430	37	ug/Kg	~ ⇔		08/27/13 16:37	
Nitrobenzene	430		430	34	ug/Kg	₩	08/26/13 14:24	08/27/13 16:37	1
Isophorone	430		430	43	ug/Kg	· · · · · · · · · · · · · · · · · · ·	08/26/13 14:24	08/27/13 16:37	
2-Nitrophenol	430		430	54	ug/Kg	₩	08/26/13 14:24	08/27/13 16:37	1
2,4-Dimethylphenol	430		430	58	ug/Kg	₩	08/26/13 14:24	08/27/13 16:37	1
Bis(2-chloroethoxy)methane	430		430	51	ug/Kg		08/26/13 14:24	08/27/13 16:37	
2,4-Dichlorophenol	430		430		ug/Kg	*	08/26/13 14:24	08/27/13 16:37	1
Naphthalene	430		430	39	ug/Kg	*	08/26/13 14:24	08/27/13 16:37	1
4-Chloroaniline	860		860	68	ug/Kg	T	08/26/13 14:24	08/27/13 16:37	
Hexachlorobutadiene	430	U	430	47	0 0	*	08/26/13 14:24	08/27/13 16:37	1
Caprolactam	430		430	86	ug/Kg	*	08/26/13 14:24	08/27/13 16:37	1
4-Chloro-3-methylphenol	430		430		ug/Kg	₩	08/26/13 14:24	08/27/13 16:37	1
2-Methylnaphthalene	430		430	50	ug/Kg	₩	08/26/13 14:24	08/27/13 16:37	1
Hexachlorocyclopentadiene	430	U	430	54	ug/Kg	₩	08/26/13 14:24	08/27/13 16:37	1
2,4,6-Trichlorophenol	430	U	430	38	ug/Kg	<b>☆</b>	08/26/13 14:24	08/27/13 16:37	1
2,4,5-Trichlorophenol	430	U	430	46	ug/Kg	₩	08/26/13 14:24	08/27/13 16:37	1
1,1'-Biphenyl	970	U	970	970	ug/Kg	₩	08/26/13 14:24	08/27/13 16:37	1
2-Chloronaphthalene	430	U	430	46	ug/Kg	₩	08/26/13 14:24	08/27/13 16:37	1
2-Nitroaniline	2200	U	2200	59	ug/Kg	₩	08/26/13 14:24	08/27/13 16:37	1
Dimethyl phthalate	430	U	430	45	ug/Kg	₩	08/26/13 14:24	08/27/13 16:37	1
2,6-Dinitrotoluene	430	U	430	55	ug/Kg	₩	08/26/13 14:24	08/27/13 16:37	1
Acenaphthylene	430	U	430	47	ug/Kg	₩	08/26/13 14:24	08/27/13 16:37	1
3-Nitroaniline	2200	U	2200	60	ug/Kg	₩	08/26/13 14:24	08/27/13 16:37	1
Acenaphthene	430	U	430	54	ug/Kg	₩	08/26/13 14:24	08/27/13 16:37	1
2,4-Dinitrophenol	2200	U	2200	1100	ug/Kg	₽	08/26/13 14:24	08/27/13 16:37	1
4-Nitrophenol	2200	U	2200	430	ug/Kg	₩	08/26/13 14:24	08/27/13 16:37	1
Dibenzofuran	430	U	430	43	ug/Kg	₩	08/26/13 14:24	08/27/13 16:37	1
2,4-Dinitrotoluene	430	U	430	64	ug/Kg	₩	08/26/13 14:24	08/27/13 16:37	1
Diethyl phthalate	430	U	430	48	ug/Kg	₽	08/26/13 14:24	08/27/13 16:37	1

TestAmerica Savannah

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Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB03-09 (1.0-2.0)

Date Collected: 08/22/13 10:50 Date Received: 08/23/13 09:28 Lab Sample ID: 680-93550-7

Matrix: Solid

Percent Solids: 76.3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluorene	430	U	430	47	ug/Kg	₩	08/26/13 14:24	08/27/13 16:37	1
4-Chlorophenyl phenyl ether	430	U	430	58	ug/Kg	₽	08/26/13 14:24	08/27/13 16:37	1
4-Nitroaniline	2200	U	2200	64	ug/Kg	₽	08/26/13 14:24	08/27/13 16:37	1
4,6-Dinitro-2-methylphenol	2200	U	2200	220	ug/Kg	₽	08/26/13 14:24	08/27/13 16:37	1
N-Nitrosodiphenylamine	430	U	430	43	ug/Kg	₽	08/26/13 14:24	08/27/13 16:37	1
4-Bromophenyl phenyl ether	430	U	430	47	ug/Kg	₽	08/26/13 14:24	08/27/13 16:37	1
Hexachlorobenzene	430	U	430	51	ug/Kg	₽	08/26/13 14:24	08/27/13 16:37	1
Atrazine	430	U	430	30	ug/Kg	₽	08/26/13 14:24	08/27/13 16:37	1
Pentachlorophenol	2200	U	2200	430	ug/Kg	₽	08/26/13 14:24	08/27/13 16:37	1
Phenanthrene	430	U	430	35	ug/Kg	₽	08/26/13 14:24	08/27/13 16:37	1
Anthracene	430	U	430	33	ug/Kg	₽	08/26/13 14:24	08/27/13 16:37	1
Carbazole	430	U	430	39	ug/Kg	₽	08/26/13 14:24	08/27/13 16:37	1
Di-n-butyl phthalate	430	U	430	39	ug/Kg	₽	08/26/13 14:24	08/27/13 16:37	1
Fluoranthene	430	U	430	42	ug/Kg	₽	08/26/13 14:24	08/27/13 16:37	1
Pyrene	430	U	430	35	ug/Kg	₽	08/26/13 14:24	08/27/13 16:37	1
Butyl benzyl phthalate	430	U	430	34	ug/Kg	₽	08/26/13 14:24	08/27/13 16:37	1
3,3'-Dichlorobenzidine	860	U	860	37	ug/Kg	₽	08/26/13 14:24	08/27/13 16:37	1
Benzo[a]anthracene	430	U	430	35	ug/Kg	₽	08/26/13 14:24	08/27/13 16:37	1
Chrysene	430	U	430	28	ug/Kg	₽	08/26/13 14:24	08/27/13 16:37	1
Bis(2-ethylhexyl) phthalate	430	U	430	38	ug/Kg		08/26/13 14:24	08/27/13 16:37	1
Di-n-octyl phthalate	430	U	430	38	ug/Kg	₽	08/26/13 14:24	08/27/13 16:37	1
Benzo[b]fluoranthene	430	U	430	50	ug/Kg	₽	08/26/13 14:24	08/27/13 16:37	1
Benzo[k]fluoranthene	430	U	430	85	ug/Kg	₽	08/26/13 14:24	08/27/13 16:37	1
Benzo[a]pyrene	430	U	430	68	ug/Kg	₽	08/26/13 14:24	08/27/13 16:37	1
Indeno[1,2,3-cd]pyrene	430	U	430	37	ug/Kg	₩	08/26/13 14:24	08/27/13 16:37	1
Dibenz(a,h)anthracene	430	U	430	51	ug/Kg	₽	08/26/13 14:24	08/27/13 16:37	1
Benzo[g,h,i]perylene	430	U	430	29	ug/Kg	₽	08/26/13 14:24	08/27/13 16:37	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	57		46 - 130				08/26/13 14:24	08/27/13 16:37	1
2-Fluorobiphenyl	76		58 - 130				08/26/13 14:24	08/27/13 16:37	1
Terphenyl-d14 (Surr)	88		60 - 130				08/26/13 14:24	08/27/13 16:37	1
Phenol-d5 (Surr)	78		49 - 130				08/26/13 14:24	08/27/13 16:37	1
2-Fluorophenol (Surr)	78		40 - 130				08/26/13 14:24	08/27/13 16:37	1
2,4,6-Tribromophenol (Surr)	79		58 - 130				08/26/13 14:24	08/27/13 16:37	1
Method: 8015C - Nonhalogenate	d Organics usi	ng GC/FID ·	Modified (Gaso	line Ran	ge Organ	ics)			
Analyte	_	Qualifier	RL	MDL	-	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)	260		260		ug/Kg	<del>-</del>	08/26/13 09:31	08/29/13 13:08	

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analvzed	Dil Fac
		Quanner			Allalyzeu	- Dil i ac
a,a,a-Trifluorotoluene	111		70 - 131	08/26/13 09:31	08/29/13 13:08	1
	111		70 - 101	00/20/10 00:01	00/23/10 10:00	
Mathadi 00450 Nambalan		00/515				

	Method: 8015C - Nonhalogenated	Organics usi	ng GC/FID -	Modified (Dies	el Range	<b>Organics</b>	s)			
١	Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Diesel Range Organics [C10-C28]	4700	J	6500	1800	ug/Kg	<del></del>	08/28/13 08:56	08/29/13 20:28	1
	ORO C24-C40	4100	JB	6500	1800	ug/Kg	₽	08/28/13 08:56	08/29/13 20:28	1
	Surrogate o-Terphenyl (Surr)	%Recovery	Qualifier	Limits 50 - 150				Prepared 08/28/13 08:56	<b>Analyzed</b> 08/29/13 20:28	Dil Fac

TestAmerica Savannah

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

Lab Sample ID: 680-93550-8

TestAmerica Job ID: 680-93550-1

Matrix: Solid

Percent Solids: 82.4

Client Sample ID: SB03-09 (3.5-4.5)

Date Collected: 08/22/13 11:00 Date Received: 08/23/13 09:28

Analyte	Result	Qualifier	RL	MDL		D	Prepared	Analyzed	Dil Fa
Acetone	7.5	J	24	6.9	ug/Kg	\$	08/26/13 08:13	08/30/13 15:25	
Benzene	4.8	U	4.8	0.47	ug/Kg	₽	08/26/13 08:13	08/30/13 15:25	
Bromodichloromethane	4.8	U	4.8	0.80	ug/Kg	₽	08/26/13 08:13	08/30/13 15:25	
Bromoform	4.8	U	4.8	0.60	ug/Kg	₽	08/26/13 08:13	08/30/13 15:25	
Bromomethane	4.8	U	4.8	1.3	ug/Kg	₽	08/26/13 08:13	08/30/13 15:25	
Carbon disulfide	4.8	U	4.8	1.1	ug/Kg	₽	08/26/13 08:13	08/30/13 15:25	
Carbon tetrachloride	4.8	U	4.8	1.6	ug/Kg	\$	08/26/13 08:13	08/30/13 15:25	
Chlorobenzene	4.8	U	4.8	0.49	ug/Kg	₽	08/26/13 08:13	08/30/13 15:25	
Chloroethane	4.8	U	4.8	1.8	ug/Kg	₽	08/26/13 08:13	08/30/13 15:25	
Chloroform	4.8	U	4.8	0.56	ug/Kg	₽	08/26/13 08:13	08/30/13 15:25	
Chloromethane	4.8	U	4.8	0.95	ug/Kg	☼	08/26/13 08:13	08/30/13 15:25	
cis-1,2-Dichloroethene	4.8	U	4.8	0.72	ug/Kg	☼	08/26/13 08:13	08/30/13 15:25	
cis-1,3-Dichloropropene	4.8	U	4.8	1.1	ug/Kg		08/26/13 08:13	08/30/13 15:25	
Cyclohexane	4.8	U	4.8	0.89	ug/Kg	₽	08/26/13 08:13	08/30/13 15:25	
Dibromochloromethane	4.8	U	4.8	0.83	ug/Kg	₩	08/26/13 08:13	08/30/13 15:25	
1,2-Dibromo-3-Chloropropane	4.8	U	4.8	3.1	ug/Kg		08/26/13 08:13	08/30/13 15:25	
1,2-Dichlorobenzene	4.8	U	4.8	0.67	ug/Kg	₽	08/26/13 08:13	08/30/13 15:25	
1,3-Dichlorobenzene	4.8	U	4.8	0.90	ug/Kg	₽	08/26/13 08:13	08/30/13 15:25	
1,4-Dichlorobenzene	4.8		4.8	0.78	ug/Kg		08/26/13 08:13	08/30/13 15:25	
Dichlorodifluoromethane	4.8		4.8	1.2	ug/Kg	₩	08/26/13 08:13	08/30/13 15:25	
1,1-Dichloroethane	4.8		4.8	0.79	ug/Kg	₩	08/26/13 08:13	08/30/13 15:25	
1,2-Dichloroethane	4.8		4.8	0.78	ug/Kg		08/26/13 08:13	08/30/13 15:25	
1,1-Dichloroethene	4.8		4.8	0.71	ug/Kg	*	08/26/13 08:13	08/30/13 15:25	
1,2-Dichloropropane	4.8		4.8	0.70	ug/Kg ug/Kg	*	08/26/13 08:13	08/30/13 15:25	
Diisopropyl ether	4.8		4.8		ug/Kg		08/26/13 08:13	08/30/13 15:25	
Ethylbenzene	4.8		4.8		ug/Kg ug/Kg	₩	08/26/13 08:13	08/30/13 15:25	
Ethylene Dibromide	4.8		4.8		ug/Kg ug/Kg		08/26/13 08:13	08/30/13 15:25	
	4.8		4.8				08/26/13 08:13	08/30/13 15:25	
Ethyl tert-butyl ether	4.6		4.6 24	4.8	ug/Kg				
2-Hexanone	4.8		4.8		ug/Kg ug/Kg		08/26/13 08:13 08/26/13 08:13	08/30/13 15:25 08/30/13 15:25	
Isopropylbenzene									
Methyl acetate	4.8		4.8		ug/Kg	₩	08/26/13 08:13	08/30/13 15:25	
Methylcyclohexane	4.8		4.8	0.83	ug/Kg		08/26/13 08:13	08/30/13 15:25	
Methylene Chloride	14		14		ug/Kg		08/26/13 08:13	08/30/13 15:25	
Methyl Ethyl Ketone	24		24	3.9	ug/Kg		08/26/13 08:13	08/30/13 15:25	
methyl isobutyl ketone	24		24		ug/Kg	₩.	08/26/13 08:13	08/30/13 15:25	
Methyl tert-butyl ether	4.8		4.8		ug/Kg	- <del>Q</del> -	08/26/13 08:13	08/30/13 15:25	
Naphthalene	4.8		4.8		ug/Kg	₩	08/26/13 08:13	08/30/13 15:25	
Styrene	4.8		4.8		ug/Kg	₩.	08/26/13 08:13	08/30/13 15:25	
Tert-amyl methyl ether	4.8	U	4.8	0.42	ug/Kg		08/26/13 08:13	08/30/13 15:25	
tert-Butyl alcohol	4.8	U	4.8		ug/Kg	₽	08/26/13 08:13	08/30/13 15:25	
1,1,2,2-Tetrachloroethane	4.8	U	4.8	0.68	ug/Kg	₽	08/26/13 08:13	08/30/13 15:25	
Tetrachloroethene	4.8	U	4.8	0.80	ug/Kg		08/26/13 08:13	08/30/13 15:25	
Toluene	4.8		4.8	0.67	ug/Kg	₩	08/26/13 08:13	08/30/13 15:25	
trans-1,2-Dichloroethene	4.8	U	4.8	0.72	ug/Kg	₩	08/26/13 08:13	08/30/13 15:25	
trans-1,3-Dichloropropene	4.8	U	4.8	0.87	ug/Kg	₩	08/26/13 08:13	08/30/13 15:25	
1,2,4-Trichlorobenzene	4.8	U	4.8	0.69	ug/Kg	₽	08/26/13 08:13	08/30/13 15:25	
1,1,1-Trichloroethane	4.8	U	4.8	1.0	ug/Kg	₽	08/26/13 08:13	08/30/13 15:25	
1,1,2-Trichloroethane	4.8	U	4.8	0.87	ug/Kg	₽	08/26/13 08:13	08/30/13 15:25	
Trichloroethene	4.8	U	4.8	0.46	ug/Kg		08/26/13 08:13	08/30/13 15:25	

TestAmerica Savannah

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93550-1

Lab Sample ID: 680-93550-8

Matrix: Solid Percent Solids: 82.4

Client Sample ID: SB03-09 (3.5-4.5)

Date Collected: 08/22/13 11:00 Date Received: 08/23/13 09:28

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichlorofluoromethane	6.5		4.8	0.90	ug/Kg	₩	08/26/13 08:13	08/30/13 15:25	1
1,1,2-Trichloro-1,2,2-trifluoroethane	4.8	U	4.8	1.9	ug/Kg	₽	08/26/13 08:13	08/30/13 15:25	1
Vinyl chloride	4.8	U	4.8	0.87	ug/Kg	₩	08/26/13 08:13	08/30/13 15:25	1
Xylenes, Total	9.5	U	9.5	1.8	ug/Kg	\$	08/26/13 08:13	08/30/13 15:25	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	103		72 - 122				08/26/13 08:13	08/30/13 15:25	1
Dibromofluoromethane	85		79 - 123				08/26/13 08:13	08/30/13 15:25	1
Toluene-d8 (Surr)	100		80 - 120				08/26/13 08:13	08/30/13 15:25	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzaldehyde	400	U	400	70	ug/Kg	₩	08/26/13 14:24	08/27/13 17:01	1
Phenol	400	U	400	41	ug/Kg	₽	08/26/13 14:24	08/27/13 17:01	1
Bis(2-chloroethyl)ether	400	U	400	54	ug/Kg	₽	08/26/13 14:24	08/27/13 17:01	1
2-Chlorophenol	400	U	400	48	ug/Kg	₽	08/26/13 14:24	08/27/13 17:01	1
2-Methylphenol	400	U	400	33	ug/Kg	₩	08/26/13 14:24	08/27/13 17:01	1
bis (2-chloroisopropyl) ether	400	U	400	36	ug/Kg	≎	08/26/13 14:24	08/27/13 17:01	1
Acetophenone	400	U	400	34	ug/Kg	*	08/26/13 14:24	08/27/13 17:01	1
3 & 4 Methylphenol	400	U	400	52	ug/Kg	≎	08/26/13 14:24	08/27/13 17:01	1
N-Nitrosodi-n-propylamine	400	U	400	39	ug/Kg	≎	08/26/13 14:24	08/27/13 17:01	1
Hexachloroethane	400	U	400	34	ug/Kg	*	08/26/13 14:24	08/27/13 17:01	1
Nitrobenzene	400	U	400	31	ug/Kg	₽	08/26/13 14:24	08/27/13 17:01	1
Isophorone	400	U	400	40	ug/Kg	≎	08/26/13 14:24	08/27/13 17:01	1
2-Nitrophenol	400	U	400	50	ug/Kg	₽	08/26/13 14:24	08/27/13 17:01	1
2,4-Dimethylphenol	400	U	400	53	ug/Kg	₽	08/26/13 14:24	08/27/13 17:01	1
Bis(2-chloroethoxy)methane	400	U	400	47	ug/Kg	₽	08/26/13 14:24	08/27/13 17:01	1
2,4-Dichlorophenol	400	U	400	42	ug/Kg	₽	08/26/13 14:24	08/27/13 17:01	1
Naphthalene	400	U	400	36	ug/Kg	₽	08/26/13 14:24	08/27/13 17:01	1
4-Chloroaniline	800	U	800	63	ug/Kg	₽	08/26/13 14:24	08/27/13 17:01	1
Hexachlorobutadiene	400	U	400	44	ug/Kg	₽	08/26/13 14:24	08/27/13 17:01	1
Caprolactam	400	U	400	80	ug/Kg	₽	08/26/13 14:24	08/27/13 17:01	1
4-Chloro-3-methylphenol	400	U	400	42	ug/Kg	₽	08/26/13 14:24	08/27/13 17:01	1
2-Methylnaphthalene	400	U	400	46	ug/Kg	\$	08/26/13 14:24	08/27/13 17:01	1
Hexachlorocyclopentadiene	400	U	400	50	ug/Kg	₽	08/26/13 14:24	08/27/13 17:01	1
2,4,6-Trichlorophenol	400	U	400	35	ug/Kg	₽	08/26/13 14:24	08/27/13 17:01	1
2,4,5-Trichlorophenol	400	U	400	42	ug/Kg	\$	08/26/13 14:24	08/27/13 17:01	1
1,1'-Biphenyl	890	U	890	890	ug/Kg	₽	08/26/13 14:24	08/27/13 17:01	1
2-Chloronaphthalene	400	U	400	42	ug/Kg	≎	08/26/13 14:24	08/27/13 17:01	1
2-Nitroaniline	2100	U	2100	54	ug/Kg	\$	08/26/13 14:24	08/27/13 17:01	1
Dimethyl phthalate	400	U	400	41	ug/Kg	₽	08/26/13 14:24	08/27/13 17:01	1
2,6-Dinitrotoluene	400	U	400	51	ug/Kg	₽	08/26/13 14:24	08/27/13 17:01	1
Acenaphthylene	400	U	400	44	ug/Kg	₽	08/26/13 14:24	08/27/13 17:01	1
3-Nitroaniline	2100	U	2100	56	ug/Kg	₽	08/26/13 14:24	08/27/13 17:01	1
Acenaphthene	400	U	400	50	ug/Kg	₩	08/26/13 14:24	08/27/13 17:01	1
2,4-Dinitrophenol	2100	U	2100	1000	ug/Kg	₩	08/26/13 14:24	08/27/13 17:01	1
4-Nitrophenol	2100	U	2100	400	ug/Kg	₽	08/26/13 14:24	08/27/13 17:01	1
Dibenzofuran	400	U	400	40	ug/Kg	☼	08/26/13 14:24	08/27/13 17:01	1
2,4-Dinitrotoluene	400	U	400	59	ug/Kg	Φ.	08/26/13 14:24	08/27/13 17:01	1
Diethyl phthalate	400	U	400	45	ug/Kg	₩	08/26/13 14:24	08/27/13 17:01	1

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Client: ARCADIS U.S., Inc.

Date Collected: 08/22/13 11:00

Date Received: 08/23/13 09:28

Diesel Range Organics [C10-C28]

ORO C24-C40

o-Terphenyl (Surr)

Surrogate

Project/Site: CSX C&O Canal Brunswick, MD Client Sample ID: SB03-09 (3.5-4.5)

TestAmerica Job ID: 680-93550-1

Lab Sample ID: 680-93550-8

Matrix: Solid

Percent Solids: 82.4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
Fluorene	400	U	400	44	ug/Kg	<del></del>	08/26/13 14:24	08/27/13 17:01	
4-Chlorophenyl phenyl ether	400	U	400	53	ug/Kg	₽	08/26/13 14:24	08/27/13 17:01	
4-Nitroaniline	2100	U	2100	59	ug/Kg	₽	08/26/13 14:24	08/27/13 17:01	
4,6-Dinitro-2-methylphenol	2100	U	2100	210	ug/Kg	₩	08/26/13 14:24	08/27/13 17:01	
N-Nitrosodiphenylamine	400	U	400	40	ug/Kg	₽	08/26/13 14:24	08/27/13 17:01	
4-Bromophenyl phenyl ether	400	U	400	44	ug/Kg	₩	08/26/13 14:24	08/27/13 17:01	
Hexachlorobenzene	400	U	400	47	ug/Kg	₩	08/26/13 14:24	08/27/13 17:01	
Atrazine	400	U	400	28	ug/Kg	₽	08/26/13 14:24	08/27/13 17:01	
Pentachlorophenol	2100	U	2100	400	ug/Kg	₽	08/26/13 14:24	08/27/13 17:01	
Phenanthrene	400	U	400	33	ug/Kg	₽	08/26/13 14:24	08/27/13 17:01	
Anthracene	400	U	400	30	ug/Kg	₽	08/26/13 14:24	08/27/13 17:01	
Carbazole	400	U	400	36	ug/Kg	₽	08/26/13 14:24	08/27/13 17:01	
Di-n-butyl phthalate	400	U	400	36	ug/Kg	₽	08/26/13 14:24	08/27/13 17:01	
Fluoranthene	400	U	400	39	ug/Kg	₽	08/26/13 14:24	08/27/13 17:01	
Pyrene	400	U	400	33	ug/Kg	₽	08/26/13 14:24	08/27/13 17:01	
Butyl benzyl phthalate	400	U	400	31	ug/Kg	₽	08/26/13 14:24	08/27/13 17:01	
3,3'-Dichlorobenzidine	800	U	800	34	ug/Kg	₽	08/26/13 14:24	08/27/13 17:01	· · · · · · · ·
Benzo[a]anthracene	400	U	400	33	ug/Kg	₩	08/26/13 14:24	08/27/13 17:01	
Chrysene	400	U	400	25	ug/Kg	₽	08/26/13 14:24	08/27/13 17:01	
Bis(2-ethylhexyl) phthalate	400	U	400	35	ug/Kg	\$	08/26/13 14:24	08/27/13 17:01	
Di-n-octyl phthalate	400	U	400	35	ug/Kg	₽	08/26/13 14:24	08/27/13 17:01	
Benzo[b]fluoranthene	400	U	400	46	ug/Kg	₽	08/26/13 14:24	08/27/13 17:01	
Benzo[k]fluoranthene	400	U	400	79	ug/Kg	₽	08/26/13 14:24	08/27/13 17:01	
Benzo[a]pyrene	400	U	400	63	ug/Kg	₽	08/26/13 14:24	08/27/13 17:01	
Indeno[1,2,3-cd]pyrene	400	U	400	34	ug/Kg	₽	08/26/13 14:24	08/27/13 17:01	
Dibenz(a,h)anthracene	400	U	400	47	ug/Kg	₽	08/26/13 14:24	08/27/13 17:01	
Benzo[g,h,i]perylene	400	U	400	27	ug/Kg	₽	08/26/13 14:24	08/27/13 17:01	•
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fa
Nitrobenzene-d5 (Surr)	71		46 - 130				08/26/13 14:24	08/27/13 17:01	
2-Fluorobiphenyl	69		58 - 130				08/26/13 14:24	08/27/13 17:01	
Terphenyl-d14 (Surr)	92		60 - 130				08/26/13 14:24	08/27/13 17:01	
Phenol-d5 (Surr)	64		49 - 130				08/26/13 14:24	08/27/13 17:01	
2-Fluorophenol (Surr)	75		40 - 130				08/26/13 14:24	08/27/13 17:01	
2,4,6-Tribromophenol (Surr)	73		58 - 130				08/26/13 14:24	08/27/13 17:01	
Method: 8015C - Nonhalogenat	ed Organics usi	ng GC/FID	-Modified (Gaso	oline Ran	ge Organ	ics)			
Analyte	_	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fa
Gasoline Range Organics (GRO) -C6-C10	240	U	240	18	ug/Kg	<del>\</del>	08/26/13 09:31	08/29/13 13:28	
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fa
a,a,a-Trifluorotoluene			70 - 131				08/26/13 09:31	08/29/13 13:28	

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Analyzed

08/29/13 20:44

08/29/13 20:44

Analyzed

08/29/13 20:44

RL

5900

5900

Limits

50 - 150

MDL Unit

1700 ug/Kg

1700 ug/Kg

D

Prepared

08/28/13 08:56

08/28/13 08:56

Prepared

08/28/13 08:56

Method: 8015C - Nonhalogenated Organics using GC/FID -Modified (Diesel Range Organics) Result Qualifier

3100 JB

%Recovery Qualifier

78

6600

Dil Fac

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB03-10 (0.5-1.5)

Date Collected: 08/22/13 11:30

Lab Sample ID: 680-93550-9

Matrix: Solid

Date Received: 08/23/13 09:28 Percent Solids: 58.9

Method: 8260B - Volatile Organi Analyte		Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
Acetone	21		50	15	ug/Kg	— <del>-</del>	08/26/13 08:13	08/30/13 15:52	
Benzene	10		10		ug/Kg	₩	08/26/13 08:13	08/30/13 15:52	
Bromodichloromethane	10		10		ug/Kg	₩	08/26/13 08:13	08/30/13 15:52	
Bromoform	10		10	1.3	ug/Kg		08/26/13 08:13	08/30/13 15:52	
Bromomethane	10		10	2.8	ug/Kg ug/Kg		08/26/13 08:13	08/30/13 15:52	
Carbon disulfide	10		10				08/26/13 08:13	08/30/13 15:52	
Carbon tetrachloride	10		10	3.4	ug/Kg		08/26/13 08:13	08/30/13 15:52	
					0 0	₩			
Chlorobenzene	10		10	1.0	ug/Kg	₩	08/26/13 08:13	08/30/13 15:52	
Chloroethane	10		10	3.8	ug/Kg		08/26/13 08:13	08/30/13 15:52	
Chloroform	10		10				08/26/13 08:13	08/30/13 15:52	
Chloromethane	10		10	2.0	ug/Kg	*	08/26/13 08:13	08/30/13 15:52	
cis-1,2-Dichloroethene	10		10		ug/Kg		08/26/13 08:13	08/30/13 15:52	
cis-1,3-Dichloropropene	10		10		ug/Kg	<b>#</b>	08/26/13 08:13	08/30/13 15:52	
Cyclohexane	10	U	10	1.9	ug/Kg	#	08/26/13 08:13	08/30/13 15:52	
Dibromochloromethane	10	U	10		ug/Kg		08/26/13 08:13	08/30/13 15:52	
1,2-Dibromo-3-Chloropropane	10	U	10	6.6	ug/Kg	₩	08/26/13 08:13	08/30/13 15:52	
1,2-Dichlorobenzene	10	U	10	1.4	ug/Kg	₩	08/26/13 08:13	08/30/13 15:52	
1,3-Dichlorobenzene	10	U	10	1.9	ug/Kg	₩	08/26/13 08:13	08/30/13 15:52	
1,4-Dichlorobenzene	10	U	10	1.6	ug/Kg	₽	08/26/13 08:13	08/30/13 15:52	
Dichlorodifluoromethane	10	U	10	2.6	ug/Kg	₽	08/26/13 08:13	08/30/13 15:52	
1,1-Dichloroethane	10	U	10	1.7	ug/Kg	₽	08/26/13 08:13	08/30/13 15:52	
1,2-Dichloroethane	10	U	10	1.6	ug/Kg		08/26/13 08:13	08/30/13 15:52	
1,1-Dichloroethene	10	U	10	1.5	ug/Kg	₩	08/26/13 08:13	08/30/13 15:52	
1,2-Dichloropropane	10	U	10	1.5	ug/Kg	₩	08/26/13 08:13	08/30/13 15:52	
Diisopropyl ether	10	U	10	1.1	ug/Kg		08/26/13 08:13	08/30/13 15:52	
Ethylbenzene	10	U	10	1.2	ug/Kg	₩	08/26/13 08:13	08/30/13 15:52	
Ethylene Dibromide	10	U	10		ug/Kg	₩	08/26/13 08:13	08/30/13 15:52	
Ethyl tert-butyl ether	10	U	10	1.1	ug/Kg		08/26/13 08:13	08/30/13 15:52	
2-Hexanone	50		50	10	ug/Kg	₽	08/26/13 08:13	08/30/13 15:52	
sopropylbenzene	10		10		ug/Kg	₩	08/26/13 08:13	08/30/13 15:52	
Methyl acetate	10		10		ug/Kg		08/26/13 08:13	08/30/13 15:52	
Methylcyclohexane	10		10	1.7		₩	08/26/13 08:13	08/30/13 15:52	
Methylene Chloride	30		30	20	ug/Kg	₩	08/26/13 08:13	08/30/13 15:52	
Methyl Ethyl Ketone	50		50		ug/Kg	· · · · · · · ·	08/26/13 08:13	08/30/13 15:52	
methyl isobutyl ketone	50		50		ug/Kg ug/Kg	*	08/26/13 08:13	08/30/13 15:52	
Methyl tert-butyl ether	10		10		ug/Kg ug/Kg	₽	08/26/13 08:13	08/30/13 15:52	
Naphthalene	10		10				08/26/13 08:13		
•						₽		08/30/13 15:52	
Styrene	10		10		ug/Kg	₩	08/26/13 08:13	08/30/13 15:52	
Fert-amyl methyl ether	10		10		ug/Kg		08/26/13 08:13	08/30/13 15:52	
ert-Butyl alcohol	10		10		ug/Kg	<b>₽</b>	08/26/13 08:13	08/30/13 15:52	
,1,2,2-Tetrachloroethane	10		10		ug/Kg		08/26/13 08:13	08/30/13 15:52	
Fetrachloroethene	10		10		ug/Kg	<u></u>	08/26/13 08:13	08/30/13 15:52	
Toluene	10		10		ug/Kg	₩.	08/26/13 08:13	08/30/13 15:52	
rans-1,2-Dichloroethene	10		10		ug/Kg	<b>#</b>	08/26/13 08:13	08/30/13 15:52	
rans-1,3-Dichloropropene	10	U	10	1.8	ug/Kg		08/26/13 08:13	08/30/13 15:52	
1,2,4-Trichlorobenzene	10	U	10	1.5	ug/Kg	₽	08/26/13 08:13	08/30/13 15:52	
,1,1-Trichloroethane	10	U	10	2.2	ug/Kg	₩	08/26/13 08:13	08/30/13 15:52	
1,1,2-Trichloroethane	10	U	10	1.8	ug/Kg	₽	08/26/13 08:13	08/30/13 15:52	
Frichloroethene	10	U	10	0.96	ug/Kg		08/26/13 08:13	08/30/13 15:52	

TestAmerica Savannah

TestAmerica Job ID: 680-93550-1

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93550-1

Client Sample ID: SB03-10 (0.5-1.5) Lab Sample ID: 680-93550-9 Date Collected: 08/22/13 11:30 Matrix: Solid Date Received: 08/23/13 09:28

Percent Solids: 58.9

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichlorofluoromethane	11		10	1.9	ug/Kg	₩	08/26/13 08:13	08/30/13 15:52	1
1,1,2-Trichloro-1,2,2-trifluoroethane	10	U	10	4.0	ug/Kg	₽	08/26/13 08:13	08/30/13 15:52	1
Vinyl chloride	10	U	10	1.8	ug/Kg	₽	08/26/13 08:13	08/30/13 15:52	1
Xylenes, Total	20	U	20	3.8	ug/Kg	₩	08/26/13 08:13	08/30/13 15:52	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	107		72 - 122				08/26/13 08:13	08/30/13 15:52	1
Dibromofluoromethane	88		79 - 123				08/26/13 08:13	08/30/13 15:52	1
Toluene-d8 (Surr)	103		80 - 120				08/26/13 08:13	08/30/13 15:52	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzaldehyde	560	U	560	98	ug/Kg	<del>*</del>	08/26/13 14:24	08/27/13 17:25	1
Phenol	560	U	560	58	ug/Kg	₩	08/26/13 14:24	08/27/13 17:25	1
Bis(2-chloroethyl)ether	560	U	560	76	ug/Kg	₩	08/26/13 14:24	08/27/13 17:25	1
2-Chlorophenol	560	U	560	68	ug/Kg	\$	08/26/13 14:24	08/27/13 17:25	1
2-Methylphenol	560	U	560	46	ug/Kg	₩	08/26/13 14:24	08/27/13 17:25	1
bis (2-chloroisopropyl) ether	560	U	560	51	ug/Kg	₩	08/26/13 14:24	08/27/13 17:25	1
Acetophenone	560	U	560	47	ug/Kg	\$	08/26/13 14:24	08/27/13 17:25	1
3 & 4 Methylphenol	560	U	560	73	ug/Kg	₩	08/26/13 14:24	08/27/13 17:25	1
N-Nitrosodi-n-propylamine	560	U	560	54	ug/Kg	₩	08/26/13 14:24	08/27/13 17:25	1
Hexachloroethane	560	U	560	47	ug/Kg	\$	08/26/13 14:24	08/27/13 17:25	1
Nitrobenzene	560	U	560	44	ug/Kg	₩	08/26/13 14:24	08/27/13 17:25	1
Isophorone	560	U	560	56	ug/Kg	₩	08/26/13 14:24	08/27/13 17:25	1
2-Nitrophenol	560	U	560	69	ug/Kg	₩	08/26/13 14:24	08/27/13 17:25	1
2,4-Dimethylphenol	560	U	560	75	ug/Kg	₩	08/26/13 14:24	08/27/13 17:25	1
Bis(2-chloroethoxy)methane	560	U	560	66	ug/Kg	₩	08/26/13 14:24	08/27/13 17:25	1
2,4-Dichlorophenol	560	U	560	59	ug/Kg	₩.	08/26/13 14:24	08/27/13 17:25	1
Naphthalene	180	J	560	51	ug/Kg	₩	08/26/13 14:24	08/27/13 17:25	1
4-Chloroaniline	1100	U	1100	88	ug/Kg	₩	08/26/13 14:24	08/27/13 17:25	1
Hexachlorobutadiene	560	U	560	61	ug/Kg	₩.	08/26/13 14:24	08/27/13 17:25	1
Caprolactam	560	U	560	110	ug/Kg	₩	08/26/13 14:24	08/27/13 17:25	1
4-Chloro-3-methylphenol	560	U	560	59	ug/Kg	₩	08/26/13 14:24	08/27/13 17:25	1
2-Methylnaphthalene	320	J	560	64	ug/Kg		08/26/13 14:24	08/27/13 17:25	1
Hexachlorocyclopentadiene	560	U	560	69	ug/Kg	₩	08/26/13 14:24	08/27/13 17:25	1
2,4,6-Trichlorophenol	560	U	560	49	ug/Kg	₩	08/26/13 14:24	08/27/13 17:25	1
2,4,5-Trichlorophenol	560	U	560	59	ug/Kg	φ.	08/26/13 14:24	08/27/13 17:25	1
1,1'-Biphenyl	1300	U	1300	1300	ug/Kg	₩	08/26/13 14:24	08/27/13 17:25	1
2-Chloronaphthalene	560	U	560	59	ug/Kg	₩	08/26/13 14:24	08/27/13 17:25	1
2-Nitroaniline	2900	U	2900	76	ug/Kg	₩	08/26/13 14:24	08/27/13 17:25	1
Dimethyl phthalate	560	U	560	58	ug/Kg	₩	08/26/13 14:24	08/27/13 17:25	1
2,6-Dinitrotoluene	560	U	560	71	ug/Kg	₩	08/26/13 14:24	08/27/13 17:25	1
Acenaphthylene	560	U	560	61	ug/Kg	₩.	08/26/13 14:24	08/27/13 17:25	1
3-Nitroaniline	2900	U	2900	78	ug/Kg	₩	08/26/13 14:24	08/27/13 17:25	1
Acenaphthene	560	U	560	69	ug/Kg	₩	08/26/13 14:24	08/27/13 17:25	1
2,4-Dinitrophenol	2900	U	2900	1400	ug/Kg	₩	08/26/13 14:24	08/27/13 17:25	1
4-Nitrophenol	2900	U	2900	560	ug/Kg	₽	08/26/13 14:24	08/27/13 17:25	1
Dibenzofuran	74	J	560	56	ug/Kg	₩	08/26/13 14:24	08/27/13 17:25	1
2,4-Dinitrotoluene	560	U	560	83	ug/Kg		08/26/13 14:24	08/27/13 17:25	1
Diethyl phthalate	560	U	560	63	ug/Kg	₩	08/26/13 14:24	08/27/13 17:25	1

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ORO C24-C40

o-Terphenyl (Surr)

Surrogate

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB03-10 (0.5-1.5)

Date Collected: 08/22/13 11:30 Date Received: 08/23/13 09:28 Lab Sample ID: 680-93550-9

Matrix: Solid

Percent Solids: 58.9

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluorene	560	U	560	61	ug/Kg	<u> </u>	08/26/13 14:24	08/27/13 17:25	1
4-Chlorophenyl phenyl ether	560	U	560	75	ug/Kg	₽	08/26/13 14:24	08/27/13 17:25	1
4-Nitroaniline	2900	U	2900	83	ug/Kg	☼	08/26/13 14:24	08/27/13 17:25	1
4,6-Dinitro-2-methylphenol	2900	U	2900	290	ug/Kg	₽	08/26/13 14:24	08/27/13 17:25	1
N-Nitrosodiphenylamine	560	U	560	56	ug/Kg	*	08/26/13 14:24	08/27/13 17:25	1
4-Bromophenyl phenyl ether	560	U	560	61	ug/Kg	☼	08/26/13 14:24	08/27/13 17:25	1
Hexachlorobenzene	560	U	560	66	ug/Kg	₩	08/26/13 14:24	08/27/13 17:25	1
Atrazine	560	U	560	39	ug/Kg	*	08/26/13 14:24	08/27/13 17:25	1
Pentachlorophenol	2900	U	2900	560	ug/Kg	₩	08/26/13 14:24	08/27/13 17:25	1
Phenanthrene	260	J	560	46	ug/Kg	₩	08/26/13 14:24	08/27/13 17:25	1
Anthracene	43	J	560	42	ug/Kg	*	08/26/13 14:24	08/27/13 17:25	1
Carbazole	560	U	560	51	ug/Kg	₩	08/26/13 14:24	08/27/13 17:25	1
Di-n-butyl phthalate	560	U	560	51	ug/Kg	₽	08/26/13 14:24	08/27/13 17:25	1
Fluoranthene	130	J	560	54	ug/Kg		08/26/13 14:24	08/27/13 17:25	1
Pyrene	110	J	560	46	ug/Kg	₩	08/26/13 14:24	08/27/13 17:25	1
Butyl benzyl phthalate	560	U	560	44	ug/Kg	₩	08/26/13 14:24	08/27/13 17:25	1
3,3'-Dichlorobenzidine	1100	U	1100	47	ug/Kg	\$	08/26/13 14:24	08/27/13 17:25	1
Benzo[a]anthracene	68	J	560	46	ug/Kg	₽	08/26/13 14:24	08/27/13 17:25	1
Chrysene	110	J	560	36	ug/Kg	₽	08/26/13 14:24	08/27/13 17:25	1
Bis(2-ethylhexyl) phthalate	280	J	560	49	ug/Kg	\$	08/26/13 14:24	08/27/13 17:25	1
Di-n-octyl phthalate	560	U	560	49	ug/Kg	₽	08/26/13 14:24	08/27/13 17:25	1
Benzo[b]fluoranthene	560	U	560	64	ug/Kg	₽	08/26/13 14:24	08/27/13 17:25	1
Benzo[k]fluoranthene	560	U	560	110	ug/Kg	\$	08/26/13 14:24	08/27/13 17:25	1
Benzo[a]pyrene	560	U	560	88	ug/Kg	₽	08/26/13 14:24	08/27/13 17:25	1
Indeno[1,2,3-cd]pyrene	560	U	560	47	ug/Kg	₽	08/26/13 14:24	08/27/13 17:25	1
Dibenz(a,h)anthracene	560	U	560	66	ug/Kg		08/26/13 14:24	08/27/13 17:25	1
Benzo[g,h,i]perylene	560	U	560	37	ug/Kg	₽	08/26/13 14:24	08/27/13 17:25	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	65		46 - 130				08/26/13 14:24	08/27/13 17:25	1
2-Fluorobiphenyl	76		58 - 130				08/26/13 14:24	08/27/13 17:25	1
Terphenyl-d14 (Surr)	97		60 - 130				08/26/13 14:24	08/27/13 17:25	1
Phenol-d5 (Surr)	60		49 - 130				08/26/13 14:24	08/27/13 17:25	1
2-Fluorophenol (Surr)	59		40 - 130				08/26/13 14:24	08/27/13 17:25	1
2,4,6-Tribromophenol (Surr)	78		58 - 130				08/26/13 14:24	08/27/13 17:25	1
Method: 8015C - Nonhalogenate	ed Organics usi	ng GC/FID	-Modified (Gaso	oline Ran	ge Organ	ics)			
Analyte		Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO) -C6-C10	440	U	440	33	ug/Kg	\$	08/26/13 09:31	08/29/13 13:48	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene	126		70 - 131				08/26/13 09:31	08/29/13 13:48	1
-									
Method: 8015C - Nonhalogenate	ed Organics usi	ng GC/FID	-Modified (Dies	el Range	Organics	s)			
Method: 8015C - Nonhalogenate Analyte Diesel Range Organics [C10-C28]		ng GC/FID Qualifier	-Modified (Dies	MDL	Organics Unit ug/Kg	b) — D — \$\frac{D}{\$\pi}\$	Prepared	Analyzed	Dil Fac

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08/29/13 21:00

Analyzed

08/29/13 21:00

08/28/13 08:56

Prepared

08/28/13 08:56

8200

Limits

50 - 150

2300 ug/Kg

38000 B

%Recovery Qualifier

53

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

iont Comple ID: CD02 40 /E E C E)

Client Sample ID: SB03-10 (5.5-6.5)

Lab Sample ID: 680-93550-10

Date Collected: 08/22/13 11:40

Date Received: 08/23/13 09:28

Matrix: Solid
Percent Solids: 80.7

Method: 8260B - Volatile Organio Analyte	•	Qualifier	RL	MDI	Unit	D	Prepared	Analyzed	Dil Fa
Acetone	24	— — —	24	6.9	ug/Kg	— <del>¤</del>	08/26/13 08:13	08/30/13 16:20	
Benzene	4.7	11	4.7	0.46	ug/Kg	₽	08/26/13 08:13	08/30/13 16:20	
Bromodichloromethane	4.7		4.7				08/26/13 08:13	08/30/13 16:20	
Bromoform	4.7		4.7	0.60	ug/Kg		08/26/13 08:13	08/30/13 16:20	
Bromomethane	4.7		4.7	1.3	ug/Kg ug/Kg		08/26/13 08:13	08/30/13 16:20	
Carbon disulfide	4.7		4.7	1.1	ug/Kg ug/Kg		08/26/13 08:13	08/30/13 16:20	
Carbon distillide  Carbon tetrachloride	4.7		4.7	1.6			08/26/13 08:13	08/30/13 16:20	
Carbon tetrachionde					ug/Kg ug/Kg				
	4.7 4.7		4.7 4.7	0.49		~ ⇔	08/26/13 08:13 08/26/13 08:13	08/30/13 16:20	
Chloroethane Chloroform	4.7		4.7	1.8	ug/Kg		08/26/13 08:13	08/30/13 16:20 08/30/13 16:20	
						<b>₩</b>			
Chloromethane	4.7		4.7	0.95	ug/Kg	<b>₩</b>	08/26/13 08:13	08/30/13 16:20	
cis-1,2-Dichloroethene	4.7		4.7		ug/Kg		08/26/13 08:13	08/30/13 16:20	
cis-1,3-Dichloropropene	4.7		4.7	1.1	ug/Kg		08/26/13 08:13	08/30/13 16:20	
Cyclohexane	4.7		4.7	0.89	ug/Kg	<b>\$</b>	08/26/13 08:13	08/30/13 16:20	
Dibromochloromethane	4.7		4.7		ug/Kg	<u></u> .	08/26/13 08:13	08/30/13 16:20	
1,2-Dibromo-3-Chloropropane	4.7		4.7		ug/Kg	*	08/26/13 08:13	08/30/13 16:20	
1,2-Dichlorobenzene	4.7		4.7		ug/Kg	*	08/26/13 08:13	08/30/13 16:20	
1,3-Dichlorobenzene	4.7		4.7	0.90	ug/Kg		08/26/13 08:13	08/30/13 16:20	
1,4-Dichlorobenzene	4.7		4.7	0.78	ug/Kg	₽	08/26/13 08:13	08/30/13 16:20	
Dichlorodifluoromethane	4.7	U	4.7	1.2	ug/Kg	₩	08/26/13 08:13	08/30/13 16:20	
1,1-Dichloroethane	4.7	U	4.7	0.79	ug/Kg		08/26/13 08:13	08/30/13 16:20	
1,2-Dichloroethane	4.7	U	4.7	0.78	ug/Kg	₽	08/26/13 08:13	08/30/13 16:20	
1,1-Dichloroethene	4.7	U	4.7	0.71	ug/Kg	₽	08/26/13 08:13	08/30/13 16:20	
1,2-Dichloropropane	4.7	U	4.7	0.70	ug/Kg	₽	08/26/13 08:13	08/30/13 16:20	
Diisopropyl ether	4.7	U	4.7	0.52	ug/Kg	₽	08/26/13 08:13	08/30/13 16:20	
Ethylbenzene	4.7	U	4.7	0.58	ug/Kg	₽	08/26/13 08:13	08/30/13 16:20	
Ethylene Dibromide	4.7	U	4.7	0.45	ug/Kg	₽	08/26/13 08:13	08/30/13 16:20	
Ethyl tert-butyl ether	4.7	U	4.7	0.53	ug/Kg	*	08/26/13 08:13	08/30/13 16:20	
2-Hexanone	24	U	24	4.7	ug/Kg	₽	08/26/13 08:13	08/30/13 16:20	
sopropylbenzene	4.7	U	4.7	0.64	ug/Kg	₽	08/26/13 08:13	08/30/13 16:20	
Methyl acetate	4.7	U	4.7	4.4	ug/Kg	₽	08/26/13 08:13	08/30/13 16:20	
Methylcyclohexane	4.7	U	4.7	0.82	ug/Kg	₽	08/26/13 08:13	08/30/13 16:20	
Methylene Chloride	14	U	14	9.5	ug/Kg	☼	08/26/13 08:13	08/30/13 16:20	
Methyl Ethyl Ketone	4.0	J	24	3.9	ug/Kg		08/26/13 08:13	08/30/13 16:20	
methyl isobutyl ketone	24	U	24	3.8	ug/Kg	₽	08/26/13 08:13	08/30/13 16:20	
Methyl tert-butyl ether	4.7	U	4.7	0.95	ug/Kg	₽	08/26/13 08:13	08/30/13 16:20	
Naphthalene	4.7	U	4.7		ug/Kg		08/26/13 08:13	08/30/13 16:20	
Styrene	4.7	U	4.7		ug/Kg	₽	08/26/13 08:13	08/30/13 16:20	
Tert-amyl methyl ether	4.7	U	4.7		ug/Kg	₽	08/26/13 08:13	08/30/13 16:20	
tert-Butyl alcohol	4.7	U	4.7		ug/Kg		08/26/13 08:13	08/30/13 16:20	
1,1,2,2-Tetrachloroethane	4.7		4.7		ug/Kg	₽	08/26/13 08:13	08/30/13 16:20	
Tetrachloroethene	4.7		4.7		ug/Kg	₽	08/26/13 08:13	08/30/13 16:20	
Toluene	4.7		4.7		ug/Kg		08/26/13 08:13	08/30/13 16:20	
trans-1,2-Dichloroethene	4.7		4.7		ug/Kg	₽	08/26/13 08:13	08/30/13 16:20	
trans-1,3-Dichloropropene	4.7		4.7		ug/Kg ug/Kg	₽	08/26/13 08:13	08/30/13 16:20	
1,2,4-Trichlorobenzene	4.7								
	4.7		4.7		ug/Kg	₩	08/26/13 08:13	08/30/13 16:20	
1,1,1-Trichloroethane			4.7	1.0			08/26/13 08:13	08/30/13 16:20	
1,1,2-Trichloroethane Trichloroethene	4.7		4.7		ug/Kg ug/Kg	 	08/26/13 08:13 08/26/13 08:13	08/30/13 16:20 08/30/13 16:20	

TestAmerica Savannah

TestAmerica Job ID: 680-93550-1

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

ecusite. Con Cao Carial Brunswick, MD

Lab Sample ID: 680-93550-10

TestAmerica Job ID: 680-93550-1

Matrix: Solid Percent Solids: 80.7

Client Sample ID: SB03-10 (5.5-6.5)

Date Collected: 08/22/13 11:40 Date Received: 08/23/13 09:28

Method: 8260B - Volatile Organi	c Compounds	(GC/MS) (C	ontinued)						
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichlorofluoromethane	4.7	U	4.7	0.90	ug/Kg	<u></u>	08/26/13 08:13	08/30/13 16:20	1
1,1,2-Trichloro-1,2,2-trifluoroethane	4.7	U	4.7	1.9	ug/Kg	₽	08/26/13 08:13	08/30/13 16:20	1
Vinyl chloride	4.7	U	4.7	0.87	ug/Kg	\$	08/26/13 08:13	08/30/13 16:20	1
Xylenes, Total	9.5	U	9.5	1.8	ug/Kg	₽	08/26/13 08:13	08/30/13 16:20	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	114		72 - 122				08/26/13 08:13	08/30/13 16:20	1
Dibromofluoromethane	89		79 - 123				08/26/13 08:13	08/30/13 16:20	1
Toluene-d8 (Surr)	98		80 - 120				08/26/13 08:13	08/30/13 16:20	1

Toluene-as (Surr)	98		80 - 120				08/26/13 08:13	08/30/13 16:20	7
Method: 8270D - Semivolatile C	•	nds (GC/M	S)	MDL	l Init	D	Prepared	Anglyzad	Dil Fac
Analyte Benzaldehyde		U	410	71	ug/Kg	— <del>ÿ</del>	08/26/13 14:24	Analyzed 08/27/13 17:50	1
Phenol	410	-	410	42	ug/Kg ug/Kg		08/26/13 14:24	08/27/13 17:50	1
Bis(2-chloroethyl)ether	410		410		ug/Kg ug/Kg		08/26/13 14:24	08/27/13 17:50	1
2-Chlorophenol	410		410	49	ug/Kg ug/Kg		08/26/13 14:24	08/27/13 17:50	
2-Methylphenol	410		410	33	ug/Kg ug/Kg		08/26/13 14:24	08/27/13 17:50	1
bis (2-chloroisopropyl) ether	410		410	37	ug/Kg ug/Kg	₩	08/26/13 14:24	08/27/13 17:50	1
Acetophenone	410		410		ug/Kg ug/Kg		08/26/13 14:24	08/27/13 17:50	· · · · · · · · · · · · · · · · · · ·
3 & 4 Methylphenol	410		410		ug/Kg ug/Kg		08/26/13 14:24	08/27/13 17:50	1
• •	410		410	39		~ ⇔	08/26/13 14:24		1
N-Nitrosodi-n-propylamine	410		410		ug/Kg	<del></del>	08/26/13 14:24	08/27/13 17:50	
Hexachloroethane				34	ug/Kg	~ ⇔		08/27/13 17:50	
Nitrobenzene	410		410	32	ug/Kg	₩	08/26/13 14:24	08/27/13 17:50	1
Isophorone	410		410	41	ug/Kg	· · · · · · · · · · · · · · · · · · ·	08/26/13 14:24	08/27/13 17:50	
2-Nitrophenol	410		410	50	ug/Kg	₩	08/26/13 14:24	08/27/13 17:50	1
2,4-Dimethylphenol	410		410	54	ug/Kg	₩	08/26/13 14:24	08/27/13 17:50	1
Bis(2-chloroethoxy)methane	410		410	48	ug/Kg		08/26/13 14:24	08/27/13 17:50	
2,4-Dichlorophenol	410		410		ug/Kg	*	08/26/13 14:24	08/27/13 17:50	1
Naphthalene	410		410	37	ug/Kg	*	08/26/13 14:24	08/27/13 17:50	1
4-Chloroaniline	810		810	64	ug/Kg	T	08/26/13 14:24	08/27/13 17:50	
Hexachlorobutadiene	410		410	44	ug/Kg	*	08/26/13 14:24	08/27/13 17:50	1
Caprolactam	410		410	81	ug/Kg	*	08/26/13 14:24	08/27/13 17:50	1
4-Chloro-3-methylphenol	410		410		ug/Kg	₩	08/26/13 14:24	08/27/13 17:50	1
2-Methylnaphthalene	410		410	47	ug/Kg	₩	08/26/13 14:24	08/27/13 17:50	1
Hexachlorocyclopentadiene	410	U	410	50	ug/Kg	₩	08/26/13 14:24	08/27/13 17:50	1
2,4,6-Trichlorophenol	410	U	410	36	ug/Kg	<b>☆</b>	08/26/13 14:24	08/27/13 17:50	1
2,4,5-Trichlorophenol	410	U	410	43	ug/Kg	₩	08/26/13 14:24	08/27/13 17:50	1
1,1'-Biphenyl	910	U	910	910	ug/Kg	₩	08/26/13 14:24	08/27/13 17:50	1
2-Chloronaphthalene	410	U	410	43	ug/Kg	₩	08/26/13 14:24	08/27/13 17:50	1
2-Nitroaniline	2100	U	2100	55	ug/Kg	₩	08/26/13 14:24	08/27/13 17:50	1
Dimethyl phthalate	410	U	410	42	ug/Kg	₩	08/26/13 14:24	08/27/13 17:50	1
2,6-Dinitrotoluene	410	U	410	52	ug/Kg	₩	08/26/13 14:24	08/27/13 17:50	1
Acenaphthylene	410	U	410	44	ug/Kg	₩	08/26/13 14:24	08/27/13 17:50	1
3-Nitroaniline	2100	U	2100	57	ug/Kg	₩	08/26/13 14:24	08/27/13 17:50	1
Acenaphthene	410	U	410	50	ug/Kg	₩	08/26/13 14:24	08/27/13 17:50	1
2,4-Dinitrophenol	2100	U	2100	1000	ug/Kg	₽	08/26/13 14:24	08/27/13 17:50	1
4-Nitrophenol	2100	U	2100	410	ug/Kg	₩	08/26/13 14:24	08/27/13 17:50	1
Dibenzofuran	410	U	410	41	ug/Kg	₩	08/26/13 14:24	08/27/13 17:50	1
2,4-Dinitrotoluene	410	U	410	60	ug/Kg		08/26/13 14:24	08/27/13 17:50	1
Diethyl phthalate	410	U	410	46	ug/Kg	₩	08/26/13 14:24	08/27/13 17:50	1

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Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB03-10 (5.5-6.5)

Date Collected: 08/22/13 11:40 Date Received: 08/23/13 09:28

Diesel Range Organics [C10-C28]

ORO C24-C40

o-Terphenyl (Surr)

Surrogate

Lab Sample ID: 680-93550-10

Matrix: Solid

Percent Solids: 80.7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
Fluorene	410	U	410	44	ug/Kg	₩	08/26/13 14:24	08/27/13 17:50	
4-Chlorophenyl phenyl ether	410	U	410	54	ug/Kg	\$	08/26/13 14:24	08/27/13 17:50	
4-Nitroaniline	2100	U	2100	60	ug/Kg	₽	08/26/13 14:24	08/27/13 17:50	
4,6-Dinitro-2-methylphenol	2100	U	2100	210	ug/Kg	₽	08/26/13 14:24	08/27/13 17:50	
N-Nitrosodiphenylamine	410	U	410	41	ug/Kg	\$	08/26/13 14:24	08/27/13 17:50	
4-Bromophenyl phenyl ether	410	U	410	44	ug/Kg	≎	08/26/13 14:24	08/27/13 17:50	
Hexachlorobenzene	410	U	410	48	ug/Kg	≎	08/26/13 14:24	08/27/13 17:50	
Atrazine	410	U	410	28	ug/Kg	₽	08/26/13 14:24	08/27/13 17:50	
Pentachlorophenol	2100	U	2100	410	ug/Kg	₩	08/26/13 14:24	08/27/13 17:50	
Phenanthrene	410	U	410	33	ug/Kg	₽	08/26/13 14:24	08/27/13 17:50	
Anthracene	410	U	410	31	ug/Kg	₽	08/26/13 14:24	08/27/13 17:50	
Carbazole	410	U	410	37	ug/Kg	₽	08/26/13 14:24	08/27/13 17:50	
Di-n-butyl phthalate	410	U	410	37	ug/Kg	₽	08/26/13 14:24	08/27/13 17:50	
Fluoranthene	410	U	410	39	ug/Kg	₽	08/26/13 14:24	08/27/13 17:50	
Pyrene	410	U	410	33	ug/Kg	₩	08/26/13 14:24	08/27/13 17:50	
Butyl benzyl phthalate	410	U	410	32	ug/Kg	₩	08/26/13 14:24	08/27/13 17:50	
3,3'-Dichlorobenzidine	810	U	810	34	ug/Kg	₽	08/26/13 14:24	08/27/13 17:50	
Benzo[a]anthracene	410	U	410	33	ug/Kg	₩	08/26/13 14:24	08/27/13 17:50	
Chrysene	410	U	410	26	ug/Kg	₽	08/26/13 14:24	08/27/13 17:50	
Bis(2-ethylhexyl) phthalate	410	U	410	36	ug/Kg		08/26/13 14:24	08/27/13 17:50	
Di-n-octyl phthalate	410	U	410	36	ug/Kg	₽	08/26/13 14:24	08/27/13 17:50	
Benzo[b]fluoranthene	410	U	410	47	ug/Kg	₽	08/26/13 14:24	08/27/13 17:50	
Benzo[k]fluoranthene	410	U	410	80	ug/Kg	\$	08/26/13 14:24	08/27/13 17:50	
Benzo[a]pyrene	410	U	410	64	ug/Kg	₽	08/26/13 14:24	08/27/13 17:50	
ndeno[1,2,3-cd]pyrene	410	U	410	34	ug/Kg	₩	08/26/13 14:24	08/27/13 17:50	
Dibenz(a,h)anthracene	410	U	410	48	ug/Kg	₽	08/26/13 14:24	08/27/13 17:50	
Benzo[g,h,i]perylene	410	U	410	27	ug/Kg	₩	08/26/13 14:24	08/27/13 17:50	
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil F
Nitrobenzene-d5 (Surr)			46 - 130				08/26/13 14:24	08/27/13 17:50	
2-Fluorobiphenyl	88		58 - 130				08/26/13 14:24	08/27/13 17:50	
Terphenyl-d14 (Surr)	89		60 - 130				08/26/13 14:24	08/27/13 17:50	
Phenol-d5 (Surr)	78		49 - 130				08/26/13 14:24	08/27/13 17:50	
2-Fluorophenol (Surr)	82		40 - 130				08/26/13 14:24	08/27/13 17:50	
2,4,6-Tribromophenol (Surr)	110		58 - 130				08/26/13 14:24	08/27/13 17:50	
Method: 8015C - Nonhalogenat <sup>Analyte</sup>	_	ng GC/FID Qualifier	-Modified (Gaso RL		ge Organ Unit	ics) D	Prepared	Analyzed	Dil F
Gasoline Range Organics (GRO)	230		230		ug/Kg	— <del> </del>	08/26/13 09:31	08/29/13 14:07	
-C6-C10	250	J	200	10	ugring		03/20/10 00:01	30/20/10 17:0/	
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil F
a,a,a-Trifluorotoluene	92		70 - 131				08/26/13 09:31	08/29/13 14:07	

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Analyzed

08/29/13 21:16

08/29/13 21:16

Analyzed

08/29/13 21:16

RL

6100

6100

Limits

50 - 150

MDL Unit

1700 ug/Kg

1700 ug/Kg

D

Prepared

08/28/13 08:56

08/28/13 08:56

Prepared

08/28/13 08:56

Result Qualifier

4200

3400 JB

%Recovery Qualifier

76

Dil Fac

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB03-05 (0.0-1.0)

Lab Sample ID: 680-93550-11

Date Collected: 08/22/13 09:15

Date Received: 08/23/13 09:28 Percent Solids: 80.6

Method: 8260B - Volatile Organio Analyte		Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
Acetone	16		44	13	ug/Kg	— <del>¤</del>	08/26/13 08:13	08/30/13 16:48	
Benzene	8.8		8.8	0.87	ug/Kg ug/Kg	₩	08/26/13 08:13	08/30/13 16:48	
Bromodichloromethane	8.8		8.8		ug/Kg ug/Kg	₽	08/26/13 08:13	08/30/13 16:48	
Bromoform	8.8		8.8	1.1	ug/Kg ug/Kg		08/26/13 08:13	08/30/13 16:48	
Bromomethane	8.8		8.8				08/26/13 08:13	08/30/13 16:48	
Carbon disulfide	8.8		8.8	2.5			08/26/13 08:13	08/30/13 16:48	
Carbon tetrachloride	8.8		8.8	3.0	ug/Kg		08/26/13 08:13	08/30/13 16:48	
					ug/Kg		08/26/13 08:13		
Chlorobenzene	8.8		8.8			₩		08/30/13 16:48	
Chloroethane	8.8		8.8		ug/Kg		08/26/13 08:13	08/30/13 16:48	
Chloroform	8.8		8.8	1.0	ug/Kg		08/26/13 08:13	08/30/13 16:48	
Chloromethane	8.8		8.8	1.8	ug/Kg	<b>*</b>	08/26/13 08:13	08/30/13 16:48	
cis-1,2-Dichloroethene	8.8		8.8	1.3	ug/Kg	<u></u>	08/26/13 08:13	08/30/13 16:48	
cis-1,3-Dichloropropene	8.8		8.8	2.1	ug/Kg	*	08/26/13 08:13	08/30/13 16:48	
Cyclohexane	8.8		8.8	1.7	ug/Kg	₩.	08/26/13 08:13	08/30/13 16:48	
Dibromochloromethane	8.8		8.8		ug/Kg	<sub></sub> .	08/26/13 08:13	08/30/13 16:48	
1,2-Dibromo-3-Chloropropane	8.8		8.8		ug/Kg	<b>#</b>	08/26/13 08:13	08/30/13 16:48	
1,2-Dichlorobenzene	8.8	U	8.8	1.3	ug/Kg	#	08/26/13 08:13	08/30/13 16:48	
1,3-Dichlorobenzene	8.8	U	8.8	1.7	ug/Kg	₩	08/26/13 08:13	08/30/13 16:48	
1,4-Dichlorobenzene	8.8	U	8.8	1.4	ug/Kg	₩	08/26/13 08:13	08/30/13 16:48	
Dichlorodifluoromethane	8.8	U	8.8	2.3	ug/Kg	₩	08/26/13 08:13	08/30/13 16:48	
1,1-Dichloroethane	8.8	U	8.8	1.5	ug/Kg	₽	08/26/13 08:13	08/30/13 16:48	
1,2-Dichloroethane	8.8	U	8.8	1.4	ug/Kg	₽	08/26/13 08:13	08/30/13 16:48	
1,1-Dichloroethene	8.8	U	8.8	1.3	ug/Kg	₩	08/26/13 08:13	08/30/13 16:48	
1,2-Dichloropropane	8.8	U	8.8	1.3	ug/Kg	₩	08/26/13 08:13	08/30/13 16:48	
Diisopropyl ether	8.8	U	8.8	0.97	ug/Kg	₽	08/26/13 08:13	08/30/13 16:48	
Ethylbenzene	8.8	U	8.8	1.1	ug/Kg	₽	08/26/13 08:13	08/30/13 16:48	
Ethylene Dibromide	8.8	U	8.8	0.85	ug/Kg	₽	08/26/13 08:13	08/30/13 16:48	
Ethyl tert-butyl ether	8.8	U	8.8	0.99	ug/Kg	₩.	08/26/13 08:13	08/30/13 16:48	
2-Hexanone	44	U	44	8.8	ug/Kg	₩	08/26/13 08:13	08/30/13 16:48	
sopropylbenzene	8.8	U	8.8	1.2	ug/Kg	₽	08/26/13 08:13	08/30/13 16:48	
Methyl acetate	8.8	U	8.8	8.1	ug/Kg		08/26/13 08:13	08/30/13 16:48	
Methylcyclohexane	8.8	U	8.8	1.5	ug/Kg	₽	08/26/13 08:13	08/30/13 16:48	
Methylene Chloride	27	U	27	18	ug/Kg	₩	08/26/13 08:13	08/30/13 16:48	
Methyl Ethyl Ketone	44	U	44		ug/Kg		08/26/13 08:13	08/30/13 16:48	
methyl isobutyl ketone	44	U	44	7.1		₽	08/26/13 08:13	08/30/13 16:48	
Methyl tert-butyl ether	8.8		8.8		ug/Kg	₽	08/26/13 08:13	08/30/13 16:48	
Naphthalene	8.8		8.8		ug/Kg		08/26/13 08:13	08/30/13 16:48	
Styrene	8.8		8.8		ug/Kg	₩	08/26/13 08:13	08/30/13 16:48	
Fert-amyl methyl ether	8.8		8.8		ug/Kg	₩	08/26/13 08:13	08/30/13 16:48	
ert-Butyl alcohol	8.8		8.8		ug/Kg		08/26/13 08:13	08/30/13 16:48	
1,1,2,2-Tetrachloroethane	8.8		8.8		ug/Kg ug/Kg	₽	08/26/13 08:13	08/30/13 16:48	
Tetrachloroethene	8.8		8.8		ug/Kg ug/Kg	₽	08/26/13 08:13	08/30/13 16:48	
	8.8							08/30/13 16:48	
Foluene			8.8		ug/Kg	₩	08/26/13 08:13		
rans-1,2-Dichloroethene	8.8		8.8		ug/Kg		08/26/13 08:13	08/30/13 16:48	
rans-1,3-Dichloropropene	8.8		8.8		ug/Kg	<del>X</del>	08/26/13 08:13	08/30/13 16:48	
1,2,4-Trichlorobenzene	8.8		8.8		ug/Kg	<b>‡</b>	08/26/13 08:13	08/30/13 16:48	
1,1,1-Trichloroethane	8.8		8.8	1.9	ug/Kg	<b>₽</b>	08/26/13 08:13	08/30/13 16:48	
1,1,2-Trichloroethane	8.8	U	8.8	1.6	ug/Kg	₽	08/26/13 08:13	08/30/13 16:48	

TestAmerica Savannah

TestAmerica Job ID: 680-93550-1

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

Lab Sample ID: 680-93550-11

TestAmerica Job ID: 680-93550-1

Client Sample ID: SB03-05 (0.0-1.0) Date Collected: 08/22/13 09:15 Matrix: Solid Date Received: 08/23/13 09:28

Percent Solids: 80.6

Method: 8260B - Volatile Organi	c Compounds	(GC/MS) (Co	ontinued)						
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichlorofluoromethane	9.6		8.8	1.7	ug/Kg	<u></u>	08/26/13 08:13	08/30/13 16:48	1
1,1,2-Trichloro-1,2,2-trifluoroethane	8.8	U	8.8	3.5	ug/Kg	₽	08/26/13 08:13	08/30/13 16:48	1
Vinyl chloride	8.8	U	8.8	1.6	ug/Kg	\$	08/26/13 08:13	08/30/13 16:48	1
Xylenes, Total	18	U	18	3.4	ug/Kg	₽	08/26/13 08:13	08/30/13 16:48	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	105		72 - 122				08/26/13 08:13	08/30/13 16:48	1
Dibromofluoromethane	87		79 - 123				08/26/13 08:13	08/30/13 16:48	1
Toluene-d8 (Surr)	100		80 - 120				08/26/13 08:13	08/30/13 16:48	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzaldehyde	410	U	410	72	ug/Kg	<del>\</del>	08/26/13 14:24	08/27/13 18:14	1
Phenol	410	U	410	42	ug/Kg	₩	08/26/13 14:24	08/27/13 18:14	1
Bis(2-chloroethyl)ether	410	U	410	56	ug/Kg	₩	08/26/13 14:24	08/27/13 18:14	1
2-Chlorophenol	410	U	410	49	ug/Kg	₽	08/26/13 14:24	08/27/13 18:14	1
2-Methylphenol	410	U	410	33	ug/Kg	₩	08/26/13 14:24	08/27/13 18:14	1
bis (2-chloroisopropyl) ether	410	U	410	37	ug/Kg	₩	08/26/13 14:24	08/27/13 18:14	1
Acetophenone	410	U	410	35	ug/Kg	₩	08/26/13 14:24	08/27/13 18:14	1
3 & 4 Methylphenol	410	U	410	53	ug/Kg	₩	08/26/13 14:24	08/27/13 18:14	1
N-Nitrosodi-n-propylamine	410	U	410	40	ug/Kg	₩	08/26/13 14:24	08/27/13 18:14	1
Hexachloroethane	410	U	410	35	ug/Kg	₩	08/26/13 14:24	08/27/13 18:14	1
Nitrobenzene	410	U	410	32	ug/Kg	≎	08/26/13 14:24	08/27/13 18:14	1
Isophorone	410	U	410	41	ug/Kg	₽	08/26/13 14:24	08/27/13 18:14	1
2-Nitrophenol	410	U	410	51	ug/Kg	₽	08/26/13 14:24	08/27/13 18:14	1
2,4-Dimethylphenol	410	U	410	54	ug/Kg	₩	08/26/13 14:24	08/27/13 18:14	1
Bis(2-chloroethoxy)methane	410	U	410	48	ug/Kg	₩	08/26/13 14:24	08/27/13 18:14	1
2,4-Dichlorophenol	410	U	410	43	ug/Kg	₽	08/26/13 14:24	08/27/13 18:14	1
Naphthalene	100	J	410	37	ug/Kg	₩	08/26/13 14:24	08/27/13 18:14	1
4-Chloroaniline	820	U	820	64	ug/Kg	₩	08/26/13 14:24	08/27/13 18:14	1
Hexachlorobutadiene	410	U	410	44	ug/Kg	₽	08/26/13 14:24	08/27/13 18:14	1
Caprolactam	410	U	410	82	ug/Kg	₩	08/26/13 14:24	08/27/13 18:14	1
4-Chloro-3-methylphenol	410	U	410	43	ug/Kg	₩	08/26/13 14:24	08/27/13 18:14	1
2-Methylnaphthalene	170	J	410	47	ug/Kg	₽	08/26/13 14:24	08/27/13 18:14	1
Hexachlorocyclopentadiene	410	U	410	51	ug/Kg	₩	08/26/13 14:24	08/27/13 18:14	1
2,4,6-Trichlorophenol	410	U	410	36	ug/Kg	₩	08/26/13 14:24	08/27/13 18:14	1
2,4,5-Trichlorophenol	410	U	410	43	ug/Kg	₩	08/26/13 14:24	08/27/13 18:14	1
1,1'-Biphenyl	910	U	910	910	ug/Kg	₩	08/26/13 14:24	08/27/13 18:14	1
2-Chloronaphthalene	410	U	410	43	ug/Kg	₩	08/26/13 14:24	08/27/13 18:14	1
2-Nitroaniline	2100	U	2100	56	ug/Kg	₩	08/26/13 14:24	08/27/13 18:14	1
Dimethyl phthalate	410	U	410	42	ug/Kg	₩	08/26/13 14:24	08/27/13 18:14	1
2,6-Dinitrotoluene	410	U	410	52	ug/Kg	₩	08/26/13 14:24	08/27/13 18:14	1
Acenaphthylene	410	U	410	44	ug/Kg	₩	08/26/13 14:24	08/27/13 18:14	1
3-Nitroaniline	2100	U	2100	57	ug/Kg	₽	08/26/13 14:24	08/27/13 18:14	1
Acenaphthene	410	U	410	51	ug/Kg	≎	08/26/13 14:24	08/27/13 18:14	1
2,4-Dinitrophenol	2100	U	2100	1000	ug/Kg	\$	08/26/13 14:24	08/27/13 18:14	1
4-Nitrophenol	2100	U	2100	410	ug/Kg	≎	08/26/13 14:24	08/27/13 18:14	1
Dibenzofuran	410	U	410	41	ug/Kg	₩	08/26/13 14:24	08/27/13 18:14	1
2,4-Dinitrotoluene	410	U	410	61	ug/Kg		08/26/13 14:24	08/27/13 18:14	1
Diethyl phthalate	410	U	410	46	ug/Kg	₩	08/26/13 14:24	08/27/13 18:14	1

TestAmerica Savannah

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB03-05 (0.0-1.0)

Date Collected: 08/22/13 09:15 Date Received: 08/23/13 09:28

Diesel Range Organics [C10-C28]

ORO C24-C40

o-Terphenyl (Surr)

Surrogate

Lab Sample ID: 680-93550-11

Matrix: Solid

Percent Solids: 80.6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluorene	410	U	410	44	ug/Kg	<u> </u>	08/26/13 14:24	08/27/13 18:14	1
4-Chlorophenyl phenyl ether	410	U	410	54	ug/Kg		08/26/13 14:24	08/27/13 18:14	1
4-Nitroaniline	2100	U	2100	61	ug/Kg	₩	08/26/13 14:24	08/27/13 18:14	1
4,6-Dinitro-2-methylphenol	2100	U	2100	210	ug/Kg	₩	08/26/13 14:24	08/27/13 18:14	1
N-Nitrosodiphenylamine	410	U	410	41	ug/Kg		08/26/13 14:24	08/27/13 18:14	1
4-Bromophenyl phenyl ether	410	U	410	44	ug/Kg	₩	08/26/13 14:24	08/27/13 18:14	1
Hexachlorobenzene	410	U	410	48	ug/Kg	₩	08/26/13 14:24	08/27/13 18:14	1
Atrazine	410	U	410	28	ug/Kg		08/26/13 14:24	08/27/13 18:14	1
Pentachlorophenol	2100	U	2100	410	ug/Kg	₩	08/26/13 14:24	08/27/13 18:14	1
Phenanthrene	99	J	410	33	ug/Kg	₩	08/26/13 14:24	08/27/13 18:14	1
Anthracene	410	U	410	31	ug/Kg	₽	08/26/13 14:24	08/27/13 18:14	1
Carbazole	410	U	410	37	ug/Kg	₽	08/26/13 14:24	08/27/13 18:14	1
Di-n-butyl phthalate	410	U	410	37	ug/Kg	₩	08/26/13 14:24	08/27/13 18:14	1
Fluoranthene	410	U	410	40	ug/Kg	₽	08/26/13 14:24	08/27/13 18:14	1
Pyrene	410	U	410	33	ug/Kg	₩	08/26/13 14:24	08/27/13 18:14	1
Butyl benzyl phthalate	410	U	410	32	ug/Kg	₩	08/26/13 14:24	08/27/13 18:14	1
3,3'-Dichlorobenzidine	820	U	820	35	ug/Kg	\$	08/26/13 14:24	08/27/13 18:14	1
Benzo[a]anthracene	410	U	410	33	ug/Kg	₽	08/26/13 14:24	08/27/13 18:14	1
Chrysene	410	U	410	26	ug/Kg	₽	08/26/13 14:24	08/27/13 18:14	1
Bis(2-ethylhexyl) phthalate	410	U	410	36	ug/Kg	\$	08/26/13 14:24	08/27/13 18:14	1
Di-n-octyl phthalate	410	U	410	36	ug/Kg	₽	08/26/13 14:24	08/27/13 18:14	1
Benzo[b]fluoranthene	410	U	410	47	ug/Kg	₽	08/26/13 14:24	08/27/13 18:14	1
Benzo[k]fluoranthene	410	U	410	80	ug/Kg	\$	08/26/13 14:24	08/27/13 18:14	1
Benzo[a]pyrene	410	U	410	64	ug/Kg	₽	08/26/13 14:24	08/27/13 18:14	1
Indeno[1,2,3-cd]pyrene	410	U	410	35	ug/Kg	₽	08/26/13 14:24	08/27/13 18:14	1
Dibenz(a,h)anthracene	410	U	410	48	ug/Kg	₽	08/26/13 14:24	08/27/13 18:14	1
Benzo[g,h,i]perylene	410	U	410	27	ug/Kg	₽	08/26/13 14:24	08/27/13 18:14	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	74	-	46 - 130				08/26/13 14:24	08/27/13 18:14	1
2-Fluorobiphenyl	81		58 - 130				08/26/13 14:24	08/27/13 18:14	1
Terphenyl-d14 (Surr)	83		60 - 130				08/26/13 14:24	08/27/13 18:14	1
Phenol-d5 (Surr)	81		49 - 130				08/26/13 14:24	08/27/13 18:14	1
2-Fluorophenol (Surr)	73		40 - 130				08/26/13 14:24	08/27/13 18:14	1
2,4,6-Tribromophenol (Surr)	81		58 - 130				08/26/13 14:24	08/27/13 18:14	1
Method: 8015C - Nonhalogenate									
Analyte		Qualifier	RL		Unit	— <del>□</del>	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO) -C6-C10	310	J	320	24	ug/Kg	¥	08/26/13 09:31	08/29/13 14:27	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene	128		70 - 131				08/26/13 09:31	08/29/13 14:27	

TestAmerica Savannah

Analyzed

08/29/13 21:32

08/29/13 21:32

Analyzed

08/29/13 21:32

RL

6000

6000

Limits

50 - 150

MDL Unit

1700 ug/Kg

1700 ug/Kg

D

₩

Prepared

08/28/13 08:56

08/28/13 08:56

Prepared

08/28/13 08:56

Method: 8015C - Nonhalogenated Organics using GC/FID -Modified (Diesel Range Organics) Result Qualifier

17000

15000 B

%Recovery Qualifier

70

Dil Fac

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93550-1

Lab Sample ID: 680-93550-12

Matrix: Solid

Client Sample ID: SB03-05 (3.5-4.5)

Date Collected: 08/22/13 09:25 Date Received: 08/23/13 09:28 Percent Solids: 81.6

Method: 8260B - Volatile Organio Analyte	•	Qualifier	RL	MDI	Unit	D	Prepared	Analyzed	Dil Fa
Acetone				6.5	ug/Kg	— <del>-</del>	08/26/13 08:14	08/30/13 17:15	
Benzene	4.5	U	4.5	0.44	ug/Kg	₩	08/26/13 08:14	08/30/13 17:15	
Bromodichloromethane	4.5		4.5		ug/Kg	₩	08/26/13 08:14	08/30/13 17:15	
Bromoform	4.5		4.5	0.57			08/26/13 08:14	08/30/13 17:15	
Bromomethane	4.5		4.5	1.3	ug/Kg ug/Kg		08/26/13 08:14	08/30/13 17:15	
Carbon disulfide	1.1		4.5	1.1	ug/Kg ug/Kg	₩	08/26/13 08:14	08/30/13 17:15	
Carbon distillide Carbon tetrachloride	4.5		4.5	1.5	ug/Kg ug/Kg	· · · · · · · · · · · · · · · · · · ·	08/26/13 08:14	08/30/13 17:15	
Chlorobenzene	4.5		4.5	0.47	ug/Kg ug/Kg	₩	08/26/13 08:14	08/30/13 17:15	
Chloroethane	4.5		4.5				08/26/13 08:14	08/30/13 17:15	
Chloroform	4.5		4.5	1.7	ug/Kg		08/26/13 08:14	08/30/13 17:15	
				0.53	ug/Kg	<b>₩</b>			
Chloromethane	4.5		4.5	0.90	ug/Kg		08/26/13 08:14	08/30/13 17:15	
cis-1,2-Dichloroethene	4.5		4.5	0.68	ug/Kg	<u></u> .	08/26/13 08:14	08/30/13 17:15	
cis-1,3-Dichloropropene	4.5		4.5	1.1	ug/Kg	*	08/26/13 08:14	08/30/13 17:15	
Cyclohexane	4.5		4.5	0.84	ug/Kg		08/26/13 08:14	08/30/13 17:15	
Dibromochloromethane	4.5		4.5	0.78	ug/Kg	<u></u> .	08/26/13 08:14	08/30/13 17:15	
1,2-Dibromo-3-Chloropropane	4.5		4.5		ug/Kg	*	08/26/13 08:14	08/30/13 17:15	
1,2-Dichlorobenzene	4.5		4.5	0.64	ug/Kg	*	08/26/13 08:14	08/30/13 17:15	
I,3-Dichlorobenzene	4.5		4.5	0.85	ug/Kg		08/26/13 08:14	08/30/13 17:15	
1,4-Dichlorobenzene	4.5	U	4.5	0.74	ug/Kg	₽	08/26/13 08:14	08/30/13 17:15	
Dichlorodifluoromethane	4.5	U	4.5	1.2	ug/Kg	☼	08/26/13 08:14	08/30/13 17:15	
,1-Dichloroethane	4.5	U	4.5	0.74	ug/Kg		08/26/13 08:14	08/30/13 17:15	
,2-Dichloroethane	4.5	U	4.5	0.74	ug/Kg	₽	08/26/13 08:14	08/30/13 17:15	
,1-Dichloroethene	4.5	U	4.5	0.67	ug/Kg	₽	08/26/13 08:14	08/30/13 17:15	
,2-Dichloropropane	4.5	U	4.5	0.66	ug/Kg	₽	08/26/13 08:14	08/30/13 17:15	
Diisopropyl ether	4.5	U	4.5	0.49	ug/Kg	₽	08/26/13 08:14	08/30/13 17:15	
Ethylbenzene	4.5	U	4.5	0.55	ug/Kg	₽	08/26/13 08:14	08/30/13 17:15	
Ethylene Dibromide	4.5	U	4.5	0.43	ug/Kg	₽	08/26/13 08:14	08/30/13 17:15	
Ethyl tert-butyl ether	4.5	U	4.5	0.50	ug/Kg	*	08/26/13 08:14	08/30/13 17:15	
2-Hexanone	22	U	22	4.5	ug/Kg	₽	08/26/13 08:14	08/30/13 17:15	
sopropylbenzene	4.5	U	4.5	0.61	ug/Kg	₽	08/26/13 08:14	08/30/13 17:15	
Methyl acetate	4.5	U	4.5	4.1	ug/Kg	₽	08/26/13 08:14	08/30/13 17:15	
Methylcyclohexane	4.5	U	4.5	0.78	ug/Kg	₽	08/26/13 08:14	08/30/13 17:15	
Methylene Chloride	13	U	13	9.0	ug/Kg	₽	08/26/13 08:14	08/30/13 17:15	
Methyl Ethyl Ketone	4.5	J	22	3.7	ug/Kg		08/26/13 08:14	08/30/13 17:15	
methyl isobutyl ketone	22	U	22	3.6	ug/Kg	₽	08/26/13 08:14	08/30/13 17:15	
Methyl tert-butyl ether	4.5	U	4.5	0.90	ug/Kg	₽	08/26/13 08:14	08/30/13 17:15	
Naphthalene	4.5	U	4.5	0.90	ug/Kg		08/26/13 08:14	08/30/13 17:15	
Styrene	4.5	U	4.5	0.68	ug/Kg	₽	08/26/13 08:14	08/30/13 17:15	
Fert-amyl methyl ether	4.5	U	4.5			₽	08/26/13 08:14	08/30/13 17:15	
ert-Butyl alcohol	4.5		4.5		ug/Kg		08/26/13 08:14	08/30/13 17:15	
I,1,2,2-Tetrachloroethane	4.5		4.5		ug/Kg	₽	08/26/13 08:14	08/30/13 17:15	
etrachloroethene	4.5		4.5		ug/Kg	₽	08/26/13 08:14	08/30/13 17:15	
Foluene	4.5		4.5		ug/Kg		08/26/13 08:14	08/30/13 17:15	
rans-1,2-Dichloroethene	4.5		4.5		ug/Kg	₽	08/26/13 08:14	08/30/13 17:15	
rans-1,3-Dichloropropene	4.5		4.5		ug/Kg	₽	08/26/13 08:14	08/30/13 17:15	
,2,4-Trichlorobenzene	4.5		4.5		ug/Kg ug/Kg		08/26/13 08:14	08/30/13 17:15	
1,1,1-Trichloroethane	4.5		4.5	0.05	ug/Kg ug/Kg	т Ф	08/26/13 08:14	08/30/13 17:15	
						₩			
1,1,2-Trichloroethane Trichloroethene	4.5 4.5		4.5 4.5	0.83	ug/Kg ug/Kg	<del>.</del>	08/26/13 08:14 08/26/13 08:14	08/30/13 17:15 08/30/13 17:15	

TestAmerica Savannah

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

Lab Sample ID: 680-93550-12

TestAmerica Job ID: 680-93550-1

Matrix: Solid Percent Solids: 81.6

Client Sample ID: SB03-05 (3.5-4.5)

Date Collected: 08/22/13 09:25 Date Received: 08/23/13 09:28

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichlorofluoromethane	4.5	U	4.5	0.85	ug/Kg	₩	08/26/13 08:14	08/30/13 17:15	1
1,1,2-Trichloro-1,2,2-trifluoroethane	4.5	U	4.5	1.8	ug/Kg	₽	08/26/13 08:14	08/30/13 17:15	1
Vinyl chloride	4.5	U	4.5	0.83	ug/Kg	₽	08/26/13 08:14	08/30/13 17:15	1
Xylenes, Total	9.0	U	9.0	1.7	ug/Kg	₽	08/26/13 08:14	08/30/13 17:15	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	308	X	72 - 122				08/26/13 08:14	08/30/13 17:15	1
Dibromofluoromethane	84		79 - 123				08/26/13 08:14	08/30/13 17:15	1
Toluene-d8 (Surr)	99		80 - 120				08/26/13 08:14	08/30/13 17:15	1

- Toldene-do (Sali)	33		00 - 120				00/20/13 00:14	00/30/13 17:13	,
Method: 8270D - Semivolatile C									
Analyte		Qualifier	RL	MDL		— <del>D</del>	Prepared	Analyzed	Dil Fac
Benzaldehyde	400		400	71	ug/Kg		08/30/13 14:23	09/03/13 20:49	1
Phenol	400		400	42	ug/Kg	*	08/30/13 14:23	09/03/13 20:49	1
Bis(2-chloroethyl)ether	400		400	55	ug/Kg		08/30/13 14:23	09/03/13 20:49	1
2-Chlorophenol	400		400	49	ug/Kg	₩	08/30/13 14:23	09/03/13 20:49	1
2-Methylphenol	400	U	400	33	ug/Kg	₩	08/30/13 14:23	09/03/13 20:49	1
bis (2-chloroisopropyl) ether	400	U	400	37	ug/Kg	₩	08/30/13 14:23	09/03/13 20:49	1
Acetophenone	400	U	400	34	ug/Kg	₩	08/30/13 14:23	09/03/13 20:49	1
3 & 4 Methylphenol	400	U	400	53	ug/Kg	₩	08/30/13 14:23	09/03/13 20:49	1
N-Nitrosodi-n-propylamine	400	U	400	39	ug/Kg	₩	08/30/13 14:23	09/03/13 20:49	1
Hexachloroethane	400	U	400	34	ug/Kg	₩	08/30/13 14:23	09/03/13 20:49	1
Nitrobenzene	400	U	400	32	ug/Kg	₩	08/30/13 14:23	09/03/13 20:49	1
Isophorone	400	U	400	40	ug/Kg	₩	08/30/13 14:23	09/03/13 20:49	1
2-Nitrophenol	400	U	400	50	ug/Kg	₩	08/30/13 14:23	09/03/13 20:49	1
2,4-Dimethylphenol	400	U	400	54	ug/Kg	₩	08/30/13 14:23	09/03/13 20:49	1
Bis(2-chloroethoxy)methane	400	U	400	48	ug/Kg	₩	08/30/13 14:23	09/03/13 20:49	1
2,4-Dichlorophenol	400	U	400	43	ug/Kg		08/30/13 14:23	09/03/13 20:49	1
Naphthalene	400	U	400	37	ug/Kg	₩	08/30/13 14:23	09/03/13 20:49	1
4-Chloroaniline	810	U	810	64	ug/Kg	₩	08/30/13 14:23	09/03/13 20:49	1
Hexachlorobutadiene	400		400	44	ug/Kg		08/30/13 14:23	09/03/13 20:49	1
Caprolactam	400	U	400	81	ug/Kg	₩	08/30/13 14:23	09/03/13 20:49	1
4-Chloro-3-methylphenol	400	U	400	43	ug/Kg	₩	08/30/13 14:23	09/03/13 20:49	1
2-Methylnaphthalene	400		400	47	ug/Kg		08/30/13 14:23	09/03/13 20:49	1
Hexachlorocyclopentadiene	400	U	400	50	ug/Kg	₽	08/30/13 14:23	09/03/13 20:49	1
2,4,6-Trichlorophenol	400	U	400	35	ug/Kg	₩	08/30/13 14:23	09/03/13 20:49	1
2,4,5-Trichlorophenol	400		400	43	ug/Kg		08/30/13 14:23	09/03/13 20:49	1
1,1'-Biphenyl	910	U	910	910	ug/Kg	₩	08/30/13 14:23	09/03/13 20:49	1
2-Chloronaphthalene	400	U	400	43	ug/Kg	₽	08/30/13 14:23	09/03/13 20:49	1
2-Nitroaniline	2100		2100		ug/Kg		08/30/13 14:23	09/03/13 20:49	1
Dimethyl phthalate	400		400	42	ug/Kg	₽	08/30/13 14:23	09/03/13 20:49	1
2,6-Dinitrotoluene	400		400	51	ug/Kg	₩	08/30/13 14:23	09/03/13 20:49	1
Acenaphthylene	400		400		ug/Kg		08/30/13 14:23	09/03/13 20:49	1
3-Nitroaniline	2100		2100	56	ug/Kg	₩	08/30/13 14:23	09/03/13 20:49	1
Acenaphthene	290		400	50	ug/Kg	₩	08/30/13 14:23	09/03/13 20:49	1
2,4-Dinitrophenol	2100		2100	1000	ug/Kg		08/30/13 14:23	09/03/13 20:49	
4-Nitrophenol	2100		2100	400	ug/Kg ug/Kg	₽	08/30/13 14:23	09/03/13 20:49	1
Dibenzofuran	400		400	400	ug/Kg ug/Kg		08/30/13 14:23	09/03/13 20:49	1
2,4-Dinitrotoluene	400		400			<del></del>	08/30/13 14:23	09/03/13 20:49	1
				60	ug/Kg	₩			
Diethyl phthalate	400	U	400	45	ug/Kg	345	08/30/13 14:23	09/03/13 20:49	1

TestAmerica Savannah

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2-Fluorophenol (Surr)

o-Terphenyl (Surr)

2,4,6-Tribromophenol (Surr)

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB03-05 (3.5-4.5)

Date Collected: 08/22/13 09:25 Date Received: 08/23/13 09:28 Lab Sample ID: 680-93550-12

Matrix: Solid Percent Solids: 81.6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluorene	830		400	44	ug/Kg	<u> </u>	08/30/13 14:23	09/03/13 20:49	1
4-Chlorophenyl phenyl ether	400	U	400	54	ug/Kg	\$	08/30/13 14:23	09/03/13 20:49	1
4-Nitroaniline	2100	U	2100	60	ug/Kg	₽	08/30/13 14:23	09/03/13 20:49	1
4,6-Dinitro-2-methylphenol	2100	U	2100	210	ug/Kg	₽	08/30/13 14:23	09/03/13 20:49	1
N-Nitrosodiphenylamine	400	U	400	40	ug/Kg	₽	08/30/13 14:23	09/03/13 20:49	1
4-Bromophenyl phenyl ether	400	U	400	44	ug/Kg	₽	08/30/13 14:23	09/03/13 20:49	1
Hexachlorobenzene	400	U	400	48	ug/Kg	₽	08/30/13 14:23	09/03/13 20:49	1
Atrazine	400	U	400	28	ug/Kg	₽	08/30/13 14:23	09/03/13 20:49	1
Pentachlorophenol	2100	U	2100	400	ug/Kg	₽	08/30/13 14:23	09/03/13 20:49	1
Phenanthrene	400	U	400	33	ug/Kg	₩	08/30/13 14:23	09/03/13 20:49	1
Anthracene	400	U	400	31	ug/Kg	₩.	08/30/13 14:23	09/03/13 20:49	1
Carbazole	400	U	400	37	ug/Kg	₽	08/30/13 14:23	09/03/13 20:49	1
Di-n-butyl phthalate	400	U	400	37	ug/Kg	₩	08/30/13 14:23	09/03/13 20:49	1
Fluoranthene	400	U	400	39	ug/Kg	₽	08/30/13 14:23	09/03/13 20:49	1
Pyrene	61	J	400	33	ug/Kg	₩	08/30/13 14:23	09/03/13 20:49	1
Butyl benzyl phthalate	400	U	400	32	ug/Kg	₽	08/30/13 14:23	09/03/13 20:49	1
3,3'-Dichlorobenzidine	810	U	810	34	ug/Kg	₽	08/30/13 14:23	09/03/13 20:49	1
Benzo[a]anthracene	400	U	400	33	ug/Kg	₽	08/30/13 14:23	09/03/13 20:49	1
Chrysene	400	U	400	26	ug/Kg	₽	08/30/13 14:23	09/03/13 20:49	1
Bis(2-ethylhexyl) phthalate	400	U	400	35	ug/Kg	\$	08/30/13 14:23	09/03/13 20:49	1
Di-n-octyl phthalate	400	U	400	35	ug/Kg	₽	08/30/13 14:23	09/03/13 20:49	1
Benzo[b]fluoranthene	400	U	400	47	ug/Kg	₽	08/30/13 14:23	09/03/13 20:49	1
Benzo[k]fluoranthene	400	U	400	80	ug/Kg	₽	08/30/13 14:23	09/03/13 20:49	1
Benzo[a]pyrene	400	U	400	64	ug/Kg	₽	08/30/13 14:23	09/03/13 20:49	1
Indeno[1,2,3-cd]pyrene	400	U	400	34	ug/Kg	₩	08/30/13 14:23	09/03/13 20:49	1
Dibenz(a,h)anthracene	400	U	400	48	ug/Kg	₩.	08/30/13 14:23	09/03/13 20:49	1
Benzo[g,h,i]perylene	400	U	400	27	ug/Kg	₽	08/30/13 14:23	09/03/13 20:49	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	70		46 - 130				08/30/13 14:23	09/03/13 20:49	1
2-Fluorobiphenyl	73		58 - 130				08/30/13 14:23	09/03/13 20:49	1
Terphenyl-d14 (Surr)	87		60 - 130				08/30/13 14:23	09/03/13 20:49	1
Phenol-d5 (Surr)	70		49 - 130				08/30/13 14:23	09/03/13 20:49	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO) -C6-C10	52000		10000	780	ug/Kg	<del>\</del>	08/26/13 09:31	08/30/13 13:44	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene	41	X	70 - 131				08/26/13 09:31	08/30/13 13:44	1
- Method: 8015C - Nonhalogenate	ed Organics usi	ng GC/FID -	Modified (Diese	el Range	Organics	s)			
- Method: 8015C - Nonhalogenate Analyte	•	ng GC/FID - Qualifier	Modified (Diese	el Range MDL	•	) D	Prepared	Analyzed	Dil Fac
	•	•	•	MDL	•	•	Prepared 08/28/13 08:56	Analyzed 08/29/13 21:48	Dil Fac
Analyte	Result	Qualifier	RL	MDL 1700	Unit ug/Kg	, D			Dil Fac

40 - 130

58 - 130

88

95

77

TestAmerica Savannah

08/29/13 21:48

08/30/13 14:23 09/03/13 20:49

08/28/13 08:56

50 - 150

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93550-1

Lab Sample ID: 680-93550-13

Matrix: Water

**Client Sample ID: PZ02-08** 

Date Collected: 08/22/13 14:00 Date Received: 08/23/13 09:28

Method: 8260B - Volatile Organi <sup>Analyte</sup>	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
Acetone		U –	25	3.5	ug/L		<u> </u>	08/30/13 00:46	
Benzene	1.0	U	1.0	0.34	ug/L			08/30/13 00:46	
Bromodichloromethane	1.0	U	1.0		ug/L			08/30/13 00:46	
Bromoform	5.0	U	5.0		ug/L			08/30/13 00:46	
Carbon disulfide	1.0	U	1.0		ug/L			08/30/13 00:46	
Carbon tetrachloride	1.0	U	1.0	0.50	-			08/30/13 00:46	
Chlorobenzene	1.0	U	1.0		ug/L			08/30/13 00:46	
Chloroethane	1.0	U	1.0		ug/L			08/30/13 00:46	
Chloroform	1.0		1.0	0.60	ug/L			08/30/13 00:46	
Chloromethane	1.0		1.0	0.83				08/30/13 00:46	
cis-1,2-Dichloroethene	1.0		1.0	0.50				08/30/13 00:46	
cis-1,3-Dichloropropene	5.0		5.0	0.50				08/30/13 00:46	
Cyclohexane	1.0		1.0	0.50				08/30/13 00:46	
Dibromochloromethane	1.0		1.0	0.50	_			08/30/13 00:46	
1,2-Dibromo-3-Chloropropane	5.0		5.0		ug/L ug/L			08/30/13 00:46	
1,2-Dichlorobenzene	1.0		1.0		ug/L ug/L			08/30/13 00:46	
1.3-Dichlorobenzene	1.0		1.0		ug/L ug/L			08/30/13 00:46	
1.4-Dichlorobenzene	1.0		1.0		-			08/30/13 00:46	
Dichlorodifluoromethane	1.0			0.64				08/30/13 00:46	
1,1-Dichloroethane	1.0		1.0	0.85					
,			1.0	0.50	ug/L			08/30/13 00:46	
I,2-Dichloroethane	1.0		1.0	0.50	ug/L			08/30/13 00:46	
I,1-Dichloroethene	1.0		1.0	0.50	ug/L			08/30/13 00:46	
1,2-Dichloropropane	1.0		1.0	0.50	ug/L			08/30/13 00:46	
Diisopropyl ether	1.0		1.0	0.50	ug/L			08/30/13 00:46	
Ethylbenzene	1.0		1.0	0.50	ug/L			08/30/13 00:46	
Ethylene Dibromide	1.0		1.0	0.50	ug/L			08/30/13 00:46	
Ethyl tert-butyl ether	1.0		1.0		ug/L			08/30/13 00:46	
2-Hexanone	25		25		ug/L			08/30/13 00:46	
sopropylbenzene	1.0		1.0		ug/L			08/30/13 00:46	
Methyl acetate	5.0	U	5.0		ug/L			08/30/13 00:46	
Methylcyclohexane	1.0	U	1.0	0.50	ug/L			08/30/13 00:46	
Methylene Chloride	5.0	U	5.0	3.0	ug/L			08/30/13 00:46	
Methyl Ethyl Ketone	25	U	25	2.6	ug/L			08/30/13 00:46	
methyl isobutyl ketone	25	U	25	1.8	ug/L			08/30/13 00:46	
Methyl tert-butyl ether	1.0	U	1.0	0.74	ug/L			08/30/13 00:46	
Naphthalene	1.0	U	1.0	1.0	ug/L			08/30/13 00:46	
Styrene	1.0	U	1.0	1.0	ug/L			08/30/13 00:46	
Tert-amyl methyl ether	1.0	U	1.0	0.60	ug/L			08/30/13 00:46	
ert-Butyl alcohol	5.0	U	5.0	4.9	ug/L			08/30/13 00:46	
I,1,2,2-Tetrachloroethane	1.0	U	1.0	0.50	ug/L			08/30/13 00:46	
Tetrachloroethene	1.0	U	1.0	0.58	ug/L			08/30/13 00:46	
Toluene	1.0	U	1.0	0.70	ug/L			08/30/13 00:46	
rans-1,2-Dichloroethene	1.0	U	1.0	0.50				08/30/13 00:46	
rans-1,3-Dichloropropene	5.0		5.0		ug/L			08/30/13 00:46	
,2,4-Trichlorobenzene	1.0		1.0		ug/L			08/30/13 00:46	
I,1,1-Trichloroethane	1.0		1.0	0.50				08/30/13 00:46	
I,1,2-Trichloroethane	5.0		5.0		ug/L			08/30/13 00:46	
Frichloroethene	1.0		1.0		ug/L			08/30/13 00:46	
Trichlorofluoromethane	1.0		1.0	0.52				08/30/13 00:46	

TestAmerica Savannah

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93550-1

Lab Sample ID: 680-93550-13

Matrix: Water

**Client Sample ID: PZ02-08** 

Date Collected: 08/22/13 14:00 Date Received: 08/23/13 09:28

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	1.0	0.50	ug/L			08/30/13 00:46	1
Vinyl chloride	1.0	U	1.0	0.50	ug/L			08/30/13 00:46	1
Xylenes, Total	10	U	10	1.6	ug/L			08/30/13 00:46	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	94		78 - 118			-		08/30/13 00:46	1
Dibromofluoromethane	104		81 - 121					08/30/13 00:46	1
Toluene-d8 (Surr)	99		80 - 120					08/30/13 00:46	1

Toluene-d8 (Surr)	99		80 - 120					08/30/13 00:46	1
Method: 8270D - Semivolatile O	rganic Compou	nds (GC/M	5)						
Analyte		Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	10	-	10	0.76	ug/L		08/27/13 14:50	09/04/13 12:38	1
Acenaphthylene	10	U	10	0.85	ug/L		08/27/13 14:50	09/04/13 12:38	1
Acetophenone	10	U	10	0.57	ug/L		08/27/13 14:50	09/04/13 12:38	1
Anthracene	10	U	10	0.69	ug/L		08/27/13 14:50	09/04/13 12:38	1
Atrazine	10	U	10	1.2	ug/L		08/27/13 14:50	09/04/13 12:38	1
Benzaldehyde	10	U	10	1.1	ug/L		08/27/13 14:50	09/04/13 12:38	1
Benzo[a]anthracene	10	U	10	0.55	ug/L		08/27/13 14:50	09/04/13 12:38	1
Benzo[a]pyrene	10	U	10	0.71	ug/L		08/27/13 14:50	09/04/13 12:38	1
Benzo[b]fluoranthene	10	U	10	2.6	ug/L		08/27/13 14:50	09/04/13 12:38	1
Benzo[g,h,i]perylene	10	U	10	0.87	ug/L		08/27/13 14:50	09/04/13 12:38	1
Benzo[k]fluoranthene	10	U	10	1.2	ug/L		08/27/13 14:50	09/04/13 12:38	1
1,1'-Biphenyl	10	U	10	0.58	ug/L		08/27/13 14:50	09/04/13 12:38	1
Bis(2-chloroethoxy)methane	10	U	10	0.94	ug/L		08/27/13 14:50	09/04/13 12:38	1
Bis(2-chloroethyl)ether	10	U	10	1.1	ug/L		08/27/13 14:50	09/04/13 12:38	1
bis (2-chloroisopropyl) ether	10	U	10	0.78	ug/L		08/27/13 14:50	09/04/13 12:38	1
Bis(2-ethylhexyl) phthalate	10	U	10	1.6	ug/L		08/27/13 14:50	09/04/13 12:38	1
4-Bromophenyl phenyl ether	10	U	10	0.77	ug/L		08/27/13 14:50	09/04/13 12:38	1
Butyl benzyl phthalate	10	U	10	1.2	ug/L		08/27/13 14:50	09/04/13 12:38	1
Caprolactam	6.1	J	10	0.79	ug/L		08/27/13 14:50	09/04/13 12:38	1
Carbazole	10	U	10	0.71	ug/L		08/27/13 14:50	09/04/13 12:38	1
4-Chloroaniline	20	U	20	2.2	ug/L		08/27/13 14:50	09/04/13 12:38	1
4-Chloro-3-methylphenol	10	U	10	1.0	ug/L		08/27/13 14:50	09/04/13 12:38	1
2-Chloronaphthalene	10	U	10	0.80	ug/L		08/27/13 14:50	09/04/13 12:38	1
2-Chlorophenol	10	U	10	0.87	ug/L		08/27/13 14:50	09/04/13 12:38	1
4-Chlorophenyl phenyl ether	10	U	10	0.84	ug/L		08/27/13 14:50	09/04/13 12:38	1
Chrysene	10	U	10	0.51	ug/L		08/27/13 14:50	09/04/13 12:38	1
Dibenz(a,h)anthracene	10	U	10	1.0	ug/L		08/27/13 14:50	09/04/13 12:38	1
Dibenzofuran	10	U	10	0.79	ug/L		08/27/13 14:50	09/04/13 12:38	1
3,3'-Dichlorobenzidine	60	U	60		ug/L		08/27/13 14:50	09/04/13 12:38	1
2,4-Dichlorophenol	10	U	10	1.1	ug/L		08/27/13 14:50	09/04/13 12:38	1
Diethyl phthalate	10	U	10		ug/L		08/27/13 14:50	09/04/13 12:38	1
2,4-Dimethylphenol	10	U	10	4.0	ug/L		08/27/13 14:50	09/04/13 12:38	1
Dimethyl phthalate	10		10	0.99	ug/L		08/27/13 14:50	09/04/13 12:38	1
Di-n-butyl phthalate	10		10		ug/L		08/27/13 14:50	09/04/13 12:38	1
4,6-Dinitro-2-methylphenol	50		50		ug/L		08/27/13 14:50	09/04/13 12:38	1
2,4-Dinitrophenol	50		50		ug/L		08/27/13 14:50	09/04/13 12:38	1
2,4-Dinitrotoluene	10		10		ug/L		08/27/13 14:50	09/04/13 12:38	· · · · · · · · · · · · · · · · · · ·
2,6-Dinitrotoluene	10		10	1.1	-		08/27/13 14:50	09/04/13 12:38	. 1
Di-n-octyl phthalate	10		10		ug/L		08/27/13 14:50	09/04/13 12:38	

TestAmerica Savannah

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93550-1

Client Sample ID: PZ02-08 Lab Sample ID: 680-93550-13

Date Collected: 08/22/13 14:00 Matrix: Water
Date Received: 08/23/13 09:28

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fa
Fluoranthene	10	U	10	0.74	ug/L		08/27/13 14:50	09/04/13 12:38	
Fluorene	10	U	10	0.96	ug/L		08/27/13 14:50	09/04/13 12:38	
Hexachlorobenzene	10	U	10	0.79	ug/L		08/27/13 14:50	09/04/13 12:38	
Hexachlorobutadiene	10	U	10	0.62	ug/L		08/27/13 14:50	09/04/13 12:38	
Hexachlorocyclopentadiene	10	U	10	2.5	ug/L		08/27/13 14:50	09/04/13 12:38	
Hexachloroethane	10	U	10	0.76	ug/L		08/27/13 14:50	09/04/13 12:38	
Indeno[1,2,3-cd]pyrene	10	U	10	1.0	ug/L		08/27/13 14:50	09/04/13 12:38	
Isophorone	10	U	10	0.90	ug/L		08/27/13 14:50	09/04/13 12:38	
2-Methylnaphthalene	10	U	10	0.78	ug/L		08/27/13 14:50	09/04/13 12:38	
2-Methylphenol	10	U	10	0.89	ug/L		08/27/13 14:50	09/04/13 12:38	
3 & 4 Methylphenol	10	U	10	1.3	ug/L		08/27/13 14:50	09/04/13 12:38	
Naphthalene	10	U	10	0.70	ug/L		08/27/13 14:50	09/04/13 12:38	
2-Nitroaniline	50	U	50	1.3	ug/L		08/27/13 14:50	09/04/13 12:38	
3-Nitroaniline	50	U	50	5.0	ug/L		08/27/13 14:50	09/04/13 12:38	
4-Nitroaniline	50	U	50		ug/L		08/27/13 14:50	09/04/13 12:38	
Nitrobenzene	10	U	10		ug/L		08/27/13 14:50	09/04/13 12:38	
2-Nitrophenol	10	U	10		ug/L		08/27/13 14:50	09/04/13 12:38	
4-Nitrophenol	50	U	50		ug/L		08/27/13 14:50	09/04/13 12:38	
N-Nitrosodi-n-propylamine	10		10		ug/L		08/27/13 14:50	09/04/13 12:38	
N-Nitrosodiphenylamine	10		10		ug/L		08/27/13 14:50	09/04/13 12:38	
Pentachlorophenol	50		50		ug/L		08/27/13 14:50	09/04/13 12:38	
Phenanthrene	10		10		ug/L		08/27/13 14:50	09/04/13 12:38	
Phenol	10		10		ug/L		08/27/13 14:50	09/04/13 12:38	
Pyrene	10		10		ug/L		08/27/13 14:50	09/04/13 12:38	
2,4,5-Trichlorophenol	10		10		ug/L		08/27/13 14:50	09/04/13 12:38	
2,4,6-Trichlorophenol	10		10		ug/L		08/27/13 14:50	09/04/13 12:38	
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fa
2-Fluorobiphenyl	60		38 - 130				08/27/13 14:50	09/04/13 12:38	
2-Fluorophenol (Surr)	66		25 <sub>-</sub> 130				08/27/13 14:50	09/04/13 12:38	
Nitrobenzene-d5 (Surr)	61		39 - 130				08/27/13 14:50	09/04/13 12:38	
Phenol-d5 (Surr)	55		25 <sub>-</sub> 130				08/27/13 14:50	09/04/13 12:38	
Terphenyl-d14 (Surr)	33		10 - 143				08/27/13 14:50	09/04/13 12:38	
2,4,6-Tribromophenol (Surr)	55		31 <sub>-</sub> 141				08/27/13 14:50	09/04/13 12:38	
		CC/FID		line Den	0	:\	00/21/10 14:00	03/04/10 12:00	
Method: 8015C - Nonhalogenated Analyte	Result	_	RL			D	Prepared	Analyzed	Dil Fa
Gasoline Range Organics (GRO) -C6-C10	13	JB	50	11	ug/L			08/28/13 13:25	
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fa
a,a,a-Trifluorotoluene	91		70 - 130					08/28/13 13:25	
Method: 8015C - Nonhalogenate						-			
Analyte		Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fa
Diesel Range Organics [C10-C28]	340	В	97	27	ug/L		08/28/13 07:23	08/28/13 18:12	
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fa
o-Terphenyl (Surr)	72		50 - 150				08/28/13 07:23	08/28/13 18:12	

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93550-1

Lab Sample ID: 680-93550-14

Matrix: Water

Client Sample ID: PZ03-04

Date Collected: 08/22/13 12:30 Date Received: 08/23/13 09:28

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
Acetone			25	3.5	ug/L			08/30/13 01:12	
Benzene	1.0	U	1.0	0.34	ug/L			08/30/13 01:12	
Bromodichloromethane	1.0	U	1.0	0.50				08/30/13 01:12	
Bromoform	5.0	U	5.0	0.71	ug/L			08/30/13 01:12	
Carbon disulfide	1.0	U	1.0	0.50	ug/L			08/30/13 01:12	
Carbon tetrachloride	1.0	U	1.0	0.50	ug/L			08/30/13 01:12	
Chlorobenzene	1.0		1.0		ug/L			08/30/13 01:12	
Chloroethane	1.0	U	1.0		ug/L			08/30/13 01:12	
Chloroform	1.0		1.0		ug/L			08/30/13 01:12	
Chloromethane	1.0		1.0		ug/L			08/30/13 01:12	
cis-1,2-Dichloroethene	1.0	U	1.0		ug/L			08/30/13 01:12	
cis-1,3-Dichloropropene	5.0		5.0	0.50	-			08/30/13 01:12	
Cyclohexane	1.0		1.0	0.50	ug/L			08/30/13 01:12	
Dibromochloromethane	1.0		1.0	0.50	ug/L			08/30/13 01:12	
1,2-Dibromo-3-Chloropropane	5.0		5.0	0.78	ug/L			08/30/13 01:12	
1,2-Dichlorobenzene	1.0		1.0	0.50	ug/L			08/30/13 01:12	
1,3-Dichlorobenzene	1.0		1.0	0.54	ug/L			08/30/13 01:12	
1.4-Dichlorobenzene	1.0		1.0	0.64	•			08/30/13 01:12	
Dichlorodifluoromethane	1.0		1.0					08/30/13 01:12	
1,1-Dichloroethane	1.0		1.0		•			08/30/13 01:12	
1,2-Dichloroethane	1.0		1.0		•			08/30/13 01:12	
1,1-Dichloroethene	1.0		1.0		ug/L ug/L			08/30/13 01:12	
,	1.0				-				
1,2-Dichloropropane	1.0		1.0 1.0		ug/L			08/30/13 01:12 08/30/13 01:12	
Diisopropyl ether					ug/L				
Ethylbenzene	1.0		1.0		ug/L			08/30/13 01:12	
Ethylene Dibromide	1.0		1.0		ug/L			08/30/13 01:12	
Ethyl tert-butyl ether	1.0		1.0		ug/L			08/30/13 01:12	
2-Hexanone	25		25		ug/L			08/30/13 01:12	
Isopropylbenzene	1.0		1.0		ug/L			08/30/13 01:12	
Methyl acetate	5.0		5.0	2.1				08/30/13 01:12	
Methylcyclohexane	1.0		1.0	0.50				08/30/13 01:12	
Methylene Chloride	5.0		5.0		ug/L 			08/30/13 01:12	
Methyl Ethyl Ketone	25		25		ug/L			08/30/13 01:12	
methyl isobutyl ketone	25		25		ug/L			08/30/13 01:12	
Methyl tert-butyl ether	1.0		1.0		ug/L			08/30/13 01:12	
Naphthalene	1.0		1.0		ug/L			08/30/13 01:12	
Styrene	1.0		1.0		ug/L			08/30/13 01:12	
Tert-amyl methyl ether	1.0		1.0		ug/L			08/30/13 01:12	
ert-Butyl alcohol	5.0	U	5.0	4.9	ug/L			08/30/13 01:12	
1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.50	ug/L			08/30/13 01:12	
Tetrachloroethene	1.0		1.0	0.58	ug/L			08/30/13 01:12	
Toluene	1.0		1.0	0.70	ug/L			08/30/13 01:12	
rans-1,2-Dichloroethene	1.0		1.0	0.50	ug/L			08/30/13 01:12	
rans-1,3-Dichloropropene	5.0	U	5.0	0.50	ug/L			08/30/13 01:12	
1,2,4-Trichlorobenzene	1.0	U	1.0	0.82	ug/L			08/30/13 01:12	
1,1,1-Trichloroethane	1.0	U	1.0	0.50	ug/L			08/30/13 01:12	
1,1,2-Trichloroethane	5.0	U	5.0	0.50	ug/L			08/30/13 01:12	
Trichloroethene	1.0	U	1.0	0.50	ug/L			08/30/13 01:12	
Trichlorofluoromethane	1.0	U	1.0	0.52	ug/L			08/30/13 01:12	

TestAmerica Savannah

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Client: ARCADIS U.S., Inc.

Date Received: 08/23/13 09:28

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93550-1

Lab Sample ID: 680-93550-14

Client Sample ID: PZ03-04 Date Collected: 08/22/13 12:30

Matrix: Water

Method: 8260B - Volatile Organi	c Compounds	(GC/MS) (C	ontinued)						
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	1.0	0.50	ug/L			08/30/13 01:12	1
Vinyl chloride	1.0	U	1.0	0.50	ug/L			08/30/13 01:12	1
Xylenes, Total	10	U	10	1.6	ug/L			08/30/13 01:12	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	96		78 - 118			-		08/30/13 01:12	1
Dibromofluoromethane	103		81 - 121					08/30/13 01:12	1
Toluene-d8 (Surr)	96		80 - 120					08/30/13 01:12	1

Method: 8015C - Nonhalogenate Analyte	_	ng GC/FID ·	-Modified (Gaso RL	line Ran MDL		nics) D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO) -C6-C10	62	В	50	11	ug/L			08/28/13 13:50	1
Surrogate a,a,a-Trifluorotoluene		Qualifier	Limits 70 - 130			-	Prepared	Analyzed 08/28/13 13:50	Dil Fac

Client Sample ID: PZ03-08 Lab Sample ID: 680-93550-15 Date Collected: 08/22/13 13:08

Matrix: Water

Date Received: 08/23/13 09:28 Method: 8260B - Volatile Organic Compounds (GC/MS) RL MDL Unit Dil Fac Analyte Result Qualifier D Prepared Analyzed Acetone 25 U 25 3.5 ug/L 08/30/13 01:37 Benzene 1.0 U 1.0 0.34 ug/L 08/30/13 01:37 Bromodichloromethane 1.0 U 1.0 0.50 ug/L 08/30/13 01:37 Bromoform 50 U 5.0 0.71 ug/L 08/30/13 01:37 Carbon disulfide 1.0 U 1.0 0.50 ug/L 08/30/13 01:37 Carbon tetrachloride 1.0 U 1.0 0.50 ug/L 08/30/13 01:37 Chlorobenzene 1.0 U 1.0 0.50 ug/L 08/30/13 01:37 Chloroethane 1.0 U 1.0 0.76 ug/L 08/30/13 01:37 Chloroform 1.0 U 0.60 ug/L 1.0 08/30/13 01:37 Chloromethane 1.0 U 1.0 0.83 ug/L 08/30/13 01:37 cis-1,2-Dichloroethene 1.0 U 1.0 0.50 ug/L 08/30/13 01:37 cis-1,3-Dichloropropene 5.0 U 5.0 0.50 ug/L 08/30/13 01:37 10 U Cyclohexane 1.0 0.50 ug/L 08/30/13 01:37 1.0 U 1.0 Dibromochloromethane 0.50 ug/L 08/30/13 01:37 1,2-Dibromo-3-Chloropropane 0.78 5.0 U 5.0 ug/L 08/30/13 01:37 1,2-Dichlorobenzene 1.0 U 1.0 0.50 ug/L 08/30/13 01:37 1.3-Dichlorobenzene 1.0 U 1.0 0.54 ug/L 08/30/13 01:37 1,4-Dichlorobenzene 1.0 U 1.0 0.64 ug/L 08/30/13 01:37 Dichlorodifluoromethane 1.0 U 1.0 0.85 ug/L 08/30/13 01:37 1,1-Dichloroethane 1.0 U 1.0 0.50 ug/L 08/30/13 01:37 1,2-Dichloroethane 1.0 U 1.0 0.50 ug/L 08/30/13 01:37 1,1-Dichloroethene 1.0 U 1.0 0.50 ug/L 08/30/13 01:37 1,2-Dichloropropane 1.0 U 1.0 0.50 ug/L 08/30/13 01:37 10 U 1.0 0.50 Diisopropyl ether ug/L 08/30/13 01:37 Ethylbenzene 1.0 U 1.0 08/30/13 01:37 0.50 ug/L Ethylene Dibromide 10 U 1.0 0.50 ug/L 08/30/13 01:37 Ethyl tert-butyl ether 1.0 U 1.0 0.68 ug/L 08/30/13 01:37 08/30/13 01:37 2-Hexanone 25 U 25 3.1 ug/L

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

Lab Sample ID: 680-93550-15

TestAmerica Job ID: 680-93550-1

Matrix: Water

Client Sample ID: PZ03-08 Date Collected: 08/22/13 13:08

Date Received: 08/23/13 09:28

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Isopropylbenzene	1.0	U	1.0	0.53	ug/L			08/30/13 01:37	1
Methyl acetate	5.0	U	5.0	2.1	ug/L			08/30/13 01:37	1
Methylcyclohexane	1.0	U	1.0	0.50	ug/L			08/30/13 01:37	1
Methylene Chloride	5.0	U	5.0	3.0	ug/L			08/30/13 01:37	1
Methyl Ethyl Ketone	25	U	25	2.6	ug/L			08/30/13 01:37	1
methyl isobutyl ketone	25	U	25	1.8	ug/L			08/30/13 01:37	1
Methyl tert-butyl ether	1.0	U	1.0	0.74	ug/L			08/30/13 01:37	1
Naphthalene	1.0	U	1.0	1.0	ug/L			08/30/13 01:37	1
Styrene	1.0	U	1.0	1.0	ug/L			08/30/13 01:37	1
Tert-amyl methyl ether	1.0	U	1.0	0.60	ug/L			08/30/13 01:37	1
tert-Butyl alcohol	5.0	U	5.0	4.9	ug/L			08/30/13 01:37	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.50	ug/L			08/30/13 01:37	1
Tetrachloroethene	1.0	U	1.0	0.58	ug/L			08/30/13 01:37	1
Toluene	1.0	U	1.0	0.70	ug/L			08/30/13 01:37	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.50	ug/L			08/30/13 01:37	1
trans-1,3-Dichloropropene	5.0	U	5.0	0.50	ug/L			08/30/13 01:37	1
1,2,4-Trichlorobenzene	1.0	U	1.0	0.82	ug/L			08/30/13 01:37	1
1,1,1-Trichloroethane	1.0	U	1.0	0.50	ug/L			08/30/13 01:37	1
1,1,2-Trichloroethane	5.0	U	5.0	0.50	ug/L			08/30/13 01:37	1
Trichloroethene	1.0	U	1.0	0.50	ug/L			08/30/13 01:37	1
Trichlorofluoromethane	1.0	U	1.0	0.52	ug/L			08/30/13 01:37	1
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	1.0	0.50	ug/L			08/30/13 01:37	1
Vinyl chloride	1.0	U	1.0	0.50	ug/L			08/30/13 01:37	1
Xylenes, Total	10	U	10	1.6	ug/L			08/30/13 01:37	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	97		78 - 118		08/30/13 01:37	1
Dibromofluoromethane	103		81 - 121		08/30/13 01:37	1
Toluene-d8 (Surr)	97		80 - 120		08/30/13 01:37	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	4.8	J	9.9	0.75	ug/L		08/27/13 14:50	09/04/13 13:04	1
Acenaphthylene	9.9	U	9.9	0.84	ug/L		08/27/13 14:50	09/04/13 13:04	1
Acetophenone	9.9	U	9.9	0.57	ug/L		08/27/13 14:50	09/04/13 13:04	1
Anthracene	9.9	U	9.9	0.69	ug/L		08/27/13 14:50	09/04/13 13:04	1
Atrazine	9.9	U	9.9	1.2	ug/L		08/27/13 14:50	09/04/13 13:04	1
Benzaldehyde	9.9	U	9.9	1.1	ug/L		08/27/13 14:50	09/04/13 13:04	1
Benzo[a]anthracene	9.9	U	9.9	0.55	ug/L		08/27/13 14:50	09/04/13 13:04	1
Benzo[a]pyrene	9.9	U	9.9	0.71	ug/L		08/27/13 14:50	09/04/13 13:04	1
Benzo[b]fluoranthene	9.9	U	9.9	2.6	ug/L		08/27/13 14:50	09/04/13 13:04	1
Benzo[g,h,i]perylene	9.9	U	9.9	0.86	ug/L		08/27/13 14:50	09/04/13 13:04	1
Benzo[k]fluoranthene	9.9	U	9.9	1.2	ug/L		08/27/13 14:50	09/04/13 13:04	1
1,1'-Biphenyl	9.9	U	9.9	0.58	ug/L		08/27/13 14:50	09/04/13 13:04	1
Bis(2-chloroethoxy)methane	9.9	U	9.9	0.93	ug/L		08/27/13 14:50	09/04/13 13:04	1
Bis(2-chloroethyl)ether	9.9	U	9.9	1.1	ug/L		08/27/13 14:50	09/04/13 13:04	1
bis (2-chloroisopropyl) ether	9.9	U	9.9	0.77	ug/L		08/27/13 14:50	09/04/13 13:04	1
Bis(2-ethylhexyl) phthalate	9.9	U	9.9	1.6	ug/L		08/27/13 14:50	09/04/13 13:04	1
4-Bromophenyl phenyl ether	9.9	U	9.9	0.76	ug/L		08/27/13 14:50	09/04/13 13:04	1
Butyl benzyl phthalate	9.9	U	9.9	1.2	ug/L		08/27/13 14:50	09/04/13 13:04	1

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12

Client: ARCADIS U.S., Inc.

Date Received: 08/23/13 09:28

4-Nitroaniline

Nitrobenzene

2-Nitrophenol

4-Nitrophenol

Surrogate

2-Fluorobiphenyl

N-Nitrosodi-n-propylamine

N-Nitrosodiphenylamine

Pentachlorophenol

Project/Site: CSX C&O Canal Brunswick, MD

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

TestAmerica Job ID: 680-93550-1

Client Sample ID: PZ03-08 Date Collected: 08/22/13 13:08

Lab Sample ID: 680-93550-15

**Matrix: Water** 

MDL Unit Dil Fac Result Qualifier D Prepared Analyzed Caprolactam 9.9 Ū 9.9 08/27/13 14:50 09/04/13 13:04 0.78 ug/L Carbazole 99 Ü 99 0.71 08/27/13 14:50 ug/L 09/04/13 13:04 4-Chloroaniline 20 U 20 2.2 ug/L 08/27/13 14:50 09/04/13 13:04 4-Chloro-3-methylphenol 9.9 U 9.9 0.99 08/27/13 14:50 09/04/13 13:04 ug/L 2-Chloronaphthalene 9.9 U 9.9 0.79 ug/L 08/27/13 14:50 09/04/13 13:04 2-Chlorophenol 99 U 99 0.86 ug/L 08/27/13 14:50 09/04/13 13:04 4-Chlorophenyl phenyl ether 9.9 U 9.9 0.83 ug/L 08/27/13 14:50 09/04/13 13:04 9.9 U 9.9 08/27/13 14:50 Chrysene 0.51 ug/L 09/04/13 13:04 Dibenz(a,h)anthracene 9.9 U 9.9 0.99 ug/L 08/27/13 14:50 09/04/13 13:04 Dibenzofuran 9.9 9.9 0.78 ug/L 08/27/13 14:50 09/04/13 13:04 3,3'-Dichlorobenzidine 60 U 60 30 ug/L 08/27/13 14:50 09/04/13 13:04 2,4-Dichlorophenol 9.9 U 9.9 1.1 ug/L 08/27/13 14:50 09/04/13 13:04 Diethyl phthalate 9.9 99 U 0.87 ug/L 08/27/13 14:50 09/04/13 13:04 2,4-Dimethylphenol 9.9 9.9 4.0 ug/L 08/27/13 14:50 09/04/13 13:04 0.98 ug/L 09/04/13 13:04 Dimethyl phthalate 99 U 99 08/27/13 14:50 Di-n-butyl phthalate 9.9 9.9 08/27/13 14:50 09/04/13 13:04 U 0.82 ug/L 50 4,6-Dinitro-2-methylphenol 50 U 9.9 ug/L 08/27/13 14:50 09/04/13 13:04 2,4-Dinitrophenol 50 50 08/27/13 14:50 09/04/13 13:04 U ug/L 2.4-Dinitrotoluene 9.9 Ü 9.9 09/04/13 13:04 ug/L 08/27/13 14:50 1.2 2,6-Dinitrotoluene 9.9 U 9.9 1.1 ug/L 08/27/13 14:50 09/04/13 13:04 Di-n-octyl phthalate 08/27/13 14:50 09/04/13 13:04 9.9 U 9.9 1.4 ua/L 99 U Fluoranthene 9.9 0.74 ug/L 08/27/13 14:50 09/04/13 13:04 9.9 0.95 ug/L 08/27/13 14:50 09/04/13 13:04 Fluorene 6.6 J Hexachlorobenzene 9.9 U 9.9 0.78 ug/L 08/27/13 14:50 09/04/13 13:04 Hexachlorobutadiene 9.9 U 9.9 0.62 ug/L 08/27/13 14:50 09/04/13 13:04 08/27/13 14:50 99 U 9.9 09/04/13 13:04 Hexachlorocyclopentadiene 2.5 ug/L Hexachloroethane 9.9 08/27/13 14:50 U 9.9 0.75 ug/L 09/04/13 13:04 Indeno[1,2,3-cd]pyrene 9.9 U 9.9 0.99 ug/L 08/27/13 14:50 09/04/13 13:04 9.9 U 9.9 ug/L 08/27/13 14:50 09/04/13 13:04 Isophorone 0.89 9.9 U 2-Methylnaphthalene 9.9 0.77 ug/L 08/27/13 14:50 09/04/13 13:04 2-Methylphenol 9.9 U 9.9 0.88 ug/L 08/27/13 14:50 09/04/13 13:04 3 & 4 Methylphenol 9.9 U 9.9 1.3 ug/L 08/27/13 14:50 09/04/13 13:04 Naphthalene 9.9 U 9.9 0.70 ug/L 08/27/13 14:50 09/04/13 13:04 2-Nitroaniline 50 U 50 08/27/13 14:50 09/04/13 13:04 1.3 ug/L 3-Nitroaniline 50 U 50 5.0 ug/L 08/27/13 14:50 09/04/13 13:04

Phenanthrene	9.9 U	9.9	0.76 ug/L	08/27/13 14:50	09/04/13 13:04
Phenol	9.9 U	9.9	0.82 ug/L	08/27/13 14:50	09/04/13 13:04
Pyrene	9.9 U	9.9	0.63 ug/L	08/27/13 14:50	09/04/13 13:04
2,4,5-Trichlorophenol	9.9 U	9.9	1.2 ug/L	08/27/13 14:50	09/04/13 13:04
2,4,6-Trichlorophenol	9.9 U	9.9	0.84 ug/L	08/27/13 14:50	09/04/13 13:04

Limits

38 - 130

50

9.9

9.9

50

9.9

9.9

50

5.0 ug/L

0.73 ug/L

0.75 ug/L

1.9 ug/L

0.72 ug/L

0.91 ug/L

2.0 ug/L 08/27/13 14:50

08/27/13 14:50

08/27/13 14:50

08/27/13 14:50

08/27/13 14:50

08/27/13 14:50

08/27/13 14:50

Prepared

08/27/13 14:50

50

9.9 U

9.9 U

50 U

9.9

%Recovery 64

9.9 U

50 U

Qualifier

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09/04/13 13:04

09/04/13 13:04

09/04/13 13:04

09/04/13 13:04

09/04/13 13:04

09/04/13 13:04

09/04/13 13:04

Analyzed

09/04/13 13:04

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9/9/2013

Dil Fac

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93550-1

Client Sample ID: PZ03-08

Date Received: 08/23/13 09:28

Lab Sample ID: 680-93550-15 Date Collected: 08/22/13 13:08

Matrix: Water

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

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorophenol (Surr)	81		25 - 130	08/27/13 14:50	09/04/13 13:04	1
Nitrobenzene-d5 (Surr)	69		39 - 130	08/27/13 14:50	09/04/13 13:04	1
Phenol-d5 (Surr)	65		25 _ 130	08/27/13 14:50	09/04/13 13:04	1
Terphenyl-d14 (Surr)	54		10 - 143	08/27/13 14:50	09/04/13 13:04	1
2,4,6-Tribromophenol (Surr)	106		31 - 141	08/27/13 14:50	09/04/13 13:04	1

Method: 8015C - Nonhalogenated	d Organics usi	ng GC/FID	-Modified (Gaso	line Ran	ge Orgar	nics)			
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO) -C6-C10	79	В	50	11	ug/L			08/28/13 14:16	1
Surrogate a,a,a-Trifluorotoluene	%Recovery	Qualifier	70 - 130			_	Prepared	Analyzed 08/28/13 14:16	Dil Fac

Method: 8015C - Nonhalogenated	d Organics usi	ng GC/FID	-Modified (Dies	el Range	Organics	s)			
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	11000		970	270	ug/L		08/30/13 15:58	09/01/13 11:22	10
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
o-Terphenyl (Surr)	144		50 - 150				08/30/13 15:58	09/01/13 11:22	10

Client Sample ID: TB01 (082213)

Lab Sample ID: 680-93550-16 Date Collected: 08/22/13 00:00 Date Received: 08/23/13 09:28

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	25	U	25	3.5	ug/L			08/30/13 02:03	1
Benzene	1.0	U	1.0	0.34	ug/L			08/30/13 02:03	1
Bromodichloromethane	1.0	U	1.0	0.50	ug/L			08/30/13 02:03	1
Bromoform	5.0	U	5.0	0.71	ug/L			08/30/13 02:03	1
Carbon disulfide	1.0	U	1.0	0.50	ug/L			08/30/13 02:03	1
Carbon tetrachloride	1.0	U	1.0	0.50	ug/L			08/30/13 02:03	1
Chlorobenzene	1.0	U	1.0	0.50	ug/L			08/30/13 02:03	1
Chloroethane	1.0	U	1.0	0.76	ug/L			08/30/13 02:03	1
Chloroform	1.0	U	1.0	0.60	ug/L			08/30/13 02:03	1
Chloromethane	1.0	U	1.0	0.83	ug/L			08/30/13 02:03	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.50	ug/L			08/30/13 02:03	1
cis-1,3-Dichloropropene	5.0	U	5.0	0.50	ug/L			08/30/13 02:03	1
Cyclohexane	1.0	U	1.0	0.50	ug/L			08/30/13 02:03	1
Dibromochloromethane	1.0	U	1.0	0.50	ug/L			08/30/13 02:03	1
1,2-Dibromo-3-Chloropropane	5.0	U	5.0	0.78	ug/L			08/30/13 02:03	1
1,2-Dichlorobenzene	1.0	U	1.0	0.50	ug/L			08/30/13 02:03	1
1,3-Dichlorobenzene	1.0	U	1.0	0.54	ug/L			08/30/13 02:03	1
1,4-Dichlorobenzene	1.0	U	1.0	0.64	ug/L			08/30/13 02:03	1
Dichlorodifluoromethane	1.0	U	1.0	0.85	ug/L			08/30/13 02:03	1
1,1-Dichloroethane	1.0	U	1.0	0.50	ug/L			08/30/13 02:03	1
1,2-Dichloroethane	1.0	U	1.0	0.50	ug/L			08/30/13 02:03	1
1,1-Dichloroethene	1.0	U	1.0	0.50	ug/L			08/30/13 02:03	1
1,2-Dichloropropane	1.0	U	1.0	0.50	ug/L			08/30/13 02:03	1

TestAmerica Savannah

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**Matrix: Water** 

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93550-1

Client Sample ID: TB01 (082213)

Date Collected: 08/22/13 00:00

Lab Sample ID: 680-93550-16

Matrix: Water

Date Received: 08/23/13 09:28

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diisopropyl ether	1.0	U	1.0	0.50	ug/L			08/30/13 02:03	1
Ethylbenzene	1.0	U	1.0	0.50	ug/L			08/30/13 02:03	1
Ethylene Dibromide	1.0	U	1.0	0.50	ug/L			08/30/13 02:03	1
Ethyl tert-butyl ether	1.0	U	1.0	0.68	ug/L			08/30/13 02:03	1
2-Hexanone	25	U	25	3.1	ug/L			08/30/13 02:03	1
Isopropylbenzene	1.0	U	1.0	0.53	ug/L			08/30/13 02:03	1
Methyl acetate	5.0	U	5.0	2.1	ug/L			08/30/13 02:03	1
Methylcyclohexane	1.0	U	1.0	0.50	ug/L			08/30/13 02:03	1
Methylene Chloride	5.0	U	5.0	3.0	ug/L			08/30/13 02:03	1
Methyl Ethyl Ketone	25	U	25	2.6	ug/L			08/30/13 02:03	1
methyl isobutyl ketone	25	U	25	1.8	ug/L			08/30/13 02:03	1
Methyl tert-butyl ether	1.0	U	1.0	0.74	ug/L			08/30/13 02:03	1
Naphthalene	1.0	U	1.0	1.0	ug/L			08/30/13 02:03	1
Styrene	1.0	U	1.0	1.0	ug/L			08/30/13 02:03	1
Tert-amyl methyl ether	1.0	U	1.0	0.60	ug/L			08/30/13 02:03	1
tert-Butyl alcohol	5.0	U	5.0	4.9	ug/L			08/30/13 02:03	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.50	ug/L			08/30/13 02:03	1
Tetrachloroethene	1.0	U	1.0	0.58	ug/L			08/30/13 02:03	1
Toluene	1.0	U	1.0	0.70	ug/L			08/30/13 02:03	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.50	ug/L			08/30/13 02:03	1
trans-1,3-Dichloropropene	5.0	U	5.0	0.50	ug/L			08/30/13 02:03	1
1,2,4-Trichlorobenzene	1.0	U	1.0	0.82	ug/L			08/30/13 02:03	1
1,1,1-Trichloroethane	1.0	U	1.0	0.50	ug/L			08/30/13 02:03	1
1,1,2-Trichloroethane	5.0	U	5.0	0.50	ug/L			08/30/13 02:03	1
Trichloroethene	1.0	U	1.0	0.50	ug/L			08/30/13 02:03	1
Trichlorofluoromethane	1.0	U	1.0	0.52	ug/L			08/30/13 02:03	1
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	1.0	0.50	ug/L			08/30/13 02:03	1
Vinyl chloride	1.0	U	1.0	0.50	ug/L			08/30/13 02:03	1
Xylenes, Total	10	U	10	1.6	ug/L			08/30/13 02:03	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	96		78 - 118			_		08/30/13 02:03	1
Dibromofluoromethane	103		81 - 121					08/30/13 02:03	1

Client Sample ID: PZ02-08 (DRO-SGT)

Date Collected: 08/22/13 14:00

Toluene-d8 (Surr)

Date Received: 08/23/13 09:28

08/30/13 02:03

Matrix: Water

Method: 8015C - Nonhalogenate	d Organics usi	ng GC/FID	-Modified (Dies	el Range	Organics	s)			
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	310	В	97	27	ug/L		08/28/13 07:23	08/28/13 18:44	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
o-Terphenyl (Surr)	81		50 - 150				08/28/13 07:23	08/28/13 18:44	1

80 - 120

TestAmerica Savannah

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93550-1

Lab Sample ID: 680-93550-19

Matrix: Water

Matrix: Water

Client Sample ID: PZ03-08 (DRO-SGT) Date Collected: 08/22/13 13:08

Date Received: 08/23/13 09:28

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	8000		490	140	ug/L		08/30/13 15:58	09/01/13 11:37	5
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
o-Terphenyl (Surr)	135		<u>50 - 150</u>				08/30/13 15:58	09/01/13 11:37	5

Client Sample ID: PZ03-04 Lab Sample ID: 680-93588-1

Date Collected: 08/22/13 12:30

Date Received: 08/24/13 08:38

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	2.4	J	9.9	0.75	ug/L		08/27/13 14:50	09/03/13 19:06	1
Acenaphthylene	9.9	U	9.9	0.84	ug/L		08/27/13 14:50	09/03/13 19:06	1
Acetophenone	9.9	U	9.9	0.57	ug/L		08/27/13 14:50	09/03/13 19:06	1
Anthracene	9.9	U	9.9	0.68	ug/L		08/27/13 14:50	09/03/13 19:06	1
Atrazine	9.9	U	9.9	1.2	ug/L		08/27/13 14:50	09/03/13 19:06	1
Benzaldehyde	9.9	U	9.9	1.1	ug/L		08/27/13 14:50	09/03/13 19:06	1
Benzo[a]anthracene	9.9	U	9.9	0.55	ug/L		08/27/13 14:50	09/03/13 19:06	1
Benzo[a]pyrene	9.9	U	9.9	0.70	ug/L		08/27/13 14:50	09/03/13 19:06	1
Benzo[b]fluoranthene	9.9	U	9.9	2.6	ug/L		08/27/13 14:50	09/03/13 19:06	1
Benzo[g,h,i]perylene	9.9	U	9.9	0.86	ug/L		08/27/13 14:50	09/03/13 19:06	1
Benzo[k]fluoranthene	9.9	U	9.9	1.2	ug/L		08/27/13 14:50	09/03/13 19:06	1
1,1'-Biphenyl	9.9	U	9.9	0.57	ug/L		08/27/13 14:50	09/03/13 19:06	1
Bis(2-chloroethoxy)methane	9.9	U	9.9	0.93	ug/L		08/27/13 14:50	09/03/13 19:06	1
Bis(2-chloroethyl)ether	9.9	U	9.9	1.1	ug/L		08/27/13 14:50	09/03/13 19:06	1
bis (2-chloroisopropyl) ether	9.9	U	9.9	0.77	ug/L		08/27/13 14:50	09/03/13 19:06	1
Bis(2-ethylhexyl) phthalate	9.9	U	9.9	1.6	ug/L		08/27/13 14:50	09/03/13 19:06	1
4-Bromophenyl phenyl ether	9.9	U	9.9	0.76	ug/L		08/27/13 14:50	09/03/13 19:06	1
Butyl benzyl phthalate	9.9	U	9.9	1.2	ug/L		08/27/13 14:50	09/03/13 19:06	1
Caprolactam	9.9	U	9.9	0.78	ug/L		08/27/13 14:50	09/03/13 19:06	1
Carbazole	9.9	U	9.9	0.70	ug/L		08/27/13 14:50	09/03/13 19:06	1
4-Chloroaniline	20	U	20	2.2	ug/L		08/27/13 14:50	09/03/13 19:06	1
4-Chloro-3-methylphenol	9.9	U	9.9	0.99	ug/L		08/27/13 14:50	09/03/13 19:06	1
2-Chloronaphthalene	9.9	U	9.9	0.79	ug/L		08/27/13 14:50	09/03/13 19:06	1
2-Chlorophenol	9.9	U	9.9	0.86	ug/L		08/27/13 14:50	09/03/13 19:06	1
4-Chlorophenyl phenyl ether	9.9	U	9.9	0.83	ug/L		08/27/13 14:50	09/03/13 19:06	1
Chrysene	9.9	U	9.9	0.51	ug/L		08/27/13 14:50	09/03/13 19:06	1
Dibenz(a,h)anthracene	9.9	U	9.9	0.99	ug/L		08/27/13 14:50	09/03/13 19:06	1
Dibenzofuran	9.9	U	9.9	0.78	ug/L		08/27/13 14:50	09/03/13 19:06	1
3,3'-Dichlorobenzidine	59	U	59	30	ug/L		08/27/13 14:50	09/03/13 19:06	1
2,4-Dichlorophenol	9.9	U	9.9	1.1	_		08/27/13 14:50	09/03/13 19:06	1
Diethyl phthalate	9.9	U	9.9	0.87	ug/L		08/27/13 14:50	09/03/13 19:06	1
2,4-Dimethylphenol	9.9	U	9.9	4.0	ug/L		08/27/13 14:50	09/03/13 19:06	1
Dimethyl phthalate	9.9	U	9.9	0.98	ug/L		08/27/13 14:50	09/03/13 19:06	1
Di-n-butyl phthalate	9.9	U	9.9	0.82	ug/L		08/27/13 14:50	09/03/13 19:06	1
4,6-Dinitro-2-methylphenol	50		50		ug/L		08/27/13 14:50	09/03/13 19:06	1
2,4-Dinitrophenol	50		50		ug/L		08/27/13 14:50	09/03/13 19:06	1
2,4-Dinitrotoluene	9.9		9.9		ug/L		08/27/13 14:50	09/03/13 19:06	1
2,6-Dinitrotoluene	9.9		9.9	1.1	ug/L		08/27/13 14:50	09/03/13 19:06	1
Di-n-octyl phthalate	9.9		9.9		ug/L		08/27/13 14:50	09/03/13 19:06	1

TestAmerica Savannah

Client Sample ID: PZ03-04

Date Collected: 08/22/13 12:30 Date Received: 08/24/13 08:38 Lab Sample ID: 680-93588-1

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoranthene	9.9	U	9.9	0.73	ug/L		08/27/13 14:50	09/03/13 19:06	1
Fluorene	3.9	J	9.9	0.95	ug/L		08/27/13 14:50	09/03/13 19:06	1
Hexachlorobenzene	9.9	U	9.9	0.78	ug/L		08/27/13 14:50	09/03/13 19:06	1
Hexachlorobutadiene	9.9	U	9.9	0.61	ug/L		08/27/13 14:50	09/03/13 19:06	1
Hexachlorocyclopentadiene	9.9	U	9.9	2.5	ug/L		08/27/13 14:50	09/03/13 19:06	1
Hexachloroethane	9.9	U	9.9	0.75	ug/L		08/27/13 14:50	09/03/13 19:06	1
Indeno[1,2,3-cd]pyrene	9.9	U	9.9	0.99	ug/L		08/27/13 14:50	09/03/13 19:06	1
Isophorone	9.9	U	9.9	0.89	ug/L		08/27/13 14:50	09/03/13 19:06	1
2-Methylnaphthalene	1.8	J	9.9	0.77	ug/L		08/27/13 14:50	09/03/13 19:06	1
2-Methylphenol	9.9	U	9.9	0.88	ug/L		08/27/13 14:50	09/03/13 19:06	1
3 & 4 Methylphenol	9.9	U	9.9	1.3	ug/L		08/27/13 14:50	09/03/13 19:06	1
Naphthalene	1.2	J	9.9	0.69	ug/L		08/27/13 14:50	09/03/13 19:06	1
2-Nitroaniline	50	U	50	1.3	ug/L		08/27/13 14:50	09/03/13 19:06	1
3-Nitroaniline	50	U	50	5.0	ug/L		08/27/13 14:50	09/03/13 19:06	1
4-Nitroaniline	50	U	50	5.0	ug/L		08/27/13 14:50	09/03/13 19:06	1
Nitrobenzene	9.9	U	9.9	0.72	ug/L		08/27/13 14:50	09/03/13 19:06	1
2-Nitrophenol	9.9	U	9.9	0.75	ug/L		08/27/13 14:50	09/03/13 19:06	1
4-Nitrophenol	50	U	50	1.9	ug/L		08/27/13 14:50	09/03/13 19:06	1
N-Nitrosodi-n-propylamine	9.9	U	9.9	0.71	ug/L		08/27/13 14:50	09/03/13 19:06	1
N-Nitrosodiphenylamine	9.9	U	9.9	0.91	ug/L		08/27/13 14:50	09/03/13 19:06	1
Pentachlorophenol	50	U	50	2.0	ug/L		08/27/13 14:50	09/03/13 19:06	1
Phenanthrene	1.0	J	9.9	0.76	ug/L		08/27/13 14:50	09/03/13 19:06	1
Phenol	9.9	U	9.9	0.82	ug/L		08/27/13 14:50	09/03/13 19:06	1
Pyrene	9.9	U	9.9	0.62	ug/L		08/27/13 14:50	09/03/13 19:06	1
2,4,5-Trichlorophenol	9.9	U	9.9	1.2	ug/L		08/27/13 14:50	09/03/13 19:06	1
2,4,6-Trichlorophenol	9.9	U	9.9	0.84	ug/L		08/27/13 14:50	09/03/13 19:06	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl	54		38 - 130				08/27/13 14:50	09/03/13 19:06	1
2-Fluorophenol (Surr)	71		25 - 130				08/27/13 14:50	09/03/13 19:06	1
Nitrobenzene-d5 (Surr)	64		39 - 130				08/27/13 14:50	09/03/13 19:06	1
Phenol-d5 (Surr)	62		25 - 130				08/27/13 14:50	09/03/13 19:06	1

Method: 8015C - Nonhalogenated Analyte	_	Qualifier	RL	MDL	•	9) D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	28000	В	2400	680	ug/L		08/28/13 07:23	08/29/13 11:20	25
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
o-Terphenyl (Surr)	202	X	50 - 150				08/28/13 07:23	08/29/13 11:20	25

10 - 143

31 - 141

41

110

Client Sample ID: PZ03-04 (DRO-SGT)

Date Collected: 08/22/13 12:30 Date Received: 08/24/13 08:38

Terphenyl-d14 (Surr)

2,4,6-Tribromophenol (Surr)

Lab Sample ID: 680-93588-2

Matrix: Water

09/03/13 19:06

09/03/13 19:06

08/27/13 14:50

08/27/13 14:50

Method: 8015C - Nonhalogenated Organics using GC/FID -Modified (Diesel Range Organics)AnalyteResultQualifierRLMDLUnitDPreparedAnalyzedDil FacDiesel Range Organics [C10-C28]27000B2400680ug/L08/28/13 12:4708/29/13 11:3625

TestAmerica Savannah

9/9/2013

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Client: ARCADIS U.S., Inc.

Date Received: 08/24/13 08:38

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93550-1

Client Sample ID: PZ03-04 (DRO-SGT)

Lab Sample ID: 680-93588-2 Date Collected: 08/22/13 12:30

Matrix: Water

Limits Surrogate %Recovery Qualifier Prepared Analyzed Dil Fac 50 - 150 25 o-Terphenyl (Surr) 206 X

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93550-1

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

Lab Sample ID: MB 400-190016/4

**Matrix: Solid** 

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

	MB	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
Acetone	25	U –	25	7.3	ug/Kg			08/28/13 10:04	-
Benzene	5.0	U	5.0	0.49	ug/Kg			08/28/13 10:04	
Bromodichloromethane	5.0	U	5.0	0.84	ug/Kg			08/28/13 10:04	
Bromoform	5.0	U	5.0	0.63	ug/Kg			08/28/13 10:04	
Bromomethane	5.0	U	5.0	1.4	ug/Kg			08/28/13 10:04	
Carbon disulfide	5.0	U	5.0	1.2	ug/Kg			08/28/13 10:04	
Carbon tetrachloride	5.0	U	5.0	1.7	ug/Kg			08/28/13 10:04	
Chlorobenzene	5.0	U	5.0	0.52	ug/Kg			08/28/13 10:04	
Chloroethane	5.0	U	5.0	1.9	ug/Kg			08/28/13 10:04	
Chloroform	5.0	U	5.0	0.59	ug/Kg			08/28/13 10:04	
Chloromethane	5.0	U	5.0	1.0	ug/Kg			08/28/13 10:04	
cis-1,2-Dichloroethene	5.0	U	5.0	0.76	ug/Kg			08/28/13 10:04	
cis-1,3-Dichloropropene	5.0	U	5.0	1.2	ug/Kg			08/28/13 10:04	
Cyclohexane	5.0	U	5.0		ug/Kg			08/28/13 10:04	
Dibromochloromethane	5.0		5.0		ug/Kg			08/28/13 10:04	
1,2-Dibromo-3-Chloropropane	5.0		5.0		ug/Kg			08/28/13 10:04	
1,2-Dichlorobenzene	5.0		5.0		ug/Kg			08/28/13 10:04	
1,3-Dichlorobenzene	5.0		5.0		ug/Kg			08/28/13 10:04	
1,4-Dichlorobenzene	5.0		5.0		ug/Kg			08/28/13 10:04	
Dichlorodifluoromethane	5.0		5.0		ug/Kg			08/28/13 10:04	
1,1-Dichloroethane	5.0		5.0		ug/Kg			08/28/13 10:04	
1.2-Dichloroethane	5.0		5.0		ug/Kg			08/28/13 10:04	
1,1-Dichloroethene	5.0		5.0		ug/Kg			08/28/13 10:04	
1,2-Dichloropropane	5.0		5.0		ug/Kg			08/28/13 10:04	
Diisopropyl ether	5.0		5.0		ug/Kg			08/28/13 10:04	
Ethylbenzene	5.0		5.0		ug/Kg			08/28/13 10:04	
Ethylene Dibromide	5.0		5.0		ug/Kg			08/28/13 10:04	
Ethyl tert-butyl ether	5.0		5.0		ug/Kg			08/28/13 10:04	
2-Hexanone	25		25		ug/Kg			08/28/13 10:04	
Isopropylbenzene	5.0		5.0		ug/Kg			08/28/13 10:04	
Methyl acetate	5.0		5.0		ug/Kg			08/28/13 10:04	
Methylcyclohexane	5.0		5.0		ug/Kg			08/28/13 10:04	
Methylene Chloride	15		15		ug/Kg			08/28/13 10:04	
Methyl Ethyl Ketone	25		25		ug/Kg			08/28/13 10:04	
methyl isobutyl ketone	25		25		ug/Kg			08/28/13 10:04	
Methyl tert-butyl ether	5.0		5.0		ug/Kg			08/28/13 10:04	
Naphthalene	5.0		5.0		ug/Kg			08/28/13 10:04	
Styrene	5.0		5.0		ug/Kg			08/28/13 10:04	
Tert-amyl methyl ether	5.0		5.0		ug/Kg			08/28/13 10:04	
tert-Butyl alcohol	5.0		5.0		ug/Kg			08/28/13 10:04	
1,1,2,2-Tetrachloroethane	5.0		5.0		ug/Kg ug/Kg			08/28/13 10:04	
Tetrachloroethene	5.0		5.0		ug/Kg ug/Kg			08/28/13 10:04	
Toluene	5.0		5.0		ug/Kg ug/Kg			08/28/13 10:04	
trans-1,2-Dichloroethene	5.0		5.0		ug/Kg ug/Kg			08/28/13 10:04	
trans-1,3-Dichloropropene	5.0		5.0		ug/Kg ug/Kg			08/28/13 10:04	
1,2,4-Trichlorobenzene	5.0		5.0		ug/Kg ug/Kg			08/28/13 10:04	
1,1,1-Trichloroethane	5.0		5.0		ug/Kg ug/Kg			08/28/13 10:04	
1,1,2-Trichloroethane	5.0		5.0		ug/Kg ug/Kg			08/28/13 10:04	

TestAmerica Savannah

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93550-1

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

5.0 U

5.0 U

Lab Sample ID: MB 400-190016/4

**Matrix: Solid** 

Trichloroethene

Vinyl chloride

Trichlorofluoromethane

Analyte

Analysis Batch: 190016

1,1,2-Trichloro-1,2,2-trifluoroethane

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

08/28/13 10:04

08/28/13 10:04

MB MB Result Qualifier RL MDL Unit Prepared Dil Fac D Analyzed 5.0 U 5.0 08/28/13 10:04 0.48 ug/Kg 5.0 U 5.0 0.95 ug/Kg 08/28/13 10:04

2.0 ug/Kg

0.92 ug/Kg

LCS LCS

 MB
 MB

 Surrogate
 %Recovery
 Qualifier
 Limits
 Prepared
 Analyzed
 Dil Fac

 4-Bromofluorobenzene
 83
 72 - 122
 08/28/13 10:04
 1

5.0

5.0

 Surrogate
 %Recovery
 Qualifier
 Limits
 Prepared
 Analyzed
 Dil Factor

 4-Bromofluorobenzene
 83
 72 - 122
 08/28/13 10:04
 1

 Dibromofluoromethane
 98
 79 - 123
 08/28/13 10:04
 1

 Toluene-d8 (Surr)
 106
 80 - 120
 08/28/13 10:04
 1

Spike

Lab Sample ID: LCS 400-190016/1000

Matrix: Solid

Ethylene Dibromide

Ethyl tert-butyl ether

Isopropylbenzene

Methylcyclohexane

Methyl acetate

2-Hexanone

Analysis Batch: 190016

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

%Rec.

Analyte Added Result Qualifier Unit D %Rec Limits Acetone 200 159 ug/Kg 79 43 - 150 Benzene 50.0 49.6 ug/Kg 99 74 - 119 Bromodichloromethane 50.0 40.7 ug/Kg 81 68 - 128 Bromoform 50.0 40.0 80 54 - 125 ug/Kg Bromomethane 50.0 32.1 ug/Kg 64 25 - 150 Carbon disulfide 50.0 99 26 - 150 49.6 ug/Kg Carbon tetrachloride 50.0 88 70 - 128 43.8 ug/Kg Chlorobenzene 50.0 109 80 - 116 54.6 ug/Kg Chloroethane 50.0 43.2 ug/Kg 86 22 - 150 Chloroform 50.0 40.3 ug/Kg 81 74 - 119 Chloromethane 50.0 32.1 ug/Kg 64 36 - 147 cis-1,2-Dichloroethene 50.0 52.2 104 ug/Kg 68 - 126cis-1,3-Dichloropropene 50.0 51.1 ug/Kg 102 68 - 125 Cyclohexane 50.0 48.9 ug/Kg 98 62 - 126 Dibromochloromethane 50.0 57.8 ug/Kg 116 65 - 13150.0 1,2-Dibromo-3-Chloropropane 50.2 ug/Kg 100 57 - 1231.2-Dichlorobenzene 50.0 53.3 ug/Kg 107 76 - 120 1,3-Dichlorobenzene 50.0 54.6 ug/Kg 109 78 - 118 1.4-Dichlorobenzene 50.0 109 77 - 118 54 6 ug/Kg Dichlorodifluoromethane 50.0 30.0 60 44 - 145 ug/Kg 103 1.1-Dichloroethane 50.0 51.6 61 - 128 ug/Kg 1,2-Dichloroethane 50.0 47.1 94 70 - 125 ug/Kg 1.1-Dichloroethene 50.0 92 62 - 130 46.2 ug/Kg 1,2-Dichloropropane 50.0 52.3 ug/Kg 105 64 - 129 Diisopropyl ether 50.0 48.0 ug/Kg 96 46 - 144 50.0 78 - 120 Ethylbenzene 54.0 ug/Kg 108

TestAmerica Savannah

101

88

100

110

86

94

78 - 119

60 - 128

54 - 140

78 - 119

52 - 139

65 - 126

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50.0

50.0

200

50.0

250

50.0

50.6

44.2

200

55 1

216

46.9

ug/Kg

ug/Kg

ug/Kg

ug/Kg

ug/Kg

ug/Kg

G

3

5

7

8

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

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

Lab Sample ID: LCS 400-190016/1000

Matrix: Solid

Analysis Batch: 190016

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

	Spike	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Methylene Chloride	50.0	48.6		ug/Kg		97	45 - 150	
Methyl Ethyl Ketone	200	198		ug/Kg		99	62 _ 126	
methyl isobutyl ketone	200	175		ug/Kg		88	56 - 137	
Methyl tert-butyl ether	50.0	46.9		ug/Kg		94	69 - 124	
Naphthalene	50.0	50.1		ug/Kg		100	64 - 126	
Styrene	50.0	55.3		ug/Kg		111	66 - 132	
Tert-amyl methyl ether	50.0	45.6		ug/Kg		91	65 - 124	
tert-Butyl alcohol	500	544		ug/Kg		109	12 _ 150	
1,1,2,2-Tetrachloroethane	50.0	45.3		ug/Kg		91	67 - 120	
Tetrachloroethene	50.0	61.9		ug/Kg		124	74 - 126	
Toluene	50.0	54.8		ug/Kg		110	76 - 120	
trans-1,2-Dichloroethene	50.0	48.6		ug/Kg		97	65 _ 130	
trans-1,3-Dichloropropene	50.0	56.4		ug/Kg		113	65 - 126	
1,2,4-Trichlorobenzene	50.0	54.7		ug/Kg		109	72 - 126	
1,1,1-Trichloroethane	50.0	39.7		ug/Kg		79	72 - 121	
1,1,2-Trichloroethane	50.0	52.4		ug/Kg		105	75 - 118	
Trichloroethene	50.0	51.9		ug/Kg		104	76 - 122	
Trichlorofluoromethane	50.0	42.8		ug/Kg		86	65 _ 132	
1,1,2-Trichloro-1,2,2-trifluoroetha	50.0	49.5		ug/Kg		99	74 - 123	
ne Vigul oblorido	F0.0	40.7		ua/Ka		01	52 - 134	
Vinyl chloride	50.0			ug/Kg		81		
Xylenes, Total	100	109		ug/Kg		109	70 - 120	

LCS LCS

Surrogate	%Recovery	Qualifier	Limits
4-Bromofluorobenzene	86		72 - 122
Dibromofluoromethane	85		79 - 123
Toluene-d8 (Surr)	105		80 120

Lab Sample ID: LCSD 400-190016/11

Matrix: Solid

Analysis Batch: 190016

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

	Spike	LCSD	LCSD				%Rec.		RPD
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Acetone	200	137		ug/Kg		68	43 - 150	15	30
Benzene	50.0	46.0		ug/Kg		92	74 - 119	8	30
Bromodichloromethane	50.0	37.3		ug/Kg		75	68 - 128	9	30
Bromoform	50.0	30.8		ug/Kg		62	54 - 125	26	30
Bromomethane	50.0	33.7		ug/Kg		67	25 - 150	5	30
Carbon disulfide	50.0	44.1		ug/Kg		88	26 - 150	12	30
Carbon tetrachloride	50.0	40.6		ug/Kg		81	70 - 128	8	30
Chlorobenzene	50.0	50.6		ug/Kg		101	80 - 116	8	30
Chloroethane	50.0	43.6		ug/Kg		87	22 - 150	1	30
Chloroform	50.0	43.9		ug/Kg		88	74 - 119	9	30
Chloromethane	50.0	32.6		ug/Kg		65	36 - 147	2	30
cis-1,2-Dichloroethene	50.0	48.4		ug/Kg		97	68 - 126	8	30
cis-1,3-Dichloropropene	50.0	46.4		ug/Kg		93	68 - 125	10	30
Cyclohexane	50.0	44.7		ug/Kg		89	62 - 126	9	30
Dibromochloromethane	50.0	52.8		ug/Kg		106	65 - 131	9	30

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93550-1

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

**Client Sample ID: Lab Control Sample Dup** 

**Prep Type: Total/NA** 

#### Lab Sample ID: LCSD 400-190016/11

**Matrix: Solid** 

Analysis Batch: 190016

Analysis Batch: 190016	Spike	LCSD	LCSD				%Rec.		RPI
Analyte	Added		Qualifier	Unit	D	%Rec	Limits	RPD	Limi
1,2-Dibromo-3-Chloropropane	50.0	42.5	- Qualifici	ug/Kg		85	57 <sub>-</sub> 123	17	30
1,2-Dichlorobenzene	50.0	49.3		ug/Kg		99	76 - 120	8	30
1,3-Dichlorobenzene	50.0	50.7		ug/Kg		101	78 <sub>-</sub> 118	7	30
1,4-Dichlorobenzene	50.0	49.6		ug/Kg		99	77 _ 118	10	30
Dichlorodifluoromethane	50.0	29.0		ug/Kg		58	44 - 145	3	30
1,1-Dichloroethane	50.0	47.4		ug/Kg		95	61 - 128	8	30
1,2-Dichloroethane	50.0	43.0		ug/Kg		86	70 <sub>-</sub> 125	9	30
1,1-Dichloroethene	50.0	42.1		ug/Kg		84	62 <sub>-</sub> 130	9	30
1,2-Dichloropropane	50.0	48.4		ug/Kg		97	64 - 129	8	30
Diisopropyl ether	50.0	44.0		ug/Kg		88	46 - 144	9	30
Ethylbenzene	50.0	50.5		ug/Kg		101	78 - 120	7	30
Ethylene Dibromide	50.0	45.7		ug/Kg		91	78 <sub>-</sub> 119	10	30
Ethyl tert-butyl ether	50.0	40.9		ug/Kg		82	60 - 128	8	30
2-Hexanone	200	176		ug/Kg		88	54 <sub>-</sub> 140	13	30
Isopropylbenzene	50.0	51.1		ug/Kg		102	78 <sub>-</sub> 119	8	30
Methyl acetate	250	186		ug/Kg		74	52 - 139	15	30
Methylcyclohexane	50.0	44.0		ug/Kg		88	65 - 126	6	30
Methylene Chloride	50.0	43.6		ug/Kg		87	45 - 150	11	30
Methyl Ethyl Ketone	200	170		ug/Kg		85	62 - 126	15	30
methyl isobutyl ketone	200	154		ug/Kg		77	56 <sub>-</sub> 137	13	30
Methyl tert-butyl ether	50.0	42.1		ug/Kg		84	69 - 124	11	30
Naphthalene	50.0	43.7		ug/Kg		87	64 - 126	14	30
Styrene	50.0	50.0		ug/Kg		100	66 - 132	10	30
Tert-amyl methyl ether	50.0	42.1		ug/Kg		84	65 - 124	8	30
tert-Butyl alcohol	500	564		ug/Kg		113	12 _ 150	4	30
1,1,2,2-Tetrachloroethane	50.0	40.5		ug/Kg		81	67 - 120	11	30
Tetrachloroethene	50.0	58.4		ug/Kg		117	74 - 126	6	30
Toluene	50.0	50.7		ug/Kg		101	76 - 120	8	30
trans-1,2-Dichloroethene	50.0	44.3		ug/Kg		89	65 _ 130	9	30
trans-1,3-Dichloropropene	50.0	51.5		ug/Kg		103	65 - 126	9	30
1,2,4-Trichlorobenzene	50.0	49.2		ug/Kg		98	72 - 126	11	30
1,1,1-Trichloroethane	50.0	38.1		ug/Kg		76	72 <sub>-</sub> 121	4	30
1,1,2-Trichloroethane	50.0	47.6		ug/Kg		95	75 <sub>-</sub> 118	10	30
Trichloroethene	50.0	48.0		ug/Kg		96	76 - 122	8	30
Trichlorofluoromethane	50.0	38.1		ug/Kg		76	65 - 132	12	30
1,1,2-Trichloro-1,2,2-trifluoroetha	50.0	46.0		ug/Kg		92	74 - 123	7	30
ne Vinyl chloride	50.0	39.1		ug/Kg		78	52 - 134	4	30
Xylenes, Total	100	100		ug/Kg		100	70 <sub>-</sub> 120	9	30

LCSD LCSD

Surrogate	%Recovery Qualifier	Limits
4-Bromofluorobenzene	86	72 - 122
Dibromofluoromethane	99	79 - 123
Toluene-d8 (Surr)	105	80 <sub>-</sub> 120

TestAmerica Savannah

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93550-1

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

Lab Sample ID: MB 400-190203/4

**Matrix: Water** 

Trichloroethene

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

	MB	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	25	U	25	3.5	ug/L			08/29/13 16:01	1
Benzene	1.0	U	1.0	0.34	ug/L			08/29/13 16:01	1
Bromodichloromethane	1.0	U	1.0	0.50	ug/L			08/29/13 16:01	1
Bromoform	5.0	U	5.0		ug/L			08/29/13 16:01	1
Carbon disulfide	1.0	U	1.0	0.50	ug/L			08/29/13 16:01	1
Carbon tetrachloride	1.0	U	1.0	0.50				08/29/13 16:01	1
Chlorobenzene	1.0	U	1.0	0.50				08/29/13 16:01	1
Chloroethane	1.0	U	1.0	0.76				08/29/13 16:01	1
Chloroform	1.0	U	1.0		ug/L			08/29/13 16:01	1
Chloromethane	1.0	U	1.0		ug/L			08/29/13 16:01	1
cis-1,2-Dichloroethene	1.0		1.0		ug/L			08/29/13 16:01	1
cis-1,3-Dichloropropene	5.0		5.0		ug/L			08/29/13 16:01	1
Cyclohexane	1.0		1.0		ug/L			08/29/13 16:01	1
Dibromochloromethane	1.0		1.0	0.50	-			08/29/13 16:01	1
1,2-Dibromo-3-Chloropropane	5.0		5.0	0.78				08/29/13 16:01	1
1,2-Dichlorobenzene	1.0		1.0		ug/L			08/29/13 16:01	1
1,3-Dichlorobenzene	1.0		1.0		ug/L			08/29/13 16:01	1
1,4-Dichlorobenzene	1.0		1.0		ug/L			08/29/13 16:01	1
Dichlorodifluoromethane	1.0		1.0		ug/L			08/29/13 16:01	
1,1-Dichloroethane	1.0		1.0	0.50				08/29/13 16:01	. 1
1,2-Dichloroethane	1.0		1.0	0.50				08/29/13 16:01	1
1,1-Dichloroethene	1.0		1.0	0.50				08/29/13 16:01	
1,2-Dichloropropane	1.0		1.0		ug/L			08/29/13 16:01	1
Diisopropyl ether	1.0		1.0		ug/L			08/29/13 16:01	1
Ethylbenzene	1.0		1.0		ug/L			08/29/13 16:01	
Ethylene Dibromide	1.0		1.0		ug/L			08/29/13 16:01	1
Ethyl tert-butyl ether	1.0		1.0		ug/L			08/29/13 16:01	1
2-Hexanone	25		25		ug/L ug/L			08/29/13 16:01	
	1.0		1.0	0.53				08/29/13 16:01	1
Isopropylbenzene									
Methyl acetate	5.0		5.0		ug/L			08/29/13 16:01	
Methylcyclohexane	1.0		1.0	0.50				08/29/13 16:01	1
Methylene Chloride	5.0		5.0		ug/L			08/29/13 16:01	1
Methyl Ethyl Ketone	25		25		ug/L			08/29/13 16:01	1
methyl isobutyl ketone	25		25		ug/L 			08/29/13 16:01	1
Methyl tert-butyl ether	1.0		1.0		ug/L			08/29/13 16:01	1
Naphthalene	1.0		1.0		ug/L			08/29/13 16:01	
Styrene	1.0		1.0		ug/L			08/29/13 16:01	1
Tert-amyl methyl ether	1.0		1.0		ug/L			08/29/13 16:01	1
tert-Butyl alcohol	5.0		5.0		ug/L			08/29/13 16:01	1
1,1,2,2-Tetrachloroethane	1.0		1.0		ug/L			08/29/13 16:01	1
Tetrachloroethene	1.0		1.0		ug/L			08/29/13 16:01	1
Toluene	1.0	U	1.0		ug/L			08/29/13 16:01	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.50	ug/L			08/29/13 16:01	1
trans-1,3-Dichloropropene	5.0	U	5.0	0.50	ug/L			08/29/13 16:01	1
1,2,4-Trichlorobenzene	1.0	U	1.0	0.82	ug/L			08/29/13 16:01	1
1,1,1-Trichloroethane	1.0	U	1.0	0.50	ug/L			08/29/13 16:01	1
1,1,2-Trichloroethane	5.0	U	5.0	0.50	ug/L			08/29/13 16:01	1

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08/29/13 16:01

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1.0

1.0 U

0.50 ug/L

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93550-1

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

Lab Sample ID: MB 400-190203/4

**Matrix: Water** 

**Analysis Batch: 190203** 

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

MB MB Analyte Result Qualifier RL MDL Unit D Dil Fac Prepared Analyzed Trichlorofluoromethane 1.0 U 1.0 0.52 ug/L 08/29/13 16:01 1,1,2-Trichloro-1,2,2-trifluoroethane 1.0 U 1.0 0.50 ug/L 08/29/13 16:01 Vinyl chloride 1.0 U 1.0 0.50 ug/L 08/29/13 16:01 Xylenes, Total 10 U 10 1.6 ug/L 08/29/13 16:01

MB MB %Recovery Surrogate Qualifier Limits Prepared Analyzed Dil Fac 78 - 118 08/29/13 16:01 4-Bromofluorobenzene 97 Dibromofluoromethane 103 81 - 121 08/29/13 16:01 Toluene-d8 (Surr) 98 80 - 120 08/29/13 16:01

Lab Sample ID: LCS 400-190203/1000

**Matrix: Water** 

Analysis Batch: 190203

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

	Spike	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Acetone	200	253		ug/L		126	24 - 150	
Benzene	50.0	50.5		ug/L		101	79 _ 120	
Bromodichloromethane	50.0	51.4		ug/L		103	75 - 127	
Bromoform	50.0	54.6		ug/L		109	65 _ 121	
Carbon disulfide	50.0	52.2		ug/L		104	41 - 140	
Carbon tetrachloride	50.0	52.3		ug/L		105	46 - 141	
Chlorobenzene	50.0	49.9		ug/L		100	85 _ 120	
Chloroethane	50.0	41.5		ug/L		83	37 - 150	
Chloroform	50.0	50.1		ug/L		100	73 _ 122	
Chloromethane	50.0	50.5		ug/L		101	49 - 141	
cis-1,2-Dichloroethene	50.0	50.8		ug/L		102	78 - 122	
cis-1,3-Dichloropropene	50.0	53.7		ug/L		107	70 _ 122	
Cyclohexane	50.0	50.4		ug/L		101	69 - 123	
Dibromochloromethane	50.0	53.5		ug/L		107	63 _ 125	
1,2-Dibromo-3-Chloropropane	50.0	53.3		ug/L		107	52 _ 124	
1,2-Dichlorobenzene	50.0	49.7		ug/L		99	80 - 121	
1,3-Dichlorobenzene	50.0	51.4		ug/L		103	77 - 124	
1,4-Dichlorobenzene	50.0	51.0		ug/L		102	79 - 119	
Dichlorodifluoromethane	50.0	44.4		ug/L		89	27 _ 144	
1,1-Dichloroethane	50.0	51.8		ug/L		104	75 <sub>-</sub> 126	
1,2-Dichloroethane	50.0	49.4		ug/L		99	69 _ 128	
1,1-Dichloroethene	50.0	55.7		ug/L		111	50 - 134	
1,2-Dichloropropane	50.0	51.3		ug/L		103	77 - 126	
Diisopropyl ether	50.0	51.5		ug/L		103	69 - 143	
Ethylbenzene	50.0	50.7		ug/L		101	82 - 120	
Ethylene Dibromide	50.0	53.2		ug/L		106	82 _ 119	
Ethyl tert-butyl ether	50.0	56.2		ug/L		112	58 - 142	
2-Hexanone	200	205		ug/L		102	60 _ 150	
Isopropylbenzene	50.0	51.0		ug/L		102	76 <sub>-</sub> 118	
Methyl acetate	250	262		ug/L		105	58 <sub>-</sub> 150	
Methylcyclohexane	50.0	50.9		ug/L		102	72 <sub>-</sub> 121	
Methylene Chloride	50.0	51.8		ug/L		104	70 - 130	
Methyl Ethyl Ketone	200	220		ug/L		110	62 - 137	

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TestAmerica Job ID: 680-93550-1

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

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

Lab Sample ID: LCS 400-190203/1000

**Matrix: Water** 

Analysis Batch: 190203

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analysis Daton. 130200								
	Spike	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
methyl isobutyl ketone	200	201		ug/L		100	63 - 150	
Methyl tert-butyl ether	50.0	53.6		ug/L		107	70 - 124	
Naphthalene	50.0	51.3		ug/L		103	45 _ 131	
Styrene	50.0	52.9		ug/L		106	79 - 124	
Tert-amyl methyl ether	50.0	55.7		ug/L		111	65 _ 125	
tert-Butyl alcohol	500	550		ug/L		110	44 - 150	
1,1,2,2-Tetrachloroethane	50.0	50.6		ug/L		101	68 - 132	
Tetrachloroethene	50.0	51.8		ug/L		104	76 - 124	
Toluene	50.0	50.0		ug/L		100	81 - 120	
trans-1,2-Dichloroethene	50.0	52.6		ug/L		105	70 - 126	
trans-1,3-Dichloropropene	50.0	55.4		ug/L		111	64 - 120	
1,2,4-Trichlorobenzene	50.0	50.8		ug/L		102	69 - 128	
1,1,1-Trichloroethane	50.0	52.0		ug/L		104	66 - 130	
1,1,2-Trichloroethane	50.0	51.5		ug/L		103	81 - 117	
Trichloroethene	50.0	52.0		ug/L		104	77 _ 119	
Trichlorofluoromethane	50.0	52.6		ug/L		105	26 - 150	
1,1,2-Trichloro-1,2,2-trifluoroetha	50.0	54.2		ug/L		108	45 - 138	
ne								
Vinyl chloride	50.0	54.0		ug/L		108	60 - 128	
Xylenes, Total	100	101		ug/L		101	70 - 130	

LCS LCS

Surrogate	%Recovery Qualific	er Limits
4-Bromofluorobenzene	102	78 - 118
Dibromofluoromethane	98	81 - 121
Toluene-d8 (Surr)	100	80 - 120

Lab Sample ID: MB 400-190276/5

**Matrix: Solid** 

Analysis Batch: 190276

**Client Sample ID: Method Blank** 

Prep Type: Total/NA

	MB	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	25	U	25	7.3	ug/Kg			08/30/13 10:21	1
Benzene	5.0	U	5.0	0.49	ug/Kg			08/30/13 10:21	1
Bromodichloromethane	5.0	U	5.0	0.84	ug/Kg			08/30/13 10:21	1
Bromoform	5.0	U	5.0	0.63	ug/Kg			08/30/13 10:21	1
Bromomethane	5.0	U	5.0	1.4	ug/Kg			08/30/13 10:21	1
Carbon disulfide	5.0	U	5.0	1.2	ug/Kg			08/30/13 10:21	1
Carbon tetrachloride	5.0	U	5.0	1.7	ug/Kg			08/30/13 10:21	1
Chlorobenzene	5.0	U	5.0	0.52	ug/Kg			08/30/13 10:21	1
Chloroethane	5.0	U	5.0	1.9	ug/Kg			08/30/13 10:21	1
Chloroform	5.0	U	5.0	0.59	ug/Kg			08/30/13 10:21	1
Chloromethane	5.0	U	5.0	1.0	ug/Kg			08/30/13 10:21	1
cis-1,2-Dichloroethene	5.0	U	5.0	0.76	ug/Kg			08/30/13 10:21	1
cis-1,3-Dichloropropene	5.0	U	5.0	1.2	ug/Kg			08/30/13 10:21	1
Cyclohexane	5.0	U	5.0	0.94	ug/Kg			08/30/13 10:21	1
Dibromochloromethane	5.0	U	5.0	0.87	ug/Kg			08/30/13 10:21	1
1,2-Dibromo-3-Chloropropane	5.0	U	5.0	3.3	ug/Kg			08/30/13 10:21	1
1,2-Dichlorobenzene	5.0	U	5.0	0.71	ug/Kg			08/30/13 10:21	1

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

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

Lab Sample ID: MB 400-190276/5

**Matrix: Solid** 

**Analysis Batch: 190276** 

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

MB MB Result Qualifier RL MDL Unit Prepared Dil Fac Analyte D Analyzed 08/30/13 10:21 1,3-Dichlorobenzene 5.0 U ug/Kg 5.0 0.95 1,4-Dichlorobenzene 5.0 U 5.0 0.82 ug/Kg 08/30/13 10:21 Dichlorodifluoromethane 5.0 U 5.0 1.3 ug/Kg 08/30/13 10:21 1,1-Dichloroethane 5.0 U 5.0 0.83 ug/Kg 08/30/13 10:21 50 U 5.0 1.2-Dichloroethane 0.82 ug/Kg 08/30/13 10:21 08/30/13 10:21 1,1-Dichloroethene 5.0 U 5.0 0.75 ug/Kg 1,2-Dichloropropane 5.0 U 5.0 0.74 ug/Kg 08/30/13 10:21 Diisopropyl ether 5.0 U 5.0 0.55 ug/Kg 08/30/13 10:21 Ethylbenzene 5.0 U 5.0 0.61 ug/Kg 08/30/13 10:21 Ethylene Dibromide 5.0 U 5.0 0.48 ug/Kg 08/30/13 10:21 Ethyl tert-butyl ether 5.0 U 5.0 0.56 ug/Kg 08/30/13 10:21 2-Hexanone 25 U 25 5.0 ug/Kg 08/30/13 10:21 ug/Ka Isopropylbenzene 5.0 U 5.0 0.68 08/30/13 10:21 Methyl acetate 5.0 U 5.0 4.6 ug/Kg 08/30/13 10:21 Methylcyclohexane 5.0 U 5.0 0.87 ug/Kg 08/30/13 10:21 Methylene Chloride 15 U 15 10 ug/Kg 08/30/13 10:21 25 U 25 08/30/13 10:21 Methyl Ethyl Ketone 4.1 ug/Kg methyl isobutyl ketone 25 U 25 4.0 ug/Kg 08/30/13 10:21 Methyl tert-butyl ether 5.0 U 5.0 1.0 ug/Kg 08/30/13 10:21 Naphthalene 5.0 U 5.0 1.0 ug/Kg 08/30/13 10:21 Styrene 5.0 U 5.0 08/30/13 10:21 0.76 ug/Kg 5.0 U 5.0 Tert-amyl methyl ether 0.44 ug/Kg 08/30/13 10:21 tert-Butyl alcohol 5.0 U 5.0 3.4 ug/Kg 08/30/13 10:21 1,1,2,2-Tetrachloroethane 5.0 U 5.0 0.72 ug/Kg 08/30/13 10:21 Tetrachloroethene 5.0 U 5.0 0.84 ug/Kg 08/30/13 10:21 Toluene 5.0 U 5.0 0.70 ug/Kg 08/30/13 10:21 5.0 U trans-1,2-Dichloroethene 5.0 0.76 ug/Kg 08/30/13 10:21 trans-1,3-Dichloropropene 5.0 U 5.0 0.92 ug/Kg 08/30/13 10:21 1.2.4-Trichlorobenzene 5.0 U 5.0 0.73 ug/Kg 08/30/13 10:21 1,1,1-Trichloroethane 5.0 U 5.0 1.1 ug/Kg 08/30/13 10:21 1.1.2-Trichloroethane 5.0 U 5.0 0.92 ug/Kg 08/30/13 10:21 Trichloroethene 5.0 U 5.0 0.48 ug/Kg 08/30/13 10:21 Trichlorofluoromethane 5.0 U 5.0 0.95 ug/Kg 08/30/13 10:21 1,1,2-Trichloro-1,2,2-trifluoroethane 5.0 U 5.0 2.0 ug/Kg 08/30/13 10:21 5.0 U 5.0 08/30/13 10:21 Vinyl chloride 0.92 ug/Kg Xylenes, Total 10 U 10 1.9 ug/Kg 08/30/13 10:21

ΙB	MB	

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	98		72 - 122		08/30/13 10:21	1
Dibromofluoromethane	95		79 - 123		08/30/13 10:21	1
Toluene-d8 (Surr)	97		80 - 120		08/30/13 10:21	1

Lab Sample ID: LCS 400-190276/1000

**Matrix: Solid** 

Analysis Batch: 190276

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

	Spike	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Acetone	200	182		ug/Kg		91	43 - 150	

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93550-1

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

Lab Sample ID: LCS 400-190276/1000

Matrix: Solid

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

	Spike	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Benzene	50.0	47.8		ug/Kg		96	74 - 119	
Bromodichloromethane	50.0	40.5		ug/Kg		81	68 - 128	
Bromoform	50.0	41.6		ug/Kg		83	54 - 125	
Bromomethane	50.0	30.8		ug/Kg		62	25 - 150	
Carbon disulfide	50.0	41.6		ug/Kg		83	26 - 150	
Carbon tetrachloride	50.0	40.9		ug/Kg		82	70 - 128	
Chlorobenzene	50.0	48.2		ug/Kg		96	80 - 116	
Chloroethane	50.0	52.3		ug/Kg		105	22 - 150	
Chloroform	50.0	48.5		ug/Kg		97	74 - 119	
Chloromethane	50.0	52.6		ug/Kg		105	36 - 147	
cis-1,2-Dichloroethene	50.0	45.1		ug/Kg		90	68 - 126	
cis-1,3-Dichloropropene	50.0	40.5		ug/Kg		81	68 - 125	
Cyclohexane	50.0	41.8		ug/Kg		84	62 - 126	
Dibromochloromethane	50.0	40.2		ug/Kg		80	65 - 131	
1,2-Dibromo-3-Chloropropane	50.0	48.4		ug/Kg		97	57 - 123	
1,2-Dichlorobenzene	50.0	50.4		ug/Kg		101	76 - 120	
1,3-Dichlorobenzene	50.0	50.8		ug/Kg		102	78 - 118	
1,4-Dichlorobenzene	50.0	49.7		ug/Kg		99	77 - 118	
Dichlorodifluoromethane	50.0	48.9		ug/Kg		98	44 - 145	
1,1-Dichloroethane	50.0	51.3		ug/Kg ug/Kg		103	61 - 128	
1,2-Dichloroethane	50.0	44.8		ug/Kg		90	70 - 125	
1,1-Dichloroethene	50.0	44.2		ug/Kg ug/Kg		88	62 <sub>-</sub> 130	
	50.0	45.7				91	64 - 129	
1,2-Dichloropropane				ug/Kg				
Diisopropyl ether	50.0	48.5		ug/Kg		97	46 - 144	
Ethylbenzene	50.0	49.7		ug/Kg		99	78 <sub>-</sub> 120	
Ethylene Dibromide	50.0	48.4		ug/Kg		97	78 - 119	
Ethyl tert-butyl ether	50.0	45.5		ug/Kg		91	60 - 128	
2-Hexanone	200	180		ug/Kg		90	54 - 140	
Isopropylbenzene	50.0	45.6		ug/Kg		91	78 - 119	
Methyl acetate	250	226		ug/Kg		90	52 - 139	
Methylcyclohexane	50.0	43.2		ug/Kg		86	65 - 126	
Methylene Chloride	50.0	42.9		ug/Kg		86	45 - 150	
Methyl Ethyl Ketone	200	177		ug/Kg		88	62 _ 126	
methyl isobutyl ketone	200	179		ug/Kg		89	56 - 137	
Methyl tert-butyl ether	50.0	46.7		ug/Kg		93	69 - 124	
Naphthalene	50.0	44.7		ug/Kg		89	64 - 126	
Styrene	50.0	49.2		ug/Kg		98	66 - 132	
Tert-amyl methyl ether	50.0	43.5		ug/Kg		87	65 - 124	
tert-Butyl alcohol	500	450		ug/Kg		90	12 _ 150	
1,1,2,2-Tetrachloroethane	50.0	47.3		ug/Kg		95	67 _ 120	
Tetrachloroethene	50.0	47.3		ug/Kg		95	74 - 126	
Toluene	50.0	46.2		ug/Kg		92	76 - 120	
trans-1,2-Dichloroethene	50.0	52.3		ug/Kg		105	65 _ 130	
trans-1,3-Dichloropropene	50.0	41.7		ug/Kg		83	65 - 126	
1,2,4-Trichlorobenzene	50.0	48.5		ug/Kg		97	72 - 126	
1,1,1-Trichloroethane	50.0	41.9		ug/Kg		84	72 - 121	
1,1,2-Trichloroethane	50.0	44.6		ug/Kg		89	75 <sub>-</sub> 118	
Trichloroethene	50.0	48.8		ug/Kg		98	76 - 122	

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

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

Lab Sample ID: LCS 400-190276/1000

**Matrix: Solid** 

Analysis Batch: 190276

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

	Spike	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Trichlorofluoromethane	50.0	47.0		ug/Kg		94	65 - 132	
1,1,2-Trichloro-1,2,2-trifluoroetha	50.0	46.8		ug/Kg		94	74 - 123	
ne								
Vinyl chloride	50.0	49.1		ug/Kg		98	52 _ 134	
Xylenes, Total	100	97.3		ug/Kg		97	70 - 120	

LCS LCS

Surrogate	%Recovery	Qualifier	Limits
4-Bromofluorobenzene	93		72 - 122
Dibromofluoromethane	100		79 - 123
Toluene-d8 (Surr)	98		80 - 120

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Lab Sample ID: LCSD 400-190276/3

Matrix: Solid

Analysis Batch: 190276	Spike	LCSD	LCSD				%Rec.		RPD
Analyte	Added		Qualifier Ur	it	D	%Rec	Limits	RPD	Limit
Acetone	200	193	ug	/Kg	_	97	43 - 150	6	30
Benzene	50.0	47.5	ug	/Kg		95	74 - 119	1	30
Bromodichloromethane	50.0	39.3	ug	/Kg		79	68 - 128	3	30
Bromoform	50.0	41.3	ug	/Kg		83	54 - 125	1	30
Bromomethane	50.0	28.1	ug	/Kg		56	25 - 150	9	30
Carbon disulfide	50.0	49.0	ug	/Kg		98	26 - 150	16	30
Carbon tetrachloride	50.0	40.7	ug	/Kg		81	70 - 128	1	30
Chlorobenzene	50.0	47.7	ug	/Kg		95	80 - 116	1	30
Chloroethane	50.0	48.8	ug	/Kg		98	22 - 150	7	30
Chloroform	50.0	48.0	ug	/Kg		96	74 - 119	1	30
Chloromethane	50.0	49.8	ug	/Kg		100	36 - 147	6	30
cis-1,2-Dichloroethene	50.0	44.6	ug	/Kg		89	68 - 126	1	30
cis-1,3-Dichloropropene	50.0	40.7	ug	/Kg		81	68 - 125	0	30
Cyclohexane	50.0	41.6	ug	/Kg		83	62 - 126	1	30
Dibromochloromethane	50.0	39.6	ug	/Kg		79	65 - 131	2	30
1,2-Dibromo-3-Chloropropane	50.0	46.3	ug	/Kg		93	57 - 123	5	30
1,2-Dichlorobenzene	50.0	48.5	ug	/Kg		97	76 - 120	4	30
1,3-Dichlorobenzene	50.0	49.0	ug	/Kg		98	78 - 118	4	30
1,4-Dichlorobenzene	50.0	48.4	ug	/Kg		97	77 - 118	3	30
Dichlorodifluoromethane	50.0	44.5	ug	/Kg		89	44 - 145	9	30
1,1-Dichloroethane	50.0	52.4	ug	/Kg		105	61 - 128	2	30
1,2-Dichloroethane	50.0	44.2	ug	/Kg		88	70 - 125	1	30
1,1-Dichloroethene	50.0	51.3	ug	/Kg		103	62 - 130	15	30
1,2-Dichloropropane	50.0	44.8	ug	/Kg		90	64 - 129	2	30
Diisopropyl ether	50.0	49.3	ug	/Kg		99	46 - 144	2	30
Ethylbenzene	50.0	48.9	ug	/Kg		98	78 - 120	2	30
Ethylene Dibromide	50.0	46.9	ug	/Kg		94	78 - 119	3	30
Ethyl tert-butyl ether	50.0	44.4	ug	/Kg		89	60 - 128	3	30
2-Hexanone	200	174	ug	/Kg		87	54 - 140	3	30
Isopropylbenzene	50.0	45.1	ug	/Kg		90	78 - 119	1	30
Methyl acetate	250	263	ug	/Kg		105	52 - 139	15	30
Methylcyclohexane	50.0	42.3	ug	/Kg		85	65 - 126	2	30

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

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

Lab Sample ID: LCSD 400-190276/3

**Matrix: Solid** 

Analysis Batch: 190276

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

	Spike	LCSD	LCSD				%Rec.		RPD
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Methylene Chloride	50.0	53.6	-	ug/Kg		107	45 - 150	22	30
Methyl Ethyl Ketone	200	176		ug/Kg		88	62 - 126	0	30
methyl isobutyl ketone	200	175		ug/Kg		87	56 - 137	2	30
Methyl tert-butyl ether	50.0	47.9		ug/Kg		96	69 - 124	3	30
Naphthalene	50.0	43.1		ug/Kg		86	64 - 126	4	30
Styrene	50.0	48.6		ug/Kg		97	66 - 132	1	30
Tert-amyl methyl ether	50.0	43.8		ug/Kg		88	65 - 124	1	30
tert-Butyl alcohol	500	430		ug/Kg		86	12 - 150	5	30
1,1,2,2-Tetrachloroethane	50.0	45.0		ug/Kg		90	67 - 120	5	30
Tetrachloroethene	50.0	47.3		ug/Kg		95	74 - 126	0	30
Toluene	50.0	46.1		ug/Kg		92	76 - 120	0	30
trans-1,2-Dichloroethene	50.0	56.0		ug/Kg		112	65 - 130	7	30
trans-1,3-Dichloropropene	50.0	42.5		ug/Kg		85	65 - 126	2	30
1,2,4-Trichlorobenzene	50.0	46.9		ug/Kg		94	72 - 126	3	30
1,1,1-Trichloroethane	50.0	41.8		ug/Kg		84	72 - 121	0	30
1,1,2-Trichloroethane	50.0	44.6		ug/Kg		89	75 - 118	0	30
Trichloroethene	50.0	48.4		ug/Kg		97	76 - 122	1	30
Trichlorofluoromethane	50.0	43.1		ug/Kg		86	65 - 132	9	30
1,1,2-Trichloro-1,2,2-trifluoroetha	50.0	52.3		ug/Kg		105	74 - 123	11	30
ne									
Vinyl chloride	50.0	46.3		ug/Kg		93	52 - 134	6	30
Xylenes, Total	100	96.4		ug/Kg		96	70 - 120	1	30

LCSD LCSD

Surrogate	%Recovery	Qualifier	Limits
4-Bromofluorobenzene	92		72 - 122
Dibromofluoromethane	101		79 - 123
Toluene-d8 (Surr)	96		80 - 120

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

Lab Sample ID: MB 680-290868/19-A

**Matrix: Solid** 

Analysis Batch: 291044

Client Sample ID: Method Blank Prep Type: Total/NA **Prep Batch: 290868** 

	MB	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzaldehyde	330	U	330	58	ug/Kg		08/26/13 14:24	08/27/13 11:48	1
Acetophenone	330	U	330	28	ug/Kg		08/26/13 14:24	08/27/13 11:48	1
Bis(2-chloroethyl)ether	330	U	330	45	ug/Kg		08/26/13 14:24	08/27/13 11:48	1
bis (2-chloroisopropyl) ether	330	U	330	30	ug/Kg		08/26/13 14:24	08/27/13 11:48	1
Bis(2-chloroethoxy)methane	330	U	330	39	ug/Kg		08/26/13 14:24	08/27/13 11:48	1
Caprolactam	330	U	330	66	ug/Kg		08/26/13 14:24	08/27/13 11:48	1
4-Chloroaniline	660	U	660	52	ug/Kg		08/26/13 14:24	08/27/13 11:48	1
4-Chloro-3-methylphenol	330	U	330	35	ug/Kg		08/26/13 14:24	08/27/13 11:48	1
2-Chlorophenol	330	U	330	40	ug/Kg		08/26/13 14:24	08/27/13 11:48	1
1,1'-Biphenyl	740	U	740	740	ug/Kg		08/26/13 14:24	08/27/13 11:48	1
2-Chloronaphthalene	330	U	330	35	ug/Kg		08/26/13 14:24	08/27/13 11:48	1
2,4-Dichlorophenol	330	U	330	35	ug/Kg		08/26/13 14:24	08/27/13 11:48	1
Acenaphthylene	330	U	330	36	ug/Kg		08/26/13 14:24	08/27/13 11:48	1
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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93550-1

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

Lab Sample ID: MB 680-290868/19-A

**Matrix: Solid** 

Analysis Batch: 291044

Client Sample ID: Method Blank Prep Type: Total/NA **Prep Batch: 290868** 

Analysis Daton. 25 1044								i icp batcii.	230000
	MB	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4-Dimethylphenol	330	U	330	44	ug/Kg		08/26/13 14:24	08/27/13 11:48	1
Acenaphthene	330	U	330	41	ug/Kg		08/26/13 14:24	08/27/13 11:48	1
Dimethyl phthalate	330	U	330	34	ug/Kg		08/26/13 14:24	08/27/13 11:48	1
2,4-Dinitrophenol	1700	U	1700	830	ug/Kg		08/26/13 14:24	08/27/13 11:48	1
Dibenzofuran	330	U	330	33	ug/Kg		08/26/13 14:24	08/27/13 11:48	1
2,4-Dinitrotoluene	330	U	330	49	ug/Kg		08/26/13 14:24	08/27/13 11:48	1
2,6-Dinitrotoluene	330	U	330	42	ug/Kg		08/26/13 14:24	08/27/13 11:48	1
Diethyl phthalate	330	U	330	37	ug/Kg		08/26/13 14:24	08/27/13 11:48	1
4-Chlorophenyl phenyl ether	330	U	330	44	ug/Kg		08/26/13 14:24	08/27/13 11:48	1
Fluorene	330	U	330	36	ug/Kg		08/26/13 14:24	08/27/13 11:48	1
4,6-Dinitro-2-methylphenol	1700	U	1700	170	ug/Kg		08/26/13 14:24	08/27/13 11:48	1
4-Bromophenyl phenyl ether	330	U	330	36	ug/Kg		08/26/13 14:24	08/27/13 11:48	1
Hexachlorobenzene	330	U	330	39	ug/Kg		08/26/13 14:24	08/27/13 11:48	1
Hexachlorobutadiene	330	U	330	36	ug/Kg		08/26/13 14:24	08/27/13 11:48	1
Atrazine	330	U	330	23	ug/Kg		08/26/13 14:24	08/27/13 11:48	1

330 U 330 08/26/13 14:24 Hexachlorocyclopentadiene 41 ug/Kg 08/27/13 11:48 330 U 330 08/26/13 14:24 Hexachloroethane 28 ug/Kg 08/27/13 11:48 330 Anthracene 330 U 25 ug/Kg 08/26/13 14:24 08/27/13 11:48 330 U 330 08/26/13 14:24 08/27/13 11:48 Isophorone 33 ug/Kg 2-Methylnaphthalene 330 330 U 38 08/26/13 14:24 ug/Kg 08/27/13 11:48 Carbazole 330 U 330 ug/Kg 08/26/13 14:24 08/27/13 11:48 330 U 330 2-Methylphenol 27 ug/Kg 08/26/13 14:24 08/27/13 11:48 Di-n-butyl phthalate 330 U 330 30 ug/Kg 08/26/13 14:24 08/27/13 11:48 3 & 4 Methylphenol 330 U 330 08/26/13 14:24 08/27/13 11:48 43 ug/Kg Fluoranthene 330 U 330 32 ug/Kg 08/26/13 14:24 08/27/13 11:48 Naphthalene 330 U 330 30 ug/Kg 08/26/13 14:24 08/27/13 11:48 1700 U 1700 2-Nitroaniline 45 ug/Kg 08/26/13 14:24 08/27/13 11:48 330 330 08/26/13 14:24 Butyl benzyl phthalate 26 ug/Kg 08/27/13 11:48 3,3'-Dichlorobenzidine 660 U 660 28 ug/Kg 08/26/13 14:24 08/27/13 11:48 3-Nitroaniline 1700 U 1700 ug/Kg 08/26/13 14:24 08/27/13 11:48 4-Nitroaniline 1700 U 1700 49 ug/Kg 08/26/13 14:24 08/27/13 11:48 Benzo[a]anthracene 330 U 330 ug/Kg 08/26/13 14:24 08/27/13 11:48 08/26/13 14:24 Chrysene 330 U 330 21 08/27/13 11:48 ug/Kg Nitrobenzene 330 U 330 ug/Kg 08/26/13 14:24 08/27/13 11:48 Bis(2-ethylhexyl) phthalate 330 U 330 08/26/13 14:24 08/27/13 11:48 29 ug/Kg 2-Nitrophenol 330 U 330 41 ug/Kg 08/26/13 14:24 08/27/13 11:48 Di-n-octyl phthalate 330 U 330 29 ug/Kg 08/26/13 14:24 08/27/13 11:48 1700 U 1700 330 4-Nitrophenol ug/Kg 08/26/13 14:24 08/27/13 11:48 Benzo[b]fluoranthene 330 U 330 38 ug/Kg 08/26/13 14:24 08/27/13 11:48 330 U 330 Benzo[k]fluoranthene 65 ug/Kg 08/26/13 14:24 08/27/13 11:48 N-Nitrosodi-n-propylamine 330 U 330 32 ug/Kg 08/26/13 14:24 08/27/13 11:48 330 330 U 52 08/26/13 14:24 08/27/13 11:48 Benzo[a]pyrene ug/Kg 330 U 330 08/26/13 14:24 08/27/13 11:48 N-Nitrosodiphenylamine 33 ug/Kg Indeno[1,2,3-cd]pyrene 330 U 330 28 ug/Kg 08/26/13 14:24 08/27/13 11:48 Pentachlorophenol 1700 U 1700 330 ug/Kg 08/26/13 14:24 08/27/13 11:48 330 Dibenz(a,h)anthracene 330 U 39 ug/Kg 08/26/13 14:24 08/27/13 11:48 Phenanthrene 330 U 330 27 ug/Kg 08/26/13 14:24 08/27/13 11:48 Benzo[g,h,i]perylene 330 U 330 22 08/26/13 14:24 08/27/13 11:48 ug/Kg

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

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

Lab Sample ID: MB 680-290868/19-A

**Matrix: Solid** 

Analysis Batch: 291044

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

Prep Batch: 290868

	Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Phenol	330	U	330	34	ug/Kg		08/26/13 14:24	08/27/13 11:48	1
	Pyrene	330	U	330	27	ug/Kg		08/26/13 14:24	08/27/13 11:48	1
ı	2,4,5-Trichlorophenol	330	U	330	35	ug/Kg		08/26/13 14:24	08/27/13 11:48	1
	2,4,6-Trichlorophenol	330	U	330	29	ug/Kg		08/26/13 14:24	08/27/13 11:48	1
1										

MB MB

MB MB

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	61		46 - 130	08/26/13 14:24	08/27/13 11:48	1
2-Fluorobiphenyl	76		58 - 130	08/26/13 14:24	08/27/13 11:48	1
Terphenyl-d14 (Surr)	94		60 - 130	08/26/13 14:24	08/27/13 11:48	1
Phenol-d5 (Surr)	79		49 - 130	08/26/13 14:24	08/27/13 11:48	1
2-Fluorophenol (Surr)	73		40 - 130	08/26/13 14:24	08/27/13 11:48	1
2,4,6-Tribromophenol (Surr)	79		58 - 130	08/26/13 14:24	08/27/13 11:48	1

Lab Sample ID: LCS 680-290868/20-A

**Matrix: Solid** 

Analysis Batch: 291044

**Client Sample ID: Lab Control Sample** 

Prep Type: Total/NA

**Prep Batch: 290868** 

Analysis Baton. 201044	Spike	LCS	LCS				%Rec.
Analyte	Added		Qualifier	Unit	D	%Rec	Limits
Benzaldehyde	3280	789		ug/Kg		24	10 - 130
Acetophenone	3280	1870		ug/Kg		57	42 - 130
Bis(2-chloroethyl)ether	3280	2310		ug/Kg		71	42 - 130
bis (2-chloroisopropyl) ether	3280	2370		ug/Kg		72	44 - 130
Bis(2-chloroethoxy)methane	3280	2270		ug/Kg		69	56 - 130
Caprolactam	3280	2810		ug/Kg		86	52 <sub>-</sub> 130
4-Chloroaniline	3280	1850		ug/Kg		56	36 - 130
4-Chloro-3-methylphenol	3280	2590		ug/Kg		79	52 - 130
2-Chlorophenol	3280	2470		ug/Kg		75	51 <sub>-</sub> 130
1,1'-Biphenyl	3280	2170		ug/Kg		66	57 - 130
2-Chloronaphthalene	3280	2180		ug/Kg		66	55 <sub>-</sub> 130
2,4-Dichlorophenol	3280	2440		ug/Kg		74	53 - 130
Acenaphthylene	3280	2260		ug/Kg		69	58 - 130
2,4-Dimethylphenol	3280	2270		ug/Kg		69	47 - 130
Acenaphthene	3280	2100		ug/Kg		64	58 - 130
Dimethyl phthalate	3280	2450		ug/Kg		75	63 - 130
2,4-Dinitrophenol	3280	1190	J	ug/Kg		36	10 - 154
Dibenzofuran	3280	2390		ug/Kg		73	56 - 130
2,4-Dinitrotoluene	3280	2570		ug/Kg		78	55 - 130
2,6-Dinitrotoluene	3280	2430		ug/Kg		74	57 - 130
Diethyl phthalate	3280	2510		ug/Kg		76	62 _ 130
4-Chlorophenyl phenyl ether	3280	2470		ug/Kg		75	61 _ 130
Fluorene	3280	2420		ug/Kg		74	58 <sub>-</sub> 130
4,6-Dinitro-2-methylphenol	3280	1920		ug/Kg		58	14 - 137
4-Bromophenyl phenyl ether	3280	2560		ug/Kg		78	65 - 130
Hexachlorobenzene	3280	2520		ug/Kg		77	59 <sub>-</sub> 130
Hexachlorobutadiene	3280	2520		ug/Kg		77	47 - 130
Atrazine	3280	2900		ug/Kg		88	54 <sub>-</sub> 141
Hexachlorocyclopentadiene	3280	2160		ug/Kg		66	35 _ 130
Hexachloroethane	3280	1970		ug/Kg		60	44 - 130

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93550-1

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

Lab Sample ID: LCS 680-290868/20-A

**Matrix: Solid** 

Analysis Batch: 291044

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 290868

Allalysis Batch. 291044	Spike	LCS	LCS				%Rec.
Analyte	Added		Qualifier	Unit	D	%Rec	Limits
Anthracene	3280	2270		ug/Kg	— <u> </u>	69	60 - 130
Isophorone	3280	2120		ug/Kg		65	48 - 130
2-Methylnaphthalene	3280	2140		ug/Kg		65	55 <sub>-</sub> 130
Carbazole	3280	2710		ug/Kg		83	60 - 130
2-Methylphenol	3280	2390		ug/Kg		73	49 - 130
Di-n-butyl phthalate	3280	2560		ug/Kg		78	65 - 130
3 & 4 Methylphenol	3280	2460		ug/Kg		75	50 - 130
Fluoranthene	3280	2540		ug/Kg		77	62 _ 130
Naphthalene	3280	2290		ug/Kg		70	54 - 130
2-Nitroaniline	3280	2560		ug/Kg		78	52 - 130
Butyl benzyl phthalate	3280	3100		ug/Kg		94	65 - 134
3,3'-Dichlorobenzidine	3280	2850		ug/Kg		87	45 - 130
3-Nitroaniline	3280	2350		ug/Kg		72	42 - 130
4-Nitroaniline	3280	2590		ug/Kg		79	49 - 130
Benzo[a]anthracene	3280	2850		ug/Kg		87	62 - 130
Chrysene	3280	2910		ug/Kg		89	62 - 130
Nitrobenzene	3280	2230		ug/Kg		68	43 - 130
Bis(2-ethylhexyl) phthalate	3280	3230		ug/Kg		98	62 - 132
2-Nitrophenol	3280	2170		ug/Kg		66	45 - 130
Di-n-octyl phthalate	3280	2800		ug/Kg		85	59 - 146
4-Nitrophenol	3280	2530		ug/Kg		77	30 - 130
Benzo[b]fluoranthene	3280	2840		ug/Kg		87	53 - 130
Benzo[k]fluoranthene	3280	2810		ug/Kg		86	57 - 130
N-Nitrosodi-n-propylamine	3280	2320		ug/Kg		71	48 - 130
Benzo[a]pyrene	3280	2530		ug/Kg		77	68 - 131
N-Nitrosodiphenylamine	3280	3010		ug/Kg		92	62 - 130
Indeno[1,2,3-cd]pyrene	3280	3000		ug/Kg		92	52 - 130
Pentachlorophenol	3280	2890		ug/Kg		88	38 - 131
Dibenz(a,h)anthracene	3280	2670		ug/Kg		81	56 - 130
Phenanthrene	3280	2470		ug/Kg		75	61 _ 130
Benzo[g,h,i]perylene	3280	2670		ug/Kg		81	54 - 130
Phenol	3280	2730		ug/Kg		83	46 - 130
Pyrene	3280	2800		ug/Kg		85	59 - 130
2,4,5-Trichlorophenol	3280	2350		ug/Kg		72	60 - 130
2,4,6-Trichlorophenol	3280	2460		ug/Kg		75	53 - 130

Surrogate	%Recovery	Qualifier	Limits
Nitrobenzene-d5 (Surr)	70		46 - 130
2-Fluorobiphenyl	71		58 <sub>-</sub> 130
Terphenyl-d14 (Surr)	92		60 - 130
Phenol-d5 (Surr)	85		49 - 130
2-Fluorophenol (Surr)	74		40 - 130
2.4.6-Tribromophenol (Surr)	83		58 - 130

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93550-1

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

Lab Sample ID: MB 680-291010/4-A

**Matrix: Water** 

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

Prepared	Analyzed	Dil Fac
08/27/13 14:50	09/03/13 17:22	1
08/27/13 14:50	09/03/13 17:22	1
08/27/13 14:50	09/03/13 17:22	1
08/27/13 14:50	09/03/13 17:22	1

Analysis Batch: 291919	MR	MB MB							: 291010
Analyte		Qualifier	RL	MDI	Unit	D	Prepared	Analyzed	Dil Fa
Benzaldehyde			10	1.1	ug/L		08/27/13 14:50	09/03/13 17:22	- Dil i a
Acetophenone	10		10	0.57	-		08/27/13 14:50	09/03/13 17:22	
Bis(2-chloroethyl)ether	10		10		ug/L		08/27/13 14:50	09/03/13 17:22	
bis (2-chloroisopropyl) ether	10		10		ug/L ug/L		08/27/13 14:50	09/03/13 17:22	
	10		10		ug/L ug/L				
Bis(2-chloroethoxy)methane	10				ug/L ug/L		08/27/13 14:50 08/27/13 14:50	09/03/13 17:22	
Caprolactam			10					09/03/13 17:22	
4-Chloroaniline	20		20		ug/L		08/27/13 14:50	09/03/13 17:22	
4-Chloro-3-methylphenol	10		10		ug/L		08/27/13 14:50	09/03/13 17:22	
2-Chlorophenol	10		10		ug/L		08/27/13 14:50	09/03/13 17:22	
1,1'-Biphenyl	10		10		ug/L		08/27/13 14:50	09/03/13 17:22	
2-Chloronaphthalene	10		10		ug/L		08/27/13 14:50	09/03/13 17:22	
2,4-Dichlorophenol	10		10		ug/L		08/27/13 14:50	09/03/13 17:22	
Acenaphthylene	10		10		ug/L		08/27/13 14:50	09/03/13 17:22	
2,4-Dimethylphenol	10		10	4.0	ug/L		08/27/13 14:50	09/03/13 17:22	
Acenaphthene	10		10	0.76			08/27/13 14:50	09/03/13 17:22	
Dimethyl phthalate	10		10		ug/L		08/27/13 14:50	09/03/13 17:22	
2,4-Dinitrophenol	50		50		ug/L		08/27/13 14:50	09/03/13 17:22	
Dibenzofuran	10		10		ug/L		08/27/13 14:50	09/03/13 17:22	
2,4-Dinitrotoluene	10	U	10	1.2	ug/L		08/27/13 14:50	09/03/13 17:22	
2,6-Dinitrotoluene	10	U	10	1.1	ug/L		08/27/13 14:50	09/03/13 17:22	
Diethyl phthalate	10	U	10	0.88	ug/L		08/27/13 14:50	09/03/13 17:22	
4-Chlorophenyl phenyl ether	10	U	10	0.84	ug/L		08/27/13 14:50	09/03/13 17:22	
Fluorene	10	U	10	0.96	ug/L		08/27/13 14:50	09/03/13 17:22	
4,6-Dinitro-2-methylphenol	50	U	50	10	ug/L		08/27/13 14:50	09/03/13 17:22	
4-Bromophenyl phenyl ether	10	U	10	0.77	ug/L		08/27/13 14:50	09/03/13 17:22	
Hexachlorobenzene	10	U	10	0.79	ug/L		08/27/13 14:50	09/03/13 17:22	
Hexachlorobutadiene	10	U	10	0.62	ug/L		08/27/13 14:50	09/03/13 17:22	
Atrazine	10	U	10	1.2	ug/L		08/27/13 14:50	09/03/13 17:22	
Hexachlorocyclopentadiene	10	U	10	2.5	ug/L		08/27/13 14:50	09/03/13 17:22	
Hexachloroethane	10	U	10	0.76	ug/L		08/27/13 14:50	09/03/13 17:22	
Anthracene	10	U	10	0.69	ug/L		08/27/13 14:50	09/03/13 17:22	
Isophorone	10	U	10	0.90	ug/L		08/27/13 14:50	09/03/13 17:22	
2-Methylnaphthalene	10	U	10	0.78	ug/L		08/27/13 14:50	09/03/13 17:22	
Carbazole	10	U	10	0.71	ug/L		08/27/13 14:50	09/03/13 17:22	
2-Methylphenol	10	U	10	0.89	ug/L		08/27/13 14:50	09/03/13 17:22	
Di-n-butyl phthalate	10	U	10	0.83	ug/L		08/27/13 14:50	09/03/13 17:22	
3 & 4 Methylphenol	10	U	10		ug/L		08/27/13 14:50	09/03/13 17:22	
Fluoranthene	10		10		ug/L		08/27/13 14:50	09/03/13 17:22	
Naphthalene	10	U	10		ug/L		08/27/13 14:50	09/03/13 17:22	
2-Nitroaniline	50		50		ug/L		08/27/13 14:50	09/03/13 17:22	
Butyl benzyl phthalate	10		10		ug/L		08/27/13 14:50	09/03/13 17:22	
3,3'-Dichlorobenzidine	60		60		ug/L		08/27/13 14:50	09/03/13 17:22	
3-Nitroaniline	50		50		ug/L		08/27/13 14:50	09/03/13 17:22	
4-Nitroaniline	50		50		ug/L		08/27/13 14:50	09/03/13 17:22	
Benzo[a]anthracene	10		10		ug/L		08/27/13 14:50	09/03/13 17:22	
Chrysene	10		10		ug/L ug/L		08/27/13 14:50	09/03/13 17:22	
Nitrobenzene	10		10		ug/L ug/L		08/27/13 14:50	09/03/13 17:22	
Bis(2-ethylhexyl) phthalate	10		10		ug/L ug/L		08/27/13 14:50	09/03/13 17:22	

TestAmerica Savannah

Client: ARCADIS U.S., Inc.

Analysis Batch: 291919

**Matrix: Water** 

Project/Site: CSX C&O Canal Brunswick, MD

Lab Sample ID: MB 680-291010/4-A

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

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

**Prep Batch: 291010** 

	-	
epared	Analyzed	Dil Fac
7/13 14:50	09/03/13 17:22	1
7/13 14:50	09/03/13 17:22	1
7/12 14:50	00/02/12 17:22	1

	MB	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Nitrophenol	10	U	10	0.76	ug/L		08/27/13 14:50	09/03/13 17:22	1
Di-n-octyl phthalate	10	U	10	1.4	ug/L		08/27/13 14:50	09/03/13 17:22	1
4-Nitrophenol	50	U	50	1.9	ug/L		08/27/13 14:50	09/03/13 17:22	1
Benzo[b]fluoranthene	10	U	10	2.6	ug/L		08/27/13 14:50	09/03/13 17:22	1
Benzo[k]fluoranthene	10	U	10	1.2	ug/L		08/27/13 14:50	09/03/13 17:22	1
N-Nitrosodi-n-propylamine	10	U	10	0.72	ug/L		08/27/13 14:50	09/03/13 17:22	1
Benzo[a]pyrene	10	U	10	0.71	ug/L		08/27/13 14:50	09/03/13 17:22	1
N-Nitrosodiphenylamine	10	U	10	0.92	ug/L		08/27/13 14:50	09/03/13 17:22	1
Indeno[1,2,3-cd]pyrene	10	U	10	1.0	ug/L		08/27/13 14:50	09/03/13 17:22	1
Pentachlorophenol	50	U	50	2.0	ug/L		08/27/13 14:50	09/03/13 17:22	1
Dibenz(a,h)anthracene	10	U	10	1.0	ug/L		08/27/13 14:50	09/03/13 17:22	1
Phenanthrene	10	U	10	0.77	ug/L		08/27/13 14:50	09/03/13 17:22	1
Benzo[g,h,i]perylene	10	U	10	0.87	ug/L		08/27/13 14:50	09/03/13 17:22	1
Phenol	10	U	10	0.83	ug/L		08/27/13 14:50	09/03/13 17:22	1
Pyrene	10	U	10	0.63	ug/L		08/27/13 14:50	09/03/13 17:22	1
2,4,5-Trichlorophenol	10	U	10	1.2	ug/L		08/27/13 14:50	09/03/13 17:22	1
2,4,6-Trichlorophenol	10	U	10	0.85	ug/L		08/27/13 14:50	09/03/13 17:22	1

MB MB Surrogate %Recovery Qualifier Limits Prepared Analyzed Dil Fac 39 - 130 08/27/13 14:50 09/03/13 17:22 Nitrobenzene-d5 (Surr) 93 2-Fluorobiphenyl 92 38 - 130 08/27/13 14:50 09/03/13 17:22 Terphenyl-d14 (Surr) 89 10 - 143 08/27/13 14:50 09/03/13 17:22 Phenol-d5 (Surr) 87 25 - 130 08/27/13 14:50 09/03/13 17:22 2-Fluorophenol (Surr) 101 25 - 130 08/27/13 14:50 09/03/13 17:22 1 2,4,6-Tribromophenol (Surr) 103 31 - 141 08/27/13 14:50 09/03/13 17:22

Lab Sample ID: LCS 680-291010/5-A

**Matrix: Water** 

Analysis Batch: 291919

Client Sample ID: Lab Control Sample Prep Type: Total/NA **Prep Batch: 291010** 

Allalysis Datcii. 231313							i iep Dateii. 23 iu iu	
	Spike	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Benzaldehyde	100	65.9		ug/L		66	59 - 142	
Acetophenone	100	74.3		ug/L		74	54 - 130	
Bis(2-chloroethyl)ether	100	83.9		ug/L		84	56 - 130	
bis (2-chloroisopropyl) ether	100	86.4		ug/L		86	55 - 130	
Bis(2-chloroethoxy)methane	100	83.8		ug/L		84	64 - 130	
Caprolactam	100	89.9		ug/L		90	34 - 130	
4-Chloroaniline	100	59.4		ug/L		59	42 - 130	
4-Chloro-3-methylphenol	100	88.3		ug/L		88	60 - 130	
2-Chlorophenol	100	79.0		ug/L		79	57 _ 130	
1,1'-Biphenyl	100	74.8		ug/L		75	54 <sub>-</sub> 130	
2-Chloronaphthalene	100	74.0		ug/L		74	53 _ 130	
2,4-Dichlorophenol	100	84.1		ug/L		84	54 - 130	
Acenaphthylene	100	85.9		ug/L		86	60 _ 130	
2,4-Dimethylphenol	100	60.7		ug/L		61	40 - 130	
Acenaphthene	100	76.7		ug/L		77	55 _ 130	
Dimethyl phthalate	100	90.1		ug/L		90	69 _ 130	
2,4-Dinitrophenol	100	91.9		ug/L		92	20 - 165	

TestAmerica Savannah

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93550-1

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

Lab Sample ID: LCS 680-291010/5-A **Client Sample ID: Lab Control Sample Matrix: Water Prep Type: Total/NA** 

**Prep Batch: 291010 Analysis Batch: 291919** 

Analysis Batch: 291919	Spike	LCS LC	ns.		Prep Batch: 291010 %Rec.	
Analyte	Added	Result Q		D %Rec	Limits	
Dibenzofuran		84.6	ug/L		58 - 130	
2,4-Dinitrotoluene	100	96.9	ug/L	97	63 - 130	
2,6-Dinitrotoluene	100	85.6	ug/L	86	65 _ 130	
Diethyl phthalate	100	93.9	ug/L	94	70 - 130	
4-Chlorophenyl phenyl ether	100	86.2	ug/L	86	57 - 130	
Fluorene	100	85.9	ug/L	86	61 - 130	
4,6-Dinitro-2-methylphenol	100	102	ug/L	102	45 - 134	
4-Bromophenyl phenyl ether	100	79.3	ug/L	79	61 - 130	
Hexachlorobenzene	100	74.0	ug/L	74	52 - 130	
Hexachlorobutadiene	100	66.0	ug/L	66	36 - 130	
Atrazine	100	79.8	ug/L	80	66 - 130	
Hexachlorocyclopentadiene	100	13.7	ug/L	14	10 - 130	
Hexachloroethane	100	59.0	ug/L	59	39 - 130	
Anthracene	100	80.5	ug/L	80	61 _ 130	
Isophorone	100	79.7	ug/L	80	59 <sub>-</sub> 130	
2-Methylnaphthalene	100	72.0	ug/L	72	52 - 130	
Carbazole	100	97.0	ug/L	97	67 _ 130	
2-Methylphenol	100	80.7	ug/L	81	55 <sub>-</sub> 130	
Di-n-butyl phthalate	100	91.3	ug/L	91	66 - 130	
3 & 4 Methylphenol	100	81.3	ug/L	81	35 _ 130	
Fluoranthene	100	111	ug/L	111	56 - 130	
Naphthalene	100	70.5	ug/L	70	50 <sub>-</sub> 130	
2-Nitroaniline	100	92.1	ug/L	92	60 _ 130	
Butyl benzyl phthalate	100	98.0	ug/L	98	66 - 130	
3,3'-Dichlorobenzidine	100	60.7	ug/L	61	27 _ 130	
3-Nitroaniline	100	81.2	ug/L	81	54 - 130	
4-Nitroaniline	100	97.3	ug/L	97	54 <sub>-</sub> 130	
Benzo[a]anthracene	100	84.3	ug/L	84	58 - 130	
Chrysene	100	86.9	ug/L	87	59 <sub>-</sub> 130	
Nitrobenzene	100	75.1	ug/L	75	56 <sub>-</sub> 130	
Bis(2-ethylhexyl) phthalate	100	90.6	ug/L	91	62 - 130	
2-Nitrophenol	100	79.8	ug/L	80	54 <sub>-</sub> 130	
Di-n-octyl phthalate	100	84.7	ug/L	85	64 - 130	
4-Nitrophenol	100	101	ug/L	101	38 - 130	
Benzo[b]fluoranthene	100	76.1	ug/L	76	51 - 130	
Benzo[k]fluoranthene	100	69.1	ug/L	69	53 - 130	
N-Nitrosodi-n-propylamine	100	83.0	ug/L	83	64 <sub>-</sub> 130	
Benzo[a]pyrene	100	70.6	ug/L	71	61 _ 130	
N-Nitrosodiphenylamine	100	81.3	ug/L	81	68 - 130	
Indeno[1,2,3-cd]pyrene	100	84.9	ug/L	85	47 - 130	
Pentachlorophenol	100	99.2	ug/L	99	42 - 138	
Dibenz(a,h)anthracene	100	72.9	ug/L	73	55 <sub>-</sub> 130	
Phenanthrene	100	84.8	ug/L	85	62 _ 130	
Benzo[g,h,i]perylene	100	72.9	ug/L	73	54 - 130	
Phenol	100	80.7	ug/L	81	29 - 130	
Pyrene	100	82.0	ug/L	82	60 - 130	
2,4,5-Trichlorophenol	100	92.1	ug/L	92	61 - 130	
2,4,6-Trichlorophenol	100	89.5	ug/L	89	57 - 130	

TestAmerica Savannah

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93550-1

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

Lab Sample ID: LCS 680-291010/5-A

**Matrix: Water** 

**Analysis Batch: 291919** 

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

**Prep Batch: 291010** 

LCS LCS

Surrogate	%Recovery	Qualifier	Limits
Nitrobenzene-d5 (Surr)	78		39 _ 130
2-Fluorobiphenyl	77		38 - 130
Terphenyl-d14 (Surr)	86		10 - 143
Phenol-d5 (Surr)	78		25 - 130
2-Fluorophenol (Surr)	89		25 - 130
2,4,6-Tribromophenol (Surr)	96		31 - 141

Client Sample ID: PZ03-08

Prep Type: Total/NA **Prep Batch: 291010** 

Lab Sample ID: 680-93550-15 MS

**Matrix: Water** 

Analysis Batch: 292070

Analysis Batch: 292070	Sample	Sample	Spike	MS	MS				Prep Batch: 291010 %Rec.
Analyte	•	Qualifier	Added		Qualifier	Unit	D	%Rec	Limits
Benzaldehyde	9.9	U	104	52.4	F	ug/L		<del></del> 51	59 - 142
Acetophenone	9.9	U	104	68.0		ug/L		65	54 - 130
Bis(2-chloroethyl)ether	9.9	U	104	76.3		ug/L		74	56 <sub>-</sub> 130
bis (2-chloroisopropyl) ether	9.9	U	104	79.1		ug/L		76	55 _ 130
Bis(2-chloroethoxy)methane	9.9	U	104	64.0	F	ug/L		62	64 <sub>-</sub> 130
Caprolactam	9.9	U	104	74.3		ug/L		72	34 - 130
4-Chloroaniline	20	U	104	35.1	F	ug/L		34	42 - 130
4-Chloro-3-methylphenol	9.9	U	104	88.7		ug/L		85	60 - 130
2-Chlorophenol	9.9	U	104	75.9		ug/L		73	57 <sub>-</sub> 130
1,1'-Biphenyl	9.9	U	104	66.5		ug/L		64	54 - 130
2-Chloronaphthalene	9.9	U	104	67.1		ug/L		65	53 - 130
2,4-Dichlorophenol	9.9	U	104	81.2		ug/L		78	54 - 130
Acenaphthylene	9.9	U	104	73.9		ug/L		71	60 - 130
2,4-Dimethylphenol	9.9	U	104	75.3		ug/L		73	40 - 130
Acenaphthene	4.8	J	104	75.5		ug/L		68	55 - 130
Dimethyl phthalate	9.9	U	104	81.5		ug/L		78	69 - 130
2,4-Dinitrophenol	50	U	104	96.0		ug/L		93	20 - 165
Dibenzofuran	9.9	U	104	79.3		ug/L		76	58 - 130
2,4-Dinitrotoluene	9.9	U	104	92.5		ug/L		89	63 - 130
2,6-Dinitrotoluene	9.9	U	104	80.6		ug/L		78	65 - 130
Diethyl phthalate	9.9	U	104	93.1		ug/L		90	70 - 130
4-Chlorophenyl phenyl ether	9.9	U	104	85.3		ug/L		82	57 - 130
Fluorene	6.6	J	104	87.9		ug/L		78	61 _ 130
4,6-Dinitro-2-methylphenol	50	U	104	97.1		ug/L		94	45 - 134
4-Bromophenyl phenyl ether	9.9	U	104	75.6		ug/L		73	61 - 130
Hexachlorobenzene	9.9	U	104	68.0		ug/L		66	52 - 130
Hexachlorobutadiene	9.9	U	104	59.7		ug/L		58	36 - 130
Atrazine	9.9	U	104	15.6	F	ug/L		15	66 - 130
Hexachlorocyclopentadiene	9.9	U	104	15.3		ug/L		15	10 - 130
Hexachloroethane	9.9	U	104	53.4		ug/L		51	39 - 130
Anthracene	9.9	U	104	75.9		ug/L		73	61 - 130
Isophorone	9.9	U	104	73.5		ug/L		71	59 <sub>-</sub> 130
2-Methylnaphthalene	9.9	U	104	66.4		ug/L		64	52 - 130
Carbazole	9.9	U	104	72.2		ug/L		70	67 _ 130
2-Methylphenol	9.9	U	104	78.5		ug/L		76	55 _ 130
Di-n-butyl phthalate	9.9	U	104	89.6		ug/L		86	66 - 130

TestAmerica Savannah

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TestAmerica Job ID: 680-93550-1

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

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

Lab Sample ID: 680-93550-15 MS

**Matrix: Water** 

Analysis Batch: 292070

Client Sample ID: PZ03-08 **Prep Type: Total/NA** 

**Prep Batch: 291010** 

•	Sample	Sample	Spike	MS	MS				%Rec.	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	
3 & 4 Methylphenol	9.9	U	104	80.2		ug/L		77	35 - 130	
Fluoranthene	9.9	U	104	84.3		ug/L		81	56 _ 130	
Naphthalene	9.9	U	104	64.7		ug/L		62	50 _ 130	
2-Nitroaniline	50	U	104	77.3		ug/L		74	60 _ 130	
Butyl benzyl phthalate	9.9	U	104	92.9		ug/L		90	66 _ 130	
3,3'-Dichlorobenzidine	60	U	104	62	UF	ug/L		0	27 - 130	
3-Nitroaniline	50	Ü	104	16.5	JF	ug/L		16	54 <sub>-</sub> 130	
4-Nitroaniline	50	U	104	40.0	JF	ug/L		39	54 _ 130	
Benzo[a]anthracene	9.9	U	104	80.0		ug/L		77	58 - 130	
Chrysene	9.9	U	104	80.7		ug/L		78	59 <sub>-</sub> 130	
Nitrobenzene	9.9	U	104	69.1		ug/L		67	56 - 130	
Bis(2-ethylhexyl) phthalate	9.9	U	104	93.9		ug/L		90	62 _ 130	
2-Nitrophenol	9.9	U	104	76.4		ug/L		74	54 <sub>-</sub> 130	
Di-n-octyl phthalate	9.9	U	104	86.3		ug/L		83	64 - 130	
4-Nitrophenol	50	U	104	102		ug/L		98	38 - 130	
Benzo[b]fluoranthene	9.9	U	104	64.8		ug/L		62	51 - 130	
Benzo[k]fluoranthene	9.9	U	104	62.5		ug/L		60	53 _ 130	
N-Nitrosodi-n-propylamine	9.9	U	104	79.0		ug/L		76	64 - 130	
Benzo[a]pyrene	9.9	Ü	104	66.8		ug/L		64	61 _ 130	
N-Nitrosodiphenylamine	9.9	U	104	43.2	F	ug/L		42	68 - 130	
Indeno[1,2,3-cd]pyrene	9.9	U	104	84.3		ug/L		81	47 - 130	
Pentachlorophenol	50	Ü	104	103		ug/L		99	42 - 138	
Dibenz(a,h)anthracene	9.9	U	104	69.2		ug/L		67	55 _ 130	
Phenanthrene	9.9	U	104	79.4		ug/L		77	62 _ 130	
Benzo[g,h,i]perylene	9.9	U	104	67.0		ug/L		65	54 - 130	
Phenol	9.9	U	104	73.6		ug/L		71	29 - 130	
Pyrene	9.9	U	104	78.2		ug/L		75	60 - 130	
2,4,5-Trichlorophenol	9.9	U	104	87.8		ug/L		85	61 - 130	
2,4,6-Trichlorophenol	9.9	U	104	81.1		ug/L		78	57 <sub>-</sub> 130	

MS MS

Surrogate	%Recovery	Qualifier	Limits
Nitrobenzene-d5 (Surr)	62		39 - 130
2-Fluorobiphenyl	60		38 - 130
Terphenyl-d14 (Surr)	39		10 - 143
Phenol-d5 (Surr)	61		25 - 130
2-Fluorophenol (Surr)	73		25 - 130
2,4,6-Tribromophenol (Surr)	94		31 - 141

Lab Sample ID: 680-93550-15 MSD

**Matrix: Water** 

Analysis Batch: 291919

Client Sample ID: PZ03-08
Prep Type: Total/NA

**Prep Batch: 291010** 

	Sample	Sample	Spike	MSD	MSD				%Rec.		RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Benzaldehyde	9.9	U	104	41.4	F	ug/L		40	59 - 142	24	50
Acetophenone	9.9	U	104	71.8		ug/L		69	54 - 130	5	50
Bis(2-chloroethyl)ether	9.9	U	104	77.7		ug/L		75	56 - 130	2	50
bis (2-chloroisopropyl) ether	9.9	U	104	77.9		ug/L		75	55 - 130	2	50
Bis(2-chloroethoxy)methane	9.9	U	104	76.6		ug/L		74	64 - 130	18	50

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Spike

MSD MSD

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93550-1

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

Sample Sample

Lab Sample ID: 680-93550-15 MSD

**Matrix: Water** 

Analysis Batch: 291919

Client Sample ID: PZ03-08 **Prep Type: Total/NA** 

Prep Batch: 291010

91010	Fieb Datcii. 231010								
RPD	%Rec. RP								
Limit	RPD	Limits							
50	61	34 - 130							
50	73	42 _ 130							
50	10	60 - 130							
50	3	57 - 130							
50	6	54 <sub>-</sub> 130							
50	5	53 - 130							
50	5	54 <sub>-</sub> 130							
50	12	60 - 130							
50	9	40 - 130							

	•	Sample	<b>Spike</b>	MSD	MSD				%Rec.		RPD
Analyte		Qualifier	Added		Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Caprolactam	9.9	U	104	140	F	ug/L		135	34 - 130	61	50
4-Chloroaniline	20	U	104	16.3	JF	ug/L		16	42 - 130	73	50
4-Chloro-3-methylphenol	9.9	U	104	97.7		ug/L		94	60 - 130	10	50
2-Chlorophenol	9.9	U	104	78.0		ug/L		75	57 - 130	3	50
1,1'-Biphenyl	9.9	U	104	70.9		ug/L		69	54 - 130	6	50
2-Chloronaphthalene	9.9	U	104	70.7		ug/L		68	53 - 130	5	50
2,4-Dichlorophenol	9.9	U	104	85.2		ug/L		82	54 - 130	5	50
Acenaphthylene	9.9	U	104	82.9		ug/L		80	60 - 130	12	50
2,4-Dimethylphenol	9.9	U	104	82.5		ug/L		80	40 - 130	9	50
Acenaphthene	4.8	J	104	81.0		ug/L		74	55 - 130	7	50
Dimethyl phthalate	9.9	U	104	88.1		ug/L		85	69 - 130	8	50
2,4-Dinitrophenol	50	U	104	112		ug/L		108	20 - 165	15	50
Dibenzofuran	9.9	U	104	85.0		ug/L		82	58 <sub>-</sub> 130	7	50
2,4-Dinitrotoluene	9.9		104	105		ug/L		102	63 _ 130	13	50
2,6-Dinitrotoluene		U	104	91.2		ug/L		88	65 - 130	12	50
Diethyl phthalate	9.9		104	98.1		ug/L		95	70 - 130	5	50
4-Chlorophenyl phenyl ether	9.9		104	86.1		ug/L		83	57 - 130	1	50
Fluorene	6.6		104	93.2		ug/L		84	61 - 130	6	50
4,6-Dinitro-2-methylphenol	50		104	101		ug/L		98	45 - 134	4	50
4-Bromophenyl phenyl ether	9.9		104	68.4		ug/L ug/L		66	61 - 130	10	50
		U	104						52 <sub>-</sub> 130		
Hexachlorobenzene				56.1		ug/L		54 54		19	50
Hexachlorobutadiene	9.9		104	55.5		ug/L		54	36 - 130	7	50
Atrazine	9.9		104		UF	ug/L		0	66 - 130	NC	50
Hexachlorocyclopentadiene		U	104	17.7		ug/L		17	10 - 130	14	50
Hexachloroethane	9.9		104	52.2		ug/L		50	39 - 130	2	50
Anthracene	9.9		104	73.9		ug/L		71	61 - 130	3	50
Isophorone		U	104	75.0		ug/L		72	59 - 130	2	50
2-Methylnaphthalene	9.9		104	68.4		ug/L		66	52 _ 130	3	50
Carbazole	9.9		104	92.8		ug/L		90	67 - 130	25	50
2-Methylphenol	9.9	U	104	84.4		ug/L		82	55 - 130	7	50
Di-n-butyl phthalate		U	104	84.8		ug/L		82	66 - 130	5	50
3 & 4 Methylphenol	9.9	U	104	86.6		ug/L		84	35 _ 130	8	50
Fluoranthene	9.9	U	104	84.9		ug/L		82	56 - 130	1	50
Naphthalene	9.9	U	104	67.1		ug/L		65	50 - 130	4	50
2-Nitroaniline	50	U	104	97.6		ug/L		94	60 - 130	23	50
Butyl benzyl phthalate	9.9	U	104	84.6		ug/L		82	66 - 130	9	50
3,3'-Dichlorobenzidine	60	U	104	62	UF	ug/L		0	27 - 130	NC	50
3-Nitroaniline	50	U	104	15.5	JF	ug/L		15	54 - 130	6	50
4-Nitroaniline	50	U	104	27.7	JF	ug/L		27	54 - 130	36	50
Benzo[a]anthracene	9.9	U	104	70.6		ug/L		68	58 - 130	12	50
Chrysene	9.9	U	104	72.5		ug/L		70	59 - 130	11	50
Nitrobenzene	9.9	U	104	73.3		ug/L		71	56 - 130	6	50
Bis(2-ethylhexyl) phthalate	9.9	U	104	71.9		ug/L		69	62 - 130	27	50
2-Nitrophenol	9.9	U	104	80.7		ug/L		78	54 - 130	5	50
Di-n-octyl phthalate	9.9		104	67.7		ug/L		65	64 - 130	24	50
4-Nitrophenol	50		104	136	F	ug/L		132	38 - 130	29	50
Benzo[b]fluoranthene	9.9		104	59.1		ug/L		57	51 - 130	9	50
Benzo[k]fluoranthene	9.9		104	58.5		-3-		٠.		•	50

TestAmerica Savannah

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

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

Lab Sample ID: 680-93550-15 MSD

**Matrix: Water** 

**Analysis Batch: 291919** 

Client Sample ID: PZ03-08 Prep Type: Total/NA

**Prep Batch: 291010** 

D	Limits	RPD	Limit
80	C4 400		
	64 - 130	5	50
55	61 - 130	16	50
46	68 - 130	11	50
63	47 - 130	25	50
106	42 - 138	7	50
59	55 - 130	12	50
77	62 _ 130	0	50
55	54 - 130	17	50
77	29 - 130	8	50
73	60 - 130	4	50
96	61 - 130	12	50
89	57 - 130	13	50
	55 46 63 106 59 77 55 77 73	55 61 - 130 46 68 - 130 63 47 - 130 106 42 - 138 59 55 - 130 77 62 - 130 55 54 - 130 77 29 - 130 73 60 - 130 96 61 - 130	55     61 - 130     16       46     68 - 130     11       63     47 - 130     25       106     42 - 138     7       59     55 - 130     12       77     62 - 130     0       55     54 - 130     17       77     29 - 130     8       73     60 - 130     4       96     61 - 130     12

MSD MSD

Surrogate	%Recovery	Qualifier	Limits
Nitrobenzene-d5 (Surr)	70		39 - 130
2-Fluorobiphenyl	71		38 - 130
Terphenyl-d14 (Surr)	40		10 - 143
Phenol-d5 (Surr)	72		25 - 130
2-Fluorophenol (Surr)	78		25 _ 130
2,4,6-Tribromophenol (Surr)	116		31 - 141

#### Method: 8015C - Nonhalogenated Organics using GC/FID -Modified (Gasoline Range Organics)

Lab Sample ID: MB 680-290745/6

**Matrix: Solid** 

Analysis Batch: 290745

MB MB

Result Qualifier Dil Fac Analyte RLMDL Unit D Prepared Analyzed Gasoline Range Organics (GRO) 250 19 ug/Kg 08/26/13 11:49 250 U -C6-C10

MB MB Surrogate Qualifier Limits Prepared Analyzed Dil Fac %Recovery a,a,a-Trifluorotoluene 85 70 - 131 08/26/13 11:49

Spike

Added

1000

Lab Sample ID: LCS 680-290745/7

**Matrix: Solid** 

Analyte

Analysis Batch: 290745

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

Client Sample ID: Method Blank

Prep Type: Total/NA

LCS LCS %Rec. Result Qualifier Unit %Rec Limits 934 ug/Kg 93 64 - 133

Gasoline Range Organics (GRO) -C6-C10

LCS LCS

%Recovery Qualifier Surrogate Limits a,a,a-Trifluorotoluene 83 70 - 131

TestAmerica Savannah

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93550-1

Method: 8015C - Nonhalogenated Organics using GC/FID -Modified (Gasoline Range Organics) (Continued)

Lab Sample ID: LCSD 680-290745/8

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

**Matrix: Solid** 

Analysis Batch: 290745

	Spike	LCSD	LCSD				%Rec.		RPD
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Gasoline Range Organics (GRO)	 1000	927		ug/Kg		93	64 - 133	1	50
-C6-C10									

-C6-C10

LCSD LCSD

 Surrogate
 %Recovery
 Qualifier
 Limits

 a,a,a-Trifluorotoluene
 89
 70 - 131

Lab Sample ID: MB 680-290971/17

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

**Matrix: Solid** 

Analysis Batch: 290971

MB MB

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)	250	U	250	19	ug/Kg			08/27/13 15:49	1

-C6-C10

MB MB

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene	91		70 - 131		08/27/13 15:49	1

Lab Sample ID: LCS 680-290971/18

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

Matrix: Solid

Analysis Batch: 290971

	Spike	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Gasoline Range Organics (GRO)	 1000	975		ug/Kg	_	98	64 - 133	

-C6-C10

LCS LCS
Surrogate %Recovery Qualifier Limits
a,a,a-Trifluorotoluene 87 70 - 131

Lab Sample ID: LCSD 680-290971/19

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Matrix: Solid Analysis Batch: 290971

Spike LCSD LCSD %Rec. RPD Analyte Added Result Qualifier Limit Unit %Rec Limits RPD 1000 892 Gasoline Range Organics (GRO) ug/Kg 89 64 - 133 50

-C6-C10

LCSD LCSD

Surrogate	%Recovery Qualifier	Limits
a,a,a-Trifluorotoluene	86	70 - 131

Lab Sample ID: MB 680-291184/5

Client Sample ID: Method Blank

Prep Type: Total/NA

Matrix: Water

Analysis Batch: 291184

	MB	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)	12.8	J	50	11	ug/L			08/28/13 10:51	1

-C6-C10

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5

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8

9

10

11

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Client Sample ID: Method Blank

Prep Type: Total/NA

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

Method: 8015C - Nonhalogenated Organics using GC/FID -Modified (Gasoline Range Organics)

(Continued)

Lab Sample ID: MB 680-291184/5

**Matrix: Water** 

Analysis Batch: 291184

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

MR MR

Surrogate %Recovery Qualifier Limits Prepared Analyzed Dil Fac a,a,a-Trifluorotoluene 92 70 - 130 08/28/13 10:51

Lab Sample ID: LCS 680-291184/6 Client Sample ID: Lab Control Sample Prep Type: Total/NA

**Matrix: Water** 

Analysis Batch: 291184

Spike LCS LCS %Rec. Analyte Added Result Qualifier Unit %Rec Limits 200 156 78 70 \_ 148 Gasoline Range Organics (GRO) ug/L

-C6-C10

Surrogate %Recovery Qualifier Limits 70 - 130 a,a,a-Trifluorotoluene 87

Lab Sample ID: LCSD 680-291184/7

**Matrix: Water** 

Analysis Batch: 291184

Spike LCSD LCSD %Rec. RPD Added Analyte Result Qualifier Unit %Rec Limits RPD Limit 200 156 ug/L 78 70 - 14850 Gasoline Range Organics (GRO)

-C6-C10

LCSD LCSD

LCS LCS

%Recovery Qualifier Limits Surrogate 70 - 130 a,a,a-Trifluorotoluene 88

Lab Sample ID: MB 680-291258/7

**Matrix: Solid** 

Analysis Batch: 291258

MB MB

RL Analyte Result Qualifier MDL Unit D Analyzed Dil Fac Prepared 250 Gasoline Range Organics (GRO) 250 Ū 19 ug/Kg 08/28/13 16:41

-C6-C10

MB MB Dil Fac Qualifier Limits Surrogate %Recovery Prepared Analyzed 70 - 131 a,a,a-Trifluorotoluene 99 08/28/13 16:41

Lab Sample ID: LCS 680-291258/6

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

**Matrix: Solid** 

Analysis Batch: 291258

Spike LCS LCS %Rec. Analyte Added Result Qualifier Unit D %Rec Limits 1000 995 99 64 - 133 Gasoline Range Organics (GRO) ug/Kg

-C6-C10

LCS LCS

%Recovery Qualifier Surrogate Limits a,a,a-Trifluorotoluene 90 70 - 131

TestAmerica Savannah

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

Method: 8015C - Nonhalogenated Organics using GC/FID -Modified (Gasoline Range Organics)

(Continued)

**Matrix: Solid** 

Lab Sample ID: LCSD 680-291258/8

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analysis Batch: 291258

LCSD LCSD RPD Spike %Rec. Analyte Added Result Qualifier Unit %Rec RPD Limit 1000 954 ug/Kg 95 64 - 133 Gasoline Range Organics (GRO)

-C6-C10

LCSD LCSD

Limits Surrogate %Recovery Qualifier a,a,a-Trifluorotoluene 86 70 - 131

Client Sample ID: Method Blank

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Type: Total/NA

**Matrix: Solid** 

Analysis Batch: 291393

Lab Sample ID: MB 680-291393/7

MB MB

Analyte Result Qualifier RL MDL Unit Prepared Analyzed Dil Fac 250 U 250 08/29/13 11:46 19 ug/Kg Gasoline Range Organics (GRO)

-C6-C10

MB MB

Qualifier Limits Dil Fac Surrogate %Recovery Prepared Analyzed a,a,a-Trifluorotoluene 70 - 131 08/29/13 11:46 90

Lab Sample ID: LCS 680-291393/8

**Matrix: Solid** 

Analysis Batch: 291393

Spike LCS LCS %Rec. Added Result Qualifier Limits Analyte Unit D %Rec 1000 878 88 64 - 133 Gasoline Range Organics (GRO) ug/Kg

-C6-C10

LCS LCS

Surrogate %Recovery Qualifier Limits a,a,a-Trifluorotoluene 89 70 - 131

Lab Sample ID: LCSD 680-291393/9

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

**Analysis Batch: 291393** 

Spike LCSD LCSD %Rec. RPD Added RPD Limit Analyte Result Qualifier Unit D %Rec Limits 1000 Gasoline Range Organics (GRO) 1020 ug/Kg 102 64 - 133 50

-C6-C10

LCSD LCSD

%Recovery Qualifier Limits Surrogate 70 - 131 a,a,a-Trifluorotoluene 89

Lab Sample ID: MB 680-291550/8

Matrix: Solid

Analysis Batch: 291550

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

мв мв

Result Qualifier RL Dil Fac Analyte MDL Unit D Prepared Analyzed 5000 U 5000 380 ug/Kg 08/30/13 12:05 Gasoline Range Organics (GRO)

-C6-C10

TestAmerica Savannah

TestAmerica Job ID: 680-93550-1

# Method: 8015C - Nonhalogenated Organics using GC/FID -Modified (Gasoline Range Organics) (Continued)

MR MR

Lab Sample ID: MB 680-291550/8

**Matrix: Solid** 

Analysis Batch: 291550

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

Surrogate %Recovery Qualifier Limits Prepared Analyzed Dil Fac a,a,a-Trifluorotoluene 94 70 - 131 08/30/13 12:05

Lab Sample ID: LCS 680-291550/9 Client Sample ID: Lab Control Sample **Matrix: Solid** Prep Type: Total/NA

Analysis Batch: 291550

Spike LCS LCS %Rec. Analyte Added Result Qualifier Unit D %Rec Limits 40000 36000 ٩n 64 \_ 133 ug/Kg

> Limits 70 \_ 131

Gasoline Range Organics (GRO) -C6-C10

LCS LCS Surrogate %Recovery Qualifier

94

Lab Sample ID: LCSD 680-291550/10 Client Sample ID: Lab Control Sample Dup **Matrix: Solid** Prep Type: Total/NA

a,a,a-Trifluorotoluene

Analysis Batch: 291550

Spike LCSD LCSD %Rec. RPD Added Analyte Result Qualifier Unit %Rec Limits RPD Limit 40000 37400 ug/Kg 94 64 - 13350 Gasoline Range Organics (GRO)

-C6-C10

LCSD LCSD

%Recovery Qualifier Limits Surrogate 70 - 131 a,a,a-Trifluorotoluene 99

#### Method: 8015C - Nonhalogenated Organics using GC/FID -Modified (Diesel Range Organics)

Lab Sample ID: MB 490-103111/1-A Client Sample ID: Method Blank **Matrix: Water** Prep Type: Total/NA Analysis Batch: 103307 **Prep Batch: 103111** 

мв мв

Analyte Result Qualifier RΙ MDL Unit Analyzed Prepared Dil Fac Diesel Range Organics [C10-C28] 36.2 100 28 ug/L 08/28/13 07:23 08/28/13 17:09

MB MB

%Recovery Qualifier Limits Prepared Dil Fac Surrogate Analyzed 50 - 150 08/28/13 07:23 08/28/13 17:09 o-Terphenyl (Surr) 85

Lab Sample ID: LCS 490-103111/2-A

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

Analysis Batch: 103307 **Prep Batch: 103111** 

542

ug/L

Spike LCS LCS %Rec. Analyte babbA Result Qualifier Unit Limits %Rec

1000 Diesel Range Organics [C10-C28]

LCS LCS

%Recovery Qualifier Limits Surrogate o-Terphenyl (Surr) 77 50 - 150

TestAmerica Savannah

Client Sample ID: Lab Control Sample

46 - 132

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93550-1

Method: 8015C - Nonhalogenated Organics using GC/FID -Modified (Diesel Range Organics) (Continued)

Lab Sample ID: MB 490-103148/1-A

Lab Sample ID: LCS 490-103148/2-A

**Matrix: Solid** 

Analysis Batch: 103532

Client Sample ID: Method Blank

Prep Type: Total/NA

**Prep Batch: 103148** 

-	МВ	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	5000	U	5000	1400	ug/Kg		08/28/13 08:56	08/29/13 17:31	1
ORO C24-C40	2800	J	5000	1400	ug/Kg		08/28/13 08:56	08/29/13 17:31	1

MB MB

Qualifier Limits Prepared Analyzed Dil Fac Surrogate %Recovery o-Terphenyl (Surr) 50 - 150 08/28/13 08:56 08/29/13 17:31 83

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

**Prep Batch: 103148** 

Spike LCS LCS %Rec. Added Result Qualifier Limits Analyte Unit %Rec 40000 30300 76 54 - 130 **Diesel Range Organics** ug/Kg

[C10-C28]

**Matrix: Water** 

Analyte

**Matrix: Solid** 

Analysis Batch: 103532

LCS LCS

MB MB Result Qualifier

Surrogate %Recovery Qualifier Limits o-Terphenyl (Surr) 88 50 - 150

Lab Sample ID: MB 490-104020/1-A Client Sample ID: Method Blank

**Analysis Batch: 104122** 

Prep Type: Total/NA

D

Prepared

MDL Unit

Prep Batch: 104020

Dil Fac

Analyzed

Diesel Range Organics [C10-C28]	100	U	100	28	ug/L	_	08/30/13 15:58	09/01/13 00:52	1
	МВ	МВ							
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
o-Ternhenyl (Surr)	90		50 - 150				08/30/13 15:58	09/01/13 00:52	1

RL

Terphenyl (Surr)

Lab Sample ID: LCS 490-104020/2-A

**Matrix: Water** 

**Analysis Batch: 104122** 

Client Sample ID: Lab Control Sample

Prep Type: Total/NA Prep Batch: 104020

LCS LCS Spike %Rec. Analyte Added Result Qualifier Unit %Rec Limits 1000 85 46 - 132 851 ug/L

Diesel Range Organics [C10-C28]

LCS LCS

Surrogate %Recovery Qualifier Limits o-Terphenyl (Surr) 98 50 - 150

Lab Sample ID: MB 490-104903/1-A

**Matrix: Solid** 

Analysis Batch: 104870

Client Sample ID: Method Blank

Prep Type: Total/NA **Prep Batch: 104903** 

	MB	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	5000	U	5000	1400	ug/Kg		09/05/13 12:12	09/06/13 02:24	1
ORO C24-C40	1500	J	5000	1400	ug/Kg		09/05/13 12:12	09/06/13 02:24	1

# **QC Sample Results**

LCS LCS

33800

Result Qualifier

Unit

ug/Kg

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93550-1

Client Sample ID: Method Blank

Method: 8015C - Nonhalogenated Organics using GC/FID -Modified (Diesel Range Organics) (Continued)

Lab Sample ID: MB 490-104903/1-A **Matrix: Solid** 

**Analysis Batch: 104870** 

MB MB

75

Surrogate %Recovery Qualifier

Limits 50 - 150

> Spike Added

> 40000

Prepared 09/05/13 12:12

Analyzed 09/06/13 02:24

Prep Type: Total/NA

**Prep Batch: 104903** 

Lab Sample ID: LCS 490-104903/2-A

**Matrix: Solid** 

[C10-C28]

Surrogate

o-Terphenyl (Surr)

o-Terphenyl (Surr)

**Analysis Batch: 104870** 

Analyte

Diesel Range Organics

LCS LCS

%Recovery Qualifier Limits 50 - 150 88

Client Sample ID: Lab Control Sample

Prep Type: Total/NA **Prep Batch: 104903** 

Limits

%Rec 54 - 130 84

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93550-1

# GC/MS VOA

## **Prep Batch: 189751**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93550-1	SB03-06 (0.0-1.0)	Total/NA	Solid	5035	
680-93550-2	SB03-06 (2.5-3.5)	Total/NA	Solid	5035	
680-93550-3	SB03-07 (1.5-2.5)	Total/NA	Solid	5035	
680-93550-4	SB03-07 (4.5-5.5)	Total/NA	Solid	5035	
680-93550-5	SB03-08 (1.0-2.0)	Total/NA	Solid	5035	
680-93550-6	SB03-08 (3.0-4.0)	Total/NA	Solid	5035	
680-93550-7	SB03-09 (1.0-2.0)	Total/NA	Solid	5035	
680-93550-8	SB03-09 (3.5-4.5)	Total/NA	Solid	5035	
680-93550-9	SB03-10 (0.5-1.5)	Total/NA	Solid	5035	
680-93550-10	SB03-10 (5.5-6.5)	Total/NA	Solid	5035	
680-93550-11	SB03-05 (0.0-1.0)	Total/NA	Solid	5035	
680-93550-12	SB03-05 (3.5-4.5)	Total/NA	Solid	5035	

## Analysis Batch: 190016

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93550-1	SB03-06 (0.0-1.0)	Total/NA	Solid	8260B	189751
680-93550-2	SB03-06 (2.5-3.5)	Total/NA	Solid	8260B	189751
LCS 400-190016/1000	Lab Control Sample	Total/NA	Solid	8260B	
LCSD 400-190016/11	Lab Control Sample Dup	Total/NA	Solid	8260B	
MB 400-190016/4	Method Blank	Total/NA	Solid	8260B	

## Analysis Batch: 190203

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93550-13	PZ02-08	Total/NA	Water	8260B	
680-93550-14	PZ03-04	Total/NA	Water	8260B	
680-93550-15	PZ03-08	Total/NA	Water	8260B	
680-93550-16	TB01 (082213)	Total/NA	Water	8260B	
LCS 400-190203/1000	Lab Control Sample	Total/NA	Water	8260B	
MB 400-190203/4	Method Blank	Total/NA	Water	8260B	

## Analysis Batch: 190276

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93550-3	SB03-07 (1.5-2.5)	Total/NA	Solid	8260B	189751
680-93550-4	SB03-07 (4.5-5.5)	Total/NA	Solid	8260B	189751
680-93550-5	SB03-08 (1.0-2.0)	Total/NA	Solid	8260B	189751
680-93550-6	SB03-08 (3.0-4.0)	Total/NA	Solid	8260B	189751
680-93550-7	SB03-09 (1.0-2.0)	Total/NA	Solid	8260B	189751
680-93550-8	SB03-09 (3.5-4.5)	Total/NA	Solid	8260B	189751
680-93550-9	SB03-10 (0.5-1.5)	Total/NA	Solid	8260B	189751
680-93550-10	SB03-10 (5.5-6.5)	Total/NA	Solid	8260B	189751
680-93550-11	SB03-05 (0.0-1.0)	Total/NA	Solid	8260B	189751
680-93550-12	SB03-05 (3.5-4.5)	Total/NA	Solid	8260B	189751
LCS 400-190276/1000	Lab Control Sample	Total/NA	Solid	8260B	
LCSD 400-190276/3	Lab Control Sample Dup	Total/NA	Solid	8260B	
MB 400-190276/5	Method Blank	Total/NA	Solid	8260B	

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TestAmerica Job ID: 680-93550-1

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

## GC/MS Semi VOA

## Prep Batch: 290868

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93550-1	SB03-06 (0.0-1.0)	Total/NA	Solid	3546	
680-93550-2	SB03-06 (2.5-3.5)	Total/NA	Solid	3546	
680-93550-4	SB03-07 (4.5-5.5)	Total/NA	Solid	3546	
680-93550-5	SB03-08 (1.0-2.0)	Total/NA	Solid	3546	
680-93550-6	SB03-08 (3.0-4.0)	Total/NA	Solid	3546	
680-93550-7	SB03-09 (1.0-2.0)	Total/NA	Solid	3546	
680-93550-8	SB03-09 (3.5-4.5)	Total/NA	Solid	3546	
680-93550-9	SB03-10 (0.5-1.5)	Total/NA	Solid	3546	
680-93550-10	SB03-10 (5.5-6.5)	Total/NA	Solid	3546	
680-93550-11	SB03-05 (0.0-1.0)	Total/NA	Solid	3546	
LCS 680-290868/20-A	Lab Control Sample	Total/NA	Solid	3546	
MB 680-290868/19-A	Method Blank	Total/NA	Solid	3546	

# **Prep Batch: 291010**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93550-13	PZ02-08	Total/NA	Water	3520C	
680-93550-15	PZ03-08	Total/NA	Water	3520C	
680-93550-15 MS	PZ03-08	Total/NA	Water	3520C	
680-93550-15 MSD	PZ03-08	Total/NA	Water	3520C	
680-93588-1	PZ03-04	Total/NA	Water	3520C	
LCS 680-291010/5-A	Lab Control Sample	Total/NA	Water	3520C	
MB 680-291010/4-A	Method Blank	Total/NA	Water	3520C	

## Analysis Batch: 291044

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93550-1	SB03-06 (0.0-1.0)	Total/NA	Solid	8270D	290868
680-93550-2	SB03-06 (2.5-3.5)	Total/NA	Solid	8270D	290868
680-93550-4	SB03-07 (4.5-5.5)	Total/NA	Solid	8270D	290868
680-93550-5	SB03-08 (1.0-2.0)	Total/NA	Solid	8270D	290868
680-93550-6	SB03-08 (3.0-4.0)	Total/NA	Solid	8270D	290868
680-93550-7	SB03-09 (1.0-2.0)	Total/NA	Solid	8270D	290868
680-93550-8	SB03-09 (3.5-4.5)	Total/NA	Solid	8270D	290868
680-93550-9	SB03-10 (0.5-1.5)	Total/NA	Solid	8270D	290868
680-93550-10	SB03-10 (5.5-6.5)	Total/NA	Solid	8270D	290868
680-93550-11	SB03-05 (0.0-1.0)	Total/NA	Solid	8270D	290868
LCS 680-290868/20-A	Lab Control Sample	Total/NA	Solid	8270D	290868
MB 680-290868/19-A	Method Blank	Total/NA	Solid	8270D	290868

## **Prep Batch: 291642**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93550-3	SB03-07 (1.5-2.5)	Total/NA	Solid	3546	
680-93550-12	SB03-05 (3.5-4.5)	Total/NA	Solid	3546	

## Analysis Batch: 291919

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93550-3	SB03-07 (1.5-2.5)	Total/NA	Solid	8270D	291642
680-93550-12	SB03-05 (3.5-4.5)	Total/NA	Solid	8270D	291642
680-93550-15 MSD	PZ03-08	Total/NA	Water	8270D	291010
680-93588-1	PZ03-04	Total/NA	Water	8270D	291010
LCS 680-291010/5-A	Lab Control Sample	Total/NA	Water	8270D	291010
MB 680-291010/4-A	Method Blank	Total/NA	Water	8270D	291010

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93550-1

# GC/MS Semi VOA (Continued)

# Analysis Batch: 292070

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93550-13	PZ02-08	Total/NA	Water	8270D	291010
680-93550-15	PZ03-08	Total/NA	Water	8270D	291010
680-93550-15 MS	PZ03-08	Total/NA	Water	8270D	291010

## **GC VOA**

## Analysis Batch: 290745

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93550-1	SB03-06 (0.0-1.0)	Total/NA	Solid	8015C	290836
680-93550-2	SB03-06 (2.5-3.5)	Total/NA	Solid	8015C	290836
680-93550-4	SB03-07 (4.5-5.5)	Total/NA	Solid	8015C	290836
680-93550-5	SB03-08 (1.0-2.0)	Total/NA	Solid	8015C	290836
LCS 680-290745/7	Lab Control Sample	Total/NA	Solid	8015C	
LCSD 680-290745/8	Lab Control Sample Dup	Total/NA	Solid	8015C	
MB 680-290745/6	Method Blank	Total/NA	Solid	8015C	

## **Prep Batch: 290836**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93550-1	SB03-06 (0.0-1.0)	Total/NA	Solid	5035	_
680-93550-2	SB03-06 (2.5-3.5)	Total/NA	Solid	5035	
680-93550-3	SB03-07 (1.5-2.5)	Total/NA	Solid	5035	
680-93550-4	SB03-07 (4.5-5.5)	Total/NA	Solid	5035	
680-93550-5	SB03-08 (1.0-2.0)	Total/NA	Solid	5035	
680-93550-6	SB03-08 (3.0-4.0)	Total/NA	Solid	5035	
680-93550-7	SB03-09 (1.0-2.0)	Total/NA	Solid	5035	
680-93550-8	SB03-09 (3.5-4.5)	Total/NA	Solid	5035	
680-93550-9	SB03-10 (0.5-1.5)	Total/NA	Solid	5035	
680-93550-10	SB03-10 (5.5-6.5)	Total/NA	Solid	5035	
680-93550-11	SB03-05 (0.0-1.0)	Total/NA	Solid	5035	
680-93550-12	SB03-05 (3.5-4.5)	Total/NA	Solid	5035	

# Analysis Batch: 290971

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93550-3	SB03-07 (1.5-2.5)	Total/NA	Solid	8015C	290836
LCS 680-290971/18	Lab Control Sample	Total/NA	Solid	8015C	
LCSD 680-290971/19	Lab Control Sample Dup	Total/NA	Solid	8015C	
MB 680-290971/17	Method Blank	Total/NA	Solid	8015C	

## Analysis Batch: 291184

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93550-13	PZ02-08	Total/NA	Water	8015C	
680-93550-14	PZ03-04	Total/NA	Water	8015C	
680-93550-15	PZ03-08	Total/NA	Water	8015C	
LCS 680-291184/6	Lab Control Sample	Total/NA	Water	8015C	
LCSD 680-291184/7	Lab Control Sample Dup	Total/NA	Water	8015C	
MB 680-291184/5	Method Blank	Total/NA	Water	8015C	

## Analysis Batch: 291258

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93550-6	SB03-08 (3.0-4.0)	Total/NA	Solid	8015C	290836

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93550-1

# GC VOA (Continued)

# Analysis Batch: 291258 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 680-291258/6	Lab Control Sample	Total/NA	Solid	8015C	
LCSD 680-291258/8	Lab Control Sample Dup	Total/NA	Solid	8015C	
MB 680-291258/7	Method Blank	Total/NA	Solid	8015C	

# Analysis Batch: 291393

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93550-7	SB03-09 (1.0-2.0)	Total/NA	Solid	8015C	290836
680-93550-8	SB03-09 (3.5-4.5)	Total/NA	Solid	8015C	290836
680-93550-9	SB03-10 (0.5-1.5)	Total/NA	Solid	8015C	290836
680-93550-10	SB03-10 (5.5-6.5)	Total/NA	Solid	8015C	290836
680-93550-11	SB03-05 (0.0-1.0)	Total/NA	Solid	8015C	290836
LCS 680-291393/8	Lab Control Sample	Total/NA	Solid	8015C	
LCSD 680-291393/9	Lab Control Sample Dup	Total/NA	Solid	8015C	
MB 680-291393/7	Method Blank	Total/NA	Solid	8015C	

## Analysis Batch: 291550

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93550-12	SB03-05 (3.5-4.5)	Total/NA	Solid	8015C	290836
LCS 680-291550/9	Lab Control Sample	Total/NA	Solid	8015C	
LCSD 680-291550/10	Lab Control Sample Dup	Total/NA	Solid	8015C	
MB 680-291550/8	Method Blank	Total/NA	Solid	8015C	

## GC Semi VOA

#### **Prep Batch: 103111**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93550-13	PZ02-08	Total/NA	Water	3510C	
680-93550-17	PZ02-08 (DRO-SGT)	Total/NA	Water	3510C	
680-93588-1	PZ03-04	Total/NA	Water	3510C	
680-93588-2	PZ03-04 (DRO-SGT)	Total/NA	Water	3510C	
LCS 490-103111/2-A	Lab Control Sample	Total/NA	Water	3510C	
MB 490-103111/1-A	Method Blank	Total/NA	Water	3510C	

# Prep Batch: 103148

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93550-1	SB03-06 (0.0-1.0)	Total/NA	Solid	3550C	
680-93550-3	SB03-07 (1.5-2.5)	Total/NA	Solid	3550C	
680-93550-4	SB03-07 (4.5-5.5)	Total/NA	Solid	3550C	
680-93550-5	SB03-08 (1.0-2.0)	Total/NA	Solid	3550C	
680-93550-6	SB03-08 (3.0-4.0)	Total/NA	Solid	3550C	
680-93550-7	SB03-09 (1.0-2.0)	Total/NA	Solid	3550C	
680-93550-8	SB03-09 (3.5-4.5)	Total/NA	Solid	3550C	
680-93550-9	SB03-10 (0.5-1.5)	Total/NA	Solid	3550C	
680-93550-10	SB03-10 (5.5-6.5)	Total/NA	Solid	3550C	
680-93550-11	SB03-05 (0.0-1.0)	Total/NA	Solid	3550C	
680-93550-12	SB03-05 (3.5-4.5)	Total/NA	Solid	3550C	
LCS 490-103148/2-A	Lab Control Sample	Total/NA	Solid	3550C	
MB 490-103148/1-A	Method Blank	Total/NA	Solid	3550C	

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93550-1

# GC Semi VOA (Continued)

# Analysis Batch: 103307

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93550-13	PZ02-08	Total/NA	Water	8015C	103111
680-93550-17	PZ02-08 (DRO-SGT)	Total/NA	Water	8015C	103111
680-93588-1	PZ03-04	Total/NA	Water	8015C	103111
680-93588-2	PZ03-04 (DRO-SGT)	Total/NA	Water	8015C	103111
LCS 490-103111/2-A	Lab Control Sample	Total/NA	Water	8015C	103111
MB 490-103111/1-A	Method Blank	Total/NA	Water	8015C	103111

#### Analysis Batch: 103532

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93550-1	SB03-06 (0.0-1.0)	Total/NA	Solid	8015C	103148
680-93550-3	SB03-07 (1.5-2.5)	Total/NA	Solid	8015C	103148
680-93550-4	SB03-07 (4.5-5.5)	Total/NA	Solid	8015C	103148
680-93550-5	SB03-08 (1.0-2.0)	Total/NA	Solid	8015C	103148
680-93550-6	SB03-08 (3.0-4.0)	Total/NA	Solid	8015C	103148
680-93550-7	SB03-09 (1.0-2.0)	Total/NA	Solid	8015C	103148
680-93550-8	SB03-09 (3.5-4.5)	Total/NA	Solid	8015C	103148
680-93550-9	SB03-10 (0.5-1.5)	Total/NA	Solid	8015C	103148
680-93550-10	SB03-10 (5.5-6.5)	Total/NA	Solid	8015C	103148
680-93550-11	SB03-05 (0.0-1.0)	Total/NA	Solid	8015C	103148
680-93550-12	SB03-05 (3.5-4.5)	Total/NA	Solid	8015C	103148
LCS 490-103148/2-A	Lab Control Sample	Total/NA	Solid	8015C	103148
MB 490-103148/1-A	Method Blank	Total/NA	Solid	8015C	103148

## **Prep Batch: 104020**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93550-15	PZ03-08	Total/NA	Water	3510C	
680-93550-19	PZ03-08 (DRO-SGT)	Total/NA	Water	3510C	
LCS 490-104020/2-A	Lab Control Sample	Total/NA	Water	3510C	
MB 490-104020/1-A	Method Blank	Total/NA	Water	3510C	

#### Analysis Batch: 104122

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93550-15	PZ03-08	Total/NA	Water	8015C	104020
680-93550-19	PZ03-08 (DRO-SGT)	Total/NA	Water	8015C	104020
LCS 490-104020/2-A	Lab Control Sample	Total/NA	Water	8015C	104020
MB 490-104020/1-A	Method Blank	Total/NA	Water	8015C	104020

# Analysis Batch: 104870

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93550-2	SB03-06 (2.5-3.5)	Total/NA	Solid	8015C	104903
LCS 490-104903/2-A	Lab Control Sample	Total/NA	Solid	8015C	104903
MB 490-104903/1-A	Method Blank	Total/NA	Solid	8015C	104903

# **Prep Batch: 104903**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93550-2	SB03-06 (2.5-3.5)	Total/NA	Solid	3550C	
LCS 490-104903/2-A	Lab Control Sample	Total/NA	Solid	3550C	
MB 490-104903/1-A	Method Blank	Total/NA	Solid	3550C	

TestAmerica Savannah

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Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93550-1

# **General Chemistry**

# Analysis Batch: 290860

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-93550-1	SB03-06 (0.0-1.0)	Total/NA	Solid	Moisture	
680-93550-2	SB03-06 (2.5-3.5)	Total/NA	Solid	Moisture	
680-93550-3	SB03-07 (1.5-2.5)	Total/NA	Solid	Moisture	
680-93550-4	SB03-07 (4.5-5.5)	Total/NA	Solid	Moisture	
680-93550-5	SB03-08 (1.0-2.0)	Total/NA	Solid	Moisture	
680-93550-6	SB03-08 (3.0-4.0)	Total/NA	Solid	Moisture	
680-93550-7	SB03-09 (1.0-2.0)	Total/NA	Solid	Moisture	
680-93550-8	SB03-09 (3.5-4.5)	Total/NA	Solid	Moisture	
680-93550-9	SB03-10 (0.5-1.5)	Total/NA	Solid	Moisture	
680-93550-10	SB03-10 (5.5-6.5)	Total/NA	Solid	Moisture	
680-93550-11	SB03-05 (0.0-1.0)	Total/NA	Solid	Moisture	
680-93550-12	SB03-05 (3.5-4.5)	Total/NA	Solid	Moisture	

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Date Collected: 08/22/13 08:45 Date Received: 08/23/13 09:28

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB03-06 (0.0-1.0)

Lab Sa

Percent Solids: 65.7

ample	ID:	680-93550-1
		Matrix: Solid

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035			189751	08/26/13 08:10	ARM	TAL PEN
Total/NA	Analysis	8260B		1	190016	08/28/13 18:26	CAR	TAL PEN
Total/NA	Prep	3546			290868	08/26/13 14:24	JCS	TAL SAV
Total/NA	Analysis	8270D		1	291044	08/27/13 20:13	SMP	TAL SAV
Total/NA	Prep	5035			290836	08/26/13 09:31	FES	TAL SAV
Total/NA	Analysis	8015C		1	290745	08/26/13 15:50	AJMC	TAL SAV
Total/NA	Prep	3550C			103148	08/28/13 08:56	JLP	TAL NSH
Total/NA	Analysis	8015C		1	103532	08/29/13 18:52	JML	TAL NSH
Total/NA	Analysis	Moisture		1	290860	08/26/13 11:20	MDK	TAL SAV

Client Sample ID: SB03-06 (2.5-3.5)

Date Received: 08/23/13 09:28

Lab Sample ID: 680-93550-2 Date Collected: 08/22/13 08:55 **Matrix: Solid** 

Percent Solids: 81.7

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035			189751	08/26/13 08:10	ARM	TAL PEN
Total/NA	Analysis	8260B		1	190016	08/28/13 18:49	CAR	TAL PEN
Total/NA	Prep	3546			290868	08/26/13 14:24	JCS	TAL SAV
Total/NA	Analysis	8270D		1	291044	08/27/13 14:36	SMP	TAL SAV
Total/NA	Prep	5035			290836	08/26/13 09:31	FES	TAL SAV
Total/NA	Analysis	8015C		1	290745	08/26/13 16:10	AJMC	TAL SAV
Total/NA	Prep	3550C			104903	09/05/13 12:12	AJK	TAL NSH
Total/NA	Analysis	8015C		1	104870	09/06/13 04:11	JLF	TAL NSH
Total/NA	Analysis	Moisture		1	290860	08/26/13 11:20	MDK	TAL SAV

Client Sample ID: SB03-07 (1.5-2.5)

Date Collected: 08/22/13 10:00 Date Received: 08/23/13 09:28 Lab Sample ID: 680-93550-3 **Matrix: Solid** Percent Solids: 79.2

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035			189751	08/26/13 08:12	ARM	TAL PEN
Total/NA	Analysis	8260B		1	190276	08/30/13 13:06	ARM	TAL PEN
Total/NA	Prep	3546			291642	08/30/13 14:23	JCS	TAL SAV
Total/NA	Analysis	8270D		1	291919	09/03/13 20:23	SMC	TAL SAV
Total/NA	Prep	5035			290836	08/26/13 09:31	FES	TAL SAV
Total/NA	Analysis	8015C		1	290971	08/27/13 18:31	AJMC	TAL SAV
Total/NA	Prep	3550C			103148	08/28/13 08:56	JLP	TAL NSH
Total/NA	Analysis	8015C		1	103532	08/29/13 19:24	JML	TAL NSH
Total/NA	Analysis	Moisture		1	290860	08/26/13 11:20	MDK	TAL SAV

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB03-07 (4.5-5.5)

Date Collected: 08/22/13 10:10 Date Received: 08/23/13 09:28

Lab Sample ID: 680-93550-4

Matrix: Solid Percent Solids: 74.4

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035			189751	08/26/13 08:12	ARM	TAL PEN
Total/NA	Analysis	8260B		1	190276	08/30/13 13:34	ARM	TAL PEN
Total/NA	Prep	3546			290868	08/26/13 14:24	JCS	TAL SAV
Total/NA	Analysis	8270D		1	291044	08/27/13 15:24	SMP	TAL SAV
Total/NA	Prep	5035			290836	08/26/13 09:31	FES	TAL SAV
Total/NA	Analysis	8015C		1	290745	08/26/13 16:49	AJMC	TAL SAV
Total/NA	Prep	3550C			103148	08/28/13 08:56	JLP	TAL NSH
Total/NA	Analysis	8015C		1	103532	08/29/13 19:40	JML	TAL NSH
Total/NA	Analysis	Moisture		1	290860	08/26/13 11:20	MDK	TAL SAV

Client Sample ID: SB03-08 (1.0-2.0) Lab Sample ID: 680-93550-5

Date Collected: 08/22/13 10:30

Matrix: Solid Date Received: 08/23/13 09:28 Percent Solids: 75.4

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035			189751	08/26/13 08:12	ARM	TAL PEN
Total/NA	Analysis	8260B		1	190276	08/30/13 14:02	ARM	TAL PEN
Total/NA	Prep	3546			290868	08/26/13 14:24	JCS	TAL SAV
Total/NA	Analysis	8270D		1	291044	08/27/13 15:48	SMP	TAL SAV
Total/NA	Prep	5035			290836	08/26/13 09:31	FES	TAL SAV
Total/NA	Analysis	8015C		1	290745	08/26/13 17:09	AJMC	TAL SAV
Total/NA	Prep	3550C			103148	08/28/13 08:56	JLP	TAL NSH
Total/NA	Analysis	8015C		1	103532	08/29/13 19:56	JML	TAL NSH
Total/NA	Analysis	Moisture		1	290860	08/26/13 11:20	MDK	TAL SAV

Lab Sample ID: 680-93550-6 Client Sample ID: SB03-08 (3.0-4.0)

Date Collected: 08/22/13 10:40 **Matrix: Solid** Date Received: 08/23/13 09:28 Percent Solids: 81.5

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035			189751	08/26/13 08:12	ARM	TAL PEN
Total/NA	Analysis	8260B		1	190276	08/30/13 14:29	ARM	TAL PEN
Total/NA	Prep	3546			290868	08/26/13 14:24	JCS	TAL SAV
Total/NA	Analysis	8270D		1	291044	08/27/13 16:13	SMP	TAL SAV
Total/NA	Prep	5035			290836	08/26/13 09:31	FES	TAL SAV
Total/NA	Analysis	8015C		1	291258	08/28/13 22:59	AJMC	TAL SAV
Total/NA	Prep	3550C			103148	08/28/13 08:56	JLP	TAL NSH
Total/NA	Analysis	8015C		1	103532	08/29/13 20:12	JML	TAL NSH
Total/NA	Analysis	Moisture		1	290860	08/26/13 11:20	MDK	TAL SAV

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB03-09 (1.0-2.0)

Date Collected: 08/22/13 10:50 Date Received: 08/23/13 09:28 Lab Sample ID: 680-93550-7

Matrix: Solid
Percent Solids: 76.3

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035	<del></del>		189751	08/26/13 08:13	ARM	TAL PEN
Total/NA	Analysis	8260B		1	190276	08/30/13 14:57	ARM	TAL PEN
Total/NA	Prep	3546			290868	08/26/13 14:24	JCS	TAL SAV
Total/NA	Analysis	8270D		1	291044	08/27/13 16:37	SMP	TAL SAV
Total/NA	Prep	5035			290836	08/26/13 09:31	FES	TAL SAV
Total/NA	Analysis	8015C		1	291393	08/29/13 13:08	AJMC	TAL SAV
Total/NA	Prep	3550C			103148	08/28/13 08:56	JLP	TAL NSH
Total/NA	Analysis	8015C		1	103532	08/29/13 20:28	JML	TAL NSH
Total/NA	Analysis	Moisture		1	290860	08/26/13 11:20	MDK	TAL SAV

Client Sample ID: SB03-09 (3.5-4.5)

Lab Sample ID: 680-93550-8

Date Collected: 08/22/13 11:00 Matrix: Solid
Date Received: 08/23/13 09:28 Percent Solids: 82.4

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035			189751	08/26/13 08:13	ARM	TAL PEN
Total/NA	Analysis	8260B		1	190276	08/30/13 15:25	ARM	TAL PEN
Total/NA	Prep	3546			290868	08/26/13 14:24	JCS	TAL SAV
Total/NA	Analysis	8270D		1	291044	08/27/13 17:01	SMP	TAL SAV
Total/NA	Prep	5035			290836	08/26/13 09:31	FES	TAL SAV
Total/NA	Analysis	8015C		1	291393	08/29/13 13:28	AJMC	TAL SAV
Total/NA	Prep	3550C			103148	08/28/13 08:56	JLP	TAL NSH
Total/NA	Analysis	8015C		1	103532	08/29/13 20:44	JML	TAL NSH
Total/NA	Analysis	Moisture		1	290860	08/26/13 11:20	MDK	TAL SAV

Client Sample ID: SB03-10 (0.5-1.5)

Lab Sample ID: 680-93550-9

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035			189751	08/26/13 08:13	ARM	TAL PEN
Total/NA	Analysis	8260B		1	190276	08/30/13 15:52	ARM	TAL PEN
Total/NA	Prep	3546			290868	08/26/13 14:24	JCS	TAL SAV
Total/NA	Analysis	8270D		1	291044	08/27/13 17:25	SMP	TAL SAV
Total/NA	Prep	5035			290836	08/26/13 09:31	FES	TAL SAV
Total/NA	Analysis	8015C		1	291393	08/29/13 13:48	AJMC	TAL SAV
Total/NA	Prep	3550C			103148	08/28/13 08:56	JLP	TAL NSH
Total/NA	Analysis	8015C		1	103532	08/29/13 21:00	JML	TAL NSH
Total/NA	Analysis	Moisture		1	290860	08/26/13 11:20	MDK	TAL SAV

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: SB03-10 (5.5-6.5)

Date Collected: 08/22/13 11:40 Date Received: 08/23/13 09:28

Lab Sample ID: 680-93550-10

Matrix: Solid Percent Solids: 80.7

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035	<del></del>		189751	08/26/13 08:13	ARM	TAL PEN
Total/NA	Analysis	8260B		1	190276	08/30/13 16:20	ARM	TAL PEN
Total/NA	Prep	3546			290868	08/26/13 14:24	JCS	TAL SAV
Total/NA	Analysis	8270D		1	291044	08/27/13 17:50	SMP	TAL SAV
Total/NA	Prep	5035			290836	08/26/13 09:31	FES	TAL SAV
Total/NA	Analysis	8015C		1	291393	08/29/13 14:07	AJMC	TAL SAV
Total/NA	Prep	3550C			103148	08/28/13 08:56	JLP	TAL NSH
Total/NA	Analysis	8015C		1	103532	08/29/13 21:16	JML	TAL NSH
Total/NA	Analysis	Moisture		1	290860	08/26/13 11:20	MDK	TAL SAV

Client Sample ID: SB03-05 (0.0-1.0) Lab Sample ID: 680-93550-11

Date Collected: 08/22/13 09:15

Matrix: Solid Date Received: 08/23/13 09:28 Percent Solids: 80.6

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035			189751	08/26/13 08:13	ARM	TAL PEN
Total/NA	Analysis	8260B		1	190276	08/30/13 16:48	ARM	TAL PEN
Total/NA	Prep	3546			290868	08/26/13 14:24	JCS	TAL SAV
Total/NA	Analysis	8270D		1	291044	08/27/13 18:14	SMP	TAL SAV
Total/NA	Prep	5035			290836	08/26/13 09:31	FES	TAL SAV
Total/NA	Analysis	8015C		1	291393	08/29/13 14:27	AJMC	TAL SAV
Total/NA	Prep	3550C			103148	08/28/13 08:56	JLP	TAL NSH
Total/NA	Analysis	8015C		1	103532	08/29/13 21:32	JML	TAL NSH
Total/NA	Analysis	Moisture		1	290860	08/26/13 11:20	MDK	TAL SAV

Client Sample ID: SB03-05 (3.5-4.5) Lab Sample ID: 680-93550-12

Date Collected: 08/22/13 09:25 **Matrix: Solid** Date Received: 08/23/13 09:28 Percent Solids: 81.6

_	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035	-		189751	08/26/13 08:14	ARM	TAL PEN
Total/NA	Analysis	8260B		1	190276	08/30/13 17:15	ARM	TAL PEN
Total/NA	Prep	3546			291642	08/30/13 14:23	JCS	TAL SAV
Total/NA	Analysis	8270D		1	291919	09/03/13 20:49	SMC	TAL SAV
Total/NA	Prep	5035			290836	08/26/13 09:31	FES	TAL SAV
Total/NA	Analysis	8015C		1	291550	08/30/13 13:44	AJMC	TAL SAV
Total/NA	Prep	3550C			103148	08/28/13 08:56	JLP	TAL NSH
Total/NA	Analysis	8015C		1	103532	08/29/13 21:48	JML	TAL NSH
Total/NA	Analysis	Moisture		1	290860	08/26/13 11:20	MDK	TAL SAV

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: PZ02-08

Lab Sample ID: 680-93550-13

Matrix: Water

Date Collected: 08/22/13 14:00 Date Received: 08/23/13 09:28

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	190203	08/30/13 00:46	WPD	TAL PEN
Total/NA	Prep	3520C			291010	08/27/13 14:50	RBS	TAL SAV
Total/NA	Analysis	8270D		1	292070	09/04/13 12:38	SMC	TAL SAV
Total/NA	Analysis	8015C		1	291184	08/28/13 13:25	AJMC	TAL SAV
Total/NA	Prep	3510C			103111	08/28/13 07:23	CLH	TAL NSH
Total/NA	Analysis	8015C		1	103307	08/28/13 18:12	JML	TAL NSH

Client Sample ID: PZ03-04 Lab Sample ID: 680-93550-14

**Matrix: Water** 

Date Collected: 08/22/13 12:30 Date Received: 08/23/13 09:28

Date Received: 08/23/13 09:28

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	190203	08/30/13 01:12	WPD	TAL PEN
Total/NA	Analysis	8015C		1	291184	08/28/13 13:50	AJMC	TAL SAV

Lab Sample ID: 680-93550-15 Client Sample ID: PZ03-08

Date Collected: 08/22/13 13:08 Matrix: Water

_	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B			190203	08/30/13 01:37	WPD	TAL PEN
Total/NA	Prep	3520C			291010	08/27/13 14:50	RBS	TAL SAV
Total/NA	Analysis	8270D		1	292070	09/04/13 13:04	SMC	TAL SAV
Total/NA	Analysis	8015C		1	291184	08/28/13 14:16	AJMC	TAL SAV
Total/NA	Prep	3510C			104020	08/30/13 15:58	CLH	TAL NSH
Total/NA	Analysis	8015C		10	104122	09/01/13 11:22	JLF	TAL NSH

Lab Sample ID: 680-93550-16 **Client Sample ID: TB01 (082213)** 

Date Collected: 08/22/13 00:00 Matrix: Water Date Received: 08/23/13 09:28

Batch Batch Dilution Batch Prepared Run Lab

Prep Type Туре Method Factor Number or Analyzed Analyst TAL PEN Total/NA Analysis 8260B 190203 08/30/13 02:03 WPD

Client Sample ID: PZ02-08 (DRO-SGT) Lab Sample ID: 680-93550-17

Date Collected: 08/22/13 14:00 Matrix: Water

Date Received: 08/23/13 09:28

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			103111	08/28/13 07:23	CLH	TAL NSH
Total/NA	Analysis	8015C		1	103307	08/28/13 18:44	JML	TAL NSH

#### Lab Chronicle

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

Client Sample ID: PZ03-08 (DRO-SGT)

TestAmerica Job ID: 680-93550-1

Lab Sample ID: 680-93550-19

**Matrix: Water** 

Date Collected: 08/22/13 13:08 Date Received: 08/23/13 09:28

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			104020	08/30/13 15:58	CLH	TAL NSH
Total/NA	Analysis	8015C		5	104122	09/01/13 11:37	JLF	TAL NSH

Client Sample ID: PZ03-04

Lab Sample ID: 680-93588-1

Date Collected: 08/22/13 12:30 **Matrix: Water** Date Received: 08/24/13 08:38

Dilution Prepared Batch Batch Batch Prep Type Туре Method Run Factor Number or Analyzed Analyst Lab Total/NA Prep 3520C 291010 08/27/13 14:50 RBS TAL SAV Total/NA Analysis 8270D 1 291919 09/03/13 19:06 SMC TAL SAV Total/NA Prep 3510C 103111 08/28/13 07:23 CLH TAL NSH Total/NA Analysis 8015C 103307 08/29/13 11:20 TAL NSH 25 JML

Client Sample ID: PZ03-04 (DRO-SGT) Lab Sample ID: 680-93588-2

Date Collected: 08/22/13 12:30 **Matrix: Water** 

Date Received: 08/24/13 08:38

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			103111	08/28/13 12:47	CLH	TAL NSH
Total/NA	Analysis	8015C		25	103307	08/29/13 11:36	JML	TAL NSH

#### Laboratory References:

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

TAL PEN = TestAmerica Pensacola, 3355 McLemore Drive, Pensacola, FL 32514, TEL (850)474-1001

TAL SAV = TestAmerica Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

¥ CHAN /PROJECT TXYJ

#

**G** ARCADIS

Lab Work Order#

CHAIN OF CUSTODY & LABORATORY

FCK 82700 NL - NAPL/Oil
SW - Sample Wipe
Other: X HAS 4 AMBRS for 6015C-GRO AND 2020 2/2/2/2 PINK - Retained by ARCADIS Laboratory Received By 1, 40 ml Vial 2, 11, Amber 3, 250 ml Plastic 4, 500 ml Plastic 5. Encore 6. 2 oz. Glass 7. 4 oz. Glass 8. 8 oz. Glass 9. Other STANDARD (LEUEL H Brrell 10, Other: SE - Sediment SL - Sludge A - Air # REMARKS Matrix Key: SO - Soil W - Water T - Tissue S. Other. 9353D 1+TC 1+TC 1 1 2 3 L 1 B HOLY STANDER WITHOD TO COMPAND THE COMPAND H. Offer. Distribution: WHITE—Laboratory returns with results

WHITE—Laboratory returns with results

WHITE—Laboratory returns with results

WHITE—Laboratory returns with results

WHITE—Laboratory returns with results Page  $\frac{2}{2}$  of  $\frac{2}{2}$ エクーエの 989 Printed Name: χ -Im/Courier: Date/Time: Signaturo: Special QA/QC Instructions(\*): CSET DR0/567 X χ X アス X X. X Test Hiner I CA 9211 X X, 8012C-D60 **ANALYSIS REQUEST FORM** Date/Time: 9/22/13 X X χ X X ASSESSION ASSESS dolz8 # of Containers 14TC 14TC Proservative rectility colds X X X (vow) X 5701 X Luch: 614 336 83 Date/Time: 8-22-13/1645 80928 7 عمرها لحقهما X X ኢ X, 8015C-GRO Pim. Ap. CADS GW NOW Fittered (\*) Container Information 2  $\chi$ X X X ኢ 36 S MD0008475,0011.00004 Matrix 80  $\mathcal{S}$ 8 y Þ Final Address. Kell Nest C. Aggran, Kell Nest C. Not Intact Grab ŧ / **Type** (5) ١ 410.987,3200 410, 907,4342 2 Semo į \* PANC \* LIGE ZANSKI Condition/Cooler Temp: Cooler Custody Seal (✓) 5260 Date Time 8 0915 8/24/3/0925 8/2/13/1400 5/22/13 1230 8/22/13/1308 1100 8/22/8 NOO 1130 8/2 3 25 Sample Receipt CSKT PROJECT ☐ Intact 130822 8/22/3 STANDARD 14 PAY Millerswille MD 21108 400 1114 BOYAELD BLUP. SXT COUNTY: PAUL MEGAN KELNER ARCHOS 3.5-4.5 2,5 - 6.0 3,5-4,0 S803-10 (5,5-6,5 DO 25 25 CO (3,54 S (0.0-1.0) 5803-05 (4.0-4.S 5.1-50 LEST AMERICA 5803-65 (0.5-1.0 0.1-50 Special Instructions/Comments: Sample ID T801 (082213 20730826 CofC AR Form 01.12,2007 dwy. PN:9415331 Cooler packed with ice (<) 5603-05 P203-04 P202-08 P203-08 5803-85 5803-09 5803-09 SB03-10 SB3-10 Car Caracles 5803-10 PANGE! Shipping Tracking #: 気を Send Results to: Page 95 of 107 9/9/2013

¥ CHAIN A ACSY T Lab Work Order#

of [7]

Page 1

CHAIN OF CUSTODY & LABORATORY Commission Terender 1xTC 4976 49 F 80125-pg **ANALYSIS REQUEST FORM** Proservative JECOLOLE TRE X X X 70/28 1×15 | 1×10 | (40W 5 20A 8 人 X  $\langle$ 195 JS108 X X X X # of Containers Filtered (<) X X MD 21108 MEGON. KellN&P ARCADS-Project Name Location (City, State): "The Project # Project # Decorated (Bounsaining Pale ) APD MD 0003/13, 0011, 000004 Matrix So z (Jase) Grab (410) 987, 0032 410, 907, 4842 (∠) ed&⊥ . Comp 98 8 8/22/30275 88.55 STS 6355 000 6555 Time Collection 130822 BLVD. 3.0-35 S (4.5-5.0 5803-06 (0.5-1.0) 1.5-2.5 1.5-2.0 0.1-0.0) NAME: FELLINER 2.5-3. BENFIELD LACKEN LAMP Sample ID ARCADIS Intrastructure - Water - Environment - Buildings MILLESTINE MEGAN K APCAD X 5803-06 5803-0G SB03-04 5803-06 5803-0**Q**  $\Xi$ Send Results to: Page 96 of 107

NL-NAPLOH SW-Sample Wipe Other ر ا ا Container Information Key: 2555 ر ج 40 mi Viai 11 Amber 250 mi Plastic 500 mi Plastic Encore 2 oz. Glass 4 oz. Glass 8 oz. Glass Other Printed Name: Barnel H 0 10 Other SE - Sediment SL - Sludge A - Air STANDARD (LEVEL 25.45 Signature: REMARKS STANDARD IT Matrix Key: SO - Soll W - Water T - Tissue G. Other. H. Other. ≼வ்ப்ப்ய்ய Printed Name: Firm/Courter ころそて Special QA/QC Instructions(~): CSXT Signaturo: PARAMETER ANALYSIS & METHOD Jay/Karld lest Minerica NAV BRUNSWICK PAIL YARD, MD LNON: ENV 33683 X X X X X 人  $\downarrow$ X CAMP X  ${m \chi}$ X CANAL BRUNSWICK - ALLERY V X ARRA L  $\lambda$ Printed Name: S 8 □ Not Intact > 2 PROJECT NAMES (40 Cooler Custody Seal (<) 050181/2/8 KUR RINSKI 80 1630 545 <u>8</u>20 5/22/13 1010 82 Sample Receipt □ Intact 多多 CONTACT: PAIN 4.5-5.5 Special Instructions/Comments: CSKT SB3-03 (3.0-3.5 1.0-2.0 30-40 1.5-20 1.5-2.0 5803-03 11.0-2.0 Į ASSESSES SELLER PN:9415351 CSXT CONTACT Cooler packed with ice (<) SE SESSES Specify Tumaround Requirements: 5863-08/ 5803-09 5803-00 S833-04 5803-09 SB03-08 Test

8769

Date/Timo | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00

PINK - Retained by ARCADIS

YELLOW - Lab copy

WHITE - Laboratory returns with results

Distribution:

20730826 CofC AR Form 01,12,2007

Shipping Tracking #:

Condition/Cooler Temp:

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S-22-(3)

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Date/Timo:

らろメナ 6/23 YELLOW - 1-16 copy Page \_ PARAMETER ANALYSIS & METHOD 0 Special GA/QC Instructions(1): 12 XX rest the epiloa CHAIN OF CUSTODY & LABORATORY York Date/Time: 9-23-72:3 **ANALYSIS REQUEST FORM** Firm/Courier: Zer L タメナデ Annor Annor なれ WHITE - Laboratopy returns with results Proservativo MONE : EN133683 dy XX Beynsty CK READIS 8-23-13 # of Containers Filtored (<) Container Information 1054 1 3 3 MD000843.0011.00004 Matrix 21105 Megan, Kellinge C 21105 Agaan, Kellinge C とない。これのします × ☐ Not Intact Grab 410,987.3200 × Type (✓) 410,907,4342 Distribution: Comp Condition/Cooler Temp: Cooler Custody Seal (<) 2 大いくととろう 8/22/18 1230 130823-1 8/22/13 1230 Date Time Somplet's Signature: Sample Receipt: Collection aboratory Information and Receipt ☐ Intact \* CEEU KNUX ARCADIS CHOCKNOWN CHY, State);
CHOCKNOWN BRUNCK PHU YARD SXT STANDARD - PX PROJECT PACT. CSX7 680-93588 Chain of Custody Bind Millershille MD MEGAN Keller AMERICA awa) Sample ID BUNKLA Special instructions/Comments: 20730826 CofC AR Form 01.12.2007 114 Benfaro Cooler packed with ice (<) PN:94 15381 P203-04 **G** ARCADIS P203-04 AWRED Send Results to: 9/9/2013 Page 97 of 107

08/24/13 0878

PINK - Retained by ARCADIS

EATON CONNER

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Date/Time:

Laboratory Received By

Printed Namo:

1.6001

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NL - NAPL/OII SW - Sample Wipe Other:

SE - Sødiment SL - Sludge A - Alr

Matrix Key: SO - Soil W - Water T - Tissue

10. Other:

Container Information Key:

Prosorvation Key

Keys

Lab Work Order #

1. 40 ml Vial
2. 1 L Amber
2. 1 L Amber
3. 250 ml Plastic
5. Encore
6. 2 oz. Glass
7. 4 oz. Glass
9. Other

H H None H Other Park

G. Other:

H. Other.

THIS GOES TO TA SPURGA

REMARKS

THIS GOES TO THE NASHVILLE

Client: ARCADIS U.S., Inc. Job Number: 680-93550-1

Login Number: 93550 List Source: TestAmerica Savannah

List Number: 1

Creator: Barnett, Eddie T

Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>N/A</td> <td></td>	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or ampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
s the Field Sampler's name present on COC?	N/A	
here are no discrepancies between the containers received and the COC.	False	One liter for -13 and two liters for -14 not received in Savannah
Samples are received within Holding Time.	True	
ample containers have legible labels.	True	
Containers are not broken or leaking.	True	
sample collection date/times are provided.	True	
ppropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is 6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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Client: ARCADIS U.S., Inc. Job Number: 680-93550-1

List Source: TestAmerica Nashville
List Number: 1
List Creation: 08/23/13 05:42 PM

Creator: Gambill, Shane

Creator: Gambiii, Snane		
Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>True</td> <td></td>	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	1.6
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	True	

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Client: ARCADIS U.S., Inc. Job Number: 680-93550-1

List Source: TestAmerica Nashville
List Number: 2
List Creation: 08/23/13 05:44 PM

Creator: Gambill, Shane

Creator: Gambili, Shane		
Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>True</td> <td></td>	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	1.6
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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Client: ARCADIS U.S., Inc. Job Number: 680-93550-1

List Source: TestAmerica Pensacola
List Number: 1
List Creation: 08/23/13 01:58 PM

Creator: Meade, Chris J

oreator. Meade, Office 5		
Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>N/A</td> <td></td>	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	0.9°C IR2
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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Client: ARCADIS U.S., Inc. Job Number: 680-93550-1

List Source: TestAmerica Pensacola
List Number: 2
List Creation: 08/23/13 02:13 PM

Creator: Meade, Chris J

Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>N/A</td> <td></td>	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	0.9°C IR2
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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Client: ARCADIS U.S., Inc. Job Number: 680-93550-1

Login Number: 93588 List Source: TestAmerica Savannah

List Number: 1

Creator: Conner, Keaton

Creator. Conner, Reaton		
Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>N/A</td> <td></td>	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
s the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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Client: ARCADIS U.S., Inc. Job Number: 680-93550-1

List Source: TestAmerica Nashville
List Number: 1
List Creation: 08/24/13 11:03 AM

Creator: McBride, Mike

ordator. mobilido, mino		
Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>True</td> <td></td>	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	1.0
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
s the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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TestAmerica Job ID: 680-93550-1

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

# **Laboratory: TestAmerica Savannah**

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

Authority	Program	EPA Region	Certification ID	Expiration Date
	AFCEE		SAVLAB	
A2LA	DoD ELAP		399.01	07-31-14
A2LA	ISO/IEC 17025		399.01	02-28-15
Alabama	State Program	4	41450	06-30-13 *
Arkansas DEQ	State Program	6	88-0692	02-01-14 *
California	NELAP	9	3217CA	07-31-14 *
Colorado	State Program	8	N/A	12-31-13
Connecticut	State Program	1	PH-0161	03-31-15
Florida	NELAP	4	E87052	06-30-14
GA Dept. of Agriculture	State Program	4	N/A	12-31-13
Georgia	State Program	4	N/A	06-30-14
Georgia	State Program	4	803	06-30-14
Guam	State Program	9	09-005r	06-17-14
Hawaii	State Program	9	N/A	06-30-14
Illinois	NELAP	5	200022	11-30-13
Indiana	State Program	5	N/A	06-30-14
lowa	State Program	7	353	07-01-15
Kentucky	State Program	4	90084	12-31-13
Kentucky (UST)	State Program	4	18	06-30-14
ouisiana	NELAP	6	30690	06-30-14
Maine	State Program	1	GA00006	08-16-14
Maryland	State Program	3	250	12-31-13
lassachusetts	State Program	1	M-GA006	06-30-14
lichigan	State Program	5	9925	06-30-14
lississippi	State Program	4	N/A	06-30-14
Montana	State Program	8	CERT0081	01-01-14
lebraska	State Program	7	TestAmerica-Savannah	06-30-14
ew Jersey	NELAP	2	GA769	06-30-14
lew Mexico	State Program	6	N/A	06-30-14
lew York	NELAP	2	10842	04-01-14
Iorth Carolina DENR	State Program	4	269	12-31-13
North Carolina DHHS	State Program	4	13701	07-31-14
Oklahoma	State Program	6	9984	08-31-13 *
Pennsylvania	NELAP	3	68-00474	06-30-14
Puerto Rico	State Program	2	GA00006	01-01-14
South Carolina	State Program	4	98001	06-30-13 *
ennessee	<del>.</del>	4	TN02961	06-30-14
ernessee	State Program NELAP	6	T104704185-08-TX	11-30-13
exas ISDA	NELAP Federal	U	SAV 3-04	04-07-14
/irginia	NELAP	3	460161	06-14-14
Washington	State Program	10	C1794	06-10-14
West Virginia	State Program	3	9950C	12-31-13
West Virginia DEP	State Program	3	94	09-30-13 *
Visconsin	State Program	5	999819810	08-31-14
Wyoming	State Program	8	8TMS-Q	06-30-13 *

#### Laboratory: TestAmerica Nashville

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

TestAmerica Savannah

9/9/2013

<sup>\*</sup> Expired certification is currently pending renewal and is considered valid.

TestAmerica Job ID: 680-93550-1

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

## Laboratory: TestAmerica Nashville (Continued)

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

Authority	Program	EPA Region	Certification ID	Expiration Date
A2LA	ISO/IEC 17025		0453.07	12-31-13
Alaska (UST)	State Program	10	UST-087	07-24-14
Arizona	State Program	9	AZ0473	05-05-14
Arizona	State Program	9	AZ0473	05-05-14 *
Arkansas DEQ	State Program	6	88-0737	04-25-14
California	NELAP	9	1168CA	10-31-13
Canadian Assoc Lab Accred (CALA)	Canada		3744	03-08-14
Connecticut	State Program	1	PH-0220	12-31-13
Florida	NELAP	4	E87358	06-30-14
Ilinois	NELAP	5	200010	12-09-13
owa	State Program	7	131	05-01-14
Kansas	NELAP	7	E-10229	10-31-13
Kentucky (UST)	State Program	4	19	06-30-14
_ouisiana	NELAP	6	30613	06-30-14
Maryland	State Program	3	316	03-31-14
Massachusetts	State Program	1	M-TN032	06-30-14
Minnesota	NELAP	5	047-999-345	12-31-13
Mississippi	State Program	4	N/A	06-30-14
Montana (UST)	State Program	8	NA	01-01-15
Nevada	State Program	9	TN00032	07-31-14
New Hampshire	NELAP	1	2963	10-10-13
New Jersey	NELAP	2	TN965	06-30-14
New York	NELAP	2	11342	04-01-14
North Carolina DENR	State Program	4	387	12-31-13
North Dakota	State Program	8	R-146	06-30-14
Ohio VAP	State Program	5	CL0033	01-19-14
Oklahoma	State Program	6	9412	08-31-14
Oregon	NELAP	10	TN200001	04-29-14
Pennsylvania	NELAP	3	68-00585	06-30-14
Rhode Island	State Program	1	LAO00268	12-30-13
South Carolina	State Program	4	84009 (001)	02-28-14
Tennessee	State Program	4	2008	02-23-14
Гехаs	NELAP	6	T104704077-09-TX	08-31-14
JSDA	Federal		S-48469	11-02-13
Jtah	NELAP	8	TN00032	07-31-14
/irginia	NELAP	3	460152	06-14-14
Vashington	State Program	10	C789	07-19-14
West Virginia DEP	State Program	3	219	02-28-14
Visconsin	State Program	5	998020430	08-31-14
Nyoming (UST)	A2LA	8	453.07	12-31-13

#### Laboratory: TestAmerica Pensacola

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

Authority Alabama	Program State Program	EPA Region  4	Certification ID 40150	Expiration Date 06-30-14
Arizona Arkansas DEQ	State Program State Program	9 6	AZ0710 88-0689	01-11-14 09-01-13
Florida	NELAP	4	E81010	06-30-14
Georgia	State Program	4	N/A	06-30-14

<sup>\*</sup> Expired certification is currently pending renewal and is considered valid.

TestAmerica Savannah

9/9/2013

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# **Certification Summary**

Client: ARCADIS U.S., Inc.

Project/Site: CSX C&O Canal Brunswick, MD

TestAmerica Job ID: 680-93550-1

## Laboratory: TestAmerica Pensacola (Continued)

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

Authority	Program	EPA Region	Certification ID	Expiration Date
Illinois	NELAP	5	200041	10-09-13
lowa	State Program	7	367	08-01-14
Kansas	NELAP	7	E-10253	10-31-13
Kentucky (UST)	State Program	4	53	06-30-14
Louisiana	NELAP	6	30976	06-30-14
Maryland	State Program	3	233	09-30-14
Massachusetts	State Program	1	M-FL094	06-30-13 *
Michigan	State Program	5	9912	06-30-13 *
New Jersey	NELAP	2	FL006	06-30-13 *
North Carolina DENR	State Program	4	314	12-31-13
Oklahoma	State Program	6	9810	08-31-14
Pennsylvania	NELAP	3	68-00467	01-31-14
Rhode Island	State Program	1	LAO00307	12-31-13
South Carolina	State Program	4	96026	06-30-13 *
Tennessee	State Program	4	TN02907	06-30-14
Texas	NELAP	6	T104704286-12-5	09-30-13
USDA	Federal		P330-10-00407	12-10-13
Virginia	NELAP	3	460166	06-14-14
West Virginia DEP	State Program	3	136	06-30-14

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<sup>\*</sup> Expired certification is currently pending renewal and is considered valid.



THE LEADER IN ENVIRONMENTAL TESTING

# ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Savannah 5102 LaRoche Avenue Savannah, GA 31404 Tel: (912)354-7858

TestAmerica Job ID: 680-91732-1

Client Project/Site: C&O Canal Brunswick Railyd

For:

ARCADIS U.S., Inc. 1114 Benfield Blvd. Suite A Millersville, Maryland 21108

Attn: Joshua Wilson

Side Hovey

Authorized for release by: 7/12/2013 2:05:01 PM

Lisa Harvey, Project Manager II lisa.harvey@testamericainc.com

·····LINKS ······

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The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

#### **Case Narrative**

Client: ARCADIS U.S., Inc.

Project/Site: C&O Canal Brunswick Railyd

TestAmerica Job ID: 680-91732-1

Job ID: 680-91732-1

Laboratory: TestAmerica Savannah

Narrative

# CASE NARRATIVE Client: ARCADIS U.S., Inc.

Project: C&O Canal Brunswick Railyd Report Number: 680-91732-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

#### **RECEIPT**

The samples were received on 06/26/2013; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 2.2 C.

#### **VOLATILE ORGANIC COMPOUNDS (GC-MS)**

Sample NPS MW-18 (8.0-8.5) (680-91732-1) was analyzed for Volatile Organic Compounds (GC-MS) in accordance with EPA SW-846 Method 8260B.

#### **GASOLINE RANGE ORGANICS (GRO)**

Sample NPS MW-18 (8-9) (680-91732-2) was analyzed for gasoline range organics (GRO) in accordance with SW 846 8015C DRO.

#### **DIESEL RANGE ORGANICS (DRO)**

Sample NPS MW-18 (8-9) (680-91732-2) was analyzed for Diesel Range Organics (DRO) in accordance with EPA SW-846 Method 8015C.

Due to the nature of this analysis which involves a total area sum over the entire retention time range, manual integrations are routinely performed for target analytes and surrogates to ensure consistent integration.

Method(s) 8015C: Surrogate recovery for the following sample(s) was outside control limits: NPS MW-18 (8-9) (680-91732-2). Re-extraction and/or re-analysis was performed with concurring results. Both sets of data have been reported.

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# **Sample Summary**

Client: ARCADIS U.S., Inc.

Project/Site: C&O Canal Brunswick Railyd

TestAmerica Job ID: 680-91732-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
680-91732-1	NPS MW-18 (8.0-8.5)	Solid	06/24/13 12:50	06/26/13 10:57
680-91732-2	NPS MW-18 (8-9)	Solid	06/24/13 12:50	06/26/13 10:57

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# **Method Summary**

Client: ARCADIS U.S., Inc.

Project/Site: C&O Canal Brunswick Railyd

TestAmerica Job ID: 680-91732-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL PEN
8015C	Nonhalogenated Organics using GC/FID -Modified (Gasoline Range Organics)	SW846	TAL SAV
8015C	Nonhalogenated Organics using GC/FID -Modified (Diesel Range Organics)	SW846	TAL SAV

#### **Protocol References:**

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

#### Laboratory References:

TAL PEN = TestAmerica Pensacola, 3355 McLemore Drive, Pensacola, FL 32514, TEL (850)474-1001 TAL SAV = TestAmerica Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

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# **Definitions/Glossary**

Client: ARCADIS U.S., Inc.

Project/Site: C&O Canal Brunswick Railyd

TestAmerica Job ID: 680-91732-1

#### **Qualifiers**

## **GC/MS VOA**

ualifier Description

U Indicates the analyte was analyzed for but not detected.

#### **GC VOA**

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

U Indicates the analyte was analyzed for but not detected.

#### **GC Semi VOA**

X Surrogate is outside control limits

U Indicates the analyte was analyzed for but not detected.

# Glossary

Abbreviation	These commonly	used abbreviations may	or may not be	present in this report.

Listed under the "D" column to designate that the result is reported on a dry weight basis

%R Percent Recovery
CNF Contains no Free Liquid

DER Duplicate error ratio (normalized absolute difference)

DL, RA, RE, IN Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample

DLC Decision level concentration

MDA Minimum detectable activity

EDL Estimated Detection Limit

MDC Minimum detectable concentration

MDL Method Detection Limit
ML Minimum Level (Dioxin)

NC Not Calculated

ND Not detected at the reporting limit (or MDL or EDL if shown)

PQL Practical Quantitation Limit

QC Quality Control
RER Relative error ratio

RL Reporting Limit or Requested Limit (Radiochemistry)

RPD Relative Percent Difference, a measure of the relative difference between two points

TEF Toxicity Equivalent Factor (Dioxin)
TEQ Toxicity Equivalent Quotient (Dioxin)

# **Client Sample Results**

Client: ARCADIS U.S., Inc.

Date Collected: 06/24/13 12:50

Date Received: 06/26/13 10:57

1,1,2-Trichloroethane

Trichloroethene

Project/Site: C&O Canal Brunswick Railyd

Client Sample ID: NPS MW-18 (8.0-8.5)

TestAmerica Job ID: 680-91732-1

Lab Sample ID: 680-91732-1

Matrix: Solid
Percent Solids: 79.8

Method: 8260B - Volatile Organic Analyte	•	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
Acetone				6.3	ug/Kg	— <del>-</del>	07/01/13 10:10	07/08/13 16:04	
Benzene	4.3		4.3		ug/Kg	₽	07/01/13 10:10	07/08/13 16:04	
Bromodichloromethane	4.3		4.3	0.73	ug/Kg	₩	07/01/13 10:10	07/08/13 16:04	
Bromoform	4.3		4.3		ug/Kg		07/01/13 10:10	07/08/13 16:04	
Bromomethane	4.3		4.3		ug/Kg	₩	07/01/13 10:10	07/08/13 16:04	
Carbon disulfide	4.3		4.3	1.0	ug/Kg	₽	07/01/13 10:10	07/08/13 16:04	
Carbon tetrachloride	4.3		4.3		ug/Kg		07/01/13 10:10	07/08/13 16:04	
Chlorobenzene	4.3		4.3		ug/Kg	₩	07/01/13 10:10	07/08/13 16:04	
Chloroethane	4.3		4.3	1.6	ug/Kg	₩	07/01/13 10:10	07/08/13 16:04	
Chloroform	4.3		4.3	0.51	ug/Kg	 Ф	07/01/13 10:10	07/08/13 16:04	
Chloromethane	4.3		4.3	0.86	ug/Kg	₽	07/01/13 10:10	07/08/13 16:04	
cis-1,2-Dichloroethene	4.3		4.3	0.66	ug/Kg ug/Kg	₽	07/01/13 10:10	07/08/13 16:04	
cis-1,3-Dichloropropene	4.3		4.3	1.0	ug/Kg		07/01/13 10:10	07/08/13 16:04	
Cyclohexane	4.3		4.3	0.81	ug/Kg ug/Kg	₩	07/01/13 10:10	07/08/13 16:04	
Dibromochloromethane	4.3		4.3	0.75	ug/Kg ug/Kg	₩	07/01/13 10:10	07/08/13 16:04	
1,2-Dibromo-3-Chloropropane	4.3		4.3	2.9	ug/Kg ug/Kg		07/01/13 10:10	07/08/13 16:04	
1,2-Dichlorobenzene	4.3		4.3	0.61	ug/Kg ug/Kg		07/01/13 10:10	07/08/13 16:04	
1,3-Dichlorobenzene	4.3		4.3		ug/Kg ug/Kg	₩	07/01/13 10:10	07/08/13 16:04	
	4.3								
1,4-Dichlorobenzene	4.3		4.3	0.71 1.1	ug/Kg	₩	07/01/13 10:10	07/08/13 16:04	
Dichlorodifluoromethane			4.3		ug/Kg	₩	07/01/13 10:10	07/08/13 16:04	
1,1-Dichloroethane	4.3		4.3		ug/Kg		07/01/13 10:10	07/08/13 16:04	
1,2-Dichloroethane	4.3		4.3	0.71	ug/Kg	<b>‡</b>	07/01/13 10:10	07/08/13 16:04	
1,1-Dichloroethene	4.3		4.3	0.65	ug/Kg	<b>\$</b>	07/01/13 10:10	07/08/13 16:04	
1,2-Dichloropropane	4.3		4.3	0.64		<u></u> .	07/01/13 10:10	07/08/13 16:04	
Diisopropyl ether	4.3		4.3	0.48	ug/Kg		07/01/13 10:10	07/08/13 16:04	
Ethylbenzene	4.3		4.3	0.53	ug/Kg	<b>\$</b>	07/01/13 10:10	07/08/13 16:04	
Ethylene Dibromide	4.3		4.3		ug/Kg	<u>.</u> .	07/01/13 10:10	07/08/13 16:04	
Ethyl tert-butyl ether	4.3		4.3	0.48	ug/Kg	*	07/01/13 10:10	07/08/13 16:04	
2-Hexanone	22		22	4.3	ug/Kg	₩.	07/01/13 10:10	07/08/13 16:04	
Isopropylbenzene	4.3		4.3	0.59	ug/Kg		07/01/13 10:10	07/08/13 16:04	
Methyl acetate	4.3		4.3			<b>*</b>	07/01/13 10:10	07/08/13 16:04	
Methylcyclohexane	4.3		4.3	0.75	ug/Kg	₩.	07/01/13 10:10	07/08/13 16:04	
Methylene Chloride	13		13		ug/Kg		07/01/13 10:10	07/08/13 16:04	
Methyl Ethyl Ketone	22		22		ug/Kg	₽	07/01/13 10:10	07/08/13 16:04	
methyl isobutyl ketone	22	U	22	3.5	ug/Kg	₩	07/01/13 10:10	07/08/13 16:04	
Methyl tert-butyl ether	4.3	U	4.3	0.86	ug/Kg	₽	07/01/13 10:10	07/08/13 16:04	
Naphthalene	4.3	U	4.3	0.86	ug/Kg	₽	07/01/13 10:10	07/08/13 16:04	
Styrene	4.3	U	4.3	0.66	ug/Kg	₽	07/01/13 10:10	07/08/13 16:04	
Tert-amyl methyl ether	4.3	U	4.3	0.38	ug/Kg	₽	07/01/13 10:10	07/08/13 16:04	
tert-Butyl alcohol	4.3	U	4.3	2.9	ug/Kg	*	07/01/13 10:10	07/08/13 16:04	
1,1,2,2-Tetrachloroethane	4.3	U	4.3	0.62	ug/Kg	₩	07/01/13 10:10	07/08/13 16:04	
Tetrachloroethene	4.3	U	4.3	0.73	ug/Kg	₩	07/01/13 10:10	07/08/13 16:04	
Toluene	4.3	U	4.3	0.61	ug/Kg	₽	07/01/13 10:10	07/08/13 16:04	
trans-1,2-Dichloroethene	4.3	U	4.3	0.66	ug/Kg	₽	07/01/13 10:10	07/08/13 16:04	
trans-1,3-Dichloropropene	4.3	U	4.3	0.80	ug/Kg	☼	07/01/13 10:10	07/08/13 16:04	
1,2,4-Trichlorobenzene	4.3	U	4.3	0.63	ug/Kg	₩	07/01/13 10:10	07/08/13 16:04	
1,1,1-Trichloroethane	4.3	U	4.3	0.95	ug/Kg	₽	07/01/13 10:10	07/08/13 16:04	

TestAmerica Savannah

07/08/13 16:04

07/08/13 16:04

07/01/13 10:10

07/01/13 10:10

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4.3

4.3

0.80 ug/Kg

0.42 ug/Kg

4.3 U

4.3 U

7/12/2013

2

5

8

4.0

1 4

# **Client Sample Results**

Client: ARCADIS U.S., Inc.

Date Collected: 06/24/13 12:50

Date Received: 06/26/13 10:57

Project/Site: C&O Canal Brunswick Railyd

Client Sample ID: NPS MW-18 (8.0-8.5)

TestAmerica Job ID: 680-91732-1

Lab Sample ID: 680-91732-1

Matrix: Solid Percent Solids: 79.8

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichlorofluoromethane	6.3		4.3	0.82	ug/Kg	<del></del>	07/01/13 10:10	07/08/13 16:04	1
1,1,2-Trichloro-1,2,2-trifluoroethane	4.3	U	4.3	1.7	ug/Kg	₽	07/01/13 10:10	07/08/13 16:04	1
Vinyl chloride	4.3	U	4.3	0.80	ug/Kg	₽	07/01/13 10:10	07/08/13 16:04	1
Xylenes, Total	8.6	U	8.6	1.6	ug/Kg	₩	07/01/13 10:10	07/08/13 16:04	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	98		72 - 122				07/01/13 10:10	07/08/13 16:04	1
Dibromofluoromethane	95		79 - 123				07/01/13 10:10	07/08/13 16:04	1
Toluene-d8 (Surr)	97		80 - 120				07/01/13 10:10	07/08/13 16:04	1

Client Sample ID: NPS MW-18 (8-9) Lab Sample ID: 680-91732-2

Date Collected: 06/24/13 12:50 Matrix: Solid

Date Received: 06/26/13 10:57								Percent Soli	ds: 84.0
- Method: 8015C - Nonhalogenated Organ Analyte		ng GC/FID - Qualifier	Modified (Gaso		ge Organi Unit	cs) D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO) -C6-C10	0.034	J	0.30	0.023	mg/Kg	<u> </u>	07/08/13 09:21	07/08/13 13:16	1
Surrogate %Re	ecovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene	116		70 - 131				07/08/13 09:21	07/08/13 13:16	1
Analyte  Diesel Range Organics [C10-C28]  Oil Range Organics (C20-C36)	12 24	Qualifier U	RL 3.9	2.5	5 5	— <del>D</del>	Prepared 06/27/13 16:39 06/27/13 16:39	Analyzed 07/01/13 15:00 07/01/13 15:00	Dil Fac
Oil Range Organics (C20-C36)		U			mg/Kg				1
Surrogate %Re	ecovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
o-Terphenyl (Surr)	29	X	56 - 135				06/27/13 16:39	07/01/13 15:00	1
Method: 8015C - Nonhalogenated Organ		•	•	_	_	•			
Analyte		Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	4.1		3.9	2.5	mg/Kg	₽	07/05/13 19:20	07/11/13 07:53	1
Oil Range Organics (C20-C36)	24	U	24	24	mg/Kg	₩	07/05/13 19:20	07/11/13 07:53	1
Surrogate %Re	ecovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
o-Terphenyl (Surr)	57		56 - 135				07/05/13 19:20	07/11/13 07:53	1

# **QC Sample Results**

RL

25

5.0

MDL Unit

7.3 ug/Kg

0.49 ug/Kg

D

Client: ARCADIS U.S., Inc.

Project/Site: C&O Canal Brunswick Railyd

TestAmerica Job ID: 680-91732-1

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

MB MB Result Qualifier

25 U

5.0 U

Lab Sample ID: MB 400-184710/4

**Matrix: Solid** 

Analyte

Acetone Benzene

**Analysis Batch: 184710** 

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

Prepared Dil Fac Analyzed 07/08/13 12:23 07/08/13 12:23 07/08/13 12:23

20.120.10	0.0	0.0	00 499	0.7007.0 12.20	
Bromodichloromethane	5.0 U	5.0	0.84 ug/Kg	07/08/13 12:23	i
Bromoform	5.0 U	5.0	0.63 ug/Kg	07/08/13 12:23 1	I
Bromomethane	5.0 U	5.0	1.4 ug/Kg	07/08/13 12:23	l
Carbon disulfide	5.0 U	5.0	1.2 ug/Kg	07/08/13 12:23	l
Carbon tetrachloride	5.0 U	5.0	1.7 ug/Kg	07/08/13 12:23 1	l
Chlorobenzene	5.0 U	5.0	0.52 ug/Kg	07/08/13 12:23	I
Chloroethane	5.0 U	5.0	1.9 ug/Kg	07/08/13 12:23	I
Chloroform	5.0 U	5.0	0.59 ug/Kg	07/08/13 12:23 1	I
Chloromethane	5.0 U	5.0	1.0 ug/Kg	07/08/13 12:23	I
cis-1,2-Dichloroethene	5.0 U	5.0	0.76 ug/Kg	07/08/13 12:23	I
cis-1,3-Dichloropropene	5.0 U	5.0	1.2 ug/Kg	07/08/13 12:23 1	l
Cyclohexane	5.0 U	5.0	0.94 ug/Kg	07/08/13 12:23	l
Dibromochloromethane	5.0 U	5.0	0.87 ug/Kg	07/08/13 12:23 1	l
1,2-Dibromo-3-Chloropropane	5.0 U	5.0	3.3 ug/Kg	07/08/13 12:23	ĺ
1,2-Dichlorobenzene	5.0 U	5.0	0.71 ug/Kg	07/08/13 12:23	ĺ
1,3-Dichlorobenzene	5.0 U	5.0	0.95 ug/Kg	07/08/13 12:23 1	1
1,4-Dichlorobenzene	5.0 U	5.0	0.82 ug/Kg	07/08/13 12:23	İ
Dichlorodifluoromethane	5.0 U	5.0	1.3 ug/Kg	07/08/13 12:23	İ
1,1-Dichloroethane	5.0 U	5.0	0.83 ug/Kg	07/08/13 12:23 1	İ
1,2-Dichloroethane	5.0 U	5.0	0.82 ug/Kg	07/08/13 12:23	ĺ
1,1-Dichloroethene	5.0 U	5.0	0.75 ug/Kg	07/08/13 12:23 1	
1,2-Dichloropropane	5.0 U	5.0	0.74 ug/Kg	07/08/13 12:23 1	
Diisopropyl ether	5.0 U	5.0	0.55 ug/Kg	07/08/13 12:23	
Ethylbenzene	5.0 U	5.0	0.61 ug/Kg	07/08/13 12:23	
Ethylene Dibromide	5.0 U	5.0	0.48 ug/Kg	07/08/13 12:23 1	
Ethyl tert-butyl ether	5.0 U	5.0	0.56 ug/Kg	07/08/13 12:23 1	
2-Hexanone	25 U	25	5.0 ug/Kg	07/08/13 12:23 1	
Isopropylbenzene	5.0 U	5.0	0.68 ug/Kg	07/08/13 12:23 1	
Methyl acetate	5.0 U	5.0	4.6 ug/Kg	07/08/13 12:23 1	
Methylcyclohexane	5.0 U	5.0	0.87 ug/Kg	07/08/13 12:23 1	
Methylene Chloride	15 U	15	10 ug/Kg	07/08/13 12:23 1	
Methyl Ethyl Ketone	25 U	25	4.1 ug/Kg	07/08/13 12:23 1	
methyl isobutyl ketone	25 U	25	4.0 ug/Kg	07/08/13 12:23 1	i
Methyl tert-butyl ether	5.0 U	5.0	1.0 ug/Kg	07/08/13 12:23 1	
Naphthalene	5.0 U	5.0	1.0 ug/Kg	07/08/13 12:23 1	
Styrene Tort amul method other	5.0 U	5.0	0.76 ug/Kg	07/08/13 12:23 1	1
Tert-amyl methyl ether	5.0 U	5.0	0.44 ug/Kg	07/08/13 12:23 1	
tert-Butyl alcohol	5.0 U	5.0	3.4 ug/Kg	07/08/13 12:23 1	1
1,1,2,2-Tetrachloroethane	5.0 U	5.0	0.72 ug/Kg	07/08/13 12:23 1	1
Tetrachloroethene	5.0 U	5.0	0.84 ug/Kg	07/08/13 12:23 1	1
Toluene	5.0 U	5.0	0.70 ug/Kg	07/08/13 12:23 1	
trans-1,2-Dichloroethene	5.0 U	5.0	0.76 ug/Kg	07/08/13 12:23 1	•
trans-1,3-Dichloropropene	5.0 U	5.0	0.92 ug/Kg	07/08/13 12:23 1	
1,2,4-Trichlorobenzene	5.0 U	5.0	0.73 ug/Kg	07/08/13 12:23 1	
1,1,1-Trichloroethane	5.0 U	5.0	1.1 ug/Kg	07/08/13 12:23 1	
1,1,2-Trichloroethane	5.0 U	5.0	0.92 ug/Kg	07/08/13 12:23	i

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7/12/2013

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# **QC Sample Results**

Client: ARCADIS U.S., Inc.

Project/Site: C&O Canal Brunswick Railyd

TestAmerica Job ID: 680-91732-1

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

Lab Sample ID: MB 400-184710/4

**Matrix: Solid** 

Analysis Batch: 184710

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

	MB	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichloroethene	5.0	U	5.0	0.48	ug/Kg			07/08/13 12:23	1
Trichlorofluoromethane	5.0	U	5.0	0.95	ug/Kg			07/08/13 12:23	1
1,1,2-Trichloro-1,2,2-trifluoroethane	5.0	U	5.0	2.0	ug/Kg			07/08/13 12:23	1
Vinyl chloride	5.0	U	5.0	0.92	ug/Kg			07/08/13 12:23	1
Xylenes, Total	10	U	10	1.9	ug/Kg			07/08/13 12:23	1

мв мв

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	98		72 - 122		07/08/13 12:23	1
Dibromofluoromethane	97		79 - 123		07/08/13 12:23	1
Toluene-d8 (Surr)	97		80 - 120		07/08/13 12:23	1

Lab Sample ID: LCS 400-184710/1000

**Matrix: Solid** 

Analysis Batch: 184710

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

	Spike	LCS	LCS				%Rec.
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits
Acetone	200	203		ug/Kg		101	43 - 150
Benzene	50.0	48.1		ug/Kg		96	74 - 119
Bromodichloromethane	50.0	49.4		ug/Kg		99	68 _ 128
Bromoform	50.0	48.7		ug/Kg		97	54 <sub>-</sub> 125
Bromomethane	50.0	44.8		ug/Kg		90	25 _ 150
Carbon disulfide	50.0	47.3		ug/Kg		95	26 _ 150
Carbon tetrachloride	50.0	50.5		ug/Kg		101	70 - 128
Chlorobenzene	50.0	48.4		ug/Kg		97	80 _ 116
Chloroethane	50.0	43.3		ug/Kg		87	22 _ 150
Chloroform	50.0	48.0		ug/Kg		96	74 <sub>-</sub> 119
Chloromethane	50.0	44.0		ug/Kg		88	36 _ 147
cis-1,2-Dichloroethene	50.0	48.2		ug/Kg		96	68 - 126
cis-1,3-Dichloropropene	50.0	49.5		ug/Kg		99	68 <sub>-</sub> 125
Cyclohexane	50.0	47.2		ug/Kg		94	62 _ 126
Dibromochloromethane	50.0	51.7		ug/Kg		103	65 <sub>-</sub> 131
1,2-Dibromo-3-Chloropropane	50.0	49.4		ug/Kg		99	57 <sub>-</sub> 123
1,2-Dichlorobenzene	50.0	50.0		ug/Kg		100	76 - 120
1,3-Dichlorobenzene	50.0	49.7		ug/Kg		99	78 <sub>-</sub> 118
1,4-Dichlorobenzene	50.0	49.4		ug/Kg		99	77 <sub>-</sub> 118
Dichlorodifluoromethane	50.0	39.9		ug/Kg		80	44 _ 145
1,1-Dichloroethane	50.0	47.6		ug/Kg		95	61 <sub>-</sub> 128
1,2-Dichloroethane	50.0	47.4		ug/Kg		95	70 - 125
1,1-Dichloroethene	50.0	47.1		ug/Kg		94	62 _ 130
1,2-Dichloropropane	50.0	49.2		ug/Kg		98	64 <sub>-</sub> 129
Diisopropyl ether	50.0	48.5		ug/Kg		97	46 - 144
Ethylbenzene	50.0	49.8		ug/Kg		100	78 <sub>-</sub> 120
Ethylene Dibromide	50.0	50.3		ug/Kg		101	78 - 119
Ethyl tert-butyl ether	50.0	48.5		ug/Kg		97	60 _ 128
2-Hexanone	200	203		ug/Kg		101	54 <sub>-</sub> 140
sopropylbenzene	50.0	51.0		ug/Kg		102	78 <sub>-</sub> 119
Methyl acetate	250	238		ug/Kg		95	52 _ 139
Methylcyclohexane	50.0	48.3		ug/Kg		97	65 - 126

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TestAmerica Job ID: 680-91732-1

Client: ARCADIS U.S., Inc.

Project/Site: C&O Canal Brunswick Railyd

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

Lab Sample ID: LCS 400-184710/1000

**Matrix: Solid** 

Analysis Batch: 184710

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

	Spike	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Methylene Chloride	50.0	44.6		ug/Kg		89	45 - 150	
Methyl Ethyl Ketone	200	205		ug/Kg		102	62 - 126	
methyl isobutyl ketone	200	200		ug/Kg		100	56 - 137	
Methyl tert-butyl ether	50.0	47.6		ug/Kg		95	69 - 124	
Naphthalene	50.0	48.3		ug/Kg		97	64 - 126	
Styrene	50.0	51.1		ug/Kg		102	66 - 132	
Tert-amyl methyl ether	50.0	47.7		ug/Kg		95	65 - 124	
tert-Butyl alcohol	500	456		ug/Kg		91	12 _ 150	
1,1,2,2-Tetrachloroethane	50.0	48.3		ug/Kg		97	67 - 120	
Tetrachloroethene	50.0	51.2		ug/Kg		102	74 - 126	
Toluene	50.0	48.6		ug/Kg		97	76 - 120	
trans-1,2-Dichloroethene	50.0	49.1		ug/Kg		98	65 - 130	
trans-1,3-Dichloropropene	50.0	50.6		ug/Kg		101	65 - 126	
1,2,4-Trichlorobenzene	50.0	46.9		ug/Kg		94	72 <sub>-</sub> 126	
1,1,1-Trichloroethane	50.0	50.6		ug/Kg		101	72 <sub>-</sub> 121	
1,1,2-Trichloroethane	50.0	49.5		ug/Kg		99	75 - 118	
Trichloroethene	50.0	50.5		ug/Kg		101	76 <sub>-</sub> 122	
Trichlorofluoromethane	50.0	42.6		ug/Kg		85	65 - 132	
1,1,2-Trichloro-1,2,2-trifluoroetha	50.0	47.8		ug/Kg		96	74 - 123	
ne								
Vinyl chloride	50.0	47.5		ug/Kg		95	52 - 134	
Xylenes, Total	100	99.2		ug/Kg		99	70 - 120	

LCS LCS

Surrogate	%Recovery Qualifier	Limits
4-Bromofluorobenzene	94	72 - 122
Dibromofluoromethane	97	79 _ 123
Toluene-d8 (Surr)	98	80 120

Lab Sample ID: LCSD 400-184710/5

Matrix: Solid

Analysis Batch: 184710

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

	Spike	LCSD	LCSD				%Rec.		RPD
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Acetone	200	172		ug/Kg		86	43 - 150	16	30
Benzene	50.0	41.1		ug/Kg		82	74 - 119	16	30
Bromodichloromethane	50.0	42.1		ug/Kg		84	68 - 128	16	30
Bromoform	50.0	39.0		ug/Kg		78	54 - 125	22	30
Bromomethane	50.0	37.0		ug/Kg		74	25 - 150	19	30
Carbon disulfide	50.0	40.4		ug/Kg		81	26 - 150	16	30
Carbon tetrachloride	50.0	43.7		ug/Kg		87	70 - 128	14	30
Chlorobenzene	50.0	41.8		ug/Kg		84	80 - 116	15	30
Chloroethane	50.0	35.3		ug/Kg		71	22 - 150	20	30
Chloroform	50.0	41.0		ug/Kg		82	74 - 119	16	30
Chloromethane	50.0	36.8		ug/Kg		74	36 - 147	18	30
cis-1,2-Dichloroethene	50.0	40.8		ug/Kg		82	68 - 126	17	30
cis-1,3-Dichloropropene	50.0	41.7		ug/Kg		83	68 - 125	17	30
Cyclohexane	50.0	40.4		ug/Kg		81	62 - 126	15	30
Dibromochloromethane	50.0	43.5		ug/Kg		87	65 - 131	17	30

TestAmerica Savannah

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# **QC Sample Results**

Client: ARCADIS U.S., Inc.

Project/Site: C&O Canal Brunswick Railyd

TestAmerica Job ID: 680-91732-1

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

Lab Sample ID: LCSD 400-184710/5

**Matrix: Solid** 

Analysis Batch: 184710

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

Analysis Batch: 184710	Spike	LCSD	LCSD				%Rec.		RPD
Analyte	Added		Qualifier	Unit	D	%Rec	Limits	RPD	Limit
1,2-Dibromo-3-Chloropropane	50.0	38.9		ug/Kg		78	57 <sub>-</sub> 123	24	30
1,2-Dichlorobenzene	50.0	42.5		ug/Kg		85	76 - 120	16	30
1.3-Dichlorobenzene	50.0	41.8		ug/Kg		84	78 - 118	17	30
1,4-Dichlorobenzene	50.0	42.4		ug/Kg		85	77 _ 118	15	30
Dichlorodifluoromethane	50.0	32.8		ug/Kg		66	44 - 145	20	30
1,1-Dichloroethane	50.0	40.9		ug/Kg		82	61 - 128	15	30
1,2-Dichloroethane	50.0	40.1		ug/Kg		80	70 - 125	17	30
1,1-Dichloroethene	50.0	40.8		ug/Kg		82	62 _ 130	14	30
1,2-Dichloropropane	50.0	41.4		ug/Kg		83	64 - 129	17	30
Diisopropyl ether	50.0	41.6		ug/Kg		83	46 - 144	15	30
Ethylbenzene	50.0	43.4		ug/Kg		87	78 - 120	14	30
Ethylene Dibromide	50.0	42.0		ug/Kg		84	78 <sub>-</sub> 119	18	30
Ethyl tert-butyl ether	50.0	40.9		ug/Kg		82	60 - 128	17	30
2-Hexanone	200	162		ug/Kg		81	54 <sub>-</sub> 140	22	30
Isopropylbenzene	50.0	43.1		ug/Kg		86	78 <sub>-</sub> 119	17	30
Methyl acetate	250	192		ug/Kg		77	52 - 139	22	30
Methylcyclohexane	50.0	41.1		ug/Kg		82	65 <sub>-</sub> 126	16	30
Methylene Chloride	50.0	39.2		ug/Kg		78	45 <sub>-</sub> 150	13	30
Methyl Ethyl Ketone	200	166		ug/Kg		83	62 _ 126	21	30
methyl isobutyl ketone	200	163		ug/Kg		81	56 <sub>-</sub> 137	21	30
Methyl tert-butyl ether	50.0	39.0		ug/Kg		78	69 - 124	20	30
Naphthalene	50.0	40.5		ug/Kg		81	64 - 126	18	30
Styrene	50.0	43.8		ug/Kg		88	66 - 132	15	30
Tert-amyl methyl ether	50.0	40.4		ug/Kg		81	65 - 124	17	30
tert-Butyl alcohol	500	393		ug/Kg		79	12 _ 150	15	30
1,1,2,2-Tetrachloroethane	50.0	39.6		ug/Kg		79	67 - 120	20	30
Tetrachloroethene	50.0	44.3		ug/Kg		89	74 - 126	14	30
Toluene	50.0	42.2		ug/Kg		84	76 - 120	14	30
trans-1,2-Dichloroethene	50.0	41.4		ug/Kg		83	65 - 130	17	30
trans-1,3-Dichloropropene	50.0	42.2		ug/Kg		84	65 - 126	18	30
1,2,4-Trichlorobenzene	50.0	40.0		ug/Kg		80	72 - 126	16	30
1,1,1-Trichloroethane	50.0	42.4		ug/Kg		85	72 - 121	18	30
1,1,2-Trichloroethane	50.0	41.9		ug/Kg		84	75 - 118	17	30
Trichloroethene	50.0	43.8		ug/Kg		88	76 - 122	14	30
Trichlorofluoromethane	50.0	38.6		ug/Kg		77	65 - 132	10	30
1,1,2-Trichloro-1,2,2-trifluoroetha	50.0	40.4		ug/Kg		81	74 - 123	17	30
ne									
Vinyl chloride	50.0	40.4		ug/Kg		81	52 - 134	16	30
Xylenes, Total	100	85.9		ug/Kg		86	70 - 120	14	30

LCSD LCSD

Surrogate	%Recovery Qualifier	Limits
4-Bromofluorobenzene	95	72 - 122
Dibromofluoromethane	95	79 - 123
Toluene-d8 (Surr)	98	80 - 120

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Client: ARCADIS U.S., Inc.

Project/Site: C&O Canal Brunswick Railyd

TestAmerica Job ID: 680-91732-1

Client Sample ID: Method Blank

Client Sample ID: Lab Control Sample

%Rec.

Limits

64 - 133

Client Sample ID: Lab Control Sample Dup

%Rec.

Limits

64 - 133

Client Sample ID: Method Blank

Analyzed

07/11/13 00:24

07/11/13 00:24

Analyzed

07/11/13 00:24

Prep Type: Total/NA

Prep Batch: 283381

Dil Fac

Dil Fac

Prep Type: Total/NA

Prep Type: Total/NA

Prep Type: Total/NA

RPD

RPD

Limit

50

## Method: 8015C - Nonhalogenated Organics using GC/FID -Modified (Gasoline Range Organics)

Lab Sample ID: MB 680-283832/5

**Matrix: Solid** 

Analysis Batch: 283832

MB MB

RL Result Qualifier MDL Unit D Analyzed Dil Fac Analyte Prepared 0.25 0.25 U 0.019 mg/Kg 07/08/13 12:56 Gasoline Range Organics (GRO)

LCS LCS

LCSD LCSD

1.01

Result Qualifier

MDL Unit

21

LCS LCS

Result

13.8

Qualifier

Unit

mg/Kg

mg/Kg

mg/Kg

0.942

Result Qualifier

Unit

Unit

mg/Kg

mg/Kg

D

%Rec

%Rec

Prepared

07/05/13 19:20

07/05/13 19:20

Prepared

07/05/13 19:20

101

94

-C6-C10

MB MB Surrogate Qualifier Limits Prepared Dil Fac %Recovery Analyzed 70 - 131 07/08/13 12:56 a,a,a-Trifluorotoluene 94

Spike

Added

1.00

Spike

Added

Limits

1.00

Lab Sample ID: LCS 680-283832/3

Analysis Batch: 283832

**Matrix: Solid** 

Analyte

Gasoline Range Organics (GRO) -C6-C10

Surrogate

a,a,a-Trifluorotoluene

%Recovery 100

LCS LCS

Qualifier I imits 70 - 131

Lab Sample ID: LCSD 680-283832/4

**Matrix: Solid** 

Analysis Batch: 283832

Analyte Gasoline Range Organics (GRO) -C6-C10

LCSD LCSD Surrogate %Recovery Qualifier

a,a,a-Trifluorotoluene 109 70 - 131

Method: 8015C - Nonhalogenated Organics using GC/FID -Modified (Diesel Range Organics)

Lab Sample ID: MB 680-283381/19-A

**Matrix: Solid** 

Analysis Batch: 284074

MB MB

MR MR

81

Qualifier

%Recovery

Analyte Result Qualifier Diesel Range Organics [C10-C28] 3.3 Ū 20 U

Oil Range Organics (C20-C36)

Surrogate o-Terphenyl (Surr)

Lab Sample ID: LCS 680-283381/20-A

Analysis Batch: 284074

Analyte Diesel Range Organics

[C10-C28]

**Matrix: Solid** 

Client Sample ID: Lab Control Sample

Prep Type: Total/NA Prep Batch: 283381

%Rec. Limits

%Rec 42

19 \_ 171

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RL

3.3

20

Limits

Spike

Added

33.2

56 - 135

## **QC Sample Results**

Client: ARCADIS U.S., Inc.

Project/Site: C&O Canal Brunswick Railyd

TestAmerica Job ID: 680-91732-1

## Method: 8015C - Nonhalogenated Organics using GC/FID -Modified (Diesel Range Organics) (Continued)

Spike

Added

66.1

72.4

Lab Sample ID: LCS 680-283381/20-A

Lab Sample ID: LCS 680-283381/23-A

**Matrix: Solid** 

Matrix: Solid

Analyte

Surrogate

o-Terphenyl (Surr)

Analysis Batch: 284074

Analysis Batch: 284074

Oil Range Organics (C20-C36)

**Client Sample ID: Lab Control Sample** 

Prep Type: Total/NA

Prep Batch: 283381

LCS LCS

Surrogate %Recovery Qualifier Limits 42 X 56 - 135 o-Terphenyl (Surr)

**Client Sample ID: Lab Control Sample** 

Prep Type: Total/NA

Prep Batch: 283381

%Rec.

LCS LCS Result Qualifier Unit %Rec

mg/Kg

Limits

109

50 - 150

LCS LCS

%Recovery Qualifier Limits 90 56 - 135

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# **QC Association Summary**

Client: ARCADIS U.S., Inc.

Project/Site: C&O Canal Brunswick Railyd

TestAmerica Job ID: 680-91732-1

0	IN	-		A
	 IIV		w	$\Delta$

Prep	Batch:	184079
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Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-91732-1	NPS MW-18 (8.0-8.5)	Total/NA	Solid	5035	

#### Analysis Batch: 184710

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-91732-1	NPS MW-18 (8.0-8.5)	Total/NA	Solid	8260B	184079
LCS 400-184710/1000	Lab Control Sample	Total/NA	Solid	8260B	
LCSD 400-184710/5	Lab Control Sample Dup	Total/NA	Solid	8260B	
MB 400-184710/4	Method Blank	Total/NA	Solid	8260B	

### **GC VOA**

#### Analysis Batch: 283832

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-91732-2	NPS MW-18 (8-9)	Total/NA	Solid	8015C	283949
LCS 680-283832/3	Lab Control Sample	Total/NA	Solid	8015C	
LCSD 680-283832/4	Lab Control Sample Dup	Total/NA	Solid	8015C	
MB 680-283832/5	Method Blank	Total/NA	Solid	8015C	

#### Prep Batch: 283949

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-91732-2	NPS MW-18 (8-9)	Total/NA	Solid	5030B	

#### **GC Semi VOA**

#### Prep Batch: 282208

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-91732-2	NPS MW-18 (8-9)	Total/NA	Solid	3546	

#### Analysis Batch: 282730

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-91732-2	NPS MW-18 (8-9)	Total/NA	Solid	8015C	282208

#### Prep Batch: 283381

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method Prep Batch
680-91732-2 - RE	NPS MW-18 (8-9)	Total/NA	Solid	3546
LCS 680-283381/20-A	Lab Control Sample	Total/NA	Solid	3546
LCS 680-283381/23-A	Lab Control Sample	Total/NA	Solid	3546
MB 680-283381/19-A	Method Blank	Total/NA	Solid	3546

#### Analysis Batch: 284074

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 680-283381/20-A	Lab Control Sample	Total/NA	Solid	8015C	283381
LCS 680-283381/23-A	Lab Control Sample	Total/NA	Solid	8015C	283381
MB 680-283381/19-A	Method Blank	Total/NA	Solid	8015C	283381

## Analysis Batch: 284075

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-91732-2 - RE	NPS MW-18 (8-9)	Total/NA	Solid	8015C	283381

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#### **Lab Chronicle**

Client: ARCADIS U.S., Inc.

Date Collected: 06/24/13 12:50

Date Received: 06/26/13 10:57

Project/Site: C&O Canal Brunswick Railyd

**Client Sample ID: NPS MW-18 (8.0-8.5)** 

TestAmerica Job ID: 680-91732-1

**Matrix: Solid** 

Percent Solids: 79.8

Lab Sample ID: 680-91732-1

_	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035			184079	07/01/13 10:10	CR	TAL PEN
Total/NA	Analysis	8260B		1	184710	07/08/13 16:04	LRS	TAI PEN

Client Sample ID: NPS MW-18 (8-9)

Lab Sample ID: 680-91732-2 Date Collected: 06/24/13 12:50 **Matrix: Solid** Date Received: 06/26/13 10:57

Percent Solids: 84.0

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5030B			283949	07/08/13 09:21	AJM	TAL SAV
Total/NA	Analysis	8015C		1	283832	07/08/13 13:16	AJM	TAL SAV
Total/NA	Prep	3546			282208	06/27/13 16:39	JCS	TAL SAV
Total/NA	Analysis	8015C		1	282730	07/01/13 15:00	SSP	TAL SAV
Total/NA	Prep	3546	RE		283381	07/05/13 19:20	JCS	TAL SAV
Total/NA	Analysis	8015C	RE	1	284075	07/11/13 07:53	SSP	TAL SAV

#### **Laboratory References:**

TAL PEN = TestAmerica Pensacola, 3355 McLemore Drive, Pensacola, FL 32514, TEL (850)474-1001 TAL SAV = TestAmerica Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

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# **Login Sample Receipt Checklist**

Client: ARCADIS U.S., Inc.

Job Number: 680-91732-1

Login Number: 91732 List Source: TestAmerica Savannah

List Number: 1

Creator: Barnett, Eddie T

Question	Answer Comment	
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>N/A</td> <td></td>	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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# **Login Sample Receipt Checklist**

Client: ARCADIS U.S., Inc.

Job Number: 680-91732-1

List Source: TestAmerica Pensacola
List Number: 1
List Source: TestAmerica Pensacola
List Creation: 06/27/13 08:01 PM

Creator: Nak, Deend

Creator: Nak, Deend		
Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>N/A</td> <td></td>	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	2.9°C IR-2
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

TestAmerica Savannah
Page 18 of 20
7/12/2013

TestAmerica Job ID: 680-91732-1

Client: ARCADIS U.S., Inc.

Project/Site: C&O Canal Brunswick Railyd

## **Laboratory: TestAmerica Savannah**

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

Authority	Program	EPA Region	Certification ID	<b>Expiration Date</b>
A2LA	DoD ELAP		399.01	07-31-13
A2LA	ISO/IEC 17025		399.01	02-28-15
Arkansas DEQ	State Program	6	88-0692	02-01-14 *
California	NELAP	9	3217CA	07-31-13
Colorado	State Program	8	N/A	12-31-13
Connecticut	State Program	1	PH-0161	03-31-15
Florida	NELAP	4	E87052	06-30-14
GA Dept. of Agriculture	State Program	4	N/A	12-31-13
Georgia	State Program	4	N/A	06-30-14
Hawaii	State Program	9	N/A	06-30-14
Illinois	NELAP	5	200022	11-30-13
Iowa	State Program	7	353	07-01-13 *
Kentucky	State Program	4	90084	12-31-13
Kentucky (UST)	State Program	4	18	06-30-14
Louisiana	NELAP	6	30690	06-30-14
Louisiana	NELAP	6	LA100015	12-31-13
Maine	State Program	1	GA00006	08-16-14
Maryland	State Program	3	250	12-31-13
Montana	State Program	8	CERT0081	01-01-14
Nebraska	State Program	7	TestAmerica-Savannah	06-30-13 *
New Jersey	NELAP	2	GA769	06-30-14
New York	NELAP	2	10842	04-01-14
North Carolina DENR	State Program	4	269	12-31-13
North Carolina DHHS	State Program	4	13701	07-31-13
Oklahoma	State Program	6	9984	08-31-13
Pennsylvania	NELAP	3	68-00474	06-30-13 *
Puerto Rico	State Program	2	GA00006	01-01-14
Tennessee	State Program	4	TN02961	06-30-14
Texas	NELAP	6	T104704185-08-TX	11-30-13
USDA	Federal		SAV 3-04	04-07-14
Virginia	NELAP	3	460161	06-14-14
Washington	State Program	10	C1794	06-10-14
West Virginia	State Program	3	9950C	12-31-13
West Virginia DEP	State Program	3	94	09-30-13
Wisconsin	State Program	5	999819810	08-31-13

#### Laboratory: TestAmerica Pensacola

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

Authority	Program	EPA Region	Certification ID	Expiration Date
Alabama	State Program	4	40150	06-30-13 *
Arizona	State Program	9	AZ0710	01-11-14
Arkansas DEQ	State Program	6	88-0689	09-01-13
Florida	NELAP	4	E81010	06-30-14
Georgia	State Program	4	N/A	06-30-13 *
Illinois	NELAP	5	200041	10-09-13
lowa	State Program	7	367	08-01-14
Kansas	NELAP	7	E-10253	10-31-13
Louisiana	NELAP	6	30976	06-30-14
Maryland	State Program	3	233	09-30-13

 $<sup>\</sup>ensuremath{^{\star}}$  Expired certification is currently pending renewal and is considered valid.

TestAmerica Savannah

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# **Certification Summary**

Client: ARCADIS U.S., Inc.

Project/Site: C&O Canal Brunswick Railyd

TestAmerica Job ID: 680-91732-1

#### Laboratory: TestAmerica Pensacola (Continued)

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

Authority	Program	EPA Region	Certification ID	Expiration Date
Massachusetts	State Program	1	M-FL094	06-30-13 *
Michigan	State Program	5	9912	06-30-13 *
New Hampshire	NELAP	1	2505	08-16-13
New Jersey	NELAP	2	FL006	06-30-13 *
North Carolina DENR	State Program	4	314	12-31-13
Oklahoma	State Program	6	9810	08-31-13
Pennsylvania	NELAP	3	68-00467	01-31-14
Rhode Island	State Program	1	LAO00307	12-31-13
South Carolina	State Program	4	96026	06-30-13 *
Tennessee	State Program	4	TN02907	06-30-14
Texas	NELAP	6	T104704286-12-5	09-30-13
USDA	Federal		P330-10-00407	12-10-13
Virginia	NELAP	3	460166	06-14-14
West Virginia DEP	State Program	3	136	08-31-13

<sup>\*</sup> Expired certification is currently pending renewal and is considered valid.

TestAmerica Savannah



# Appendix F

NewFields Fingerprinting Report





Paul Kurzanski CSX Transportation, Inc. 500 Water Street, J-275 Jacksonville, Florida 32202

> Chemical Fingerprinting of On-Site LPHs and C&O Canal Soils/Sediment CSXT Brunswick Yard Brunswick, Maryland

Dear Mr. Kurzanski,

At your request NewFields Companies, LLC is pleased to provide you with the chemical fingerprinting results surrounding our analysis of:

- (1) five liquid phase hydrocarbons (LPH) samples collected from on-site monitoring wells at the CSX Transportation, Inc. (CSXT) Brunswick Yard (the Yard) and
- (2) ten soils/sediments from nine borings within the Chesapeake and Ohio (C&O) Canal prism footprint south of the Yard (Fig. 1).

The Yard, which has been an active rail yard since 1892, is located adjacent to the C&O Canal (Fig.1). LPH has been recognized to exist in multiple on-site monitoring wells since 1992. Efforts to delineate, contain, and/or recover the LPH have been on-going for approximately 20 years. These efforts had shown the LPH accumulation located west of the former roundhouse was stable and/or decreasing. However, in January 2013 LPH was observed in wells east of the former roundhouse (MW-39 and MW-70), which previously had not contained LPH. The recent appearance of LPH east of the former roundhouse, in part, promulgated the chemical fingerprinting of selected LPHs described herein (Table 1).

The C&O Canal, located on National Park Service property south of the Yard, had once been an active canal but is presently swampy and vegetated (Fig. 1). Investigations of *sediments* and *soils* – terms used to respectively describe samples *above* and *below* the Canal's clay liner – since the early 1990s had indicated the sporadic occurrence of LPH in some sediments and soils in three areas (Areas 1, 2, and 3; Fig. 1). At the request of the Maryland Department of the Environment (MDE), CSXT is presently conducting an investigation of the Canal's soils and sediments, which promulgated the chemical fingerprinting of selected sediment and soil samples described herein (Table 1).

The objectives for the analysis of the LPH and soil/sediment samples included:

- (1) determine the degree of homo/heterogeneity among, and to the degree possible the "age(s)" of, the LPHs, with emphasis on comparing the long-extant LPH accumulation west of the former roundhouse *versus* the more recently-appearing LPH east of the former roundhouse;
- (2) determine the character of any petroleum or other type of contamination in soils and sediments from the C&O Canal; and
- (3) compare the specific character of any petroleum represented by the on-site LPHs to any petroleum encountered in the Canal's soils and sediments.



The five LPH samples (Table 1) were collected in September 12 and 16, 2013 and shipped to Alpha Laboratory in Mansfield, Massachusetts (Alpha) on September 16, 2013. The samples arrived safely at Alpha on September 19, 2013. A copy of the chain-of-custody is attached to this letter.

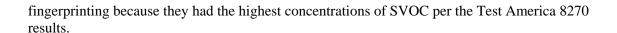
The LPHs were analyzed using analytical methods that have been described in detail elsewhere, namely:

- (1) TPH and Selected Alkane Quantification and Fingerprinting: a modified EPA Method 8015D was used to determine the TPH concentration (C<sub>9</sub>-C<sub>44</sub>) and concentrations of *n*-alkanes (C<sub>9</sub>-C<sub>40</sub>) and selected (C<sub>15</sub>-C<sub>20</sub>) acyclic isoprenoids (e.g., pristane and phytane), and simultaneously provide a detailed fingerprint of the hydrocarbons present in each sample. This analysis allowed for characterization of the general boiling range(s) and type(s) of petroleum or other product(s) present, as well as the degree(s) of weathering. A method blank (B), lab control sample (LCS), lab control sample duplicate (LCSD) and sample duplicate (D) were prepared and analyzed for quality control (QC).
- (2) PAH Quantification and Fingerprinting: a modified EPA Method 8270D was used to determine the concentrations of 51 semi-volatile compounds or compound groups, included Priority Pollutant PAHs, alkylated PAHs, and sulfur-containing aromatics. These features can reveal specific characteristics of petroleum fuels, e.g., diesel fuels. A method blank (B), lab control sample (LCS), lab control sample duplicate (LCSD), reference crude oil, and sample duplicate (D) were prepared and analyzed for quality control QC.
- (3) Total Sulfur Determination: ASTM D5453-93 was used to determine the total sulfur content of LPHs using *uv*-fluorescence. This analysis provided a basis to characterize the sulfur content of the precursor fuels, particularly any diesel component. (This analysis was subcontracted to Triton Analytics, Houston.)

The 10 soil/sediment samples from the C&O Canal prism footprint borings analyzed herein (Table 1) were collected in August 2013. These samples were a subset of the 60 samples sent to Alpha on Aug. 23, which had arrived safely on Aug. 24, 2013. A copy of the chain-of-custody is attached to this letter. These 60 samples were grab samples from the same intervals as were sent to Test America for TPH-DRO, TPH-ORO, and SVOC (Method 8270) analysis. Upon receipt and review of these Test America results, 10 of the 60 samples were selected for chemical fingerprinting by NewFields. The basis for selecting these 10 samples included the DRO, ORO, and/or SVOC concentrations, the character of the DRO/ORO GC/FID chromatograms, and field observations, used in combination with attempts to represent soils or sediments from each Area (Table 1).

The 10 soil/sediment samples selected were analyzed using the same *TPH* and *Selected Alkane Quantification and Fingerprinting* method described above. Prior to analysis the samples were serially extracted (3-times) in dichloromethane. After concentrating the extracts were processed (cleaned) through alumina using EPA Method 3611 in order to remove polar compounds. Three of the samples' extracts were further analyzed using the same *PAH Quantification and Fingerprinting* method described above. These three samples were selected for PAH

<sup>&</sup>lt;sup>1</sup> Douglas, G.D., Emsbo-Mattingly, S.D., Stout, S.A., Uhler, A.D., and McCarthy, K.J. (2007) Chemical fingerprinting of hydrocarbons and polychlorinated biphenyls. In: *Introduction to Environmental Forensics*, 2<sup>nd</sup> *Ed.*, B. Murphy and R. Morrison, Eds., Academic Press, New York, pp. 317-459.



#### Results

The complete Alpha data reports (ETRs# L13186627, 1309010, and 1310009) are being maintained by NewFields but can be made available upon request. Full size GC/FID chromatograms and all tabulated concentration results are attached to this letter.

#### On-Site LPH Characterization:

Appearance: The LPHs studied varied in their appearance as per the photograph shown in Figure 2. The LPHs collected from the four wells west of the former roundhouse ranged in color from translucent amber (MW-56) to opaque, dark brown (MW-55 and MW-49), with the LPH from MW-37 appearing intermediate (Fig. 2A-D). The LPH from MW-70, east of the former roundhouse, was reddish-brown (Fig. 2E), which is notable in light of the red dye required to be used in off-road diesel.

TPH and Chromatographic Character: The LPHs were comprised of 100% measureable TPH (Table 2A). This means that all of the mass of the LPHs was chromatographable and reported to the  $C_8$  to  $C_{44}$  (TPH) range.

The GC/FID fingerprints for the five LPHs are shown in Figure 3. Inspection of this reveals that all five of the LPHs studied are nearly exclusively comprised of chemicals that boil within the diesel range ( $C_{10}$ - $C_{28}$ ). Only traces of hydrocarbons within the gasoline range ( $C_{10}$ -) are present and no residual range ( $C_{28}$ +) compounds are present (Fig. 3).

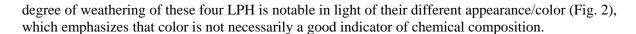
The dominant feature within the diesel range in each of the samples is a broad "hump", referred to as the unresolved complex mixture (UCM). The UCM is a long-recognized chromatographic feature that is typical of petroleum.<sup>2</sup> The shape of the UCM can reveal something about the type(s) of parent petroleum comprising the LPH. The UCM in each of the LPHs studied is uni-modal and symmetrical (i.e. exhibits a gradual rise-and-fall) reaching a maximum around  $C_{15}$  (Fig. 3), which is typical of middle distillate fuels.<sup>3</sup> Thus, all five LPHs studied are comprised exclusively of middle distillate fuel, e.g., diesel fuel #2.

The resolved compounds (peaks) atop the UCM humps are different among the samples (Fig. 3). Specifically, resolved compounds in the four LPHs collected from wells west of the former roundhouse are all dominated by alkyl-naphthalenes and acyclic isoprenoids (Fig. 3A-D). The isoprenoids include compounds with 13 to 20 carbons, including pristane (Pr) and phytane (Ph). The alkylated naphthalenes and isoprenoids are considered relatively resistant to weathering (biodegradation and water-washing). Their prominence in the MW-56, MW-55, MW-49 and MW-37 LPHs indicates **the four LPHs west of the former roundhouse are each significantly, and comparably, weathered.** The consistency in the

<sup>2</sup> Blumer, M. and Sass, J. (1972) Indigenous and petroleum-derived hydrocarbons in polluted sediment. Mar. Pollut. Bull. 3: 92-94.

<sup>&</sup>lt;sup>3</sup>Stout, S.A., Uhler, A.D., McCarthy, K.J. and Emsbo-Mattingly, S.D. (2002). The influences of refining on petroleum fingerprinting – Part 3. Distillate fuel production practices. *Contaminated Soil, Sediment & Water*, Jan/Feb Issue, pp. 6-11.

<sup>&</sup>lt;sup>4</sup> Kaplan, I.R., Galperin, Y., Alimi, H., Lee, R.P., and Lu, S.-T. (1996). Patterns of chemical changes during environmental alteration of hydrocarbon fuels. Ground Water Monitoring and Remediation, Fall 1996, 113-124.



On the other hand, the dominant resolved compounds (peaks) in the MW-70 LPH's chromatogram are nalkanes that range from n- $C_8$  to n- $C_{28}$  (Fig. 1E). n-Alkanes are the most abundant compounds present in fresh distillate fuels<sup>3</sup> but they are considered susceptible to weathering (biodegradation).<sup>4</sup> **The LPH east of the former roundhouse, as represented by the sample from MW-70, shows little to no evidence of weathering.** This marked difference in the degrees of weathering among the LPHs studied east *versus* west of the former roundhouse is reflected in the higher nC<sub>17</sub>/Pr and nC<sub>18</sub>/Ph ratios for the MW-70 LPH (Table 2B).

Decalins, PAHs and Sulfur-Containing Aromatics: The LPHs studied contained between 12,501 and 62,190 mg/kg of total PAHs (TPAH51),<sup>5</sup> or 1.25 to 6.22 wt% of the LPHs (Table 2A). Each LPH contained markedly lower concentrations of the 16 Priority Pollutant PAHs (TPAH16), which comprised between 4.4 and 6.0 percent of the TPAH51 (Table 2A). **Higher concentrations of PAHs were present in the four LPHs west of the former roundhouse**, owing to the concentrating effect that weathering (i.e., biodegradation of n-alkanes) has had on these LPHs. This difference is also reflected in these LPHs' higher percentage of TPH asTPAH51 (0.09 to 0.12%) compared to the unweathered MW-70 LPH (0.01%; Table 2A).

The distributions of the PAHs in each of the LPHs studied, as well as the decalins<sup>6</sup> and benzothiophenes, are shown in Figure 4. As expected based upon the GC/FID results (above), each LPH contains compounds within the diesel range. There are no significant concentrations of higher molecular weight PAHs (HPAHs) containing 4- to 6-rings.

As is typical of weathered diesel fuels, each LPH west of the former roundhouse is dominated by alkylated naphthalenes (N2-N4; Fig. 4A-D). However, the unweathered diesel fuel comprising the MW-70 LPH is dominated by decalins (D0-D4; Fig. 4E). The predominance of decalins over naphthalenes is (in my experience) atypical of most unweathered 'historic' diesel fuels. However, as the refining of diesel fuel has become increasingly complicated, hydrotreatment of distillate feedstocks has become more common. Decalins are formed from the hydrotreatment of naphthalenes, which (1) may explain their relative prominence in the MW-70 LPH and, in turn, (2) indicate that the unweathered diesel fuel comprising the MW-70 LPH is more typical of modern, hydrotreated diesel fuel (than historic, non-hydrotreated diesel fuel).

*Sulfur Content:* The sulfur content of the LPHs studied varied. The four LPHs west of the former roundhouse contained between 2200 and 2970 ppm of total sulfur (Table 2A). The MW-70 LPH from east of the former roundhouse contained only 728 ppm of total sulfur (Table 2A). The implications of this difference are discussed further in the next section.

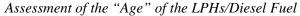
<sup>&</sup>lt;sup>5</sup> This is defined as the sum of all 51 analytes ranging from naphthalene to benzo(ghi)perylene on the attached data tables.

<sup>&</sup>lt;sup>6</sup> Decalins are compounds with two, fused saturated, 6-member rings, i.e., decahydronaphthalenes.

<sup>&</sup>lt;sup>7</sup>Stout, S.A., Uhler, A.D., and McCarthy, K.J. (2006) Chemical characterization and sources of distillate fuels in the subsurface, Mandan, North Dakota. *Environ. Forensics*, **7(3)**: 267-282.

<sup>&</sup>lt;sup>8</sup> Stout, S.A., unpublished data. 'Historic' refers to diesel fuels refined prior to the widespread use of deep hydrodesulfurization over the past 20 years or so.

Pines, H. (1981). The Chemistry of Catalytic Hydrocarbon Conversions, Academic Press, New York, 305 pp.



The degree of weathering of LPH is not necessarily a good proxy for the length of *time* petroleum has spent in the environment (i.e., its "age"). The reason for this is that the length of time spent in the environment is not the only factor. Specifically, the *rate* of weathering of petroleum is also important and it depends on numerous site-specific factors that will vary of many scales (e.g., oxygen availability, temperature, chemical concentrations, etc.). Therefore, it is the combined effect of the *rate* of weathering and the *time* spent in the environment that dictates the *degree* of weathering in any LPH. That is,

#### $Degree of Weathering = Rate \ x \ Time$

Thus, the degree of weathering alone cannot determine the *absolute* "age" of petroleum in the environment. However, varying degrees of weathering among LPHs that have accumulated under a comparable set of site-specific factors may reveal differences in their *relative* "ages". At the Site, where site-specific factors may not vary widely, the unweathered character of the MW-70 LPH compared to the severely weathered character of the other LPHs would seem to suggest that **the release(s) giving rise to the MW-70 LPH occurred much more recently that the release(s) giving rise to the LPHs west of the former roundhouse**.

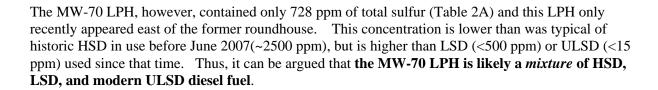
A more defensible (quantitative) means to assess the "age" of the LPHs studied is the concentration of sulfur. The basis for this approach is that the maximum permissible concentration of sulfur in most distillate fuels was reduced by regulations over the past 20 years. For example, all types of diesel fuels sold before October 1993 typically contained an average of 2500 ppm sulfur, <sup>11</sup> and are now referred to a high sulfur diesel (HSD). In October 1993 the maximum permissible concentration of sulfur in *on-road* diesel fuels was reduced to 500 ppm, which are now referred to as low sulfur diesel (LSD). In September 2006 the maximum permissible limit was further reduced to 15 ppm. <sup>12</sup> These "modern" on-road diesel fuels are referred to as ultra-low sulfur diesel (ULSD).

Given the rail yard operations at the Site, and the likely prominence of *off-road*, including locomotive, diesel fuel at the Site, it is necessary to consider how the sulfur regulations concerning off-road diesel fuels have progressed over time. Off-road diesel fuels historically contained an average of 2500 ppm sulfur before 1993. The generally high concentrations of sulfur varied around 2500 ppm after October 1993 depending on the supplier. However, in June 2007, all off-road fuels (except marine diesels) were required to contain less than 500 ppm total sulfur (LSD) and in June 2012, the maximum permissible sulfur in locomotive diesel was further reduced to 15 ppm (ULSD).

The LPH samples west of the former roundhouse contained between 2200 and 2970 ppm total sulfur, and averaged 2673 ppm (Table 2A). These values are typical of the average value (~2500 ppm) for off-road diesel fuel in use for decades prior to 2007. This indicates **the LPHs west of the former roundhouse are comprised of historic HSD** (which is no surprise given that LPH was first discovered in this area in the early 1990s).

<sup>&</sup>lt;sup>10</sup> Stout, S.A. and Wang, Z. (2008) Diagnostic compounds for fingerprinting petroleum in the environment. In: *Environmental Forensics*, R.E. Hester and R.M. Harrison, Eds., Royal Soc. Chem., Issues in Environmental Science and Technology Publ. No. 26, London, pp. 54-104.

<sup>&</sup>lt;sup>11</sup> EPA (2000). Fuel standard feasibility. In: Heavy Duty Standards/Diesel Fuel RIA EPA420-R-00-026, 122 p. <sup>12</sup> 40CFR Parts 69, 80, and 86. Some exemptions were available until June 2010, when all on-road diesel nationwide needed to meet the 15 ppm standard.



#### C&O Canal Soil and Sediment Characterization:

The chemical fingerprinting of the 10 selected samples from the C&O Canal prism footprint are discussed separately for each of the three Areas studied (Fig. 1; Table 1). Data from these samples are compiled in Table 2.

*Area 1: TPH and Chromatographic Character:* Four samples from three borings from Area 1 were included in this study; both a sediment and soil (above and below the clay liner, respectively) were studied from the SB01-04 location (Table 1). The TPH concentrations in all but one of the Area 1 samples were below 100 ppm, the exception being the soil from SB01-04 (6.0-7.0), which contained 1260 ppm TPH<sub>(C9-C44)</sub> (Table 2A).<sup>13</sup>

The GC/FID fingerprints for the four Area 1 samples studied are shown in Figure 5. The chromatogram for the SB01-04 (6.0-7.0) soil (Fig. 5B) exhibits the same general features as the LPHs west of the former roundhouse (Fig. 3A-D); e.g., a prominent diesel range UCM with no n-alkanes. Thus, **the SB01-04** (6.0-7.0) soil below the clay liner in Area 1 contains a weathered diesel fuel (Table 2C). Qualitative comparison to the LPHs west of the former roundhouse fingerprints (Fig. 3) reveals the diesel in the SB01-04 soil is somewhat more highly weathered than the LPHs, as the former contains less alkylnaphthalenes and lower isoprenoids relative to Pr and Ph (Fig. 5B). A quantitative comparison based upon diagnostic ratios, however, cannot be performed since the SB01-04 (6.0-7.0) soil was not analyzed for PAHs and sulfur-containing aromatics. Therefore, at present, it cannot be determined if the weathered diesel fuel in the SB01-04 (6.0-7.0) sample is HSD, such as exists in the on-site LPHs west of the roundhouse.

The other three Area 1 samples with low  $TPH_{(C9-C44)}$  concentrations (<100 ppm) each exhibit highly comparable fingerprints (Fig. 5A, C and D), which allows them to be described together. Each of these samples contains compounds predominantly within the late diesel range and residual range ( $C_{25}$ +). The most prominent compounds within this range are odd-carbon numbered n-alkanes between n- $C_{25}$  and n- $C_{33}$  (Fig. 5A, C, and D). The prominence of odd-carbon numbered n-alkanes in this range is a feature typical of many modern sediments and is the result of naturally-occurring hydrocarbons derived from degrading plant cuticles. Other compounds in the residual range appear consistent with the variety of microbial- and plant-derived terpenoids that are also typical of modern sediments. In summary, the features of the low concentrations of  $TPH_{(C9-C44)}$  in the SB01-04 (0.0-1.5), SB01-05 (8.0-9.0), and SB01-07 (0.5-1.5) samples are consistent with modern, natural organic matter (NOM), i.e., plant debris.

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<sup>&</sup>lt;sup>13</sup> TPH<sub>(C9-C44)</sub> refers to the total concentration between C9 and C44, and therefore includes the DRO (C10-C28) and ORO (C28+) ranges.

<sup>&</sup>lt;sup>14</sup> The predominance of odd carbon *n*-alkanes results from the decarboxylation of even carbon *n*-alkyl fatty acids that are present in plant waxes. Eglinton, G. and Hamilton, R.J. (1967) Leaf epicuticular waxes. Science 156: 1322-1335.

<sup>&</sup>lt;sup>15</sup>Stout, S.A. and Uhler, A.D. (2003) Distinguishing "background" hydrocarbons from contamination using chemical fingerprinting. *Environ. Claims. J.*, **15(2)**: 241-259.

In addition, the two sediment samples from above the clay liner [SB01-07 (0.5-1.5) and SB01-04 (0.0-1.5)] each also appear to contain a trace amount of an asymmetrical UCM spanning the diesel and residual ranges (Fig. 5A and D) that suggests they each also contain a trace of petroleum.<sup>2</sup> [There is no such UCM evident in the SB01-05 (8.0-9.0) sample (Fig. 5C).] The presence of a trace amount of broadboiling petroleum in sediment above the clay liner is supported by the PAH results discussed below (see discussion of Fig. 8A). Notably, this petroleum present is <u>not</u> diesel fuel (which is narrower boiling) but is more consistent with the mixed petroleum typical of urban runoff.<sup>16</sup> Collectively, these features indicate the two canal sediment samples from Area 1 appear to contain a mixture of NOM with a trace amount of urban runoff (Table 2C). Perhaps not surprisingly, only NOM is evident in the deeper soil sample collected from below the clay liner [SB01-05 (8.0-9.0), Fig. 5C and Table 2C].

*Area 2: TPH and Chromatographic Character:* Two samples from two borings from Area 2 were included in this study; one sediment and one soil from different locations (Fig. 1; Table 1). The TPH<sub>(C9-C44)</sub> concentration in the sediment from SB02-05 (0.5-1.5) was 549 ppm *versus* only 44 ppm in the soil from SB02-09 (4.5-5.5) (Table 2A).

The GC/FID fingerprints for the two Area 2 samples studied are shown in Figure 6. The sediment collected above the liner exhibits a long broad, asymmetrical UCM that spans the diesel and residual ranges (Fig. 6A). Resolved compounds (peaks) atop the UCM include numerous alkylated naphthalenes and isoprenoids, along with  $C_{25}$ + odd-carbon n-alkanes and terpenoids. The presence of this petroleum – along with combustion-derived (pyrogenic) PAHs as supported by the PAH results discussed below – indicates **the SB02-05 (0.5-1.5) soil sample contains a mixture of NOM and urban runoff** (Table 2C). Trace amounts (lower concentrations) of the same type of urban runoff were evident in the canal sediment samples from Area 1 described above [i.e., SB01-04 (0.0-1.0) and SB01-07 (0.5-1.5); Fig. 5A and D]. Again, perhaps not surprisingly, **only NOM is evident in the deeper soil sample collected from below the clay liner** [SB02-09 (4.5-5.5), Fig. 6B and Table 2C].

As was also observed in the Area 1, it would appear that the **sediments above the clay liner appear to be impacted by urban runoff while soils below the clay liner are not**.

*Area 3: TPH and Chromatographic Character:* Four samples from Area 3 were included in this study; two sediments and two soils, all from different locations (Table 1 and Fig. 1). The TPH<sub>(C9-C44)</sub> concentrations in the sediments ranged from 165 ppm [(SB03-10 (0.5-1.5)] to 2730 ppm [SB03-06 (0.0-1.0); Table 2A]. Both soils studied contained the virtually identical concentrations of 235 and 236 ppm TPH<sub>(C9-C44)</sub> [SB03-07 4.5-5.5) and SB03-08 (3.0-4.00); Table 2A].

The GC/FID fingerprints for the four Area 3 samples studied are shown in Figure 7. Three of the four samples exhibit symmetrical UCM humps that span the diesel range (Fig. 7A-C). Varying amounts of alkyl-naphthalenes and isoprenoids also are evident in each sample. As described above, these features indicate that the sediment from SB03-06 (0.0-1.0) and soils from SB03-07 (4.5-5.5) and SB03-08 (3.0-4.0) all contain weathered diesel fuel, the highest concentration (2730 ppm  $TPH_{(C9-C44)}$ ) occurring in the SB03-06 (0.0-1.0) sediment sample. Lesser amounts of  $C_{25}$ + odd-carbon n-alkanes and terpenoids are also evident indicating each sample (Fig. 7) indicating that each sample also contains some NOM.

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<sup>&</sup>lt;sup>16</sup> Stout, S.A., Uhler, A.D., and Emsbo-Mattingly, S.D. (2004) Comparative evaluation of background anthropogenic hydrocarbons in surficial sediments from nine urban waterways. *Environ. Sci. Technol.*, **38(11)**: 2987-2994.

The sediment sample from SB03-10 (0.5-1.5) also contains NOM, but the UCM hump in this sample appears distinct, as it spans only the latter "half" of the diesel range (Fig. 7D). Severe evaporation of diesel fuel will yield a UCM with this profile. Therefore, the distinct appearance of this sample's fingerprint indicates that the trace concentration of diesel fuel present in the SB03-10 (0.5-1.5) sediment is simply more highly evaporated than the weathered diesel fuel present in the other three samples from Area 3.

In Areas 1 and 2 the sediments collected above the canal's clay liner had each contained an urban runoff component (see above; Table 2C). An urban runoff component may also be present in the sediments from Area 3; however, in these sediments the presence of weathered diesel fuel likely tends to "mask" any obvious impact of urban runoff in the GC/FID fingerprints. The presence of trace amounts of combustion-derived (pyrogenic) PAHs in the SB03-06 (0.0-1.0) sediment, however, suggests some urban runoff is also present (see PAH results below).

*Decalins, PAHs and Sulfur-Containing Aromatics:* The scope of this study warranted that only three samples from the Canal be analyzed for these compounds. The samples from each Area that had contained the highest concentrations of SVOCs based upon the Test America Method 8270 results) were selected for detailed fingerprinting. All three were sediment samples collected above the Canal's clay liner, *viz.* SB01-07 (0.5-1.5), SB02-05 (0.5-1.5), and SB03-06 (0.0-1.0).<sup>17</sup>

Figure 8 shows the histograms showing the concentrations and distributions of decalins, PAHs and sulfurcontaining aromatics in the selected samples (Fig. 8A-C). For ease of comparison, the histogram for one of the diesel-composed LPHs is included (Fig. 8D reproduced from Fig. 4A).

The two sediment samples from Area 1 and 2 contained 5.04 and 36 ppm of TPAH51 (Table 2A).<sup>5</sup> Despite these varying concentrations the distribution (fingerprint) of these two samples' PAHs are remarkably similar (Fig. 8A-B). Both samples contained a full suite of lower and higher molecular weight PAHs (LPAH and HPAH). Most homologues exhibit a dominance of PAHs containing 1 to 3 alkyl groups (e.g., N1 or PA1) over the corresponding non-alkylated, Priority Pollutant PAHs (e.g., N0 or P0), as is typical of petroleum-derived PAHs.<sup>18</sup> The presence of both LPAH and HPAH clearly indicates, however, that the petroleum present in these sediment samples is broader boiling than diesel fuel (which overwhelmingly contains LPAHs; Fig. 8D). As described above, this broad-boiling petroleum is more consistent with the mixed petroleum typical of urban runoff.<sup>16</sup>

Notably, however, both sediments contain an excess of high molecular weight Priority Pollutant PAHs that are atypical of petroleum (see dark blue bars to the right of Fig. 8A-B). These HPAHs are typical of combustion-derived (pyrogenic) PAHs formed from the incomplete combustion of organic matter (e.g., exhaust soot) and are common components of urban runoff. The apparent mixture of broad-boiling petrogenic PAHs and pyrogenic HPAHs indicates (and supports the GC/FID fingerprint results) that the SB01-07 (0.5-1.5) and SB02-05 (0.5-1.5) sediments are impacted by urban runoff. The higher concentration of TPH and PAH in the SB02-05 (0.5-1.5) sample simply speaks to a higher input of urban runoff in this sample (Area 2?) than in the SB01-07 (0.5-1.5) sample (Area 1?).

<sup>18</sup> Boehm, P.D. (2006) Polycyclic aromatic hydrocarbons. In: Environmental Forensics, Contaminant Specific Guide. R.D. Morrison and B.L. Murphy, Eds., Academic Press, New York, pp. 314-337.

<sup>&</sup>lt;sup>17</sup> Test America data indicated the total Priority Pollutant PAHs in these samples were 4.4, 4.1 and 5.0 ppm, respectively.

The sediment sample from Area 3 contained 43 ppm TPAH51(Table 2A) that was dominated by LPAHs (Fig. 8C). These LPAHs are reasonably attributable to the dominant weathered diesel fuel component recognized in this sample (e.g., Fig. 7A). As such, it is not surprising its histogram resembles the diesel-composed LPHs (Fig. 8C-D). This sediment, however, also contains HPAHs, including the Priority Pollutant HPAHs, which are not attributable to weathered diesel fuel. Instead these HPAHs indicate that, in addition to the dominant, weathered diesel fuel component, the SB03-06 (0.0-1.0) sediment also contains an urban runoff component (as had exclusively occurred in the SB01-07 (0.5-1.5) and SB02-05 (0.5-1.5) sediments described above).

Comparison of On-Site and Off-Site Diesel Fuel: The detailed PAH data provide an opportunity to compare the specific type of diesel fuels represented by the on-site LPHs *versus* the diesel fuel component found in the SB03-06 (0.0-1.0) sediment. However, because the sediment samples also contained an urban runoff component, the issue of mixing confounds a direct comparison.

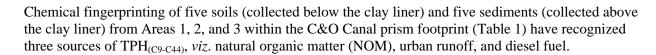
Nonetheless, Figure 9 shows cross-plots of two sets of diagnostic ratios that can reflect differences among distillate fuels. Fig. 9A shows the ratios of C2- and C3-dibenzothiophenes to C2- and C3-phenanthrenes/ anthracenes. Both ratios (DBT2/PA2 and DBT3/PA3) will increase with sulfur content. As such (given the sulfur results described above), it is not surprising that the four LPHs west of the former roundhouse exhibit higher ratios than the MW-70 LPH east of the former roundhouse (Table 2B). The two Canal sediments containing only urban runoff contained comparably low, relative abundances of sulfur (Table 2B and Fig. 9A).

The SB03-06 (0.0-1.0) sediment from Area 3 was shown to contain a mixture of diesel fuel with urban runoff (see above; Table 2C). Because the diesel fuel component was weathered, it is not reasonably attributable to the unweathered, recent ULSD that is prominent in the MW-70 LPH east of the former roundhouse. However, the intermediate ratios for this sediment suggest it is possible that a mixture of historic, high sulfur diesel (represented by the LPHs west of the former roundhouse) with urban runoff could produce intermediate DBT2/PA2 and DBT3/PA3 ratios observed for the SB03-06 (0.0-1.0) sediment (Fig. 9A). The same intermediate result is found upon comparison of the methyl-phenanthrene ratios (MPI1 and MPI2) shown in Figure 9B. As such, a contribution of historic diesel fuel from the Yard to this Area 3 sediment cannot be confirmed or ruled out.

#### **Conclusions**

Chemical fingerprinting analysis of LPHs from four on-site monitoring wells west of the former roundhouse (MW-56, MW-55, MW-37, and MW-49) and one on-site monitoring well east of the former roundhouse (MW-70) allow for the following conclusions:

- (1) All five LPHs studied are comprised exclusively of middle distillate fuel, e.g., diesel fuel #2.
- (2) The four LPHs west of the former roundhouse are each significantly, but comparably, weathered, whereas the LPH east of the former roundhouse shows little to no evidence of weathering.
- (3) The LPHs west of the former roundhouse appear fairly homogeneous and typical of historic, high sulfur diesel fuels. However, the prominence of decalins and markedly lower sulfur content of the LPH sample from MW-70 indicate it is more typical of modern (hydrotreated and lower sulfur) diesel fuel.



- (4) Varying amounts of NOM are pervasive in the soils and sediments from the Canal, logically owing to the ubiquitous occurrence of plant debris.
- (5) Urban runoff has variably-impacted sediments collected above the Canal's clay liner in all three Areas, contributing up to 549 ppm TPH<sub>(C9-C44)</sub>. Urban runoff has not impacted soils below the Canal's clay liner.
- (6) Diesel fuel has impacted some soil below the Canal's clay liner in Area 1 (1270 ppm TPH<sub>(C9-C44)</sub>) and Area 3 (235 and 236 ppm TPH<sub>(C9-C44)</sub>) and sediments above the Canal's clay liner in Area 3 (2730 ppm TPH<sub>(C9-C44)</sub>).

The available data cannot confirm or rule out the possible contribution of historic diesel fuel from the Yard to Areas 1 or 3.

Please let me know if you have any questions on the data or content of this letter.

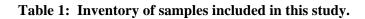
Sincerely,

Scott A. Stout, Ph.D., P.G.

Sr. Consulting Geochemist

Attachments:

Table 2 column header definitions Chain of custody documents GC/FID Chromatograms Tabulated TPH, alkanes, PAH and sulfur results



Alpha Lab ID	Location	Matrix*	<b>Date Collected</b>
1310009-01	on-site	LPH	09/12/2013
1310009-02	on-site	LPH	09/12/2013
1310009-03	on-site	LPH	09/12/2013
1310009-04	on-site	LPH	09/12/2013
1310009-05	on-site	LPH	09/16/2013
1309010-01	Area 1	Sediment	08/19/2013
1309010-02	Area 1	Soil	08/19/2013
1309010-03	Area 1	Soil	08/19/2013
1309010-04	Area 1	Sediment	08/20/2013
1309010-05	Area 2	Sediment	08/20/2013
1309010-06	Area 2	Soil	08/21/2013
1309010-07	Area 3	Sediment	08/22/2013
1309010-08	Area 3	Soil	08/22/2013
1309010-09	Area 3	Soil	08/22/2013
	1310009-01 1310009-02 1310009-03 1310009-04 1310009-05 1309010-01 1309010-02 1309010-03 1309010-04 1309010-05 1309010-06 1309010-07 1309010-08	1310009-01 on-site 1310009-02 on-site 1310009-03 on-site 1310009-04 on-site 1310009-05 on-site 1310009-05 Area 1 1309010-03 Area 1 1309010-04 Area 1 1309010-05 Area 2 1309010-06 Area 2 1309010-07 Area 3 1309010-08 Area 3	ID         LPH           1310009-01         on-site         LPH           1310009-02         on-site         LPH           1310009-03         on-site         LPH           1310009-04         on-site         LPH           1310009-05         on-site         LPH           1309010-01         Area 1         Sediment           1309010-02         Area 1         Soil           1309010-03         Area 1         Sediment           1309010-04         Area 1         Sediment           1309010-05         Area 2         Sediment           1309010-06         Area 2         Soil           1309010-08         Area 3         Sediment           1309010-08         Area 3         Soil

Area 3

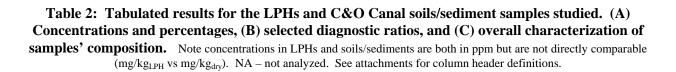
Sediment

08/22/2013

1309010-10

SB03-10 (0.5-1.5)

<sup>\*</sup>sediment and soil respectively describe samples above and below the Canal's clay liner



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Client ID	TPH (ppm)	TPAH51 (ppm)	TPAH16 (ppm)	%TPAH51 as TPAH16	%TPH as TPAH51	%TPH as TPAH16	Total Sulfur (ppm)
MW-56	1,140,000	62,190	3,722	5.99	0.005	0.0003	2640
MW-55	1,100,000	59,723	2,846	4.76	0.005	0.0003	2880
MW-37	1,140,000	51,503	2,534	4.92	0.005	0.0002	2200
MW-49	1,070,000	51,442	2,893	5.62	0.005	0.0003	2970
MW-70	1,040,000	12,501	549	4.39	0.001	0.0001	728
SB01-04 (0.0-1.0)	81	NA	NA	NA	NA	NA	NA
SB01-04 (6.0-7.0)	1260	NA	NA	NA	NA	NA	NA
SB01-05 (8.0-9.0)	23	NA	NA	NA	NA	NA	NA
SB01-07 (0.5-1.5)	78	5.04	1.7	34.25	0.01	0.002	NA
SB02-05 (0.5-1.5)	549	36	9.3	25.78	0.01	0.002	NA
SB02-09 (4.5-5.5)	44	NA	NA	NA	NA	NA	NA
SB03-06 (0.0-1.0)	2730	43	6.6	15.30	0.00	0.0002	NA
SB03-07 (4.5-5.5)	235	NA	NA	NA	NA	NA	NA
SB03-08 (3.0-4.0)	236	NA	NA	NA	NA	NA	NA
SB03-10 (0.5-1.5)	165	NA	NA	NA	NA	NA	NA

B

Client ID	Pr/Ph	nC17/Pr	C17/Pr nC18/Ph	CPI	DBT2/	DBT3/	MPI 1	MPI 2	MPR
Olicht ib	1 1/1 11	11017711	110 10/1 11	5 1	PA2	PA3	IVIPI 1		
MW-56	2.2	0.1	0.0	0.00	0.57	0.82	1.25	1.32	2.79
MW-55	2.2	0.1	0.0	0.00	0.56	0.80	1.29	1.37	2.75
MW-37	1.9	0.1	0.0	0.00	0.52	0.74	1.26	1.34	2.71
MW-49	2.3	0.1	0.0	0.00	0.49	0.70	1.29	1.37	2.49
MW-70	1.7	1.6	2.0	0.00	0.42	0.50	1.54	1.52	1.68
SB01-04 (0.0-1.0)	5.0	0.7	2.6	5.11	NA	NA	NA	NA	NA
SB01-04 (6.0-7.0)	0.0	0.0	0.0	2.36	NA	NA	NA	NA	NA
SB01-05 (8.0-9.0)	0.9	1.3	3.4	6.98	NA	NA	NA	NA	NA
SB01-07 (0.5-1.5)	3.6	0.8	2.0	4.73	0.20	0.23	0.71	0.85	2.00
SB02-05 (0.5-1.5)	6.0	0.6	2.9	3.78	0.20	0.24	0.68	0.84	1.76
SB02-09 (4.5-5.5)	2.7	0.5	2.0	4.78	NA	NA	NA	NA	NA
SB03-06 (0.0-1.0)	1.9	0.0	0.0	2.83	0.39	0.42	0.89	1.06	2.33
SB03-07 (4.5-5.5)	2.1	0.2	0.3	4.08	NA	NA	NA	NA	NA
SB03-08 (3.0-4.0)	1.9	0.0	0.0	3.31	NA	NA	NA	NA	NA
SB03-10 (0.5-1.5)	1.8	0.5	0.8	5.50	NA	NA	NA	NA	NA

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Client ID	Overall Characterization	
MW-56	weathered diesel fuel	
MW-55	weathered diesel fuel	
MW-37	weathered diesel fuel	
MW-49	weathered diesel fuel	
MW-70	unweathered diesel fuel	

SB01-04 (0.0-1.0)	NOM/trace urban runoff
SB01-04 (6.0-7.0)	weathered diesel fuel
SB01-05 (8.0-9.0)	natural organic matter (NOM)
SB01-07 (0.5-1.5)	NOM/trace urban runoff
SB02-05 (0.5-1.5)	urban runoff
SB02-09 (4.5-5.5)	natural organic matter (NOM)
SB03-06 (0.0-1.0)	weathered diesel fuel/trace urban runoff
SB03-07 (4.5-5.5)	trace weathered diesel fuel w/ NOM
SB03-08 (3.0-4.0)	trace weathered diesel fuel
SB03-10 (0.5-1.5)	NOM/trace weathered diesel fuel

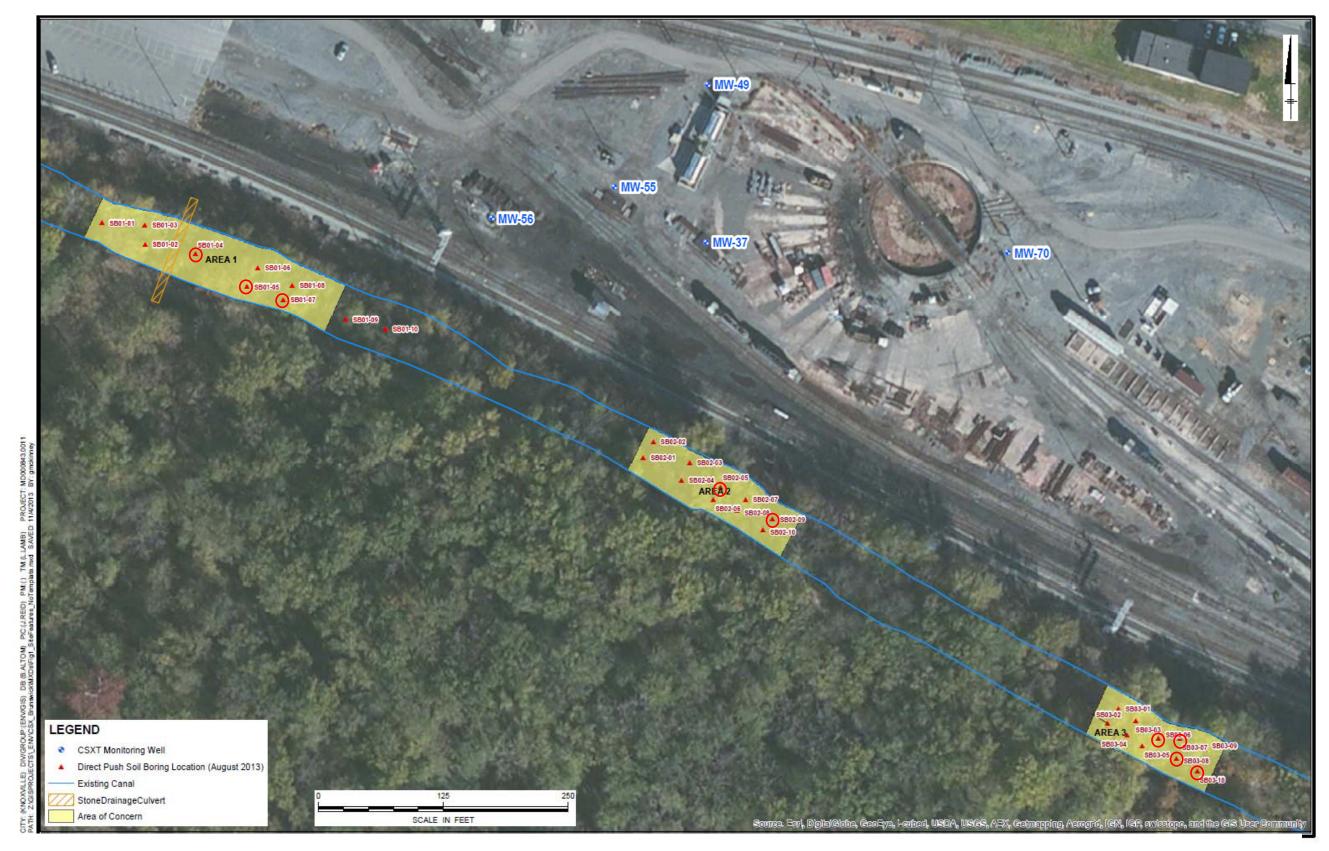


Figure 1: Map showing the locations of the five on-site monitoring wells sampled for LPHs (blue labels) and locations of the 10 off-site soil/sediments (red circles) included in this fingerprinting study. See Table 1 for sample inventory. Preliminary (TestAmerica DRO/ORO and SVOC) data from all 30 off-site borings in the C&O Canal (boundaries in blue) were used in selecting the 10 soils from nine borings for fingerprinting.

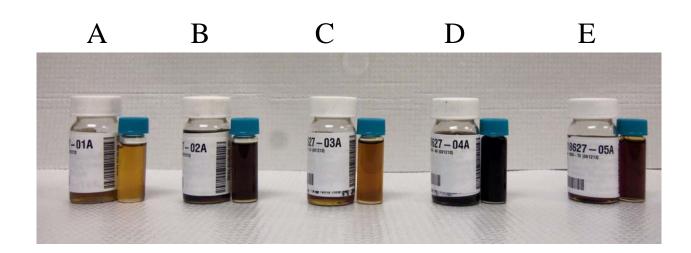


Figure 2: Photograph of the LPHs studied (as received by Alpha): (A) MW-56, (B) MW-55, (C) MW-37, (D) MW-49, and (E) MW-70.

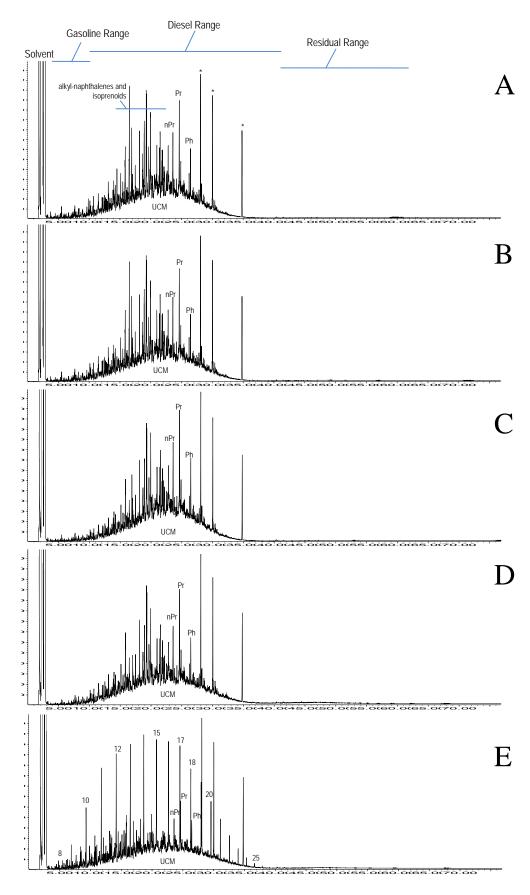


Figure 3: GC/FID chromatograms for the LPHs studied: (A) MW-56, (B) MW-55, (C) MW-49, (D) MW-37, and (E) MW-70. Pr-pristane; Ph-phytane; nPr-norpristane; UCM-unresolved complex mixture; #-n-alkane carbon number. See attached data tables for absolute concentrations of n-alkanes and isoprenoids; \*-internal standards.

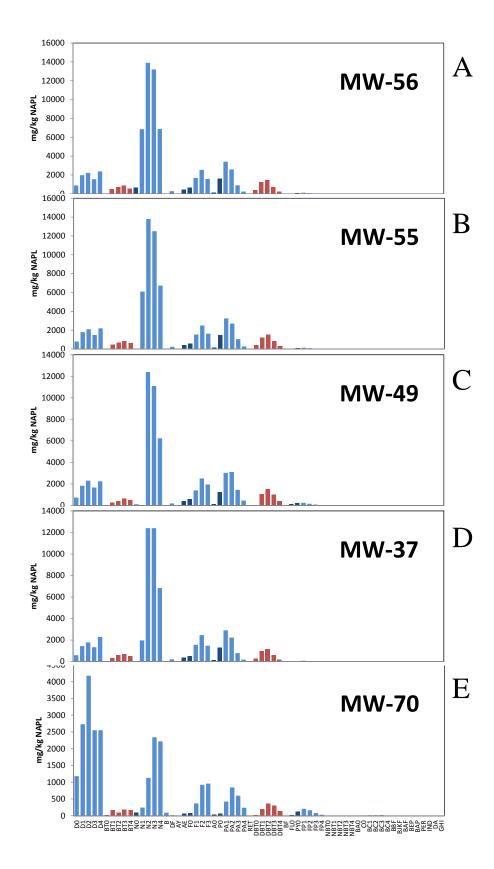


Figure 4: Histograms showing the concentrations of decalins, PAHs, and sulfur-containing aromatics in the LPHs studied: (A) MW-56, (B) MW-55, (C) MW-49, (D) MW-37, and (E) MW-70. See attached data tables for absolute concentrations and compound abbreviations. (Dk. Blue: Priority Pollutant PAHs; Red: sulfur-containing aromatics).

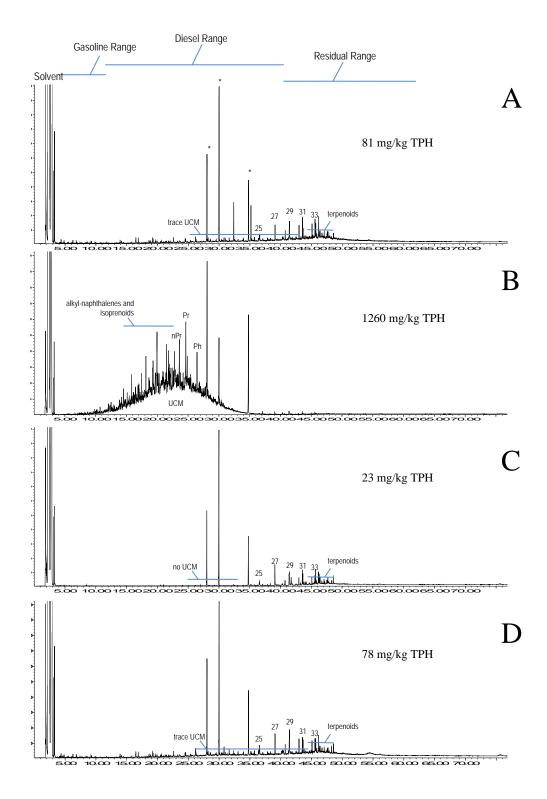


Figure 5: GC/FID chromatograms and TPH (C9-C44) for the soils/sediments from Area 1 of the C&O Canal prism footprint (see Fig. 1): (A) SB01-04 (0.0-1.5), (B) SB01-04 (6.0-7.0), (C) SB01-05 (8.0-9.0), and (D) SB01-07 (0.5-1.5). Pr-pristane; Ph-phytane; nPr-norpristane; UCM-unresolved complex mixture; #-n-alkane carbon number. See attached data tables for absolute concentrations of n-alkanes and isoprenoids; \*-internal standards.

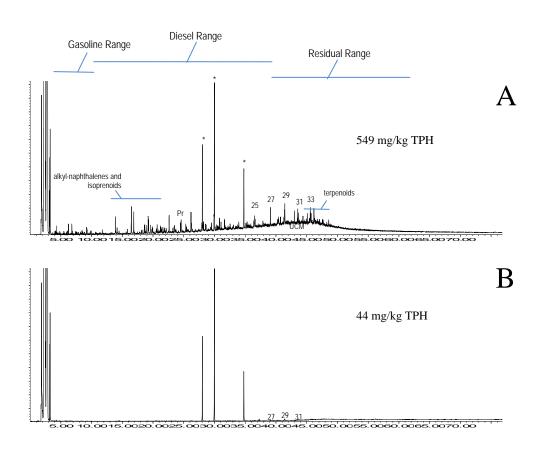


Figure 6: GC/FID chromatograms and TPH (C9-C44) for the soils/sediments from Area 2 of the C&O Canal prism footprint (see Fig. 1): (A) SB02-05 (0.5-1.5) and (B) SB02-09 (4.5-5.5). Pr-pristane; Ph-phytane; nPr-norpristane; UCM-unresolved complex mixture; #-n-alkane carbon number. See attached data tables for absolute concentrations of n-alkanes and isoprenoids; \*-internal standards.

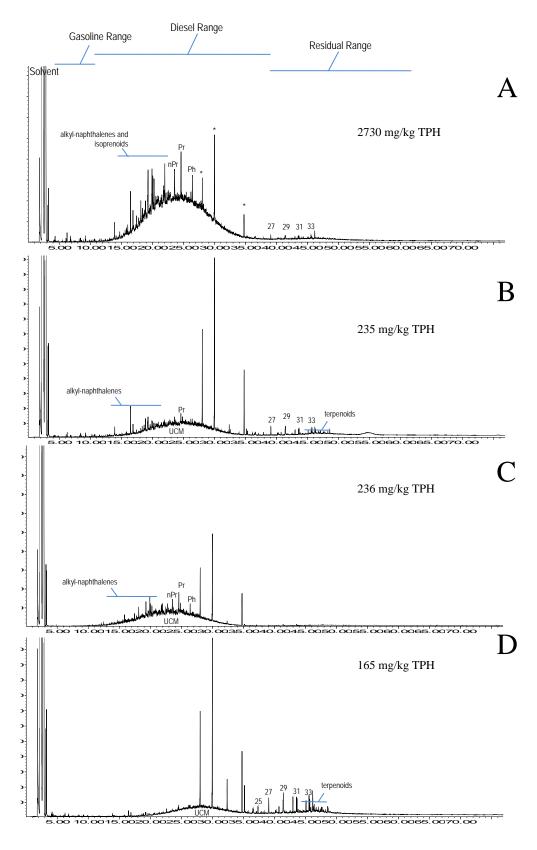


Figure 7: GC/FID chromatograms and TPH (C9-C44) for the soils/sediments from Area 3 of the C&O Canal prism footprint (see Fig. 1): (A) SB03-06 (0.0-1.0), (B) SB03-07 (4.5-5.5), (C) SB03-08 (3.0-4.0), and (D) SB03-10 (0.5-1.5). Pr-pristane; Ph-phytane; nPr-norpristane; UCM-unresolved complex mixture; #-n-alkane carbon number. See attached data tables for absolute concentrations of n-alkanes and isoprenoids; \*-internal standards.

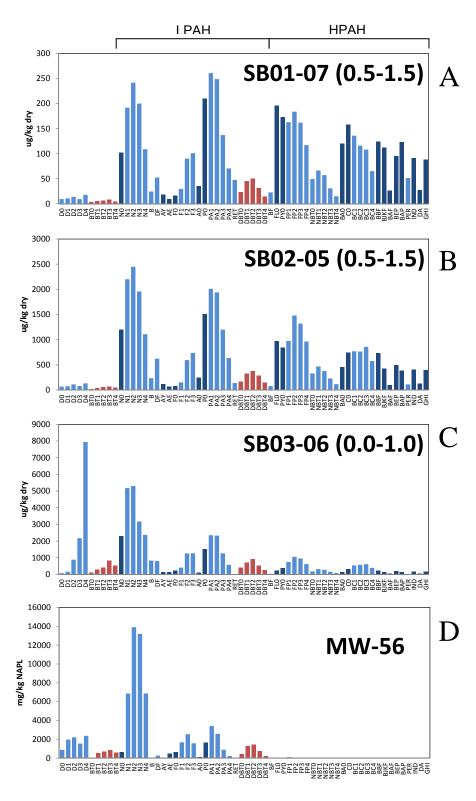
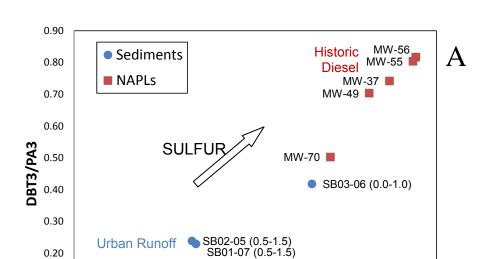


Figure 8: Histograms showing the concentrations of decalins, PAHs, and sulfur-containing aromatics in the C&O Canal sediments studied: (A) SB01-07 (0.5-1.5), (B) SB02-05 (0.5-1.5), and (C) SB03-06 (0.0-1.0). (D) Shows the same for one of the on-site LPHs (MW-56) for comparison. See attached data tables for absolute concentrations and compound abbreviations. (Dk. Blue: Priority Pollutant PAHs; Red: sulfur-containing aromatics).



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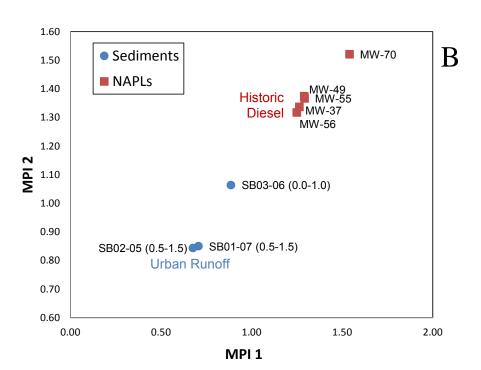
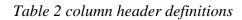


Figure 9: Cross-plots showing diagnostic features of the LPHs and C&O Canal sediments studied based upon (A) relative abundance of sulfur-containing aromatics and (B) distribution of methyl-phenanthrene isomers. Data from Table 2B. (Dk. Blue: Priority Pollutant PAHs; Red: sulfur-containing aromatics).



# **ATTACHMENTS**



Column Header	Definition			
TPH (ppm)	total petroleum hydrocarbons C9-C44			
TPAH51 (ppm)	tal PAHs, sum of 51 analytes from naphthalene to benzo(ghi)perylene on attached data tables			
TPAH16 (ppm)	otal of 16 Priority Pollutant PAHs only			
%TPAH51 as TPAH16	percentage of total PAHs (51) that are Priority Pollutant PAHs (16)			
%TPH as TPAH51	percentage of TPH that occurs as TPAH51			
%TPH as TPAH16	percentage of TPH that occurs as TPAH16			
nC17/Pr	n-hexadecane/pristane			
nC18/Ph	n-octadecane/phytane			
CPI	Carbon Preference Index per Stout et al. (2002)			
DBT2/PA2	C2-dibenzothiophenes/C2-phenanthrenes & anthracenes			
DBT3/PA3	C3-dibenzothiophenes/C3-phenanthrenes & anthracenes			
MPI 1	methylphenanthrene index 1 per Stout et al. (2002)			
MPI 2	methylphenanthrene index 2 per Stout et al. (2002)			
MPR	methylphenanthrene ratio Stout et al. (2002)			
Stout et al. (2002) Chemical f	Stout et al. (2002) Chemical fingerprinting of Hydrocarbons, In: Introduction to Environmental Forensics, B. Murphy and R. Morrison,			
Eds., Academic Press, New Y	York, p. 135-260.			

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Page 2 of 5

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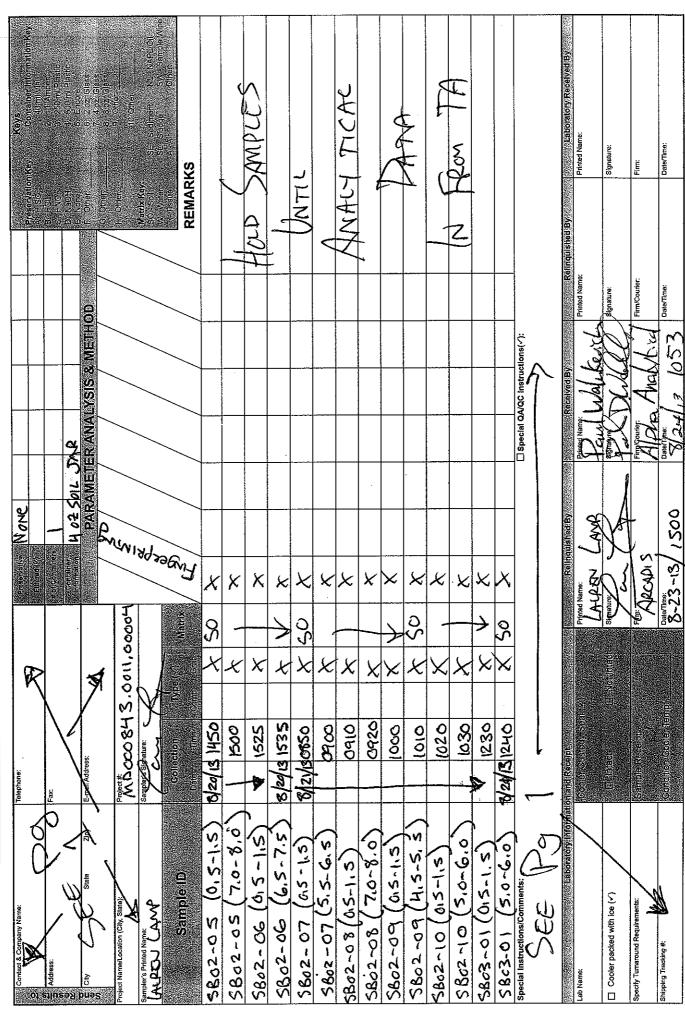
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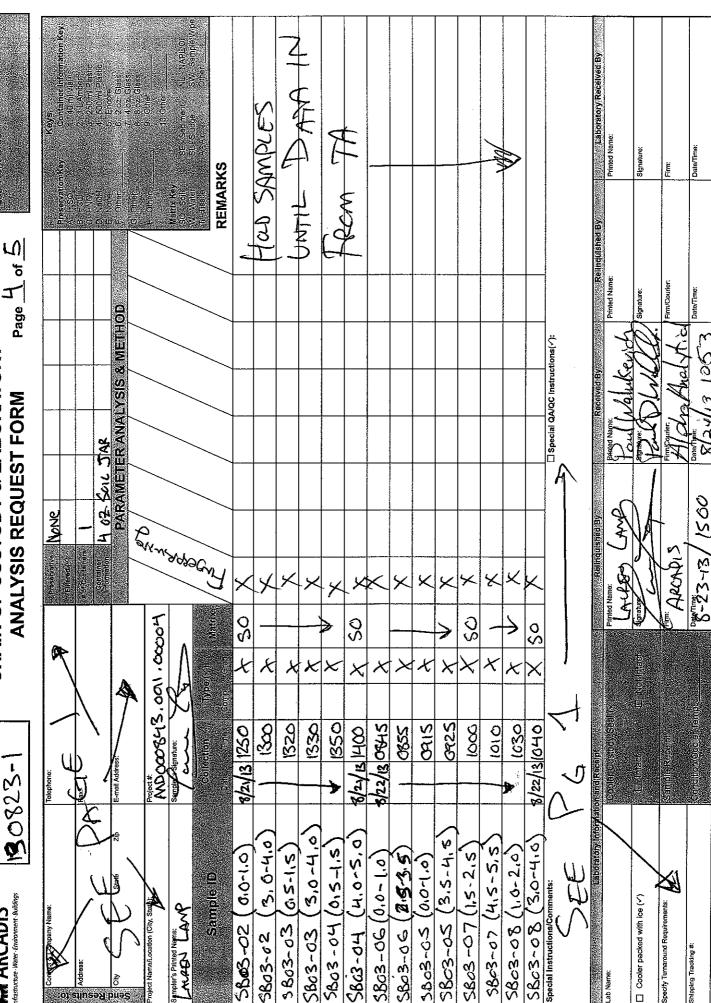
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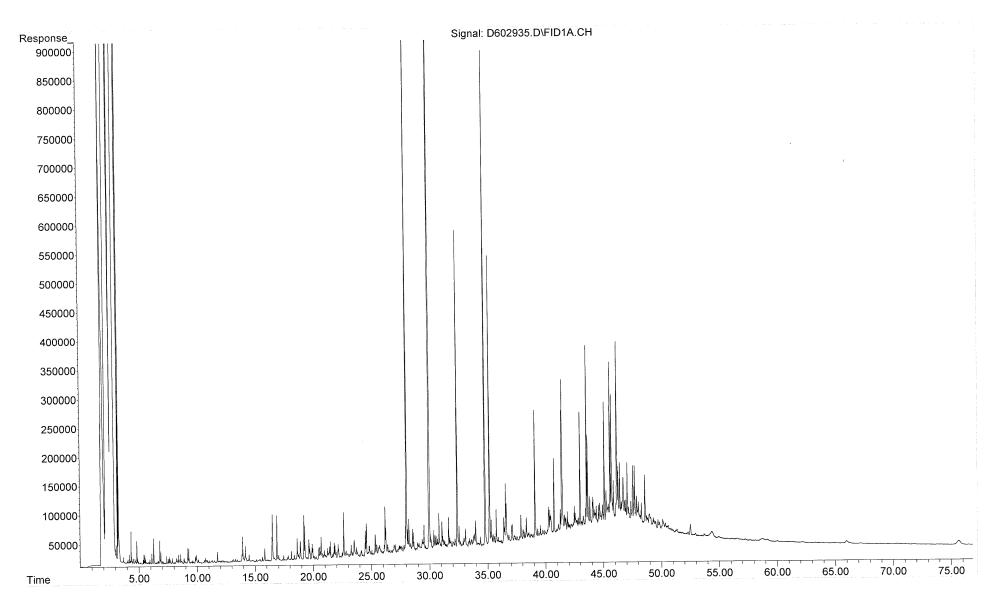
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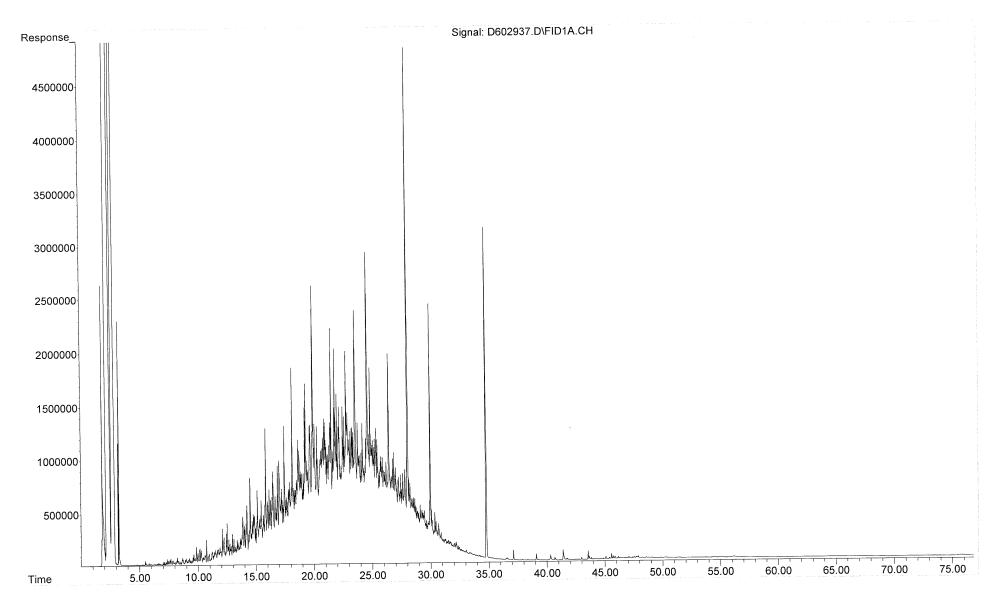
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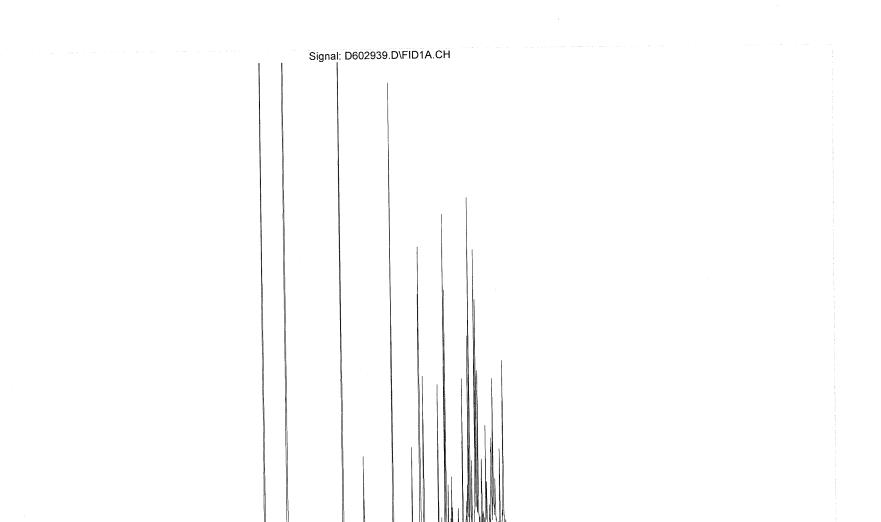
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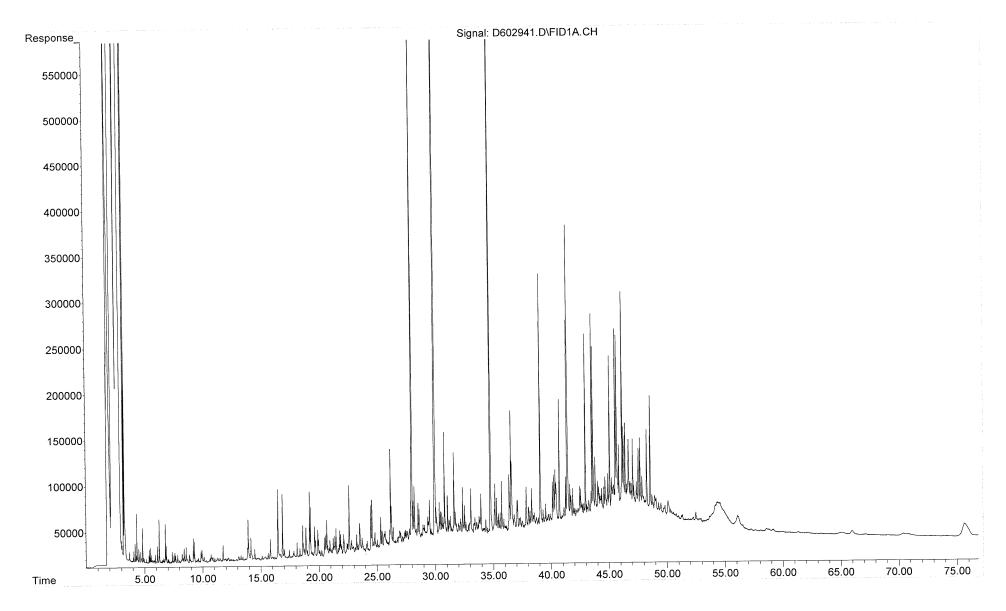
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SB01-07 (0.5-1.5) 1309010-04



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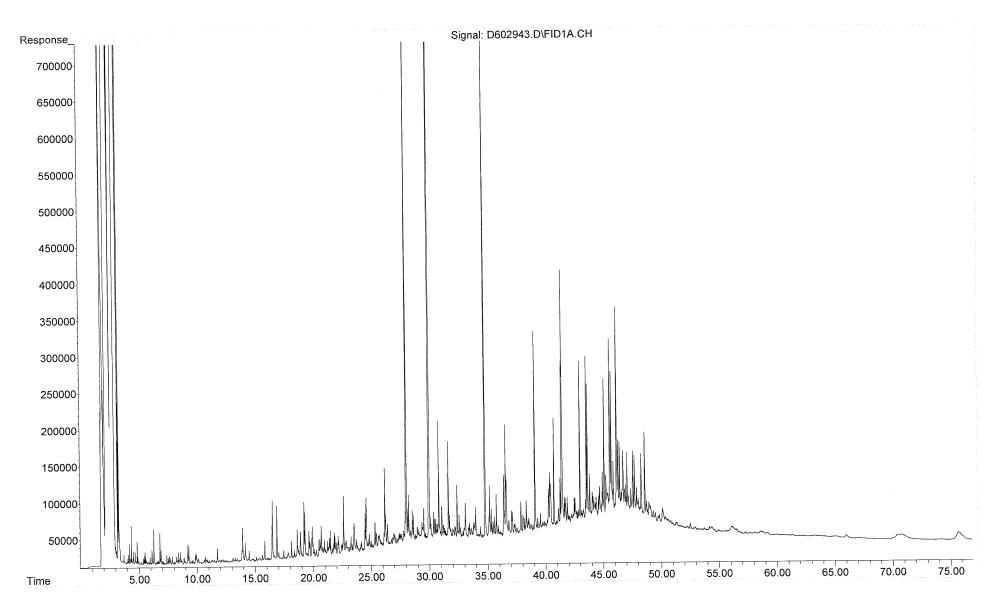
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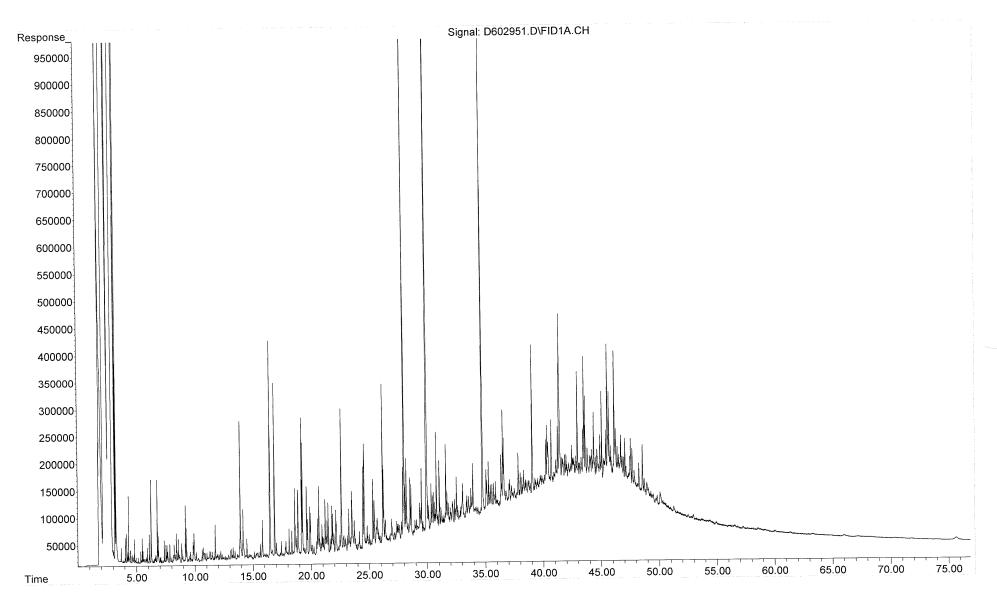
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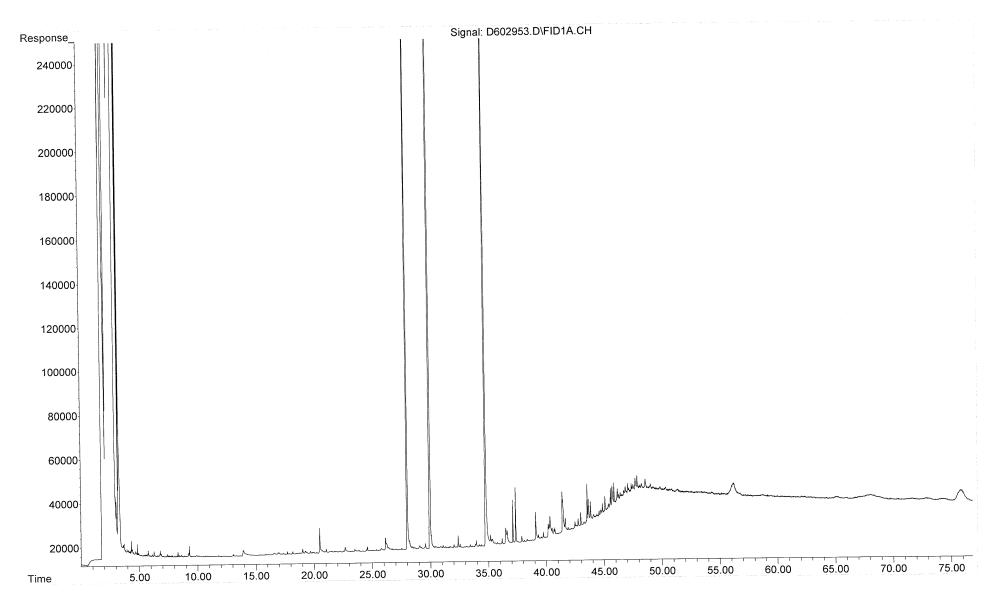
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SB02-09 (4.5-5.5)

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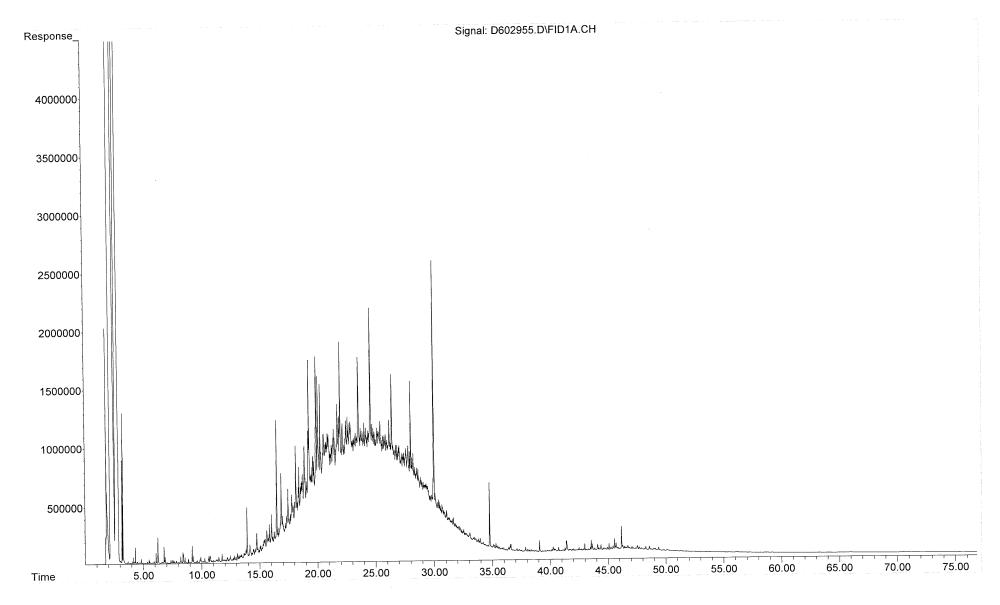
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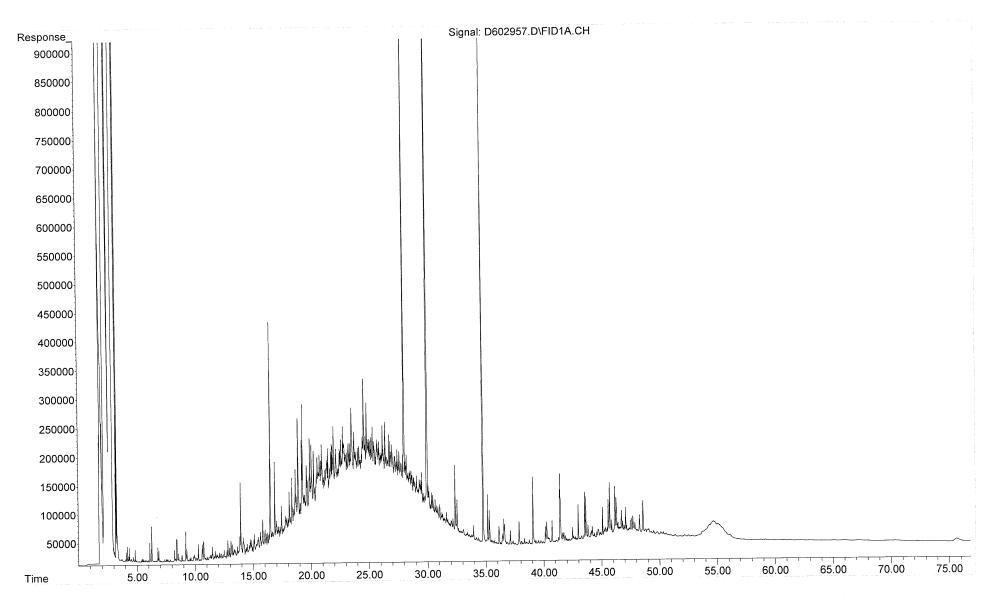
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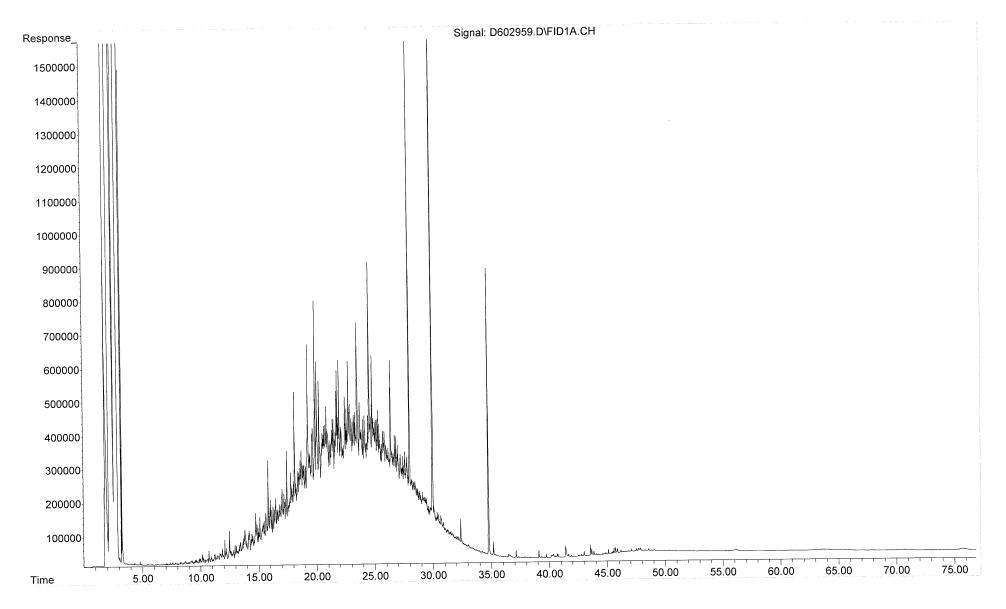
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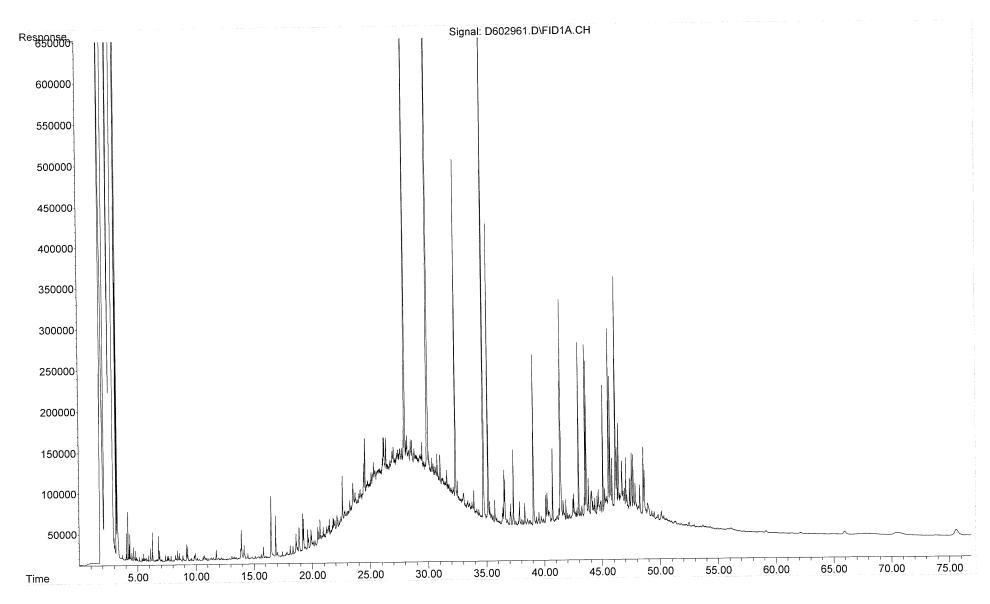
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Sample Name: 1309010-10

Misc Info : 1X Vial Number: 23



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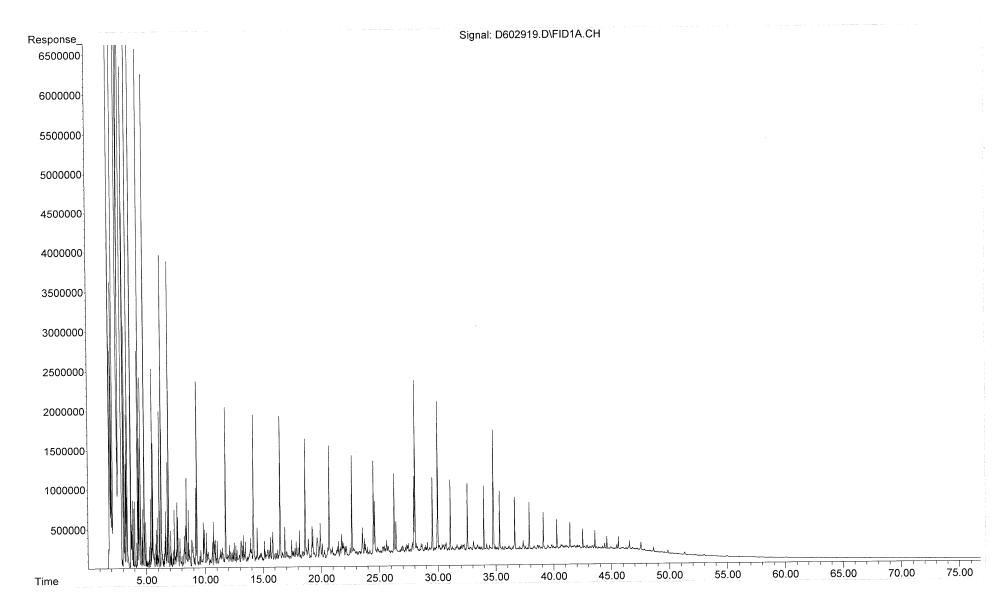
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Instrument : FID6
Sample Name: ANS

Misc Info : 1X WHAS60 10.1mg/mL

Vial Number: 2

North Slope Crude Reference Standard



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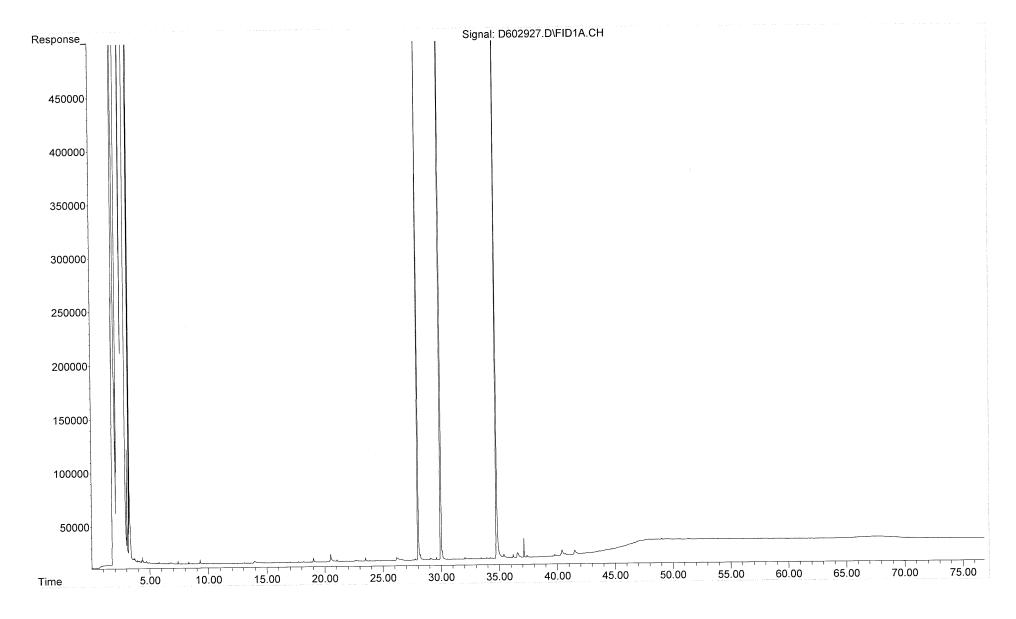
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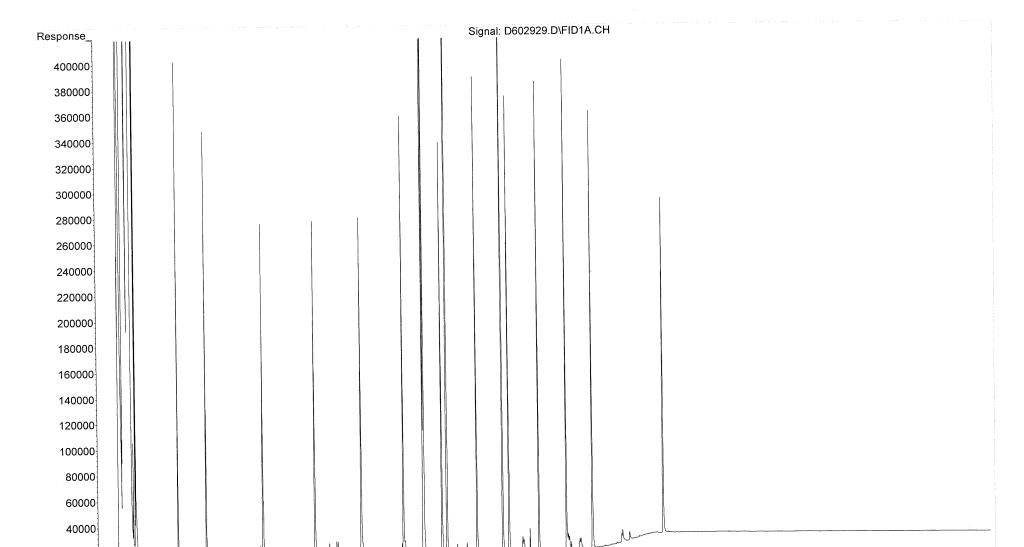
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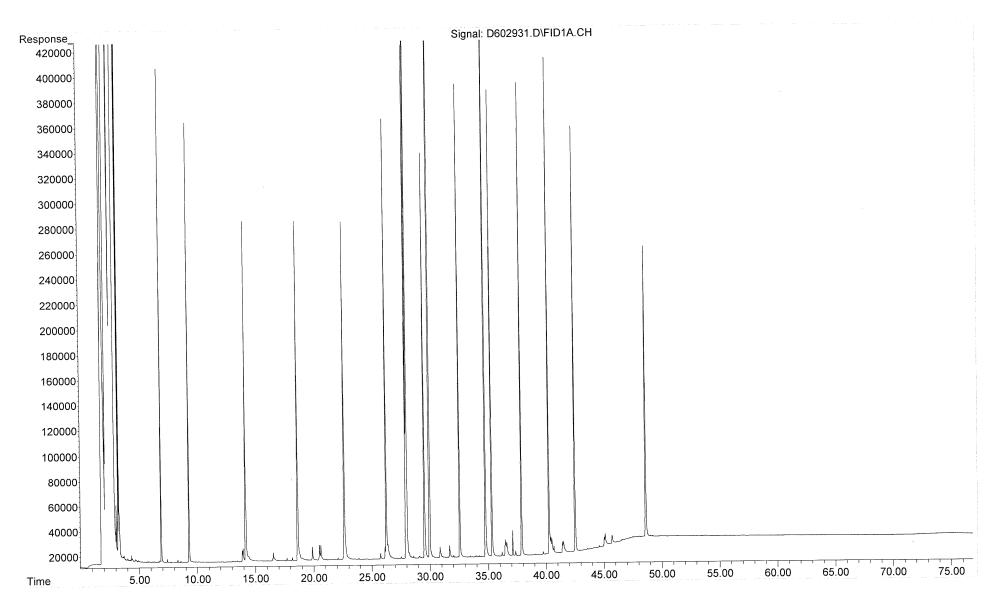
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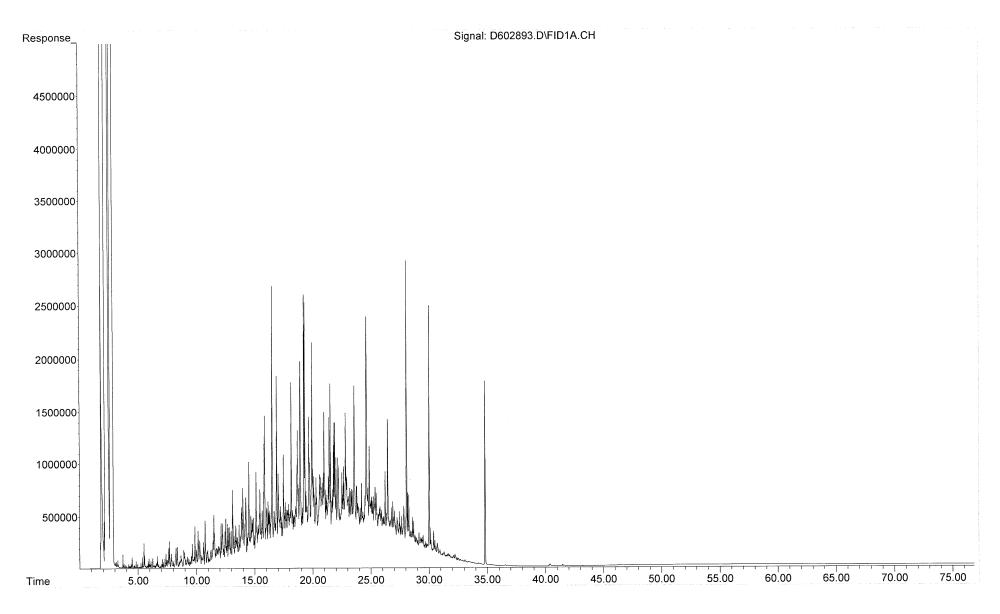
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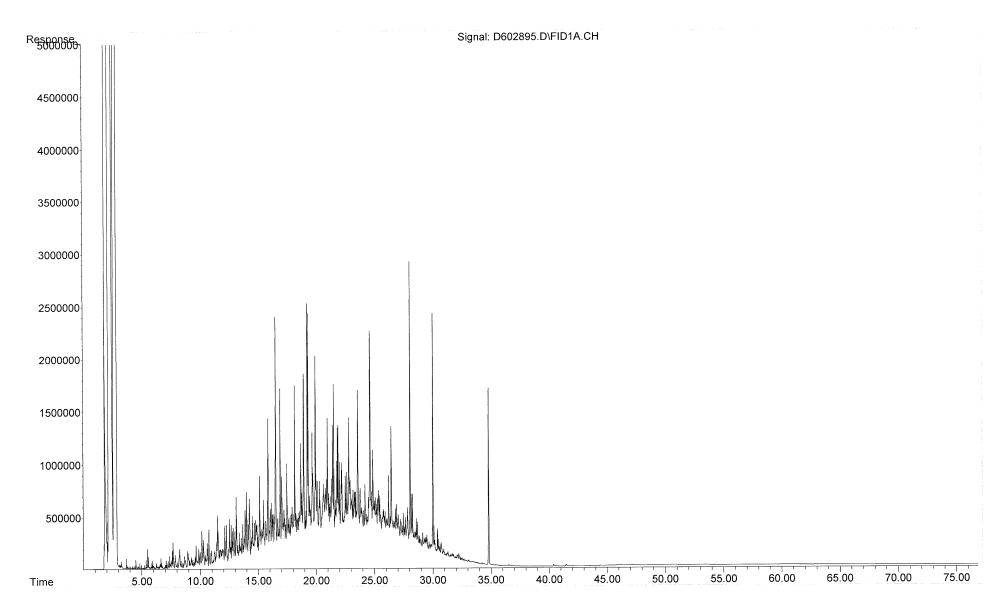
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Operator : FID6:NL Instrument : FID6

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Sample Name: L1318627-02,42 Misc Info : WG640394,WG638546



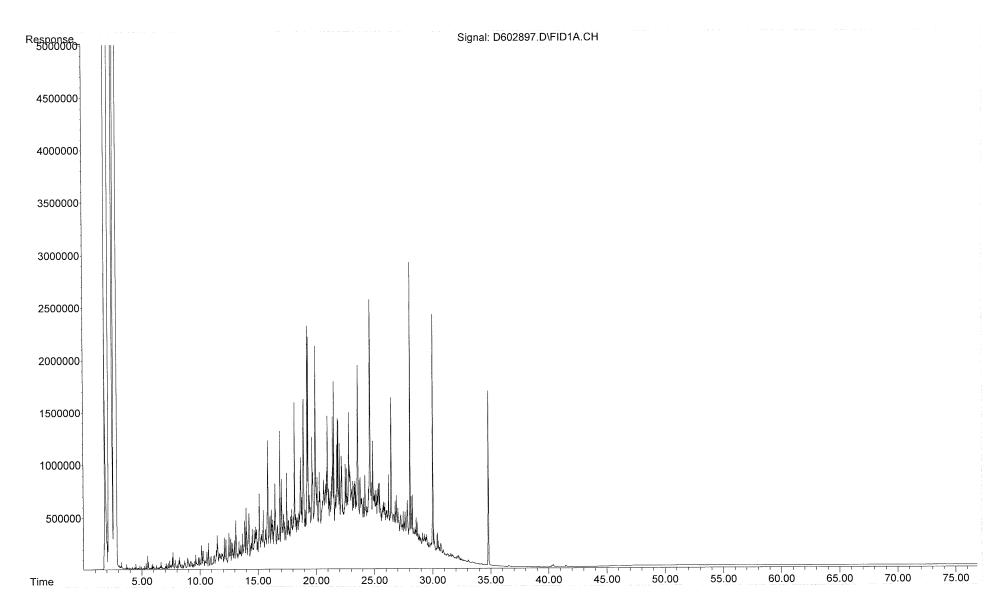
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Operator : FID6:NL Instrument : FID6

Acquired : 25 Sep 2013 4:45 pm using AcqMethod FID6A.M

Sample Name: L1318627-03,42 Misc Info : WG640394,WG638546



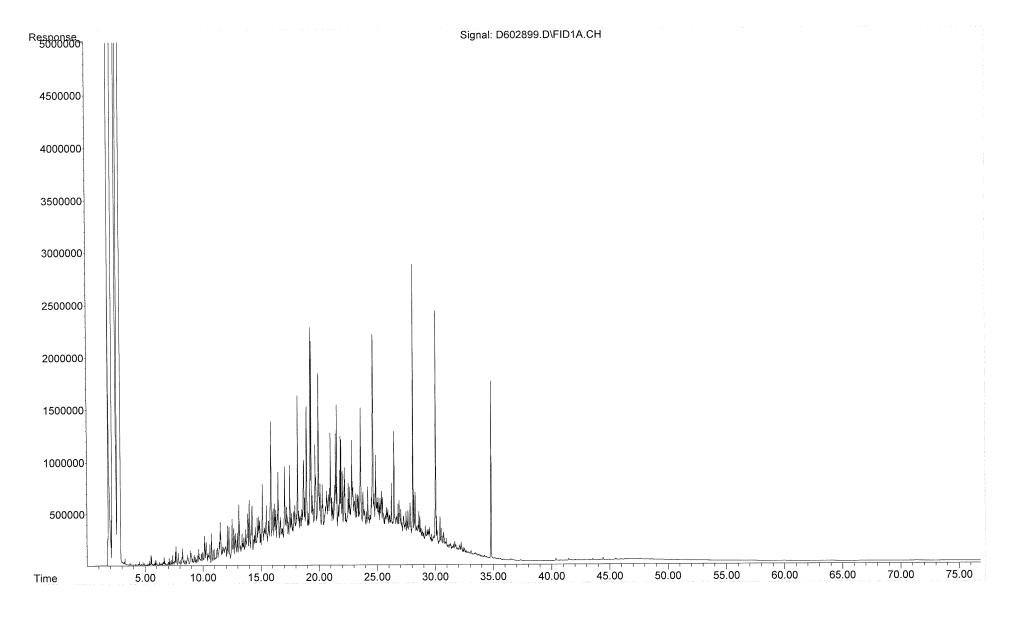
MW-37 (091213) L1318627-03

... FID\D602899.D

Operator : FID6:NL Instrument : FID6

Acquired : 25 Sep 2013 6:14 pm using AcqMethod FID6A.M

Sample Name: L1318627-04,42 Misc Info : WG640394,WG638546



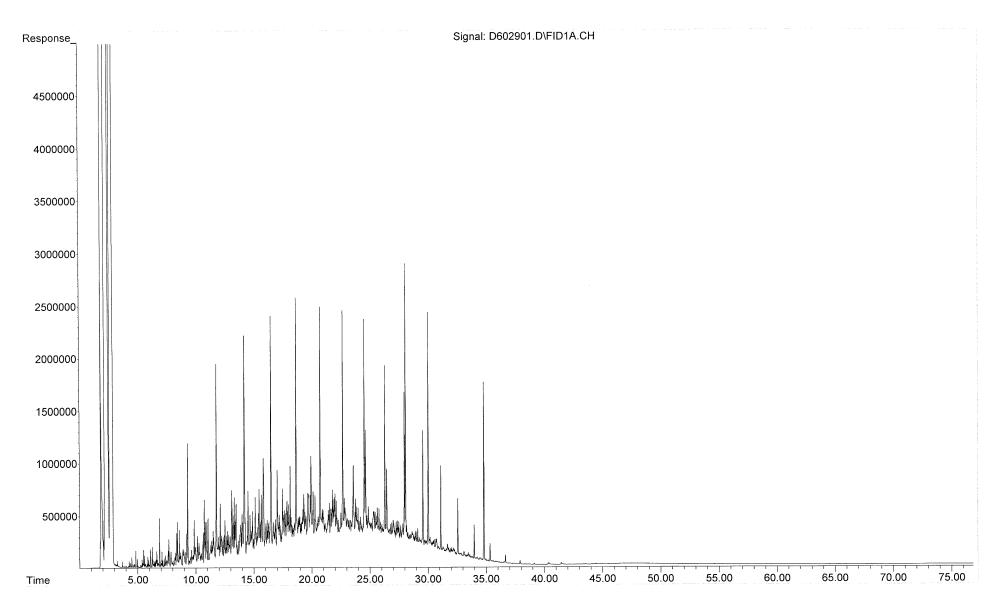
MW-49 (091213) L1318627-04

FID\D602901.D

Operator : FID6:NL Instrument : FID6

Acquired : 25 Sep 2013 7:43 pm using AcqMethod FID6A.M

Sample Name: L1318627-05,42 Misc Info : WG640394,WG638546



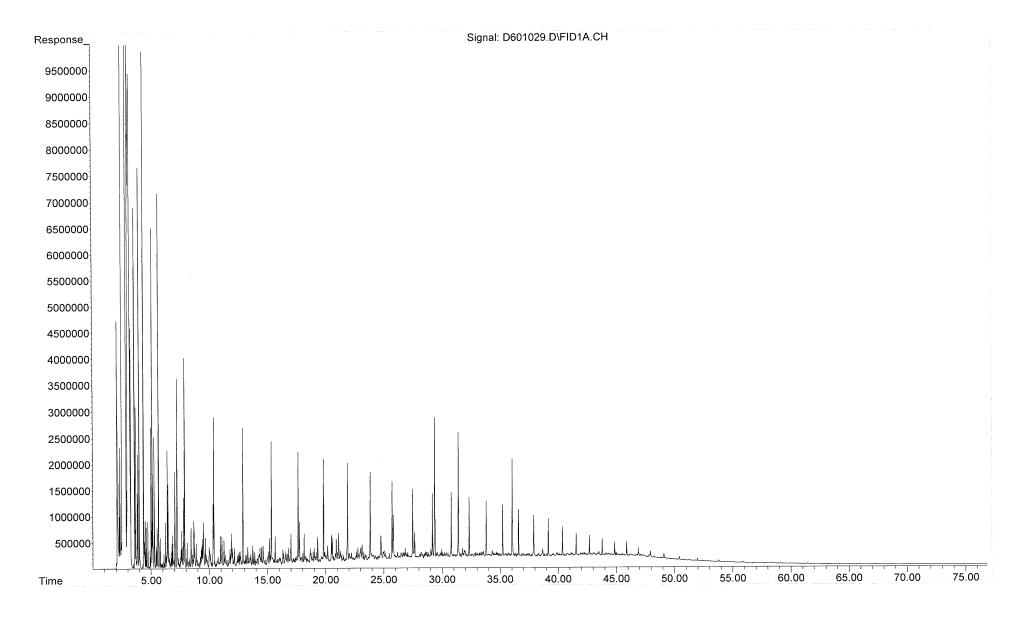
MW-70 (091213) L1318627-05

... FID\HC6043013F Data Files\D601029.D

Operator : DMP
Instrument : FID6

Acquired : 01 May 2013 9:29 am using AcqMethod FID6A.M

Sample Name: TO050913ANC01 Misc Info : 1X WHAR22 North Slope Crude Reference Standard



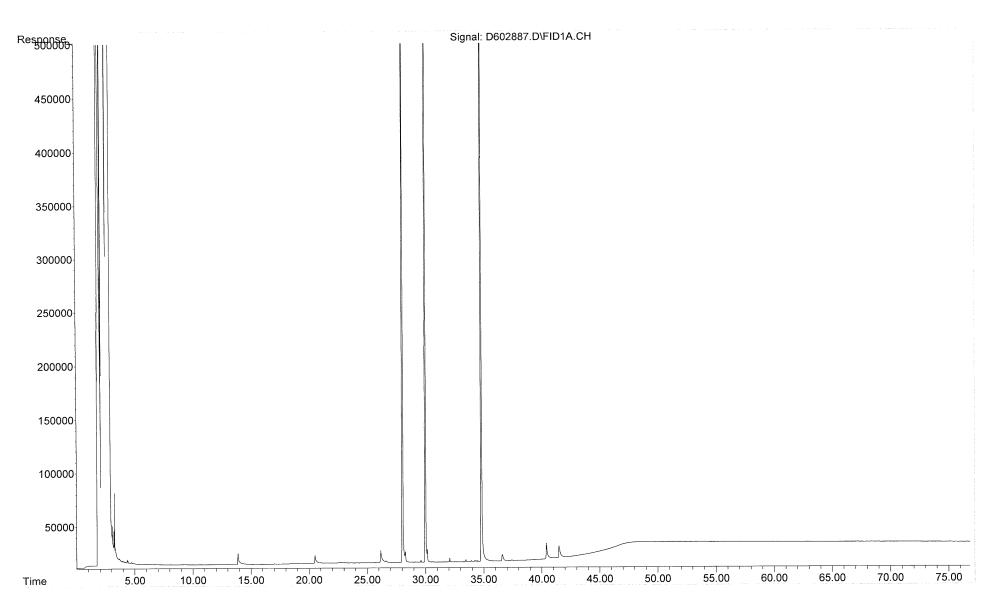
FID\D602887.D

: FID6:NL Operator Instrument : FID6

: 25 Sep 2013 9:18 am using AcqMethod FID6A.M Acquired

Sample Name: WG638546-1,42

Misc Info : WG640394, WG638546



**Method Blank** 

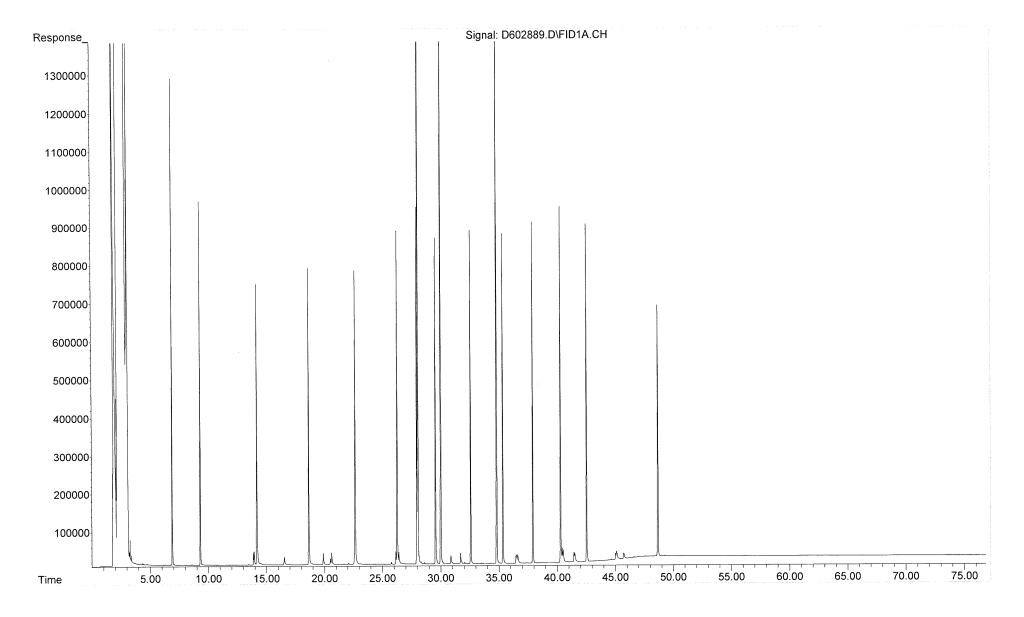
WG638546-1

FID\D602889.D

Operator : FID6:NL Instrument : FID6

Acquired : 25 Sep 2013 10:47 am using AcqMethod FID6A.M

Sample Name: WG638546-2,42 Misc Info : WG640394,WG638546



Lab Control Sample WG638546-2

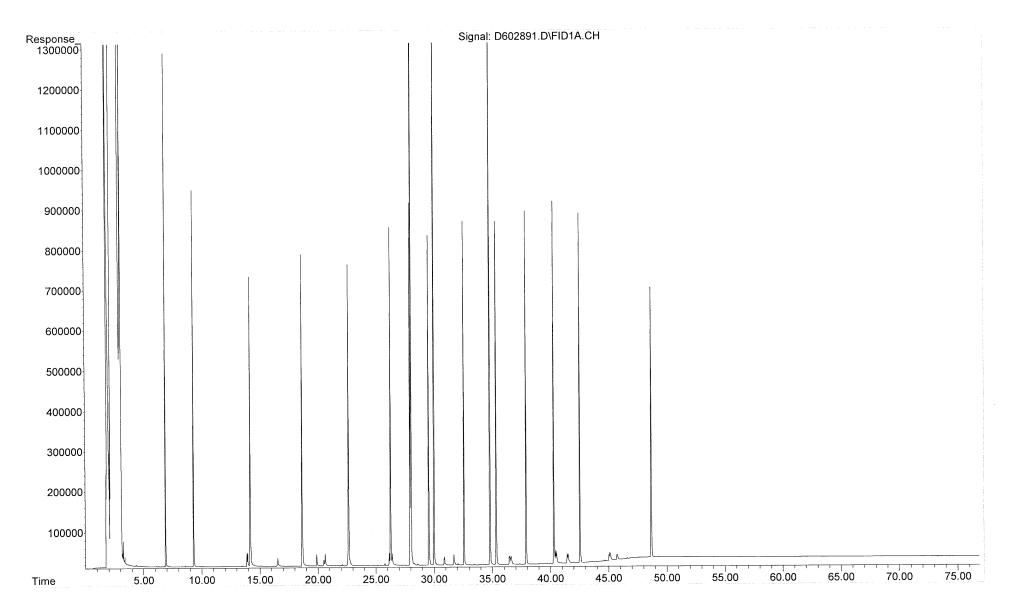
FID\D602891.D

Operator : FID6:NL Instrument : FID6

Acquired : 25 Sep 2013 12:16 pm using AcqMethod FID6A.M

Sample Name: WG638546-3,42 Misc Info : WG640394,WG638546







Client ID Lab ID Matrix Reference Method Batch ID Date Collected Date Received Date Prepped Date Analyzed Sample Size (wet) % Solid File ID Units	Method Blank \$S091813B03 \$HC \$S091813B03 N/A N/A 09/18/2013 10/11/2013 22 2100.00 D603233.D mg/Kg
Units	mg/Kg
Final Volume	2
Dilution	1
Reporting Limit	0.0909

Class	Abbrev	Analytes	Result	SSRL
SHC	C9	n-Nonane (C9)	0.00100 J	0.0909
SHC	C10	n-Decane (C10)	0.00782 J	0.0909
SHC	C11	n-Undecane (C11)	U	0.0909
SHC	C12	n-Dodecane (C12)	U	0.0909
SHC	C13	n-Tridecane (C13)	U	0.0909
SHC	1380	2,6,10 Trimethyldodecane (1380)	U	0.0909
SHC	C14	n-Tetradecane (C14)	U	0.0909
SHC	1470	2,6,10 Trimethyltridecane (1470)	U	0.0909
SHC	C15	n-Pentadecane (C15)	U	0.0909
SHC	C16	n-Hexadecane (C16)	U	0.0909
SHC	1650	Norpristane (1650)	U	0.0909
SHC	C17	n-Heptadecane (C17)	U	0.0909
SHC	Pr	Pristane	U	0.0909
SHC	C18	n-Octadecane (C18)	U	0.0909
SHC	Ph	Phytane	U	0.0909
SHC	C19	n-Nonadecane (C19)	U	0.0909
SHC	C20	n-Eicosane (C20)	0.00445 J	0.0909
SHC	C21	n-Heneicosane (C21)	0.000727 J	0.0909
SHC	C22	n-Docosane (C22)	0.000636 J	0.0909
SHC	C23	n-Tricosane (C23)	0.00145 J	0.0909
SHC	C24	n-Tetracosane (C24)	0.000818 J	0.0909
SHC	C25	n-Pentacosane (C25)	0.00327 J	0.0909
SHC	C26	n-Hexacosane (C26)	0.00127 J	0.0909
SHC	C27	n-Heptacosane (C27)	0.00227 J	0.0909
SHC	C28	n-Octacosane (C28)	0.00336 J	0.0909
SHC	C29	n-Nonacosane (C29)	0.0509 CJ	0.0909
SHC	C30	n-Triacontane (C30)	0.00218 J	0.0909
SHC	C31	n-Hentriacontane (C31)	0.00200 J	0.0909
SHC	C32	n-Dotriacontane (C32)	0.00218 J	0.0909
SHC	C33	n-Tritriacontane (C33)	0.00145 J	0.0909
SHC	C34	n-Tetratriacontane (C34)	0.00118 J	0.0909
SHC	C35	n-Pentatriacontane (C35)	0.00100 J	0.0909
SHC	C36	n-Hexatriacontane (C36)	0.00127 J	0.0909
SHC	C37	n-Heptatriacontane (C37)	U	0.0909
SHC	C38	n-Octatriacontane (C38)	U	0.0909
SHC	C39	n-Nonatriacontane (C39)	U	0.0909
SHC	C40	n-Tetracontane (C40)	U	0.0909
SHC	TSH	Total Saturated Hydrocarbons	0.0893 J	0.0909
SHC	TPH	Total Petroleum Hydrocarbons (C9-C44)	U	3.00

Surrogates (% Recovery) ortho-Terphenyl d50-Tetracosane

98 104



Client ID	Laboratory Control Sample
Lab ID	SS091813LCS02
Matrix	Soil
Reference Method	SHC
Batch ID	SS091813B03
Date Collected	N/A
Date Received	N/A
Date Prepped	09/18/2013
Date Analyzed	10/11/2013
Sample Size (wet)	22
% Solid	100.00
File ID	D603235.D
Units	mg/Kg
Final Volume	2
Dilution	1
Reporting Limit	0.0909

Class	Abbrev	Analytes	Result	SSRL	% Rec	Spike Conc.	Lower Limit	Upper Limit
SHC	C9	n-Nonane (C9)	0.589 S	0.0909	65	0.909	50	130
SHC	C10	n-Decane (C10)	0.714 S	0.0909	79	0.909	50	130
SHC	C12	n-Dodecane (C12)	0.792 S	0.0909	87	0.909	50	130
SHC	C14	n-Tetradecane (C14)	0.784 S	0.0909	86	0.909	50	130
SHC	C16	n-Hexadecane (C16)	0.849 S	0.0909	93	0.909	50	130
SHC	C18	n-Octadecane (C18)	0.901 S	0.0909	99	0.909	50	130
SHC	C19	n-Nonadecane (C19)	0.911 S	0.0909	100	0.909	50	130
SHC	C20	n-Eicosane (C20)	0.893 S	0.0909	98	0.909	50	130
SHC	C22	n-Docosane (C22)	0.884 S	0.0909	97	0.909	50	130
SHC	C24	n-Tetracosane (C24)	0.893 S	0.0909	98	0.909	50	130
SHC	C26	n-Hexacosane (C26)	0.887 S	0.0909	98	0.909	50	130
SHC	C28	n-Octacosane (C28)	0.935 S	0.0909	103	0.909	50	130
SHC	C30	n-Triacontane (C30)	0.898 S	0.0909	99	0.909	50	130
SHC	C36	n-Hexatriacontane (C36)	0.838 S	0.0909	92	0.909	50	130

Surrogates (% Recovery) ortho-Terphenyl d50-Tetracosane

93 101



Client ID	Laboratory Control Sample Dup
Lab ID	SS091813LCSD03
Matrix	Soil
Reference Method	SHC
Batch ID	SS091813B03
Date Collected	N/A
Date Received	N/A
Date Prepped	09/18/2013
Date Analyzed	10/11/2013
Sample Size (wet)	22
% Solid	100.00
File ID	D603237.D
Units	mg/Kg
Final Volume	2
Dilution	1
Reporting Limit	0.0909

Class	Abbrev	Analytes	Result		SSRL	% Rec	Spike Conc.	Lower Limit	Upper Limit	RPD	RPD Limit
SHC	C9	n-Nonane (C9)	0.601	S	0.0909	66	0.909	50	130	2	30
SHC	C10	n-Decane (C10)	0.714	S	0.0909	79	0.909	50	130	0	30
SHC	C12	n-Dodecane (C12)	0.790	S	0.0909	87	0.909	50	130	0	30
SHC	C14	n-Tetradecane (C14)	0.777	S	0.0909	85	0.909	50	130	1	30
SHC	C16	n-Hexadecane (C16)	0.843	S	0.0909	93	0.909	50	130	1	30
SHC	C18	n-Octadecane (C18)	0.892	S	0.0909	98	0.909	50	130	1	30
SHC	C19	n-Nonadecane (C19)	0.902	S	0.0909	99	0.909	50	130	1	30
SHC	C20	n-Eicosane (C20)	0.884	S	0.0909	97	0.909	50	130	1	30
SHC	C22	n-Docosane (C22)	0.875	S	0.0909	96	0.909	50	130	1	30
SHC	C24	n-Tetracosane (C24)	0.884	S	0.0909	97	0.909	50	130	1	30
SHC	C26	n-Hexacosane (C26)	0.877	S	0.0909	96	0.909	50	130	1	30
SHC	C28	n-Octacosane (C28)	0.924	S	0.0909	102	0.909	50	130	1	30
SHC	C30	n-Triacontane (C30)	0.889	S	0.0909	98	0.909	50	130	1	30
SHC	C36	n-Hexatriacontane (C36)	0.828	S	0.0909	91	0.909	50	130	1	30

Surrogates (% Recovery) ortho-Terphenyl d50-Tetracosane

91 99



Client ID	SB01-07 (0.5-1.5)	SB01-07 (0.5-1.5)
Lab ID	1309010-04	1309010-04D
Matrix	Soil	Soil
Reference Method	SHC	SHC
Batch ID	SS091813B03	SS091813B03
Date Collected	08/20/2013	08/20/2013
Date Received	08/24/2013	08/24/2013
Date Prepped	09/18/2013	09/18/2013
Date Analyzed	10/12/2013	10/12/2013
Sample Size (wet)	29.9	29.96
% Solid	82.00	82.00
File ID	D603247.D	D603249.D
Units	mg/Kg	mg/Kg
Final Volume	2	2
Dilution	1	1
Reporting Limit	0.0816	0.0814

	Abbrev	Analytes	Result		SSRL	Result		SSRL	RPD	RPD Limit	
SHC	C9	n-Nonane (C9)	0.0332		0.0816	0.0304		0.0814	9	30	
SHC	C10	n-Decane (C10)	0.0465		0.0816	0.0490		0.0814	5	30	
SHC	C11	n-Undecane (C11)	0.0458	J	0.0816	0.0492	J	0.0814	7	30	
SHC	C12	n-Dodecane (C12)	0.0610	J	0.0816	0.0664	J	0.0814	8	30	
SHC	C13	n-Tridecane (C13)	0.241		0.0816	0.255		0.0814	6	30	
SHC	1380	2,6,10 Trimethyldodecane (1380)	0.0282	J	0.0816	0.0409	J	0.0814	37	30	n
SHC	C14	n-Tetradecane (C14)	0.0643	J	0.0816	0.0755	J	0.0814	16	30	
SHC	1470	2,6,10 Trimethyltridecane (1470)	0.0502	J	0.0816	0.0754	J	0.0814	40	30	n
SHC	C15	n-Pentadecane (C15)	0.0711	J	0.0816	0.0822		0.0814	14	30	
SHC	C16	n-Hexadecane (C16)	0.156		0.0816	0.166		0.0814	6	30	
SHC	1650	Norpristane (1650)	0.0690	J	0.0816	0.105		0.0814	42	30	n
SHC	C17	n-Heptadecane (C17)	0.112		0.0816	0.122		0.0814	9	30	
SHC	Pr	Pristane	0.137		0.0816	0.179		0.0814	26	30	
SHC	C18	n-Octadecane (C18)	0.0738	J	0.0816	0.0680	J	0.0814	8	30	
SHC	Ph	Phytane	0.0377	J	0.0816	0.0580	J	0.0814	43	30	n
SHC	C19	n-Nonadecane (C19)	0.0718	J	0.0816	0.0719	J	0.0814	0	30	
SHC	C20	n-Eicosane (C20)	0.0714	j	0.0816	0.0751	j	0.0814	5	30	
SHC	C21	n-Heneicosane (C21)	0.0910		0.0816	0.101		0.0814	10	30	
SHC	C22	n-Docosane (C22)	0.0620	J	0.0816	0.0652	J	0.0814	5	30	
SHC	C23	n-Tricosane (C23)	0.0802		0.0816	0.0796	j	0.0814	1	30	
SHC	C24	n-Tetracosane (C24)	0.0638	j	0.0816	0.0633	j	0.0814	1	30	
SHC	C25	n-Pentacosane (C25)	0.130		0.0816	0.137		0.0814	6	30	
SHC	C26	n-Hexacosane (C26)	0.120		0.0816	0.131		0.0814	9	30	
SHC	C27	n-Heptacosane (C27)	0.552		0.0816	0.601		0.0814	9	30	
SHC	C28	n-Octacosane (C28)	0.153		0.0816	0.175		0.0814	14	30	
SHC	C29	n-Nonacosane (C29)	0.378	СВ	0.0816	0.436	СВ	0.0814	14	30	
SHC	C30	n-Triacontane (C30)	0.0613	J	0.0816	0.0654	J	0.0814	6	30	
SHC	C31	n-Hentriacontane (C31)	0.381		0.0816	0.416		0.0814	9	30	
SHC	C32	n-Dotriacontane (C32)	0.0536	J	0.0816	0.0692	J	0.0814	25	30	
SHC	C33	n-Tritriacontane (C33)	0.465		0.0816	0.644		0.0814	32	30	n
SHC	C34	n-Tetratriacontane (C34)	0.0309	J	0.0816	0.0310	J	0.0814	0	30	
SHC	C35	n-Pentatriacontane (C35)	0.211		0.0816	0.263		0.0814	22	30	
SHC	C36	n-Hexatriacontane (C36)		U	0.0816		U	0.0814		30	N/A
SHC	C37	n-Heptatriacontane (C37)	0.0253	Ĵ	0.0816	0.0339	Ĵ	0.0814	29	30	
SHC	C38	n-Octatriacontane (C38)		Ü	0.0816		Ü	0.0814		30	N/A
SHC	C39	n-Nonatriacontane (C39)		Ū	0.0816		Ū	0.0814		30	N/A
SHC	C40	n-Tetracontane (C40)		Ū	0.0816		Ū	0.0814		30	N/A
SHC	TSH	Total Saturated Hydrocarbons	4.23		0.0816	4.88		0.0814	14	30	
SHC	TPH	Total Petroleum Hydrocarbons (C9-C44)	78.4		2.69	92.8		2.69	17	30	

 Surrogates (% Recovery)
 88
 88

 ortho-Terphenyl
 88
 88

 d50-Tetracosane
 97
 98



Client ID	Alaska North Slope Crude
Lab ID	TO050913ANC01
Matrix	Oil
Reference Method	SHC
Batch ID	N/A
Date Collected	N/A
Date Received	N/A
Date Prepped	N/A
Date Analyzed	05/01/2013
Sample Size (wet)	0.10102
% Solid	100.00
File ID	D601029.D
Units	mg/Kg
Final Volume	10
Dilution	1
Reporting Limit	99.0

	Abbrev	Analytes	Result		% Rec	Spike Conc.	Lower Limit	Upper Limit
SHC	C9	n-Nonane (C9)	6340	99.0	101	6286.00	65	135
SHC	C10	n-Decane (C10)	4890	99.0	97	5047.00	65	135
SHC	C11	n-Undecane (C11)	4490	99.0	95	4703.00	65	135
SHC	C12	n-Dodecane (C12)	4140	99.0	100	4155.00	65	135
SHC	C13	n-Tridecane (C13)	3820	99.0	94	4058.00	65	135
SHC	1380	2,6,10 Trimethyldodecane (1380)	863	99.0	102	845.00	65	135
SHC	C14	n-Tetradecane (C14)	3360	99.0	91	3670.00	65	135
SHC	1470	2,6,10 Trimethyltridecane (1470)	1230	99.0	90	1367.00	65	135
SHC	C15	n-Pentadecane (C15)	3970	99.0	108	3660.00	65	135
SHC	C16	n-Hexadecane (C16)	3050	99.0	92	3330.00	65	135
SHC	1650	Norpristane (1650)	887	99.0	81	1093.00	65	135
SHC	C17	n-Heptadecane (C17)	2750	99.0	91	3012.00	65	135
SHC	Pr	Pristane	2090	99.0	97	2145.00	65	135
SHC	C18	n-Octadecane (C18)	2440	99.0	91	2700.00	65	135
SHC	Ph	Phytane	1150	99.0	95	1215.00	65	135
SHC	C19	n-Nonadecane (C19)	2350	99.0	102	2305.00	65	135
SHC	C20	n-Eicosane (C20)	2300	99.0	99	2337.00	65	135
SHC	C21	n-Heneicosane (C21)	2070	99.0	101	2044.00	65	135
SHC	C22	n-Docosane (C22)	1980	99.0	101	1972.00	65	135
SHC	C23	n-Tricosane (C23)	1710	99.0	98	1745.00	65	135
SHC	C24	n-Tetracosane (C24)	1600	99.0	97	1641.00	65	135
SHC	C25	n-Pentacosane (C25)	1590	99.0	102	1562.00	65	135
SHC	C26	n-Hexacosane (C26)	1370	99.0	100	1378.00	65	135
SHC	C27	n-Heptacosane (C27)	1070	99.0	99	1083.00	65	135
SHC	C28	n-Octacosane (C28)	731	99.0	94	776.00	65	135
SHC	C29	n-Nonacosane (C29)	761	99.0	104	734.00	65	135
SHC	C30	n-Triacontane (C30)	620	99.0	99	627.00	65	135
SHC	C31	n-Hentriacontane (C31)	514	99.0	100	514.00	65	135
SHC	C32	n-Dotriacontane (C32)	546	99.0	119	458.00	65	135
SHC	C33	n-Tritriacontane (C33)	334	99.0	86	388.00	65	135
SHC	C34	n-Tetratriacontane (C34)	272	99.0	78	347.00	65	135
SHC	C35	n-Pentatriacontane (C35)	259	99.0	93	278.00	65	135
SHC	C36	n-Hexatriacontane (C36)	152	99.0	82	186.00	65	135
SHC	C37	n-Heptatriacontane (C37)	158	99.0	104	152.00	65	135
SHC	C38	n-Octatriacontane (C38)	136	99.0	104	131.00	65	135
SHC	C39	n-Nonatriacontane (C39)	104	99.0	117	88.70	65	135
SHC	C40	n-Tetracontane (C40)	98.1 、	J 99.0	106	92.30	65	135
SHC	TSH	Total Saturated Hydrocarbons	66200	99.0	97	68122.00	65	135
SHC	TPH	Total Petroleum Hydrocarbons (C9-C44)	565000	3270	102	554993.00	65	135



Client ID	SB01-04 (0.0-1.0)	SB01-04 (6.0-7.0)		SB01-05 (8.0-9.0)
Lab ID	1309010-01	1309010-02		1309010-03
Matrix	Soil	Soil		Soil
Reference Method	SHC	SHC		SHC
Batch ID	SS091813B03	SS091813B03		SS091813B03
Date Collected	08/19/2013	08/19/2013		08/19/2013
Date Received	08/24/2013	08/24/2013		08/24/2013
Date Prepped	09/18/2013	09/18/2013		09/18/2013
Date Analyzed	10/12/2013	10/12/2013		10/12/2013
Sample Size (wet)	29.9	16.54		29.66
% Solid	84.02	77.35		74.06
File ID	D603241.D	D603243.D		D603245.D
Units	mg/Kg	mg/Kg		mg/Kg
Final Volume	2	2		2
Dilution	1	1		1
Reporting Limit	0.0796	0.156		0.0910
Analytes	Result	SSRI Result	SSRI	Result

Class	Abbrev	Analytes	Result		SSRL	Result		SSRL	Result		SSRL
SHC	C9	n-Nonane (C9)	0.0310		0.0796	0.0322	J	0.156	0.00209		0.0910
SHC	C10	n-Decane (C10)	0.0490		0.0796	0.0871	J	0.156	0.00865	JB	0.0910
SHC	C11	n-Undecane (C11)	0.0464	J	0.0796		U	0.156	0.000910	J	0.0910
SHC	C12	n-Dodecane (C12)	0.0680	J	0.0796		U	0.156	0.00109	J	0.0910
SHC	C13	n-Tridecane (C13)	0.251		0.0796	2.56		0.156	0.00173	J	0.0910
SHC	1380	2,6,10 Trimethyldodecane (1380)	0.0267	J	0.0796		U	0.156	0.00355	J	0.0910
SHC	C14	n-Tetradecane (C14)	0.0725	J	0.0796	2.85		0.156	0.00182	J	0.0910
SHC	1470	2,6,10 Trimethyltridecane (1470)	0.0471	J	0.0796		U	0.156	0.00264	J	0.0910
SHC	C15	n-Pentadecane (C15)	0.0678	J	0.0796	0.633		0.156	0.00437	J	0.0910
SHC	C16	n-Hexadecane (C16)	0.162		0.0796	1.98		0.156	0.00574	J	0.0910
SHC	1650	Norpristane (1650)	0.0520	J	0.0796		U	0.156	0.00182	J	0.0910
SHC	C17	n-Heptadecane (C17)	0.102		0.0796	1.91		0.156	0.00337	J	0.0910
SHC	Pr	Pristane	0.140		0.0796		U	0.156	0.00264	J	0.0910
SHC	C18	n-Octadecane (C18)	0.0721		0.0796		U	0.156	0.00992	J	0.0910
SHC	Ph	Phytane	0.0279	J	0.0796		U	0.156	0.00291	J	0.0910
SHC	C19	n-Nonadecane (C19)	0.0635	J	0.0796		U	0.156		U	0.0910
SHC	C20	n-Eicosane (C20)	0.0871		0.0796		U	0.156	0.00774	JB	0.0910
SHC	C21	n-Heneicosane (C21)	0.0901		0.0796	0.175		0.156	0.00829	J	0.0910
SHC	C22	n-Docosane (C22)	0.0630	J	0.0796	0.0718	J	0.156	0.0112	J	0.0910
SHC	C23	n-Tricosane (C23)	0.0751	J	0.0796		U	0.156	0.0237	J	0.0910
SHC	C24	n-Tetracosane (C24)	0.0668	J	0.0796		U	0.156	0.0142		0.0910
SHC	C25	n-Pentacosane (C25)	0.124		0.0796	0.0566	J	0.156	0.0597	J	0.0910
SHC	C26	n-Hexacosane (C26)	0.108		0.0796	0.0472	J	0.156	0.0302	J	0.0910
SHC	C27	n-Heptacosane (C27)	0.476		0.0796	0.316		0.156	0.757		0.0910
SHC	C28	n-Octacosane (C28)	0.139		0.0796	0.364		0.156	0.131		0.0910
SHC	C29	n-Nonacosane (C29)	0.362		0.0796	0.254	CB	0.156	0.378	В	0.0910
SHC	C30	n-Triacontane (C30)	0.0768	J	0.0796	0.0374	J	0.156	0.0528	J	0.0910
SHC	C31	n-Hentriacontane (C31)	0.548		0.0796	0.332		0.156	0.442		0.0910
SHC	C32	n-Dotriacontane (C32)	0.0748	J	0.0796	0.0374	J	0.156	0.0493	J	0.0910
SHC	C33	n-Tritriacontane (C33)	0.592		0.0796	0.202		0.156	0.285		0.0910
SHC	C34	n-Tetratriacontane (C34)	0.0263	J	0.0796	0.0128	J	0.156	0.0251	J	0.0910
SHC	C35	n-Pentatriacontane (C35)	0.317		0.0796	0.0869	J	0.156	0.270		0.0910
SHC	C36	n-Hexatriacontane (C36)	0.0312	J	0.0796	0.00719	JB	0.156	0.0199	J	0.0910
SHC	C37	n-Heptatriacontane (C37)	0.0384	J	0.0796	0.0186	J	0.156	0.0274	J	0.0910
SHC	C38	n-Octatriacontane (C38)	0.0379	J	0.0796		U	0.156		U	0.0910
SHC	C39	n-Nonatriacontane (C39)	0.0167	J	0.0796		U	0.156		U	0.0910
SHC	C40	n-Tetracontane (C40)	0.0259	J	0.0796		U	0.156	0.0107	J	0.0910
SHC	TSH	Total Saturated Hydrocarbons	4.65		0.0796	12.1		0.156	2.66		0.0910
SHC	TPH	Total Petroleum Hydrocarbons (C9-C44)	80.5		2.63	1260		5.16	22.9		3.00

Surrogates (% Recovery)			
ortho-Terphenyl	88	91	77
d50-Tetracosane	97	94	83



		Project Number.									
		Client ID	SB01-07 (0.5-1.5)			SB02-05 (0.5-1.5)			SB02-09 (4.5-5.5)		
		Lab ID	1309010-04			1309010-05			1309010-06		
		Matrix	Soil			Soil			Soil		
		Reference Method	SHC			SHC			SHC		
		Batch ID	SS091813B03			SS091813B03			SS091813B03		
		Date Collected	08/20/2013			08/20/2013			08/21/2013		
		Date Received	08/24/2013			08/24/2013			08/24/2013		
		Date Prepped	09/18/2013			09/18/2013			09/18/2013		
		Date Analyzed	10/12/2013			10/12/2013			10/12/2013		
		Sample Size (wet) % Solid	29.9 82.00			13.36 64.60			14 83.46		
		File ID	D603247.D			D603251.D			D603253.D		
		Units	mg/Kg			mg/Kg			mg/Kg		
		Final Volume	2			2			2		
		Dilution	1			1			1		
		Reporting Limit	0.0816			0.232			0.171		
Class	Abbrev	Analytes	Result	_	SSRL	Result	_	SSRL	Result	ID	SSRL
SHC	C9 C10	n-Nonane (C9) n-Decane (C10)	0.0332 0.0465	J JB	0.0816 0.0816	0.216 0.322	J	0.232	0.00548 0.0200	JB JB	0.171 0.171
SHC	C10	n-Undecane (C11)	0.0458	J	0.0816	0.322		0.232	0.0200	JB	0.171
SHC	C12	n-Dodecane (C12)	0.0430	J	0.0816	0.544		0.232	0.00839	J	0.171
SHC	C12	n-Tridecane (C13)	0.241	J	0.0816	2.50		0.232	0.00411	J	0.171
SHC	1380	2,6,10 Trimethyldodecane (1380)		J	0.0816	0.220	J	0.232	0.00548	Ĵ	0.171
SHC	C14	n-Tetradecane (C14)	0.0643	Ĵ	0.0816	0.781		0.232	0.00223	J	0.171
SHC	1470	2,6,10 Trimethyltridecane (1470)	0.0502	J	0.0816	0.417		0.232	0.00308	J	0.171
SHC	C15	n-Pentadecane (C15)	0.0711	J	0.0816	0.589		0.232	0.0128	J	0.171
SHC	C16	n-Hexadecane (C16)	0.156		0.0816	1.44		0.232	0.0142	J	0.171
SHC	1650	Norpristane (1650)	0.0690	J	0.0816	0.220	J	0.232	0.00531	J	0.171
SHC	C17	n-Heptadecane (C17)	0.112		0.0816	0.837		0.232	0.00582	J	0.171
SHC	Pr	Pristane	0.137		0.0816	1.33		0.232	0.0106	J	0.171
SHC	C18 Ph	n-Octadecane (C18)	0.0738	J	0.0816	0.632	į.	0.232	0.00787	J J	0.171
SHC	C19	Phytane	0.0377 0.0718	J J	0.0816 0.0816	0.220 0.563	J	0.232	0.00394	U	0.171 0.171
SHC	C20	n-Nonadecane (C19) n-Eicosane (C20)	0.0714	J	0.0816	0.609		0.232	0.00445	JB	0.171
SHC	C21	n-Heneicosane (C21)	0.0714	J	0.0816	0.726		0.232	0.00770	J	0.171
SHC	C22	n-Docosane (C22)	0.0620	J	0.0816	0.475		0.232	0.00565	JB	0.171
SHC	C23	n-Tricosane (C23)	0.0802	Ĵ	0.0816	0.527		0.232	0.0130	JB	0.171
SHC	C24	n-Tetracosane (C24)	0.0638	J	0.0816	0.441		0.232	0.0104	J	0.171
SHC	C25	n-Pentacosane (C25)	0.130		0.0816	0.606		0.232	0.0264	JB	0.171
SHC	C26	n-Hexacosane (C26)	0.120		0.0816	0.378		0.232	0.0209	J	0.171
SHC	C27	n-Heptacosane (C27)	0.552		0.0816	1.52		0.232	0.103	J	0.171
SHC	C28	n-Octacosane (C28)	0.153		0.0816	0.631		0.232	0.0219	JB	0.171
SHC	C29	n-Nonacosane (C29)	0.378		0.0816	0.971		0.232	0.141		0.171
SHC	C30	n-Triacontane (C30)	0.0613	J	0.0816	0.294		0.232	0.0181	JB	0.171
SHC	C31 C32	n-Hentriacontane (C31) n-Dotriacontane (C32)	0.381 0.0536	J	0.0816 0.0816	1.08 0.177	ï	0.232	0.0839 0.0163	J JB	0.171 0.171
SHC	C32	n-Tritriacontane (C33)	0.0550	J	0.0816	1.68	J	0.232	0.0479	J	0.171
SHC	C34	n-Tetratriacontane (C34)	0.0309	J	0.0816		J	0.232	0.0151	J	0.171
SHC	C35	n-Pentatriacontane (C35)	0.211	ŭ	0.0816	0.802	•	0.232	0.0291	Ĵ	0.171
SHC	C36	n-Hexatriacontane (C36)	0.211	U	0.0816		U	0.232	0.0201	Ŭ	0.171
SHC	C37	n-Heptatriacontane (C37)	0.0253	J	0.0816	0.139	J	0.232	0.0152	J	0.171
SHC	C38	n-Octatriacontane (C38)		U	0.0816	0.0966	J	0.232		U	0.171
SHC	C39	n-Nonatriacontane (C39)		U	0.0816		J	0.232		U	0.171
SHC	C40	n-Tetracontane (C40)		U	0.0816		U	0.232		U	0.171
SHC	TSH	Total Saturated Hydrocarbons	4.23		0.0816	22.6		0.232	0.693	В	0.171
SHC	TPH	Total Petroleum Hydrocarbons (C9-C44)	78.4		2.69	549		7.65	44.3		5.65
		Surrogates (% Recovery)									
		ortho-Terphenyl	88			86			87		
		d50-Tetracosane	97			100			93		



		•									
		Client ID	SB03-06 (0.0-1.0)			SB03-07 (4.5-5.5)			SB03-08 (3.0-4.0)		
		Lab ID	1309010-07			1309010-08			1309010-09		
		Matrix	Soil			Soil			Soil		
		Reference Method	SHC			SHC			SHC		
		Batch ID	SS091813B03			SS091813B03			SS091813B03		
		Date Collected	08/22/2013			08/22/2013			08/22/2013		
		Date Received	08/24/2013			08/24/2013			08/24/2013		
		Date Prepped	09/18/2013			09/18/2013			09/18/2013		
		Date Analyzed	10/12/2013			10/12/2013			10/12/2013		
		Sample Size (wet)	15.29			18.2			28.25		
		% Solid	67.06			78.10			82.56		
		File ID	D603255.D			D603257.D			D603259.D		
		Units	mg/Kg			mg/Kg			mg/Kg		
		Final Volume	3.33			2			2		
		Dilution	1			1			1		
		Reporting Limit	0.325			0.141			0.0858		
Class	Abbrev	Analytes	Result		SSRL	Result		SSRL	Result		SSRL
SHC	C9	n-Nonane (C9)	0.339		0.325	0.0502	J	0.141	0.00549	JB	0.0858
SHC	C10	n-Decane (C10)	0.465		0.325	0.0720	JB	0.141	0.0173		0.0858
SHC	C11	n-Undecane (C11)	0.560		0.325	0.0577	J	0.141		U	0.0858
SHC	C12	n-Dodecane (C12)	0.980		0.325	0.101	J	0.141	0.141		0.0858
SHC	C13	n-Tridecane (C13)	8.24		0.325	1.27		0.141	0.184		0.0858
SHC	1380	2,6,10 Trimethyldodecane (1380)	5.90		0.325	0.211		0.141	0.668		0.0858
SHC	C14	n-Tetradecane (C14)	1.35		0.325	0.257		0.141	0.217		0.0858
SHC	1470	2,6,10 Trimethyltridecane (1470)	10.2		0.325	0.551		0.141	1.18		0.0858
SHC	C15	n-Pentadecane (C15)	0.771		0.325	0.0583	J	0.141	0.0406	J	0.0858
SHC	C16 1650	n-Hexadecane (C16)	1.99 8.64		0.325	0.193		0.141 0.141	1.19	U	0.0858
SHC	C17	Norpristane (1650)	0.04	U	0.325 0.325	0.426 0.0965	J	0.141	1.19	U	0.0858 0.0858
SHC	Pr	n-Heptadecane (C17) Pristane	11.7	U	0.325	0.0965	J	0.141	1.35	U	0.0858
SHC	C18	n-Octadecane (C18)	11.7	U	0.325	0.0791	J	0.141	1.35	U	0.0858
SHC	Ph	Phytane	6.06	U	0.325	0.260	J	0.141	0.702	U	0.0858
SHC	C19	n-Nonadecane (C19)	1.25		0.325	0.200	U	0.141	0.702	U	0.0858
SHC	C20	n-Eicosane (C20)	1.23	U	0.325	0.0763	J	0.141		U	0.0858
SHC	C21	n-Heneicosane (C21)	0.818	U	0.325	0.0763	J	0.141		U	0.0858
SHC	C22	n-Docosane (C22)	0.326		0.325	0.0477	J	0.141		Ü	0.0858
SHC	C23	n-Tricosane (C23)	0.477		0.325	0.0674	J	0.141		U	0.0858
SHC	C24	n-Tetracosane (C24)	0.324	i	0.325	0.0074	J	0.141	0.00592	JB	0.0858
SHC	C25	n-Pentacosane (C25)	0.475	U	0.325	0.0882	Ĵ	0.141	0.0158	JB	0.0858
SHC	C26	n-Hexacosane (C26)	0.355		0.325	0.0978	ĞJ	0.141	0.0120	JB	0.0858
SHC	C27	n-Heptacosane (C27)	0.888		0.325	0.440	-	0.141	0.0650	J	0.0858
SHC	C28	n-Octacosane (C28)	0.481		0.325	0.148		0.141	0.0537		0.0858
SHC	C29	n-Nonacosane (C29)	0.665	C	0.325	0.303	CB	0.141	0.0927	СВ	0.0858
SHC	C30	n-Triacontane (C30)	0.199		0.325	0.0447	J	0.141	0.00986	JB	0.0858
SHC	C31	n-Hentriacontane (C31)	0.618		0.325	0.250		0.141	0.0667	J	0.0858
SHC	C32	n-Dotriacontane (C32)	0.178	J	0.325	0.0342	J	0.141	0.00729	JB	0.0858
SHC	C33	n-Tritriacontane (C33)	0.972		0.325	0.243		0.141	0.0380	J	0.0858
SHC	C34	n-Tetratriacontane (C34)	0.137	J	0.325		U	0.141	0.00266	JB	0.0858
SHC	C35	n-Pentatriacontane (C35)	0.460		0.325	0.148		0.141	0.0255	J	0.0858
SHC	C36	n-Hexatriacontane (C36)		U	0.325		U	0.141		U	0.0858
SHC	C37	n-Heptatriacontane (C37)	0.0974	J	0.325	0.0257	J	0.141	0.00712	J	0.0858
SHC	C38	n-Octatriacontane (C38)		U	0.325		U	0.141	0.00720	J	0.0858
SHC	C39	n-Nonatriacontane (C39)		U	0.325		U	0.141		U	0.0858
SHC	C40	n-Tetracontane (C40)		U	0.325		U	0.141		U	0.0858
SHC	TSH	Total Saturated Hydrocarbons	66.0		0.325	6.37		0.141	6.11		0.0858
SHC	TPH	Total Petroleum Hydrocarbons (C9-C44)	2730		10.7	235		4.64	236		2.83
										_	_
		Surrogatos (9/ Basayanı)									
		Surrogates (% Recovery) ortho-Terphenyl	88			85			90		
		d50-Tetracosane	104			93			90		
		UJU- I CII AUJSAITE	104			93			95		



Client ID	SB03-10 (0.5-1.5)
Lab ID	1309010-10
Matrix	Soil
Reference Method	SHC
Batch ID	SS091813B03
Date Collected	08/22/2013
Date Received	08/24/2013
Date Prepped	09/18/2013
Date Analyzed	10/12/2013
Sample Size (wet)	20
% Solid	82.97
File ID	D603261.D
Units	mg/Kg
Final Volume	2
Dilution	1
Reporting Limit	0.121

	Abbrev	Analytes	Result		SSRL	
SHC	C9	n-Nonane (C9)	0.0318		0.121	
SHC	C10	n-Decane (C10)	0.0512			
SHC	C11	n-Undecane (C11)	0.0413	J	0.121	
SHC	C12	n-Dodecane (C12)		J	0.121	
SHC	C13	n-Tridecane (C13)	0.320		0.121	
SHC	1380	2,6,10 Trimethyldodecane (1380)	0.0277	J	0.121	
SHC	C14	n-Tetradecane (C14)	0.0570	J	0.121	
SHC	1470	2,6,10 Trimethyltridecane (1470)	0.0527	J	0.121	
SHC	C15	n-Pentadecane (C15)	0.0628	J	0.121	
SHC	C16	n-Hexadecane (C16)	0.176		0.121	
SHC	1650	Norpristane (1650)	0.180		0.121	
SHC	C17	n-Heptadecane (C17)	0.115	J	0.121	
SHC	Pr	Pristane	0.215		0.121	
SHC	C18	n-Octadecane (C18)	0.102	J	0.121	
SHC	Ph	Phytane	0.121		0.121	
SHC	C19	n-Nonadecane (C19)	0.0914	J	0.121	
SHC	C20	n-Eicosane (C20)	0.0880	J	0.121	
SHC	C21	n-Heneicosane (C21)	0.120	J	0.121	
SHC	C22	n-Docosane (C22)	0.0624	J	0.121	
SHC	C23	n-Tricosane (C23)	0.0826	J	0.121	
SHC	C24	n-Tetracosane (C24)	0.0559	J	0.121	
SHC	C25	n-Pentacosane (C25)	0.146		0.121	
SHC	C26	n-Hexacosane (C26)	0.0811	J	0.121	
SHC	C27	n-Heptacosane (C27)	0.650		0.121	
SHC	C28	n-Octacosane (C28)	0.200		0.121	
SHC	C29	n-Nonacosane (C29)	0.418	СВ	0.121	
SHC	C30	n-Triacontane (C30)	0.0747	J	0.121	
SHC	C31	n-Hentriacontane (C31)	0.587		0.121	
SHC	C32	n-Dotriacontane (C32)	0.0759	J	0.121	
SHC	C33	n-Tritriacontane (C33)	0.666		0.121	
SHC	C34	n-Tetratriacontane (C34)	0.0351	J	0.121	
SHC	C35	n-Pentatriacontane (C35)	0.325		0.121	
SHC	C36	n-Hexatriacontane (C36)	0.197		0.121	
SHC	C37	n-Heptatriacontane (C37)	0.0412	J	0.121	
SHC	C38	n-Octatriacontane (C38)	0.0391	J	0.121	
SHC	C39	n-Nonatriacontane (C39)	0.0181	Ĵ	0.121	
SHC	C40	n-Tetracontane (C40)		Ü	0.121	
SHC	TSH	Total Saturated Hydrocarbons	5.67		0.121	
SHC	TPH	Total Petroleum Hydrocarbons (C9-C44)	165		3.98	

85 93

Surrogates (% Recovery) ortho-Terphenyl d50-Tetracosane



Client ID Lab ID Matrix Reference Method Batch ID Date Collected Date Received Date Received Date Analyzed Sample Size (wet) % Solid File ID Units Final Volume Dilution Reporting Limit	Method Blank \$S091813B03 Soil Modified 8270D \$S091813B03 N/A N/A 09/18/2013 10/02/2013 22 100.00 d32749.D µg/Kg 2 1 0 909
Reporting Limit	0.909

Class	Abbrev	Analytes	Result	SSRL
2	D0	cis/trans-Decalin	U	0.909
2	D1	C1-Decalins	Ū	0.909
2	D2	C2-Decalins	Ū	0.909
2	D3	C3-Decalins	Ū	0.909
2	D4	C4-Decalins	Ū	0.909
2	BT0	Benzothiophene	Ū	0.909
2	BT1	C1-Benzo(b)thiophenes	Ū	0.909
2	BT2	C2-Benzo(b)thiophenes	Ū	0.909
2	BT3	C3-Benzo(b)thiophenes	Ū	0.909
2	BT4	C4-Benzo(b)thiophenes	Ü	0.909
2	N0	Naphthalene	0.0945 J	0.909
2	N1	C1-Naphthalenes	U	0.909
2	N2	C2-Naphthalenes	U	0.909
2	N3	C3-Naphthalenes	U	0.909
2	N4	C4-Naphthalenes	U	0.909
2	В	Biphenyl	U	0.909
3	DF	Dibenzofuran	U	0.909
3	AY	Acenaphthylene	U	0.909
3	AE	Acenaphthene	U	0.909
3	F0	Fluorene	U	0.909
3	F1	C1-Fluorenes	U	0.909
3	F2	C2-Fluorenes	U	0.909
3	F3	C3-Fluorenes	U	0.909
3	A0	Anthracene	U	0.909
3	P0	Phenanthrene	0.120 J	0.909
3	PA1	C1-Phenanthrenes/Anthracenes	U	0.909
3	PA2	C2-Phenanthrenes/Anthracenes	U	0.909
3	PA3	C3-Phenanthrenes/Anthracenes	U	0.909
3	PA4	C4-Phenanthrenes/Anthracenes	U	0.909
3	RET	Retene	U	0.909
3	DBT0	Dibenzothiophene	U	0.909
3	DBT1	C1-Dibenzothiophenes	U	0.909
3	DBT2	C2-Dibenzothiophenes	U	0.909
3	DBT3	C3-Dibenzothiophenes	U	0.909
3	DBT4	C4-Dibenzothiophenes	U	0.909
4	BF	Benzo(b)fluorene	U	0.909
4	FL0	Fluoranthene	0.107 J	0.909
4	PY0	Pyrene	0.0780 J	0.909
4	FP1	C1-Fluoranthenes/Pyrenes	U	0.909
4	FP2	C2-Fluoranthenes/Pyrenes	U	0.909
4	FP3	C3-Fluoranthenes/Pyrenes	U	0.909
4	FP4	C4-Fluoranthenes/Pyrenes	U	0.909
4	NBT0	Naphthobenzothiophenes	U	0.909
4	NBT1	C1-Naphthobenzothiophenes	U	0.909
4	NBT2	C2-Naphthobenzothiophenes	U	0.909
4	NBT3	C3-Naphthobenzothiophenes	U	0.909
4	NBT4	C4-Naphthobenzothiophenes	U	0.909
4	BA0	Benz[a]anthracene	U	0.909
4	C0	Chrysene/Triphenylene	U	0.909
4	BC1	C1-Chrysenes	U	0.909
4	BC2	C2-Chrysenes	U	0.909
4	BC3	C3-Chrysenes	U	0.909
4	BC4	C4-Chrysenes	U	0.909
5	BBF	Benzo[b]fluoranthene	U	0.909
5	BJKF	Benzo[j]fluoranthene/Benzo[k]fluoranthene	U	0.909
5	BAF	Benzo[a]fluoranthene	U	0.909
5	BEP	Benzo[e]pyrene	U	0.909
5	BAP	Benzo[a]pyrene	U	0.909
5	PER	Perylene	U	0.909
6	IND	Indeno[1,2,3-cd]pyrene	U	0.909
6	DA	Dibenz[ah]anthracene/Dibenz[ac]anthracene	U	0.909
6	GHI	Benzo[g,h,i]perylene	U	0.909
_	CAR	Carbazole	U	0.909
3	4MDT	4-Methyldibenzothiophene	U	0.909
3	2MDT	2/3-Methyldibenzothiophene	U	0.909
3	1MDT	1-Methyldibenzothiophene	U	0.909
3	3MP	3-Methylphenanthrene	U	0.909
3	2MP	2-Methylphenanthrene	U	0.909
3	2MA	2-Methylanthracene	U	0.909
3	9MP	9/4-Methylphenanthrene	U	0.909
3	1MP	1-Methylphenanthrene	U	0.909

Surrogates (% Recovery)	
Naphthalene-d8	80
Phenanthrene-d10	96
Benzo[a]pyrene-d12	101
5B(H)Cholane	99
, ,	



Client ID	Laboratory Control Sample	Laboratory Control Sample Dup
Lab ID	SS091813LCS02	SS091813LCSD03
Matrix	Soil	Soil
Reference Method	Modified 8270D	Modified 8270D
Batch ID	SS091813B03	SS091813B03
Date Collected	N/A	N/A
Date Received	N/A	N/A
Date Prepped	09/18/2013	09/18/2013
Date Analyzed	10/02/2013	10/02/2013
Sample Size (wet)	22	22
% Solid	100.00	100.00
File ID	d32751.D	d32753.D
Units	μg/Kg	μg/Kg
Final Volume	2	2
Dilution	1	1
Reporting Limit	0.909	0.909

Class	Abbrev	Analytes	Result	SSRL	% Rec	Spike Conc.	Lower Limit	Upper Limit	Result
2	N0	Naphthalene	38.0 S	0.909	84	45.5	50	130	39.0
3	AY	Acenaphthylene	40.1 S	0.909	88	45.5	50	130	41.0
3	AE	Acenaphthene	40.2 S	0.909	88	45.5	50	130	40.8
3	F0	Fluorene	41.7 S	0.909	92	45.5	50	130	42.7
3	A0	Anthracene	41.6 S	0.909	92	45.5	50	130	42.7
3	P0	Phenanthrene	42.4 S	0.909	93	45.5	50	130	43.7
4	FL0	Fluoranthene	45.1 S	0.909	99	45.5	50	130	46.9
4	PY0	Pyrene	46.6 S	0.909	103	45.5	50	130	48.4
4	BA0	Benz[a]anthracene	47.7 S	0.909	105	45.5	50	130	49.1
4	C0	Chrysene/Triphenylene	46.9 S	0.909	103	45.5	50	130	48.0
5	BBF	Benzo[b]fluoranthene	50.1 S	0.909	110	45.5	50	130	48.9
5	BJKF	Benzo[j]fluoranthene/Benzo[k]fluoranthene	48.7 S	0.909	107	45.5	50	130	52.1
5	BAP	Benzo[a]pyrene	50.0 S	0.909	110	45.5	50	130	51.5
6	IND	Indeno[1,2,3-cd]pyrene	52.8 S	0.909	116	45.5	50	130	50.2
6	DA	Dibenz[ah]anthracene/Dibenz[ac]anthracene	50.2 S	0.909	110	45.5	50	130	51.4
6	GHI	Benzo[g,h,i]perylene	48.6 S	0.909	107	45.5	50	130	49.5

Surrogates (% Recovery)		
Naphthalene-d8	84	86
Phenanthrene-d10	100	102
Benzo[a]pyrene-d12	103	105
5B(H)Cholane	95	98



Client ID
Lab ID
Matrix
Reference Method
Batch ID
Date Collected
Date Received
Date Prepped
Date August
Sample Size (wet)
% Solid
File ID
Units
Final Volume
Dilution
Reporting Limit

Class	Abbrev	Analytes		SSRL	% Rec	Spike Conc.	Lower Limit	Upper Limit	RPD	RPD Limit
2	N0	Naphthalene	S	0.909	86	45.5	50	130	2	30
3	AY	Acenaphthylene	S	0.909	90	45.5	50	130	2	30
3	AE	Acenaphthene	S	0.909	90	45.5	50	130	2	30
3	F0	Fluorene	S	0.909	94	45.5	50	130	3	30
3	A0	Anthracene	S	0.909	94	45.5	50	130	3	30
3	P0	Phenanthrene	S	0.909	96	45.5	50	130	3	30
4	FL0	Fluoranthene	S	0.909	103	45.5	50	130	4	30
4	PY0	Pyrene	S	0.909	107	45.5	50	130	4	30
4	BA0	Benz[a]anthracene	S	0.909	108	45.5	50	130	3	30
4	C0	Chrysene/Triphenylene	S	0.909	106	45.5	50	130	2	30
5	BBF	Benzo[b]fluoranthene	S	0.909	108	45.5	50	130	3	30
5	BJKF	Benzo[j]fluoranthene/Benzo[k]fluoranthene	S	0.909	115	45.5	50	130	7	30
5	BAP	Benzo[a]pyrene	S	0.909	113	45.5	50	130	3	30
6	IND	Indeno[1,2,3-cd]pyrene	S	0.909	110	45.5	50	130	5	30
6	DA	Dibenz[ah]anthracene/Dibenz[ac]anthracene	S	0.909	113	45.5	50	130	2	30
6	GHI	Benzo[g,h,i]perylene	S	0.909	109	45.5	50	130	2	30

Surrogates (% Recovery) Naphthalene-d8 Phenanthrene-d10 Benzo[a]pyrene-d12 5B(H)Cholane



Client ID	SB01-07 (0.5-1.5)	SB01-07 (0.5-1.5)
Lab ID	1309010-04	1309010-04D
Matrix	Soil	Soil
Reference Method	Modified 8270D	Modified 8270D
Batch ID	SS091813B03	SS091813B03
Date Collected	08/20/2013	08/20/2013
Date Received	08/24/2013	08/24/2013
Date Prepped	09/18/2013	09/18/2013
Date Analyzed	10/02/2013	10/02/2013
Sample Size (wet)	29.9	29.96
% Solid	82.00	82.00
File ID	d32755.D	d32757.D
Units	μg/Kg	μg/Kg
Final Volume	2	2
Dilution	1	1
Reporting Limit	0.816	0.814

Class	Abbrev	Analytes	Result	SSRL	Result	SSRL	RPD	RPD Limit	<u></u>
2	D0	cis/trans-Decalin	9.12	0.816	9.53	0.814	4	30	
2	D1	C1-Decalins	10.7	0.816	12.4	0.814	15	30	
2	D2	C2-Decalins	13.6	0.816	17.8	0.814	26	30	
2	D3	C3-Decalins	9.14	0.816	13.3	0.814	37	30	п
2	D4	C4-Decalins	17.7	0.816	25.7	0.814	37	30	п
2	BT0	Benzothiophene	3.23	0.816	3.46	0.814	7	30	
2	BT1	C1-Benzo(b)thiophenes	5.56	0.816	6.14	0.814	10	30	
2	BT2	C2-Benzo(b)thiophenes	6.52	0.816	7.06	0.814	8	30	
2	BT3 BT4	C3-Benzo(b)thiophenes	8.04 4.61	0.816 0.816	9.18 5.64	0.814 0.814	13 20	30 30	
2	N0	C4-Benzo(b)thiophenes Naphthalene	102	0.816	105	0.814	3	30	
2	N1	C1-Naphthalenes	192	0.816	199	0.814	4	30	
2	N2	C2-Naphthalenes	242	0.816	258	0.814	6	30	
2	N3	C3-Naphthalenes	200	0.816	225	0.814	12	30	
2	N4	C4-Naphthalenes	109	0.816	132	0.814	19	30	
2	В	Biphenyl	24.3	0.816	25.4	0.814	5	30	
3	DF	Dibenzofuran	52.3	0.816	52.0	0.814	1	30	
3	AY	Acenaphthylene	18.0	0.816	37.9	0.814	71	30	¤
3	AE	Acenaphthene	9.70	0.816	9.31	0.814	4	30	
3	F0	Fluorene	16.3	0.816	15.2	0.814	7	30	
3	F1	C1-Fluorenes	29.7	0.816	33.2	0.814	11	30	
3	F2	C2-Fluorenes	90.1	0.816	97.7	0.814	8	30	
3	F3	C3-Fluorenes	101	0.816	108	0.814	7	30	
3	A0	Anthracene	35.6	0.816	43.4	0.814	20	30	
3	P0	Phenanthrene	210	0.816	215	0.814	3	30	
3	PA1	C1-Phenanthrenes/Anthracenes	261	0.816	284	0.814	9	30	
3	PA2	C2-Phenanthrenes/Anthracenes	249	0.816	269	0.814	8	30	
3	PA3	C3-Phenanthrenes/Anthracenes	137	0.816	143	0.814	4	30	
3	PA4	C4-Phenanthrenes/Anthracenes	70.5	0.816	70.6	0.814	0	30	
3	RET	Retene	47.7	0.816	38.5	0.814	21	30	
3	DBT0 DBT1	Dibenzothiophene	23.1 45.4	0.816	24.1 49.7	0.814 0.814	4 9	30 30	
3	DBT1	C1-Dibenzothiophenes C2-Dibenzothiophenes	50.3	0.816 0.816	49.7 57.0	0.814	13	30	
3	DBT3	C3-Diberizothiophenes	31.4	0.816	36.4	0.814	15	30	
3	DBT3	C4-Dibenzothiophenes	14.1	0.816	15.9	0.814	12	30	
4	BF	Benzo(b)fluorene	22.6	0.816	31.2	0.814	32	30	п
4	FL0	Fluoranthene	196	0.816	292	0.814	40	30	п
4	PY0	Pyrene	173	0.816	263	0.814	41	30	п
4	FP1	C1-Fluoranthenes/Pyrenes	163	0.816	204	0.814	23	30	
4	FP2	C2-Fluoranthenes/Pyrenes	184	0.816	205	0.814	11	30	
4	FP3	C3-Fluoranthenes/Pyrenes	162	0.816	169	0.814	4	30	
4	FP4	C4-Fluoranthenes/Pyrenes	117	0.816	121	0.814	4	30	
4	NBT0	Naphthobenzothiophenes	49.4	0.816	56.1	0.814	13	30	
4	NBT1	C1-Naphthobenzothiophenes	66.5	0.816	69.9	0.814	5	30	
4	NBT2	C2-Naphthobenzothiophenes	57.0	0.816	59.4	0.814	4	30	
4	NBT3	C3-Naphthobenzothiophenes	30.6	0.816	32.5	0.814	6	30	
4	NBT4	C4-Naphthobenzothiophenes	15.0	0.816	14.7	0.814	2	30	
4	BA0 C0	Benz[a]anthracene	120 158	0.816 0.816	177 208	0.814 0.814	39 27	30 30	п
4	BC1	Chrysene/Triphenylene	136	0.816	208 151	0.814	10	30	
4	BC2	C1-Chrysenes C2-Chrysenes	116	0.816	123	0.814	6	30	
4	BC3	C3-Chrysenes	108	0.816	108	0.814	0	30	
4	BC4	C4-Chrysenes	65.1	0.816	69.8	0.814	7	30	
5	BBF	Benzo[b]fluoranthene	124	0.816	199	0.814	46	30	п
5	BJKF	Benzo[i]fluoranthene/Benzo[k]fluoranthene	112	0.816	146	0.814	26	30	
5	BAF	Benzo[a]fluoranthene	26.2	0.816	39.1	0.814	39	30	п
5	BEP	Benzo[e]pyrene	95.3	0.816	138	0.814	37	30	n
5	BAP	Benzo[a]pyrene	123	0.816	193	0.814	44	30	¤
5	PER	Perylene	51.2	0.816	74.2	0.814	37	30	п
6	IND	Indeno[1,2,3-cd]pyrene	91.1	0.816	138	0.814	41	30	п
6	DA	Dibenz[ah]anthracene/Dibenz[ac]anthracene	27.7	0.816	40.1	0.814	37	30	п
6	GHI	Benzo[g,h,i]perylene	88.0	0.816	135	0.814	42	30	п
_	CAR	Carbazole	15.4	0.816	13.8	0.814	11	30	
3	4MDT	4-Methyldibenzothiophene	19.6	0.816	21.7	0.814	10	30	
3	2MDT	2/3-Methyldibenzothiophene	19.4	0.816	21.0	0.814	8	30	
3	1MDT	1-Methyldibenzothiophene	3.45	0.816	3.86	0.814	11	30	
3	3MP	3-Methylphenanthrene	58.5	0.816	63.3	0.814	8	30	
3 3	2MP 2MA	2-Methylphenanthrene 2-Methylanthracene	88.2 10.9	0.816 0.816	95.4 12.6	0.814 0.814	8 14	30 30	
3	9MP	9/4-Methylphenanthrene	57.2	0.816	62.7	0.814	9	30	
3	1MP	1-Methylphenanthrene	57.2 44.1	0.816	47.5	0.814	7	30	
J	IIVIC	i-wearyphenanuliene	44.1	0.010	41.0	0.014	- 1	30	

Surrogates (% Recovery)		
Naphthalene-d8	69	70
Phenanthrene-d10	93	94
Benzo[a]pyrene-d12	99	96
5B(H)Cholane	102	102



Class	Abbrev	Analytes	Result	SSRL	% Rec	Spike Conc.	Lower Limit	Upper Limit
2	D0	cis/trans-Decalin	439	1.97	92	479.20	65	135
2	D1	C1-Decalins	710	1.97	97	728.90	65	135
2	D2	C2-Decalins	668	1.97	105	635.50	65	135
2	D3	C3-Decalins	396	1.97	120	329.80	65	135
2	D4	C4-Decalins	397	1.97	122	326.50	65	135
2	BT0	Benzothiophene	5.73	1.97	106	5.40	65	135
2	BT1	C1-Benzo(b)thiophenes	32.0	1.97	111	28.90	65	135
2	BT2	C2-Benzo(b)thiophenes	55.7	1.97	112	49.60	65	135
2	BT3	C3-Benzo(b)thiophenes	121	1.97	122	99.00	65	135
2	BT4	C4-Benzo(b)thiophenes	107	1.97	123	87.10	65	135
2	NO	Naphthalene	553	1.97	100	555.80	65	135
			1220					
2	N1	C1-Naphthalenes		1.97	104	1167.30	65	135
2	N2	C2-Naphthalenes	1570	1.97	111	1409.70	65	135
2	N3	C3-Naphthalenes	1220	1.97	118	1035.90	65	135
2	N4	C4-Naphthalenes	709	1.97	126	561.10	65	135
2	В	Biphenyl	156	1.97	107	145.70	65	135
3	DF	Dibenzofuran	52.8	1.97	103	51.20	65	135
3	AY	Acenaphthylene	7.09	1.97	109	6.50	65	135
3	AE	Acenaphthene	16.9	1.97	91	18.70	65	135
3	F0	Fluorene	76.5	1.97	103	74.60	65	135
3	F1	C1-Fluorenes	185	1.97	109	170.20	65	135
3	F2	C2-Fluorenes	283	1.97	111	255.40	65	135
3	F3	C3-Fluorenes	275	1.97	115	238.50	65	135
3	A0	Anthracene	١		0	200.00	00	135
3	P0	Phenanthrene	217	1.97	102	212.20	65	135
3	PA1	C1-Phenanthrenes/Anthracenes	489	1.97	113	432.70	65	135
3	PA2	C2-Phenanthrenes/Anthracenes	568	1.97		465.90	65	
3	PA2 PA3	C3-Phenanthrenes/Anthracenes	394	1.97	122			135
					124	317.40	65	135
3	PA4	C4-Phenanthrenes/Anthracenes	172	1.97	133	129.00	65	135
3	RET	Retene	U					
3	DBT0	Dibenzothiophene	149	1.97	107	138.90	65	135
3	DBT1	C1-Dibenzothiophenes	335	1.97	120	278.60	65	135
3	DBT2	C2-Dibenzothiophenes	476	1.97	126	377.50	65	135
3	DBT3	C3-Dibenzothiophenes	443	1.97	130	341.40	65	135
3	DBT4	C4-Dibenzothiophenes	240	1.97	131	183.40	65	135
4	BF	Benzo(b)fluorene	5.95	1.97				
4	FL0	Fluoranthene	4.24	1.97	106	4.00	65	135
4	PY0	Pyrene	11.3	1.97	87	13.00	65	135
4	FP1	C1-Fluoranthenes/Pyrenes	69.1	1.97	109	63.10	65	135
4	FP2		116	1.97	114	102.20	65	135
		C2-Fluoranthenes/Pyrenes						
4	FP3	C3-Fluoranthenes/Pyrenes	135	1.97	113	119.60	65	135
4	FP4	C4-Fluoranthenes/Pyrenes	119	1.97	114	104.00	65	135
4	NBT0	Naphthobenzothiophenes	43.1	1.97	98	43.80	65	135
4	NBT1	C1-Naphthobenzothiophenes	115	1.97	98	117.20	65	135
4	NBT2	C2-Naphthobenzothiophenes	163	1.97	100	163.30	65	135
4	NBT3	C3-Naphthobenzothiophenes	129	1.97	100	128.70	65	135
4	NBT4	C4-Naphthobenzothiophenes	93.8	1.97	105	89.00	65	135
4	BA0	Benz[a]anthracene	2.06	1.97	98	2.10	65	135
4	C0	Chrysene/Triphenylene	39.6	1.97	112	35.20	65	135
4	BC1	C1-Chrysenes	68.3	1.97	109	62.80	65	135
4	BC2	C2-Chrysenes	98.1	1.97	114	86.00	65	135
4	BC3	C3-Chrysenes	102	1.97	104	97.60	65	135
4	BC4	C4-Chrysenes	64.0	1.97	108	59.40	65	135
5	BBF	Benzo[b]fluoranthene	5.10	1.97	98	5.20	65	135
5	BJKF	Benzo[j]fluoranthene/Benzo[k]fluoranthene	0.417 J		30	3.20	03	135
5	BAF		0.417 J					100
		Benzo[a]fluoranthene			400	0.00	05	405
5	BEP	Benzo[e]pyrene	10.7	1.97	109	9.80	65	135
5	BAP	Benzo[a]pyrene	1.62 J		86	1.90	65	135
5	PER	Perylene	2.82	1.97	101	2.80	65	135
6	IND	Indeno[1,2,3-cd]pyrene	0.550 J					135
6	DA	Dibenz[ah]anthracene/Dibenz[ac]anthracene	0.861 J					135
6	GHI	Benzo[g,h,i]perylene	3.16	1.97	102	3.10	65	135
	CAR	Carbazole	5.35	1.97	89	6.00	65	135
3	4MDT	4-Methyldibenzothiophene	158	1.97	120	131.80	65	135
3	2MDT	2/3-Methyldibenzothiophene	123	1.97	126	97.50	65	135
3	1MDT	1-Methyldibenzothiophene	50.4	1.97	114	44.20	65	135
3	3MP	3-Methylphenanthrene	103	1.97	115	89.40	65	135
3	2MP	2-Methylphenanthrene	103	1.97	111	97.70	65	135
	2MA				108			
3		2-Methylanthracene	3.47	1.97		3.20	65	135
3	9MP	9/4-Methylphenanthrene	162	1.97	115	141.20	65	135
3	1MP	1-Methylphenanthrene	106	1.97	109	97.40	65	135



		Client ID	QD01.07./0.5.4.5\	SB02.05.(0.5.1.5)		CD02.00 (0.0.4.0		
		Lab ID	SB01-07 (0.5-1.5) 1309010-04		SB02-05 (0.5-1.5) 1309010-05		SB03-06 (0.0-1.0) 1309010-07	
		Matrix Reference Method	Soil Modified 8270D		Soil Modified 8270D		Soil Modified 8270D	
		Batch ID	SS091813B03		SS091813B03		SS091813B03	
		Date Collected Date Received	08/20/2013 08/24/2013		08/20/2013 08/24/2013		08/22/2013 08/24/2013	
		Date Prepped	09/18/2013		09/18/2013		09/18/2013	
		Date Analyzed	10/02/2013		10/03/2013		10/03/2013	
		Sample Size (wet) % Solid	29.9 82.00		13.36 64.60		15.29 67.06	
		File ID	d32755.D		d32759.D		d32761.D	
		Units Final Volume	μg/Kg 2		μg/Kg 2		μg/Kg 3.33	
		Dilution			1		1	
		Reporting Limit	0.816		2.32		3.25	
Class 2	Abbrev D0	Analytes cis/trans-Decalin	Result 9.12	SSRL 0.816	Result 69.3	SSRL 2.32	Result 80.0	3.25
2	D1	C1-Decalins	10.7	0.816	76.4	2.32	166	3.25
2	D2 D3	C2-Decalins C3-Decalins	13.6 9.14	0.816 0.816	113 80.7	2.32	887 2180	3.25 3.25
2	D4	C4-Decalins	17.7	0.816	133	2.32	7940	3.25
2	BT0 BT1	Benzothiophene	3.23 5.56	0.816 0.816	20.6 41.4	2.32 2.32	90.4 279	3.25 3.25
2	BT2	C1-Benzo(b)thiophenes C2-Benzo(b)thiophenes	6.52	0.816	56.3	2.32	400	3.25
2	BT3 BT4	C3-Benzo(b)thiophenes	8.04 4.61	0.816 0.816	70.6 46.1	2.32 2.32	836 515	3.25 3.25
2	N0	C4-Benzo(b)thiophenes Naphthalene	102	0.816	1200	2.32	2280	3.25
2	N1 N2	C1-Naphthalenes	192 242	0.816 0.816	2200 2450	2.32 2.32	5180 5300	3.25 3.25
2	N3	C2-Naphthalenes C3-Naphthalenes	200	0.816	1960	2.32	3180	3.25
2	N4	C4-Naphthalenes	109	0.816	1110	2.32	2370	3.25
2	B DF	Biphenyl Dibenzofuran	24.3 52.3	0.816 0.816	237 622	2.32	833 807	3.25 3.25
3	AY	Acenaphthylene	18.0	0.816	112	2.32	122	3.25
3	AE F0	Acenaphthene Fluorene	9.70 16.3	0.816 0.816	69.7 78.3	2.32	144 237	3.25 3.25
3	F1	C1-Fluorenes	29.7	0.816	153	2.32	414	3.25
3	F2 F3	C2-Fluorenes C3-Fluorenes	90.1 101	0.816 0.816	596 738	2.32	1260 1270	3.25 3.25
3	A0	Anthracene	35.6	0.816	247	2.32	116	3.25
3	P0 PA1	Phenanthrene C1-Phenanthrenes/Anthracenes	210 261	0.816 0.816	1510 2010	2.32	1510 2350	3.25 3.25
3	PA2	C2-Phenanthrenes/Anthracenes	249	0.816	1940	2.32	2330	3.25
3	PA3 PA4	C3-Phenanthrenes/Anthracenes C4-Phenanthrenes/Anthracenes	137 70.5	0.816 0.816	1200 638	2.32	1270 578	3.25 3.25
3	RET	Retene	47.7	0.816	139	2.32	ι	J 3.25
3	DBT0 DBT1	Dibenzothiophene C1-Dibenzothiophenes	23.1 45.4	0.816 0.816	169 325	2.32	416 708	3.25 3.25
3	DBT2	C2-Dibenzothiophenes	50.3	0.816	379	2.32	918	3.25
3	DBT3 DBT4	C3-Dibenzothiophenes C4-Dibenzothiophenes	31.4 14.1	0.816 0.816	286 147	2.32	531 249	3.25 3.25
4	BF	Benzo(b)fluorene	22.6	0.816	81.0	2.32	40.0	3.25
4	FL0 PY0	Fluoranthene Pyrene	196 173	0.816 0.816	968 837	2.32	227 367	3.25 3.25
4	FP1	C1-Fluoranthenes/Pyrenes	163	0.816	976	2.32	750	3.25
4 4	FP2 FP3	C2-Fluoranthenes/Pyrenes C3-Fluoranthenes/Pyrenes	184 162	0.816 0.816	1480 1320	2.32	1060 959	3.25 3.25
4	FP4	C4-Fluoranthenes/Pyrenes	117	0.816	964	2.32	620	3.25
4 4	NBT0 NBT1	Naphthobenzothiophenes C1-Naphthobenzothiophenes	49.4 66.5	0.816 0.816	329 469	2.32	183 316	3.25 3.25
4	NBT2	C2-Naphthobenzothiophenes	57.0	0.816	378	2.32	278	3.25
4 4	NBT3 NBT4	C3-Naphthobenzothiophenes C4-Naphthobenzothiophenes	30.6 15.0	0.816 0.816	230 118	2.32	154 82.2	3.25 3.25
4	BA0	Benz[a]anthracene	120	0.816	455	2.32	142	3.25
4 4	C0 BC1	Chrysene/Triphenylene C1-Chrysenes	158 136	0.816 0.816	745 769	2.32	325 544	3.25 3.25
4	BC2	C2-Chrysenes	116	0.816	765	2.32	579	3.25
4 4	BC3 BC4	C3-Chrysenes C4-Chrysenes	108 65.1	0.816 0.816	858 577	2.32	617 399	3.25 3.25
5	BBF	Benzo[b]fluoranthene	124	0.816	736	2.32	229	3.25
5 5	BJKF BAF	Benzo[j]fluoranthene/Benzo[k]fluoranthene Benzo[a]fluoranthene	112 26.2	0.816	422 93.7	2.32	140 34.4	3.25 3.25
5	BEP	Benzo[e]pyrene	95.3	0.816	496	2.32	204	3.25
5 5	BAP PER	Benzo[a]pyrene Perylene	123 51.2	0.816 0.816	386 112	2.32	131 30.0	3.25 3.25
6	IND	Indeno[1,2,3-cd]pyrene	91.1	0.816	403	2.32	166	3.25
6 6	DA GHI	Dibenz[ah]anthracene/Dibenz[ac]anthracene	27.7 88.0	0.816 0.816	130 393	2.32	57.2 175	3.25 3.25
	CAR	Benzo[g,h,i]perylene Carbazole	15.4	0.816	93.8	2.32	78.6	3.25
3	4MDT 2MDT	4-Methyldibenzothiophene 2/3-Methyldibenzothiophene	19.6 19.4	0.816 0.816	116 128	2.32	336 270	3.25 3.25
3	1MDT	1-Methyldibenzothiophene	3.45	0.816	34.8	2.32	51.6	3.25
3	3MP 2MP	3-Methylphenanthrene 2-Methylphenanthrene	58.5 88.2	0.816 0.816	403 667	2.32 2.32	556 833	3.25 3.25
3	2MA	2-Methylanthracene	10.9	0.816	68.6	2.32	94.5	3.25
3	9MP 1MP	9/4-Methylphenanthrene	57.2 44.1	0.816 0.816	484 378	2.32 2.32	482 358	3.25 3.25
3	IIVIP	1-Methylphenanthrene	44.1	0.010	3/8	2.32	აეგ	3.25
		Surrogates (% Recovery)						
		Naphthalene-d8	69		77		76	
		Phenanthrene-d10 Benzo[a]pyrene-d12	93 99		103 94		109 96	
		5B(H)Cholane	102		108		109	



- U: The analyte was analyzed for but not detected at the sample specific level reported
- B: Found in associated blank as well as sample.
- J: Estimated value, below quantitation limit. E: Estimated value, exceeds the upper limit of calibration.
- NA: Not Applicable
- D: Secondary Dilution Performed
- D1: Tertiary Dilution Performed
- a: Value outside of QC Limits.
- §: Surrogate value outside of acceptable range.
- X: It is not possible to calculate RPD, one result is below the detection limit, the other is above reporting limit
- G: Matrix Interference.
- P: Greater than 40% RPD between the two columns, the higher value is reported according to the method
- I: Due to interference, the lower value is reported.
- N: Spike recovery outside control limits. E: Estimated due to Interference. (Metals)
- ¤: Duplicate outside control limits.
- P: Spike compound. (Metals)
- J: Below CRDL, Project DL, or RL but greater than or equal to MDI
  C: Sample concentration is > 4 times the spike level, recovery limits do not apply. (Metals)
- S: Spike Compound. (Organics)
- 5: Spn. Compound. (Organics) 5: RPD criteria not applicable to results less than 5 times the reporting limit. (Metals) T: Tentatively identified corexit compound.
- C: Co-elution.
- Z: Result not surrogate corrected.
- DL: Surrogate result diluted out of sample.
  W: Matrix interference may be present based on chemical reasonableness evaluation.



01. 110	
Client ID	Method Blank
Lab ID	SO100413B03
Matrix	NAPL
Reference Method	Modified 8270D
Batch ID	SO100413B03
Date Collected	N/A
Date Received	N/A
Date Prepped	09/24/2013
Date Analyzed	10/04/2013
Sample Size (wet)	0.1
% Solid	100.00
File ID	d32777.D
Units	mg/Kg
Final Volume	20
Dilution	1
Reporting Limit	2.00

Class	Abbrev	Analytes	Result	SSRL
2	D0	cis/trans-Decalin	U	2.00
2	D1	C1-Decalins	U	2.00
2	D2	C2-Decalins	U	2.00
2	D3	C3-Decalins	U	2.00
2	D4 BT0	C4-Decalins Benzothiophene	U	2.00
2	BT1	C1-Benzo(b)thiophenes	U	2.00
2	BT2	C2-Benzo(b)thiophenes	U	2.00
2	BT3	C3-Benzo(b)thiophenes	Ü	2.00
2	BT4	C4-Benzo(b)thiophenes	Ū	2.00
2	N0	Naphthalene	U	2.00
2	N1	C1-Naphthalenes	U	2.00
2	N2	C2-Naphthalenes	U	2.00
2	N3	C3-Naphthalenes	U	
2	N4	C4-Naphthalenes	U	2.00
2	В	Biphenyl	U	2.00
3	DF AY	Dibenzofuran Acenaphthylene	U	2.00
3	AE	Acenaphthene	U	2.00
3	F0	Fluorene	Ü	
3	F1	C1-Fluorenes	Ū	2.00
3	F2	C2-Fluorenes	U	2.00
3	F3	C3-Fluorenes	U	2.00
3	A0	Anthracene	U	2.00
3	P0	Phenanthrene	U	2.00
3	PA1	C1-Phenanthrenes/Anthracenes	U	2.00
3	PA2	C2-Phenanthrenes/Anthracenes	U	2.00
3	PA3 PA4	C3-Phenanthrenes/Anthracenes	U	2.00
3	RFT	C4-Phenanthrenes/Anthracenes Retene	U	2.00
3	DBT0	Dibenzothiophene	i i	2.00
3	DBT1	C1-Dibenzothiophenes	U	2.00
3	DBT2	C2-Dibenzothiophenes	Ü	2.00
3	DBT3	C3-Dibenzothiophenes	U	2.00
3	DBT4	C4-Dibenzothiophenes	U	2.00
4	BF	Benzo(b)fluorene	U	2.00
4	FL0	Fluoranthene	U	2.00
4	PY0	Pyrene	U	2.00
4	FP1 FP2	C1-Fluoranthenes/Pyrenes	U	2.00
4	FP2 FP3	C2-Fluoranthenes/Pyrenes C3-Fluoranthenes/Pyrenes	U	2.00
4	FP4	C4-Fluoranthenes/Pyrenes	Ü	2.00
4	NBT0	Naphthobenzothiophenes	Ü	2.00
4	NBT1	C1-Naphthobenzothiophenes	Ū	2.00
4	NBT2	C2-Naphthobenzothiophenes	U	2.00
4	NBT3	C3-Naphthobenzothiophenes	U	2.00
4	NBT4	C4-Naphthobenzothiophenes	U	2.00
4	BA0	Benz[a]anthracene	U	2.00
4	C0	Chrysene/Triphenylene	U	2.00
4	BC1 BC2	C1-Chrysenes	U	2.00
4	BC2 BC3	C2-Chrysenes C3-Chrysenes	U	2.00
4	BC4	C4-Chrysenes	U	2.00
5	BBF	Benzo[b]fluoranthene	Ü	2.00
5	BJKF	Benzo[j]fluoranthene/Benzo[k]fluoranthene	Ū	2.00
5	BAF	Benzo[a]fluoranthene	U	2.00
5	BEP	Benzo[e]pyrene	U	2.00
5	BAP	Benzo[a]pyrene	U	2.00
5	PER	Perylene	U	2.00
6	IND	Indeno[1,2,3-cd]pyrene	U	2.00
6	DA GHI	Dibenz[ah]anthracene/Dibenz[ac]anthracene	U	2.00
6	CAR	Benzo[g,h,i]perylene Carbazole	U	2.00
3	4MDT	4-Methyldibenzothiophene	U	2.00
3	2MDT	2/3-Methyldibenzothiophene	U	2.00
3	1MDT	1-Methyldibenzothiophene	Ü	2.00
3	3MP	3-Methylphenanthrene	Ū	2.00
3	2MP	2-Methylphenanthrene	U	2.00
3	2MA	2-Methylanthracene	U	2.00
3	9MP	9/4-Methylphenanthrene	U	2.00
3	1MP	1-Methylphenanthrene	U	2.00



Benzo[a]pyrene-d12



Class	Abbrev	Analytes	Result	SSF	RL % Rec	Spike Conc.	Lower Limit	Upper Limit
2	N0	Naphthalene	188 5	3 2.0	0 94	200	50	130
3	AY	Acenaphthylene	200 8	3 2.0	0 100	200	50	130
3	AE	Acenaphthene	198 5	2.0	0 99	200	50	130
3	F0	Fluorene	202 8	2.0	0 101	200	50	130
3	A0	Anthracene	204 S	2.0	0 102	200	50	130
3	P0	Phenanthrene	202 5	2.0	0 101	200	50	130
4	FL0	Fluoranthene	217 8	2.0	0 109	200	50	130
4	PY0	Pyrene	224 8	2.0	0 112	200	50	130
4	BA0	Benz[a]anthracene	224 8	2.0	0 112	200	50	130
4	C0	Chrysene/Triphenylene	219 8	2.0	0 109	200	50	130
5	BBF	Benzo[b]fluoranthene	229 5	3 2.0	0 115	200	50	130
5	BJKF	Benzo[j]fluoranthene/Benzo[k]fluoranthene	227 8	2.0	0 113	200	50	130
5	BAP	Benzo[a]pyrene	242 5	2.0	0 121	200	50	130
6	IND	Indeno[1,2,3-cd]pyrene	242 5	2.0	0 121	200	50	130
6	DA	Dibenz[ah]anthracene/Dibenz[ac]anthracene	230 8	2.0	0 115	200	50	130
6	GHI	Benzo[g,h,i]perylene	223 5	2.0	0 111	200	50	130

 Surrogates (% Recovery)
 99

 Naphthalene-d8
 99

 Phenanthrene-d10
 107

 Benzo[a]pyrene-d12
 113



Class	Abbrev	Analytes	Result	SSRL	% Rec	Spike Conc.	Lower Limit	Upper Limit	RPD	RPD Limit
2	N0	Naphthalene	192 5		96	200	50	130	2	30
3	AY	Acenaphthylene	204 8		102	200	50	130	2	30
3	AE	Acenaphthene	202 8		101	200	50	130	2	30
3	F0	Fluorene	205 8		103	200	50	130	2	30
2	A0	Anthracene	206 8		103	200	50	130	1	30
3	P0	Phenanthrene	205 8		103	200	50	130	1	30
-									1	
4	FL0	Fluoranthene	220 8		110	200	50	130	1	30
4	PY0	Pyrene	227 8	2.00	114	200	50	130	2	30
4	BA0	Benz[a]anthracene	225 5	2.00	113	200	50	130	0	30
4	C0	Chrysene/Triphenylene	219 5	2.00	110	200	50	130	0	30
5	BBF	Benzo[b]fluoranthene	233 5	2.00	117	200	50	130	2	30
5	BJKF	Benzo[j]fluoranthene/Benzo[k]fluoranthene	228 5	2.00	114	200	50	130	0	30
5	BAP	Benzo[a]pyrene	244 5	2.00	122	200	50	130	1	30
6	IND	Indeno[1,2,3-cd]pyrene	245 8	2.00	122	200	50	130	1	30
6	DA	Dibenz[ah]anthracene/Dibenz[ac]anthracene	233 8	2.00	116	200	50	130	1	30
6	GHI	Benzo[g,h,i]perylene	224 5	2.00	112	200	50	130	0	30

 Surrogates (% Recovery)
 99

 Naphthalene-d8
 99

 Phenanthrene-d10
 106

 Benzo[a]pyrene-d12
 111



Client ID
Lab ID
Matrix
Reference Method
Batch ID
Date Collected
Date Received
Date Prepped
Date Analyzed
Sample Size (wet)
% Solid
File ID
Units
Final Volume
Dilution
Reporting Limit

Class	Abbrev	Analytes
2	N0	Naphthalene
3	AY	Acenaphthylene
3	AE	Acenaphthene
3	F0	Fluorene
3	A0	Anthracene
3	P0	Phenanthrene
4	FL0	Fluoranthene
4	PY0	Pyrene
4	BA0	Benz[a]anthracene
4	C0	Chrysene/Triphenylene
5	BBF	Benzo[b]fluoranthene
5	BJKF	Benzo[j]fluoranthene/Benzo[k]fluoranthene
5	BAP	Benzo[a]pyrene
6	IND	Indeno[1,2,3-cd]pyrene
6	DA	Dibenz[ah]anthracene/Dibenz[ac]anthracene
6	GHI	Benzo[g,h,i]perylene

Surrogates (% Recovery) Naphthalene-d8 Phenanthrene-d10 Benzo[a]pyrene-d12



Client ID	Alaska North Slope Crude
Lab ID	ST091213ANC01
Matrix	Oil
Reference Method	Modified 8270D
Batch ID	N/A
Date Collected	N/A
Date Received	N/A
Date Prepped	N/A
Date Analyzed	08/17/2013
Sample Size (wet)	0.05073
% Solid	100.00
File ID	D32061.D
Units	mg/Kg
Final Volume	10
Dilution	1
Reporting Limit	1.97

Class	Abbrev	Analytes	Result	SSRL	% Rec	Spike Conc.	Lower Limit	Upper Limit
2	D0	cis/trans-Decalin	439	1.97	92	479.20	65	135
2	D1	C1-Decalins	710	1.97	97	728.90	65	135
2	D2	C2-Decalins	668	1.97	105	635.50	65	135
2	D3	C3-Decalins	396	1.97	120	329.80	65	135
2	D4	C4-Decalins	397	1.97	122	326.50	65	135
2	BT0	Benzothiophene	5.73	1.97	106	5.40	65	135
2	BT1	C1-Benzo(b)thiophenes	32.0	1.97	111	28.90	65	135
2	BT2	C2-Benzo(b)thiophenes	55.7	1.97	112	49.60	65	135
2	BT3	C3-Benzo(b)thiophenes	121	1.97	122	99.00	65	135
2	BT4	C4-Benzo(b)thiophenes	107	1.97	123	87.10	65	135
2	N0	Naphthalene	553	1.97	100	555.80	65	135
2	N1 N2	C1-Naphthalenes	1220	1.97	104	1167.30	65 65	135
2	N2 N3	C2-Naphthalenes C3-Naphthalenes	1570 1220	1.97 1.97	111 118	1409.70 1035.90	65	135 135
2	N4	C4-Naphthalenes	709	1.97	126	561.10	65	135
2	B B	Biphenyl	156	1.97	107	145.70	65	135
3	DF	Dibenzofuran	52.8	1.97	107	51.20	65	135
3	AY		7.09		103		65	
ა 3	AT AE	Acenaphthylene Acenaphthene	16.9	1.97 1.97	91	6.50 18.70	65	135 135
ა 3	F0	Fluorene	76.5	1.97	103	74.60	65	135
3	F1	C1-Fluorenes	185	1.97	103	170.20	65	135
3	F2		283		111		65	135
3	F2 F3	C2-Fluorenes C3-Fluorenes	283 275	1.97 1.97	111	255.40 238.50	65	135
ა 3	A0	Anthracene	2/5	1.97	113	230.50	05	133
	P0		217		102	212.20	65	125
3 3	P0 PA1	Phenanthrene C1-Phenanthrenes/Anthracenes	217 489	1.97 1.97	102 113	212.20 432.70	65 65	135 135
3	PA2		568	1.97			65	135
3	PA3	C2-Phenanthrenes/Anthracenes	394	1.97	122	465.90	65	
	PA4	C3-Phenanthrenes/Anthracenes C4-Phenanthrenes/Anthracenes		1.97	124 133	317.40 129.00	65	135 135
3	RET	Retene	172	1.97	133	129.00	05	133
3	DBT0	Dibenzothiophene	149	1.97	107	138.90	65	135
3	DBT0 DBT1	C1-Dibenzothiophenes	335	1.97	120	278.60	65	135
3	DBT2	C2-Dibenzothiophenes	476	1.97	126	377.50	65	135
ა 3	DBT3	C3-Dibenzothiophenes	443	1.97			65	135
3	DBT4	C3-Dibenzothiophenes	240	1.97	130 131	341.40 183.40	65	135
			5.95		131	163.40	65	135
4	BF	Benzo(b)fluorene		1.97	400	4.00	0.5	405
4	FL0 PY0	Fluoranthene Pyrene	4.24 11.3	1.97 1.97	106 87	4.00 13.00	65 65	135 135
4	FP1		69.1	1.97	109	63.10	65	135
4	FP1	C1-Fluoranthenes/Pyrenes C2-Fluoranthenes/Pyrenes	116	1.97	114	102.20	65	135
4	FP2 FP3	C3-Fluoranthenes/Pyrenes	135	1.97	113	119.60	65	135
4	FP4		119	1.97	113	104.00	65	135
4	NBT0	C4-Fluoranthenes/Pyrenes		1.97	98	43.80	65	
4	NBT1	Naphthobenzothiophenes	43.1 115	1.97	98		65	135
4	NBT2	C1-Naphthobenzothiophenes C2-Naphthobenzothiophenes	163	1.97	100	117.20 163.30	65	135 135
4	NBT3		129	1.97	100	128.70	65	135
		C3-Naphthobenzothiophenes						
4	NBT4	C4-Naphthobenzothiophenes	93.8	1.97	105	89.00	65	135
4 4	BA0 C0	Benz[a]anthracene	2.06 39.6	1.97 1.97	98 112	2.10	65 65	135
4		Chrysene/Triphenylene				35.20		135
4 4	BC1 BC2	C1-Chrysenes	68.3 98.1	1.97 1.97	109 114	62.80 86.00	65 65	135 135
4	BC2 BC3	C2-Chrysenes C3-Chrysenes	98.1	1.97	104	97.60	65	135
4 4	BC3 BC4	C3-Chrysenes C4-Chrysenes	64.0	1.97	104	59.40	65	135
4 5	BBF			1.97	98		65	
	BJKF	Benzo[b]fluoranthene	5.10		96	5.20	05	135
5		Benzo[j]fluoranthene/Benzo[k]fluoranthene	0.417	1.97				
5	BAF	Benzo[a]fluoranthene	40.7	1.97	100	0.00		125
5	BEP BAP	Benzo[e]pyrene	10.7	1.97	109	9.80	65	135
5 5	PER	Benzo[a]pyrene	1.62	1.97	86	1.90	65	135
		Perylene	2.82	1.97	101	2.80	65	135
6 6	IND	Indeno[1,2,3-cd]pyrene	0.550	1.97				
	DA GHI	Dibenz[ah]anthracene/Dibenz[ac]anthracene	0.861 3.16	1.97 1.97	102	3.10	65	135
6	CAR	Benzo[g,h,i]perylene Carbazole	3.16 5.35	1.97	102 89	3.10 6.00	65 65	135 135
^								
3	4MDT	4-Methyldibenzothiophene	158	1.97	120	131.80	65	135
3	2MDT	2/3-Methyldibenzothiophene	123	1.97	126	97.50	65	135
3	1MDT	1-Methyldibenzothiophene	50.4	1.97	114	44.20	65	135
3	3MP	3-Methylphenanthrene	103	1.97	115	89.40	65	135
3	2MP	2-Methylphenanthrene	108	1.97	111	97.70	65	135
3	2MA	2-Methylanthracene	3.47	1.97	108	3.20	65	135
3	9MP 1MP	9/4-Methylphenanthrene	162	1.97	115	141.20	65	135
3		1-Methylphenanthrene	106	1.97	109	97.40	65	135



Client ID	MW-56 (091213)	MW-55 (091213)	MW-37 (091213)
Lab ID	1310009-01	1310009-02	1310009-03
Matrix	NAPL	NAPL	NAPL
Reference Method	Modified 8270D	Modified 8270D	Modified 8270D
Batch ID	SO100413B03	SO100413B03	SO100413B03
Date Collected	09/12/2013	09/12/2013	09/12/2013
Date Received	09/19/2013	09/19/2013	09/19/2013
Date Prepped	09/24/2013	09/24/2013	09/24/2013
Date Analyzed	10/05/2013	10/05/2013	10/05/2013
Sample Size (wet)	0.1007	0.1014	0.1004
% Solid	100.00	100.00	100.00
File ID	d32783.D	d32785.D	d32787.D
Units	mg/Kg	mg/Kg	mg/Kg
Final Volume	20	20	20
Dilution	1	1	1
Reporting Limit	1.99	1.97	1.99

		Reporting Ellinic	1.00								
Class	Abbrev	Analytes	Result		SSRL	Result		SSRL	. Result		SSRL
2	D0	cis/trans-Decalin	876		1.99	786		1.97	603		1.99
2	D1	C1-Decalins	1970		1.99	1790		1.97	1440		1.99
2	D2	C2-Decalins	2220		1.99	2090		1.97	1790		1.99
2	D3	C3-Decalins	1540		1.99	1490		1.97	1340		1.99
2	D4	C4-Decalins	2370		1.99	2200		1.97	2300		1.99
2	BT0	Benzothiophene	24.8		1.99	3.26		1.97		U	1.99
2	BT1	C1-Benzo(b)thiophenes	516		1.99	434		1.97	355		1.99
2	BT2	C2-Benzo(b)thiophenes	716		1.99	637		1.97	587		1.99
2	BT3	C3-Benzo(b)thiophenes	860		1.99	821		1.97	708		1.99
2	BT4	C4-Benzo(b)thiophenes	580		1.99	586		1.97	492		1.99
2	N0	Naphthalene	665	_	1.99	57.5	_	1.97	40.4		1.99
2	N1	C1-Naphthalenes	6860		3.97	6100	D	3.94	1970	_	1.99
2	N2 N3	C2-Naphthalenes C3-Naphthalenes	13900 13200	U	3.97 1.99	13800 12500	U	3.94 1.97	12400 12400	D	3.98 1.99
2	N4	C4-Naphthalenes	6870		1.99	6730		1.97	12400		1.99
2	B B	C4-Naphthalenes Biphenyl	5.32		1.99	3.65		1.97	4.41		1.99
3	DF	Dibenzofuran	280		1.99	231		1.97	219		1.99
3	AY	Acenaphthylene	35.0		1.99	33.4		1.97	30.1		1.99
3	AE	Acenaphthene	460		1.99	418		1.97	398		1.99
3	F0	Fluorene	665		1.99	576		1.97	517		1.99
3	F1	C1-Fluorenes	1680		1.99	1530		1.97	1560		1.99
3	F2	C2-Fluorenes	2550		1.99	2490		1.97	2460		1.99
3	F3	C3-Fluorenes	1580		1.99	1620		1.97	1480		1.99
3	A0	Anthracene	139		1.99	135		1.97	135		1.99
3	P0	Phenanthrene	1640		1.99	1460		1.97	1320		1.99
3	PA1	C1-Phenanthrenes/Anthracenes	3400		1.99	3240		1.97	2910		1.99
3	PA2	C2-Phenanthrenes/Anthracenes	2580		1.99	2690		1.97	2240		1.99
3	PA3	C3-Phenanthrenes/Anthracenes	907		1.99	1050		1.97	794		1.99
3	PA4	C4-Phenanthrenes/Anthracenes	231		1.99	278		1.97	196		1.99
3	RET	Retene		U	1.99		U	1.97		U	1.99
3	DBT0	Dibenzothiophene	429		1.99	391		1.97	298		1.99
3	DBT1	C1-Dibenzothiophenes	1260		1.99	1220		1.97	1000		1.99
3	DBT2	C2-Dibenzothiophenes	1460		1.99	1510		1.97	1170		1.99
3	DBT3	C3-Dibenzothiophenes	741		1.99	844		1.97	589		1.99
3	DBT4	C4-Dibenzothiophenes	240		1.99	293		1.97	193		1.99
4	BF	Benzo(b)fluorene	7.08		1.99	9.11		1.97	5.57		1.99
4	FL0	Fluoranthene	28.1		1.99	42.1		1.97	21.0		1.99
4	PY0	Pyrene	76.8		1.99	90.6		1.97	60.5		1.99
4	FP1	C1-Fluoranthenes/Pyrenes	115		1.99	131		1.97	92.6		1.99
4	FP2	C2-Fluoranthenes/Pyrenes	72.1		1.99	85.4		1.97	60.5		1.99
4	FP3	C3-Fluoranthenes/Pyrenes	34.4		1.99	43.1		1.97	30.2		1.99
4	FP4	C4-Fluoranthenes/Pyrenes	11.5		1.99	15.0		1.97	11.4		1.99
4	NBT0	Naphthobenzothiophenes	5.25		1.99	6.64		1.97	3.64		1.99
4	NBT1	C1-Naphthobenzothiophenes	8.36		1.99	10.0		1.97	5.62		1.99
4	NBT2	C2-Naphthobenzothiophenes	6.74		1.99	9.21		1.97	4.32		1.99
4	NBT3	C3-Naphthobenzothiophenes	3.76		1.99	4.91		1.97	2.86		1.99
4	NBT4	C4-Naphthobenzothiophenes		U	1.99	3.25		1.97		U	1.99
4	BA0	Benz[a]anthracene	2.52		1.99	6.66		1.97	2.24		1.99
4	C0	Chrysene/Triphenylene	5.90		1.99	9.79		1.97	4.66		1.99
4	BC1	C1-Chrysenes	10.2		1.99	13.7		1.97	8.33		1.99
4	BC2	C2-Chrysenes	9.20		1.99	12.2		1.97	9.20		1.99
4	BC3 BC4	C3-Chrysenes	10.2		1.99	12.3	IJ	1.97	11.0		1.99
4		C4-Chrysenes	0.007	U	1.99	0.74	U	1.97	4.00	U	1.99
5	BBF BJKF	Benzo[b]fluoranthene	0.997 0.722	J	1.99 1.99	3.71 2.94		1.97	1.00	J	1.99 1.99
5	BAF	Benzo[j]fluoranthene/Benzo[k]fluoranthene				0.529			0.611		
5		Benzo[a]fluoranthene	0.160	J	1.99		J	1.97	0.160	J	1.99
5 5	BEP BAP	Benzo[e]pyrene Benzo[a]pyrene	0.897	J	1.99 1.99	2.75 2.91		1.97 1.97	0.982 0.825	J	1.99 1.99
5	PER	Perylene	0.860 0.323	J	1.99	0.923	J	1.97	0.338	J	1.99
6	IND	Indeno[1,2,3-cd]pyrene	0.467		1.99	1.59	J	1.97	0.442		1.99
	DA	Dibenz[ah]anthracene/Dibenz[ac]anthracene				0.501					
6 6	GHI	Benzo[g,h,i]perylene	0.178 0.534	J	1.99 1.99	1.54	J	1.97 1.97	0.132 0.685	J	1.99 1.99
U	CAR	Carbazole	14.9	J	1.99	1.54	J	1.97	12.8	J	1.99
3	4MDT	4-Methyldibenzothiophene	652		1.99	635		1.97	518		1.99
3	2MDT	2/3-Methyldibenzothiophene	468		1.99	454		1.97	363		1.99
3	1MDT	1-Methyldibenzothiophene	86.2		1.99	83.5		1.97	67.7		1.99
3	3MP	3-Methylphenanthrene	1060		1.99	1000		1.97	888		1.99
3	2MP	2-Methylphenanthrene	1180		1.99	1120		1.97	996		1.99
3	2MA	2-Methylanthracene	103		1.99	93.1		1.97	90.0		1.99
3	9MP	9/4-Methylphenanthrene	625		1.99	592		1.97	548		1.99
3	1MP	1-Methylphenanthrene	423		1.99	407		1.97	367		1.99
			720			701			301		

Surrogates (% Recovery)			
Naphthalene-d8	86	81	79
Phenanthrene-d10	99	94	95



Project Name: CSXT-Arcadis-Brunswick Rail Yard

Pro		

	Client ID	MW-56 (091213)	MW-55 (091213	) MW-37 (091213)	
	Lab ID	1310009-01	1310009-0	2 1310009-03	
	Matrix	NAPL	NAP	L NAPL	-
	Reference Method	Modified 8270D	Modified 8270	Modified 8270D	)
	Batch ID	SO100413B03	SO100413B0	3 SO100413B03	1
	Date Collected	09/12/2013	09/12/2013	3 09/12/2013	
	Date Received	09/19/2013	09/19/2013	3 09/19/2013	
	Date Prepped	09/24/2013	09/24/2013	3 09/24/2013	
	Date Analyzed	10/05/2013	10/05/2013	3 10/05/2013	
	Sample Size (wet)	0.1007	0.1014	1 0.1004	
	% Solid	100.00	100.0	100.00	1
	File ID	d32783.D	d32785.I	d32787.D	1
	Units	mg/Kg	mg/K	g mg/Kg	1
	Final Volume	20	2	20	
	Dilution	1		1 1	
	Reporting Limit	1.99	1.9	7 1.99	1
Class Abbrev	Analytes	Result	SSRL Resu	lt SSRL Result	t SSRL
	Benzo[a]pyrene-d12	111	109	9 110	



Project Name: CSXT-Arcadis-Brunswick Rail Yard

riojeci	Nullibel.

Client ID	MW-49 (091213)	MW-70 (091213)
Lab ID	1310009-04	1310009-05
Matrix	NAPL	NAPL
Reference Method	Modified 8270D	Modified 8270D
Batch ID	SO100413B03	SO100413B03
Date Collected	09/12/2013	09/12/2013
Date Received	09/19/2013	09/19/2013
Date Prepped	09/24/2013	09/24/2013
Date Analyzed	10/05/2013	10/05/2013
Sample Size (wet)	0.1055	0.1006
% Solid	100.00	100.00
File ID	d32789.D	d32791.D
Units	mg/Kg	mg/Kg
Final Volume	20	20
Dilution	1	1
Reporting Limit	1.90	1.99

Description   Part   Serut			Reporting Limit	1.90		1.99	
2	01	A 1-1	Analytica	D#	CCDI	D#	CODI
2							
2 D 2 C2-Decains							
2							
2							
BTI							
2 B 511         C1-Benzo(b)thiophenes         265         1,90         164         1,99           2 B 13         C2-Benzo(b)thiophenes         627         1,90         93,8         1,99           2 B 13         C3-Benzo(b)thiophenes         627         1,90         1,92         1,99           2 B 14         C4-Benzo(b)thiophenes         420         1,90         1,92         1,99           2 N 1         C1-Nagothalenes         27,1         G         1,90         1,24         1,99           2 N 2         C2-Najathalenes         1,100         1,90         2,34         1,99           2 N 3         C3-Najathalenes         1,100         1,90         2,24         1,99           3 B 3         C3-Najathalenes         1,100         1,90         2,240         1,99           3 B 5         B Byberly         3,94         1,80         9,1         1,99           3 A 7         Canapathylme         3,43         1,80         9,7         1,99           3 A A Canapathylme         40         1,90         67.6         1,99           3 F 1         C1-Florenes         1,90         1,90         67.6         1,99           3 F 2         C2-Florenes         1,90<		BT0					
2         BT3         C3-Bertzo(Dhipophenes         627         1,90         192         1,99           2         N 10         Ale-Broz(Dhipophenes         480         1,90         175         1,99           2         N 10         C1-Alephrhalenes         27,1         6         3,99         21,1         1,39           2         N 12         C1-Alephrhalenes         27,1         6         3,99         21,1         1,39           2         N 3         C2-Alephrhalenes         6200         1,50         1,24         1,39           2         N 4         C4-Alephrhalenes         6230         1,50         1,39           3         B 5         Biphenyl         3,94         1,90         91,4         1,99           3         A 7         Acenaphrhylene         34,3         1,90         9,79         1,99           3         A 7         Acenaphrhylene         400         1,90         9,79         1,99           3         A 7         Acenaphrhylene         400         1,90         9,81         1,99           3         F 7         C2-Ellephrane         2,90         1,90         9,81         1,99           4         F 1							
2	2	BT2	C2-Benzo(b)thiophenes	403	1.90	93.6	1.99
2         N NO         Naphthalenes         44 2         1.90         102         1.99           2         N 2         C1-Naphthalenes         127 0         1.90         241         1.99           2         N 3         C2-Naphthalenes         1100         1.90         2340         1.19           2         N 4         C4-Naphthalenes         6230         1.90         2220         1.99           2         N 4         C4-Naphthalenes         6230         1.90         2220         1.99           2         N 4         C4-Naphthalenes         6230         1.90         2220         1.99           3         A 5         CA-Naphthalene         400         1.90         67.6         1.99           3         A 5         CA-Naphthalene         400         1.90         67.6         1.99           3         F 1         C1-Fluorene         655         1.90         81.6         1.99           3         F 2         C2-Fluorenes         1950         1.90         923         1.99           3         F 3         C3-Fluorenes         1950         1.90         923         1.99           4         F 3         F 3         C		BT3	C3-Benzo(b)thiophenes	627	1.90	192	1.99
2 NI			C4-Benzo(b)thiophenes				
2         NZ         C2-Naphthalenes         1100         0         3.79         1130         1.99           2         NA         C2-Naphthalenes         1100         1.90         2220         1.99           2         NA         C2-Naphthalenes         6230         1.90         2220         1.99           3         DF         Dibenzofran         1.88         1.90         1.50         1.99           3         AV         Acceptaphtylene         3.43         1.90         1.50         1.99           3         AV         Acceptaphtylene         3.43         1.90         1.50         1.99           3         F1         C1-Florenes         1.00         1.90         3.65         1.99           3         F2         C2-Florenes         2510         1.90         323         1.99           3         F3         C3-S-Florenes         1.90         1.90         37.0         1.99           3         F3         C3-S-Florenes         1.90         1.90         37.0         1.99           3         F3         C3-S-Florenes         1.90         1.90         37.0         1.99           3         FA         C2-Phenanthrees							
2         N3         C3-Naphthalenes         6130         190         2340         199           2         B         Biphenyl         3.94         1,90         91.4         1,99           3         AF         Acenaphthylene         34.3         1,90         9.79         1,99           3         AF         Acenaphthylene         36.3         1,90         6.76         1,99           3         AF         Acenaphthylene         36.3         1,90         6.76         1,99           3         AF         Acenaphthylene         40.0         1,90         6.76         1,99           3         AF         CL-Thornese         40.0         1,90         365         1,99           3         FO         Fluorene         160.0         1,90         365         1,99           3         FO         Anonamitrone         140         1,90         358         1,99           3         PA         CAPhrantmerese/Antracenes         140         1,90         421         1,99           3         PA         CAPhrantmeres/Antracenes         150         1,90         423         1,99           3         PA         CAPhrantmeres/Antracenes							
2         NA         CA-Naphthalenes         6230         1.90         2220         1.99           3         DF         Dibercofuran         188         1.90         15.0         1.99           3         AY         Aconaphthylene         34.3         1.90         9.79         1.99           3         AE         Aconaphthylene         400         1.90         67.6         1.99           3         F.D         Fluorene         655         1.90         81.6         1.99           3         F.1         CI-recenes         210         1.90         365         1.99           3         F.1         CI-recenes         210         1.90         365         1.99           3         F.2         CZ-Fluorenes         180         1.90         365         1.99           3         F.2         CZ-Fluorenes         180         1.90         983         1.99           3         F.2         CZ-Fluorenes         180         1.90         983         1.99           3         F.2         CZ-Fluorenes         180         1.90         92         1.99           3         F.A1         CL-Poranthylanese         1.90 <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>							
2         B         Bipheryi         3.94         1.90         91.4         1.99           3         DF         Diberzofuran         188         1.90         9.79         1.99           3         AZ         Acenaphthene         400         1.90         67.6         1.99           3         F.O         Fluorene         585         1.90         81.6         1.99           3         F.O         Fluorenes         1400         1.90         385         1.99           3         F.O         Fluorenes         1400         1.90         325         1.99           3         F.O         Fluorenes         1400         1.90         322         1.99           3         F.D         Cl-Fluorenes         1400         1.90         325         1.99           3         P.A         CAPrenantreesAndrees         1400         1.90         72.8         1.99           3         P.A         CAPrenantreesAndriracenes         3100         1.90         72.8         1.99           3         P.A         CAPrenantreesAndriracenes         458         1.90         2.7         1.99           3         P.A         CAPrenantreesAndriracenes							
3							
3         AZE         AcenaphtWeen         400         1.90         67.6         1.99           3         FO         Fluorene         665         1.90         81.6         1.99           3         FO         Fluorenes         1.60         1.90         36.6         1.99           3         F1         CL-Fluorenes         1.90         1.90         923         1.99           3         F3         CS-Fluorenes         1.90         1.90         923         1.99           3         AO         Anthracene         1.40         1.90         923         1.99           3         PAD         Chenanthrenes/Anthracenes         3.09         1.90         421         1.99           3         PAI         Cl-Phenanthrenes/Anthracenes         3.09         1.90         421         1.99           3         PAI         Cl-Phenanthrenes/Anthracenes         1.60         1.90         597         1.99           3         PAI         Cl-Phenanthrenes/Anthracenes         1.60         1.90         597         1.99           3         PAI         Cl-Phenanthrenes/Anthracenes         1.60         1.90         597         1.99           3         PAI<							
8 A El Flowene         Aconaphthene         400         1 90         67.6         1 99           3 F1         C1-Fluorenes         1400         1 90         365         1 99           3 F2         C2-Fluorenes         2510         1 90         923         1 99           3 F3         C3-Fluorenes         1950         1 90         958         1 99           3 F0         C3-Fluorenes         1950         1 90         958         1 99           3 F0         C3-Fluorenes         190         1 90         978         1 199           3 PA1         C1-Phenanthrenes/Anthracenes         330         1 90         72.8         1 199           3 PA2         C2-Phenanthrenes/Anthracenes         3110         1 90         843         1 199           3 PA3         C3-Fluorenthrenes/Anthracenes         458         1 90         237         1 199           3 PA3         C3-Fluorenthrenes/Anthracenes         458         1 90         237         1 199           3 PA3         C3-Fluorenthrenes/Anthracenes         1 90         1 90         1 90         1 199           3 PA3         C3-Fluorenthrenes/Anthracenes         1 90         1 90         1 199         1 199           3 PA							
FIO   Fluorene   565   1.90   81.6   1.99							
File   C1-Fluorenes   1400   190   3865   199							
3         F3         C2-Fluorenes         2510         1.90         958         1.99           3         AO         Anthracene         140         1.90         72.8         1.99           3         PA         Anthracene         140         1.90         72.8         1.99           3         PA         C1-Phenanthrenes/Anthracenes         3030         1.90         421         1.99           3         PA         C1-Phenanthrenes/Anthracenes         310         1.90         843         1.99           3         PA3         C3-Phenanthrenes/Anthracenes         1450         1.90         597         1.99           3         PA3         C3-Phenanthrenes/Anthracenes         1450         1.90         597         1.99           3         PAB         C4-Phenanthrenes/Anthracenes         1650         1.90         205         1.99           3         DRT         C2-Phenanthrenes/Anthracenes         1650         1.90         205         1.99           3         DRT         C1-Dienzchhiophenes         1050         1.90         205         1.99           3         DRT         C1-Dienzchhiophenes         1020         1.90         4.00         1.99      <							
S							
AO							
PO							
PAIL   C1-Phenanthrenes/Anthracenes   3030   190   421   199							
9 PAZ         C2-Phenanthrees/Anthracenes         3110         1,90         843         1,99           3 PA3         C3-Phenanthrenes/Anthracenes         488         1,90         237         1,99           3 RET         Retene         U         1,90         U         1,99           3 DBT0         Diberozothiophene         31.7         1,90         17.4         1,99           3 DBT2         C2-Diberozothiophenes         1050         1,90         20.5         1,99           3 DBT3         C3-Diberozothiophenes         1020         1,90         300         1,99           3 DBT3         C3-Diberozothiophenes         1020         1,90         300         1,99           3 DBT4         C4-Diberozothiophenes         402         1,90         300         1,99           4 BB         Bezozo(hijkovene         20.0         1,90         4,10         1,99           4 PF0         Pivoranthenes         224         1,90         125         1,99           4 PF0         Pyrene         224         1,90         125         1,99           4 FF1         C3-Elucoranthrenes/Pyrenes         158         1,90         163         1,99           4 FF2         C3-Elucoranthren		PA1	C1-Phenanthrenes/Anthracenes				
3         PAM         C4-Phenanthrenes/Anthracenes         488         1.90         237         1.99           3         RET         Retene         U         1.90         U         1.99           3         DBT0         Olbrazothiophene         31.7         1.90         17.4         1.99           3         DBT2         C2-Dibenzothiophenes         1520         1.90         358         1.99           3         DBT3         C2-Dibenzothiophenes         1520         1.90         358         1.99           3         DBT4         C4-Dibenzothiophenes         1020         1.90         4.14         1.99           4         BBT         Bezozolbiluorene         20.0         1.90         4.14         1.99           4         FBT         Cluoranthenes/Prenes         20.0         1.90         4.14         1.99           4         FBT         Cluoranthenes/Prenes         18.8         1.90         15.3         1.99           4         FPT         C2-Lioranthenes/Prenes         18.8         1.90         13.3         1.99           4         FBT         C2-Lioranthenes/Prenes         31.2         1.90         3.66         1.99           4 <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>							
9 PAM         C4-Phenanthrenes/Anthracenes         488         1.90         237         1.99           3 RET         Retene         U 1.90         U 1.90         1.99           3 DBT0         Dibrazothiophene         31.7         1.90         17.4         1.99           3 DBT2         C2-Debrazothiophenes         1520         1.90         358         1.99           3 DBT3         C3-Debrazothiophenes         1520         1.90         358         1.99           3 DBT4         C4-Debrazothiophenes         1020         1.90         358         1.99           4 PFD         C3-Debrazothiophenes         402         1.90         1.44         1.99           4 PFD         PLorathrene         144         1.90         4.10         1.99           4 PFD         Plorarithenes         242         1.90         125         1.99           4 PFD         C1-Fuoranthenes/Pyrenes         242         1.90         125         1.99           4 PFD         C1-Fuoranthenes/Pyrenes         158         1.90         153         1.99           4 PFD         C1-Fuoranthenes/Pyrenes         313         1.90         27.4         1.99           4 PFD         C2-Livandhenes/Pyrenes	3						1.99
3         DBT0         Diberzothiophene         31.7         1.90         17.4         1.99           3         DBT2         C2-Dibenzothiophenes         1050         1.90         358         1.99           3         DBT3         C2-Dibenzothiophenes         1020         1.90         300         1.99           3         DBT4         C2-Dibenzothiophenes         402         1.90         400         1.99           4         BBF         Benzo(b)fluorene         200         1.90         4.10         1.99           4         FLO         Flouranthene         144         1.90         224         1.99           4         PYO         Pyrene         224         1.90         125         1.99           4         FPYO         Pyrene         224         1.90         126         1.99           4         FPYO         Pyrene         224         1.90         126         1.99           4         FPY         C4-Fluoranthenes/Pyrenes         158         1.90         163         1.99           4         FPA         C4-Fluoranthenes/Pyrenes         31.3         1.90         3.66         1.99           4         NBT3         C2-Apa	3	PA4				237	1.99
3         DBT1         C1-Diberzothiophenes         1050         1 90         25         1 99           3         DBT3         C2-Diberzothiophenes         1520         1 90         338         1 99           3         DBT4         C2-Diberzothiophenes         1020         1 90         144         1.99           4         BF         Berazothiophenes         20         1.90         141         1.99           4         PFO         FLO         Fluoranthene         144         1.90         224         1.99           4         PFO         Pyrone         224         1.90         125         1.99           4         FP1         C1-Fluoranthenes/Pyrenes         158         1.90         106         1.99           4         FP2         C2-Fluoranthenes/Pyrenes         188         1.90         796         1.99           4         FP3         C3-Fluoranthenes/Pyrenes         31.3         1.90         796         1.99           4         FP3         C3-Fluoranthenes/Pyrenes         31.3         1.90         5.66         1.99           4         NBT3         C3-Naphthobenzothiophenes         13.2         1.90         3.66         1.99 <t< td=""><td>3</td><td>RET</td><td>Retene</td><td>U</td><td>1.90</td><td>U</td><td>1.99</td></t<>	3	RET	Retene	U	1.90	U	1.99
3 DBT2         C2-Dibenzothiophenes         1520         1.90         358         1.99           3 DBT4         C3-Dibenzothiophenes         1020         1.90         300         1.99           4 BF         Benzo(b)fluorene         20.0         1.90         4.10         1.99           4 FLO         Fluoranthenee         144         1.90         22.4         1.99           4 PYO         Pyrene         224         1.90         125         1.99           4 FP1         C1-Fluoranthenes/Pyrenes         242         1.90         125         1.99           4 FP2         C2-Fluoranthenes/Pyrenes         188         1.90         163         1.99           4 FP3         C3-Fluoranthenes/Pyrenes         189         1.90         79.6         1.99           4 FP3         C3-Fluoranthenes/Pyrenes         13.3         1.90         27.4         1.99           4 FP4         C4-Fluoranthenes/Pyrenes         13.3         1.90         27.4         1.99           4 NBT3         C1-Asphthobenzothiophenes         12.2         1.90         3.66         1.99           4 NBT3         C2-Naphthobenzothiophenes         15.2         1.90         3.66         1.99           4 NBT3 <td>3</td> <td>DBT0</td> <td>Dibenzothiophene</td> <td>31.7</td> <td>1.90</td> <td>17.4</td> <td>1.99</td>	3	DBT0	Dibenzothiophene	31.7	1.90	17.4	1.99
3         DBT3         C3-Dibenzothiophenes         402         1.90         340         1.99           4         BF         Benzo(p)fluorene         20.0         1.90         4.10         1.99           4         FLO         Fluoranthenes         20.0         1.90         4.10         1.99           4         PYO         Pyrene         224         1.90         125         1.99           4         PYO         Pyrene         224         1.90         206         1.99           4         FP1         C1-Fluoranthenes/Pyrenes         158         1.90         206         1.99           4         FP2         C2-Fluoranthenes/Pyrenes         158         1.90         206         1.99           4         FP3         C3-Fluoranthenes/Pyrenes         13.3         1.90         274         1.99           4         FP4         C4-Fluoranthenes/Pyrenes         13.2         1.90         3.66         1.99           4         FP3         C3-Fluoranthenes/Pyrenes         13.2         1.90         3.66         1.99           4         NBT3         C3-Halphthobenzothiophenes         17.1         1.90         3.66         1.99           4	3	DBT1	C1-Dibenzothiophenes	1050	1.90	205	1.99
3 BBT							
4         BF Benzo(b)fluorene         20.0         1.90         4.10         1.99           4         FLO Fluoranthene         144         1.90         22.4         1.99           4         PYO Pyrene         224         1.90         125         1.99           4         FP1 C1-Fluoranthenes/Pyrenes         224         1.90         206         1.99           4         FP2 C2-Fluoranthenes/Pyrenes         84.9         1.90         79.6         1.99           4         FP3 C3-Fluoranthenes/Pyrenes         84.9         1.90         79.6         1.99           4         FP4 C4-Fluoranthenes/Pyrenes         81.3         1.90         77.6         1.99           4         RP5 C4-Fluoranthenes/Pyrenes         81.3         1.90         27.6         1.99           4         NBT0 C4-Fluoranthenes/Pyrenes         13.2         1.90         3.66         1.99           4         NBT1 C4-Fluoranthenes/Pyrenes         17.1         1.90         6.66         1.99           4         NBT3 C3-Naphthobenzothiophenes         15.2         1.90         3.65         1.99           4         NBT2 C4-Naphthobenzothiophenes         5.90         1.90         4.08         1.99							
4         FLO         Fluoranthene         144         1,90         22.4         1,99           4         PY0         Pyrene         224         1,90         125         1,99           4         FP1         C1-Fluoranthenes/Pyrenes         158         1,90         79.6         1,99           4         FP2         C2-Fluoranthenes/Pyrenes         158         1,90         79.6         1,99           4         FP4         C3-Fluoranthenes/Pyrenes         31.3         1,90         27.4         1,99           4         NBT0         Napthobenzothiophenes         13.2         1,90         3.66         1,99           4         NBT3         C1-Naphthobenzothiophenes         15.2         1,90         3.66         1,99           4         NBT3         C3-Naphthobenzothiophenes         15.2         1,90         3.65         1,99           4         NBT3         C3-Naphthobenzothiophenes         5.90         1,90         0         1,99           4         NBT4         C4-Naphthobenzothiophenes         5.90         1,90         0         1,99           4         BCD         C3-Naphthobenzothiophenes         2.82         1,90         4,08         1,99 <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>							
4         PYO         Pyrene         224         1.90         125         1.99           4         FP1         C1-Fluoranthenes/Pyrenes         242         1.90         206         1.99           4         FP2         C2-Fluoranthenes/Pyrenes         84.9         1.90         79.6         1.99           4         FP3         C3-Fluoranthenes/Pyrenes         84.9         1.90         79.6         1.99           4         FP4         C4-Fluoranthenes/Pyrenes         84.9         1.90         79.6         1.99           4         FP5         C3-Fluoranthenes/Pyrenes         84.9         1.90         3.66         1.99           4         RP16         C4-Hupathobenzothiophenes         13.2         1.90         3.66         1.99           4         NBT3         C3-Naphthobenzothiophenes         15.2         1.90         3.65         1.99           4         NBT3         C3-Naphthobenzothiophenes         8.24         1.90         3.65         1.99           4         NBT3         C3-Naphthobenzothiophenes         8.24         1.90         3.65         1.99           4         BAO         Benz(alphthobenzothiophenes         25.5         1.90         4.08							
4         FP1         C1-Fluoranthenes/Pyrenes         158         1.90         206         1.99           4         FP2         C2-Fluoranthenes/Pyrenes         158         1.90         79.6         1.99           4         FP3         C3-Fluoranthenes/Pyrenes         31.3         1.90         27.4         1.99           4         FP4         C4-Fluoranthenes/Pyrenes         31.3         1.90         3.66         1.99           4         NBT0         Napthobenzothiophenes         15.2         1.90         3.66         1.99           4         NBT1         C1-Naphthobenzothiophenes         15.2         1.90         5.34         1.99           4         NBT3         C3-Naphthobenzothiophenes         15.2         1.90         5.34         1.99           4         NBT3         C3-Vaphthobenzothiophenes         5.90         1.90         5.34         1.99           4         NBT4         C4-Naphthobenzothiophenes         5.90         1.90         4.00         1.99           4         BAD         Berz[a]anthracene         25.5         1.90         4.08         1.99           4         BC1         C1-Chysenes         27.2         1.90         12.1         1.							
4         FP2         C2-Fluoranthenes/Pyrenes         158         1.90         79.6         1.99           4         FP3         C3-Fluoranthenes/Pyrenes         84.9         1.90         79.6         1.99           4         FP4         C4-Fluoranthenes/Pyrenes         31.3         1.90         27.4         1.99           4         NBT0         Naphthobenzothiophenes         13.2         1.90         3.66         1.99           4         NBT2         C2-Naphthobenzothiophenes         15.2         1.90         5.34         1.99           4         NBT3         C3-Naphthobenzothiophenes         8.24         1.90         3.65         1.99           4         RBA         BAB         Benz(alphthobenzothiophenes         2.59         1.90         4.08         1.99           4         BC1         C1-Chrysenes         27.2         1.90							
4         FP3         C3-Fluoranthenes/Pyrenes         84 9         1.90         79.6         1.99           4         RF4         C4-Fluoranthenes/Pyrenes         31.3         1.90         27.4         1.99           4         NBT0         Naphthobenzothiophenes         17.1         1.90         6.66         1.99           4         NBT2         C2-Naphthobenzothiophenes         17.1         1.90         6.66         1.99           4         NBT3         C2-Naphthobenzothiophenes         15.2         1.90         3.65         1.99           4         NBT3         C2-Naphthobenzothiophenes         8.24         1.90         3.65         1.99           4         NBT3         C3-Naphthobenzothiophenes         8.24         1.90         3.65         1.99           4         NBT4         C4-Naphthobenzothiophenes         2.5         1.90         4.08         1.99           4         BAD         Benzolarithophenzothiophenes         2.5         1.90         4.08         1.99           4         BC2         C2-Chrysenes         27.2         1.90         15.4         1.99           4         BC3         C3-Chrysenes         22.9         1.90         15.9         <							
4         FP4 CA-Fluoranthenes/Pyrenes         31.3         1.90         3.64         1.99           4         NBT0         Naphthobenzothiophenes         13.2         1.90         3.66         1.99           4         NBT1         C1-Naphthobenzothiophenes         17.1         1.90         6.66         1.99           4         NBT2         C2-Naphthobenzothiophenes         15.2         1.90         5.34         1.99           4         NBT3         C3-Naphthobenzothiophenes         5.90         1.90         U         1.99           4         NBT3         C4-Naphthobenzothiophenes         5.90         1.90         U         1.99           4         NBT4         C4-Naphthobenzothiophenes         5.90         1.90         U         1.99           4         BA0         Benz(a)lanthracene         25.5         1.90         4.08         1.99           4         BC0         C1-Chrysenes         27.2         1.90         15.4         1.99           4         BC1         C1-Chrysenes         27.2         1.90         15.4         1.99           5         BBF         Benzo[jillyuoranthene         11.5         1.90         2.81         1.99							
4         NBT0         NBT10 benzothiophenes         13.2         1.90         3.66         1.99           4         NBT1         C1-Naphthobenzothiophenes         17.1         1.90         6.66         1.99           4         NBT2         C2-Naphthobenzothiophenes         15.2         1.90         3.65         1.99           4         NBT3         C3-Naphthobenzothiophenes         8.24         1.90         4.08         1.99           4         BC3         C3-Chrysenes         27.2         1.90         4.08         1.99           4         BC1         C1-Chrysenes         27.2         1.90         15.4         1.99           4         BC3         C3-Chrysenes         22.9         1.90         15.9         1.99           5         BJK         Benzo[plituoranthene         1.15         1.90         3.98         1.99     <							
4         NBT1         C1-Naphthobenzothiophenes         17.1         1.90         6.66         1.99           4         NBT2         C2-Naphthobenzothiophenes         15.2         1.90         5.34         1.99           4         NBT3         C3-Naphthobenzothiophenes         5.90         1.90         3.65         1.99           4         NBT4         C4-Naphthobenzothiophenes         5.90         1.90         U 1.99           4         BA0         Benz[a]nthracene         25.5         1.90         4.08         1.99           4         BC0         Chrysenes Triphenylene         28.8         1.90         15.4         1.99           4         BC1         C1-Chrysenes         27.2         1.90         15.4         1.99           4         BC3         C3-Chrysenes         22.9         1.90         15.4         1.99           4         BC3         C3-Chrysenes         18.8         1.90         18.9         1.99           5         BBF         BenzOlipliuoranthene         11.1         1.90         3.88         1.99           5         BBF         BenzOlipliuoranthene/Benzolkjliuoranthene         18.1         1.90         0.808         J 1.99 <tr< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr<>							
4         NBT2         C2-Naphthobenzothiophenes         15.2         1.90         5.34         1.99           4         NBT3         C3-Naphthobenzothiophenes         8.24         1.90         3.65         1.99           4         NBT3         C4-Naphthobenzothiophenes         5.90         1.90         U 1.99           4         BA0         Benz[a]anthracene         25.5         1.90         4.08         1.99           4         CO         ChrysenesTriphenylene         28.8         1.90         5.93         1.99           4         BC1         C1-Chrysenes         27.2         1.90         12.1         1.99           4         BC2         C2-Chrysenes         22.9         1.90         15.4         1.99           4         BC3         C3-Chrysenes         2.9         1.90         15.9         1.99           4         BC3         C3-Chrysenes         1.88         1.90         18.9         1.99           5         BBF         Benzo[j]fluoranthene         1.1.1         1.90         3.98         1.99           5         BJKF         Benzo[a]fluoranthene         2.26         1.90         0.808         1.99           5         BEP<							
4         NBT3         C3-Naphthobenzothiophenes         8.24         1.90         3.65         1.99           4         NBT4         C4-Naphthobenzothiophenes         5.90         1.90         U 1.99           4         BAD         Benz[a]anthracene         25.5         1.90         4.08         1.99           4         CO         Chrysene/Triphenylene         28.8         1.90         5.93         1.99           4         BC1         C1-Chrysenes         27.2         1.90         15.4         1.99           4         BC2         C2-Chrysenes         18.8         1.90         18.9         1.99           4         BC3         C3-Chrysenes         18.8         1.90         18.9         1.99           5         BBF         Benzo[b]fluoranthene         14.1         1.90         3.98         1.99           5         BJKF         Benzo[b]fluoranthene/Benzo[k]fluoranthene         11.5         1.90         2.81         1.99           5         BAF         Benzo[a]byrene         8.96         1.90         0.808         1.99           5         BEP         Benzo[a]byrene         8.96         1.90         3.55         1.99           6							
4         NBT4         C4-Najnthobenzothiophenes         5.90         1.90         U         1.99           4         BAO         Benz[a]anthracene         25.5         1.90         4.08         1.99           4         CO         Chrysenel Tiphenylene         28.8         1.90         5.93         1.99           4         BC1         C1-Chrysenes         27.2         1.90         12.1         1.99           4         BC3         C2-Chrysenes         22.9         1.90         15.4         1.99           4         BC3         C3-Chrysenes         18.8         1.90         18.9         1.99           5         BBF         Benzo[liptoranthene         14.1         1.90         3.88         1.99           5         BBF         Benzo[a]thuoranthene         11.5         1.90         2.81         1.99           5         BBF         Benzo[a]thuoranthene         2.6         1.90         0.808         J         1.99           5         BBF         Benzo[a]thuranthene/Benzo[k]fluoranthene         2.6         1.90         0.808         J         1.99           5         BEP         Benzo[a]pyrene         2.96         1.90         3.5         1.9							
4         BA0         Benz[a]anthracene         25.5         1.90         4.08         1.99           4         BC1         C1-Chrysenes         27.2         1.90         12.1         1.99           4         BC2         C2-Chrysenes         27.2         1.90         15.4         1.99           4         BC3         C3-Chrysenes         22.9         1.90         15.4         1.99           4         BC3         C3-Chrysenes         18.8         1.90         18.9         1.99           5         BBF         BBC4         C4-Chrysenes         U 1.90         3.98         1.99           5         BBF         Benzo[ljhuoranthene         14.1         1.90         3.88         1.99           5         BJKF         Benzo[ljhuoranthene         2.26         1.90         0.808         J 1.99           5         BAF         Benzo[a]byrene         8.96         1.90         3.74         1.99           5         BAF         Benzo[a]byrene         10.5         1.90         3.55         1.99           6         BAP         Benzo[a]byrene         10.5         1.90         3.54         1.99           6         IND         Inden							
4         CO         Chrysene/Triphenylene         28.8         1.90         5.93         1.99           4         BC1         C1-Chrysenes         27.2         1.90         12.1         1.99           4         BC2         C2-Chrysenes         18.8         1.90         18.9         1.99           4         BC3         C3-Chrysenes         18.8         1.90         18.9         1.99           5         BBF         Benzo[b]fluoranthene         14.1         1.90         3.98         1.99           5         BJKF         Benzo[b]fluoranthene         11.5         1.90         2.81         1.99           5         BJKF         Benzo[b]fluoranthene         11.5         1.90         2.81         1.99           5         BJKF         Benzo[b]fluoranthene         2.26         1.90         0.808         1.99           5         BJKF         Benzo[a]pyrene         8.96         1.90         3.74         1.99           5         BPR         Benzo[a]pyrene         1.90         0.842         1.99           6         IND         Indenof1,2,3-cdlpyrene         4.70         1.90         0.842         1.99           6         IND         <	4	BA0		25.5	1.90	4.08	1.99
4         BC2         C2-Chrysenes         22.9         1.90         15.4         1.99           4         BC3         C3-Chrysenes         18.8         1.90         18.9         1.99           4         BC4         C4-Chrysenes         U 1.90         U 1.90         U 1.99           5         BBF         Benzo[ji]tuoranthene         14.1         1.90         3.98         1.99           5         BJKF         Benzo[ji]tuoranthene         11.5         1.90         0.808         J 1.99           5         BAF         Benzo[ji]tuoranthene         8.96         1.90         0.808         J 1.99           5         BAF         Benzo[a]pyrene         8.96         1.90         3.74         1.99           5         BAP         Benzo[a]pyrene         2.80         1.90         3.55         1.99           6         IND         Indeno[1,2,3-cd]pyrene         4.78         1.90         0.842         J 1.99           6         IND         Dibenz[a]alpathracene/Dibenz[ac]anthracene         1.37         J 1.90         0.511         J 1.99           6         GHI         Benzo[a],i]perylene         4.20         1.90         2.79         1.99           3<	4	C0		28.8	1.90	5.93	1.99
4         BC2         C2-Chrysenes         22 9 1,90         15.4 1,99           4         BC3         C3-Chrysenes         18 9 1,90         18,9 1,99           4         BC4         C4-Chrysenes         U 1,90         U 1,99           5         BBF         Benzo[h]tuoranthene         14.1         1,90         3,98 1,99           5         BJKF         Benzo[a]tuoranthene         2,60         1,90         0,808 J 1,99           5         BAF         Benzo[a]pyrene         8,96         1,90         3,74 1,99           5         BAP         Benzo[a]pyrene         10,5 1,90         3,55 1,99           5         PER         Perylene         2,80 1,90         0,842 J 1,99           6         IND         Indeno[1,2,3-cd]pyrene         4,78 1,90         0,842 J 1,99           6         IND         Indeno[1,2,3-cd]pyrene         4,78 1,90         0,248 1,99           6         DA         Dibenz[a]hanthracene/Dibenz[ac]anthracene         1,37 J 1,90         0,511 J 1,99           6         GH         Benzo[a]hanthracene/Dibenz[ac]anthracene         1,37 J 1,90         0,511 J 1,99           6         DA         Dibenz[a]hanthracene/Dibenz[ac]anthracene         1,37 J 1,90         0,511 J 1,99 <td>4</td> <td>BC1</td> <td></td> <td></td> <td>1.90</td> <td>12.1</td> <td>1.99</td>	4	BC1			1.90	12.1	1.99
4         BC4         C4-Chrysenes         U         1.90         U         1.99           5         BBF         Benzo[b]fluoranthene         11.5         1.90         3.98         1.99           5         BJKF         Benzo[a]fluoranthene         2.26         1.90         0.808         J         1.99           5         BAF         Benzo[a]fluoranthene         2.26         1.90         0.808         J         1.99           5         BEP         Benzo[a]pyrene         8.96         1.90         3.74         1.99           5         BAP         Benzo[a]pyrene         1.05         1.90         3.55         1.99           6         BAP         Perylene         2.80         1.90         0.842         J         1.99           6         IND         Indeno[1,2,3-ed]pyrene         4.78         1.90         0.842         J         1.99           6         IND         Indeno[1,2,3-ed]pyrene         4.78         1.90         0.842         J         1.99           6         IND         Indeno[1,2,3-ed]pyrene         4.78         1.90         0.511         J         1.99           6         IND         Benzo[a,h]piperylene         4.20 </td <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>							
5         BBF         Benzo[b]fluoranthene         14.1         1.90         3.98         1.99           5         BJKF         Benzo[l]fluoranthene         11.5         1.90         0.808         J.99           5         BBF         Benzo[a]fluoranthene         2.26         1.90         0.808         J.199           5         BEP         Benzo[a]pyrene         8.96         1.90         3.74         1.99           5         BEP         Benzo[a]pyrene         1.90         0.842         J.199           6         IND         Indeno[1,2,3-cd]pyrene         4.78         1.90         0.842         J.199           6         IND         Indeno[1,2,3-cd]pyrene         4.78         1.90         0.842         J.199           6         DA         Dibenz[ah]anthracene/Dibenz[ac]anthracene         1.37         J.90         0.511         J.199           6         DA         Dibenz[ah]iperylene         4.20         1.90         2.79         1.99           6         GH         Benzo[a]hilperylene         4.20         1.90         8.47         1.99           3         4MDT         4-Methyldibenzothiophene         380         1.90         8.62         1.99 <tr< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr<>							
5         BJKF         Benzo[jilluoranthene/Benzo[k]fluoranthene         11.5         1.90         2.81         1.99           5         BAF         Benzo[a]fluoranthene         2.26         1.90         0.808         J         1.99           5         BEP         Benzo[a]pyrene         8.96         1.90         3.74         1.99           5         BAP         Benzo[a]pyrene         1.90         0.82         1.99           6         IND         Indeno[1,2,3-cd]pyrene         4.78         1.90         0.842         1.99           6         DA         Dibenz[ah]anthracene/Dibenz[ac]anthracene         1.37         J         1.90         0.511         J         1.99           6         DA         Dibenz[ah]anthracene/Dibenz[ac]anthracene         1.37         J         1.90         0.511         J         1.99           6         GRI         Benzo[a],hijperylene         4.20         1.90         0.51         J         1.99           6         GRI         Benzo(a),hijperylene         4.20         1.90         0.27         1.99           3         4MDT         4-Methylpidenzothiophene         380         1.90         8.47         1.99           3         2M				-			
5         BAF         Benzo[a]tluoranthene         2,26         1,90         0.808         J         1,99           5         BEP         Benzo[a]pyrene         8,96         1,90         3,74         1,99           5         BAP         Benzo[a]pyrene         1,95         3,55         1,99           5         PER         Perylene         2,80         1,90         0,842         J         1,99           6         IND         Indeno[1,2,3-cd]pyrene         4,78         1,90         0,248         1,99           6         GH         Benzo[a]hi]perylene         4,20         1,90         0,511         J         1,99           6         GH         Benzo[a]hi]perylene         4,20         1,90         0,511         J         1,99           6         GH         Benzo[a,hi]perylene         4,20         1,90         8,47         1,99           3         4MDT         4-Methyldibenzothiophene         380         1,90         105         1,99           3         2MDT         1-Methyldibenzothiophene         83,1         1,90         18,0         1,99           3         3MP         3-Methylphenanthrene         897         1,90         116							
5         BEP         Benzo[e]pyrene         8.96         1.90         3.74         1.99           5         BAP         Benzo[e]pyrene         1.90         3.55         1.99           5         PER         Perylene         2.80         1.90         0.842         y           6         IND         Indeno[1,2,3-cd]pyrene         4.78         1.90         2.48         1.99           6         DA         Dibenz[ah]anthracene/Dibenz[ac]anthracene         1.37         J.90         0.511         J         1.99           6         GH         Benzo[g]h,i]perylene         4.20         1.90         2.79         1.99           6         CAR         Carbazole         11.8         1.90         8.47         1.99           3         4MDT         4-Methyldibenzothiophene         546         1.90         1.05         1.99           3         2MDT         2/3-Methyldibenzothiophene         380         1.90         68.2         1.99           3         3MP         3-Methylphenanthrene         897         1.90         116         1.99           3         2MP         2-Methylphenanthrene         1020         1.90         113         1.99 <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>							
5         BAP         Benzo[a]pyrene         10.5         1.90         3.55         1.99           6         PER         Perylene         2.80         1.90         0.842         J 1.99           6         IND         Indeno[1,2,3-cd]pyrene         4.78         1.90         0.511         J 1.99           6         DA         Dibenz[ah]anthracene/Dibenz[ac]anthracene         1.37         J 1.90         0.511         J 1.99           6         GHB         Benzo[a,h]perylene         4.20         1.90         2.79         1.99           CAR         Carbazole         11.8         1.90         8.47         1.99           3         4MDT         4-Methyldibenzothiophene         380         1.90         68.2         1.99           3         1MDT         1-Methyldibenzothiophene         83.1         1.90         18.0         1.99           3         3MP         3-Methylphenanthrene         897         1.90         116         1.99           3         2MP         2-Methylphenanthrene         1020         1.90         113         1.99           3         2MP         2-Methylphenanthrene         87         1.90         113         1.99           3<							
5         PER IND         Perylene         2.80         1.90         0.842 J         J.99           6         IND         Indeno[1,2,3-d]pyrene         4.78         1.90         2.48         1.99           6         DA         Dibenz[ah]anthracene/Dibenz[ac]anthracene         1.37 J         1.90         0.511 J         1.99           6         GHI         Benzo[g,h,i]perylene         4.20         1.90         2.79 I         1.99           3         4MDT         4-Methyldibenzothiophene         546 I.90         0.15 I         1.99           3         2MDT         2-Methyldibenzothiophene         380 I.90         68.2 I.99         1.99           3         1MDT         1-Methyldibenzothiophene         87 I.90         116 I.99         1.99           3         2MP         3-Methylphenanthrene         897 I.90         116 I.99         1.99           3         2MP         2-Methylphenanthrene         180 I.90         113 I.99         113 I.99           3         2MA         2-Methylphenanthrene         180 I.90         22.8 I.99         1.99           3         9M         9/4-Methylphenanthrene         588 I.90         83.0 I.99         1.99							
6         IND         Indeno[1,2,3-cd]pyrene         4,78         1,90         2,48         1,99           6         DA         Dibenz[ah]antracene/Dibenz[ac]anthracene         1,37         1,90         0,511         J         1,99           6         GHI         Benzo[gh,il]perylene         4,20         1,90         2,79         1,99           CAR         Carbazzole         11,8         1,90         8,47         1,99           3         4MDT         4-Methyldibenzothiophene         546         1,90         105         1,99           3         1MDT         1-Methyldibenzothiophene         83,1         1,90         18,0         1,99           3         1MDT         1-Methylphenanthrene         897         1,90         116         1,99           3         2MP         3-Methylphenanthrene         1020         1,90         113         1,99           3         2MP         2-Methylphenanthrene         1020         1,90         113         1,99           3         9MP         9/4-Methylphenanthrene         588         1,90         83,0         1,99           3         9MP         9/4-Methylphenanthrene         588         1,90         83,0         1,99							
6         DA         Dibenz[ah]anthracene/Dibenz[ac]anthracene         1.37         J         1.90         0.511         J         1.99           6         GHI         Benzo[g]h,i]perylene         4.20         1.90         2.79         1.99           3         Carbazole         11.8         1.90         8.47         1.99           3         2MDT         2.3-Methyldibenzothiophene         380         1.90         105         1.99           3         1MDT         1-Methyldibenzothiophene         881         1.90         18.0         1.99           3         3MP         3-Methylphenanthrene         897         1.90         116         1.99           3         2MP         2-Methylphenanthrene         1020         1.90         113         1.99           3         2MP         2-Methylphenanthrene         87.2         1.90         113         1.99           3         2MP         2-Methylphenanthrene         87.2         1.90         22.8         1.99           3         9MP         9/4-Methylphenanthrene         588         1.90         83.0         1.99							
6         GHI         Benzo[g,h,i]perylene         4.20         1.90         2.79         1.99           CAR         Carbazole         11.8         1.90         8.47         1.99           3         4MDT         4-Methyldibenzothiophene         546         1.90         105         1.99           3         2MDT         22-Methyldibenzothiophene         380         1.90         68.2         1.99           3         1MDT         1-Methyldibenzothiophene         89.7         1.90         116         1.99           3         2MP         2-Methylphenanthrene         1020         1.90         113         1.99           3         2MP         2-Methylphenanthrene         87         1.90         113         1.99           3         2MA         2-Methylphenanthrene         87         1.90         22.8         1.99           3         9MP         9/4-Methylphenanthrene         588         1.90         83.0         1.99							
CAR         Carbazole         11.8         1.90         8.47         1.99           3         4MDT         4-Methyldibenzothiophene         58         1.90         105         1.99           3         2MDT         2/3-Methyldibenzothiophene         380         1.90         68.2         1.99           3         1MDT         1-Methyldibenzothiophene         83.1         1.90         18.0         1.99           3         2MP         3-Methylphenanthrene         897         1.90         116         1.99           3         2MP         2-Methylphenanthrene         1020         1.90         113         1.99           3         9MP         9/4-Methylphenanthrene         588         1.90         83.0         1.99							
3         4MDT         4-Methyldibenzothiophene         546         1.90         105         1.99           3         2MDT         22-Methyldibenzothiophene         380         1.90         68.2         1.99           3         1MDT         1-Methyldibenzothiophene         83.1         1.90         18.0         1.99           3         3MP         3-Methylphenanthrene         897         1.90         116         1.99           3         2MP         2-Methylphenanthrene         1020         1.90         113         1.99           3         2MA         2-Methylphenanthracene         87.2         1.90         22.8         1.99           3         9MP         9/4-Methylphenanthrene         588         1.90         83.0         1.99	O						
3         2MDT         2/3-Methyldibenzothiophene         38         1.90         68.2         1.99           3         1MDT         1-Methyldibenzothiophene         83.1         1.90         18.0         1.99           3         3MP         3-Methylphenanthrene         897         1.90         116         1.99           3         2MP         2-Methylphenanthrene         120         1.90         113         1.99           3         2MA         2-Methylphenanthracene         87         1.90         22.8         1.99           3         9MP         9/4-Methylphenanthrene         588         1.90         83.0         1.99	3						
3     1MDT     1-Methyldibenzothiophene     83.1     1.90     18.0     1.99       3     3MP     3-Methylphenanthrene     89.7     1.90     116     1.99       3     2MP     2-Methylphenanthrene     1.90     113     1.99       3     2MP     2-Methylphenanthracene     87.2     1.90     22.8     1.99       3     9MP     9/4-Methylphenanthrene     588     1.90     83.0     1.99							
3     3MP     3-Methylphenanthrene     897     1.90     116     1.99       3     2MP     2-Methylphenanthrene     1020     1.90     113     1.99       3     2MA     2-Methylphraanthracene     87.2     1.90     22.8     1.99       3     9MP     9/4-Methylphenanthrene     588     1.90     83.0     1.99							
3 2MP 2-Methylphenanthrene 1020 1.90 113 1.99 3 2MA 2-Methylphenanthrene 87.2 1.90 22.8 1.99 3 9MP 9/4-Methylphenanthrene 588 1.90 83.0 1.99							
3     2MA     2-Methylanthracene     87.2     1.90     22.8     1.99       3     9MP     9/4-Methylphenanthrene     588     1.90     83.0     1.99							
3 9MP 9/4-Methylphenanthrene 588 1.90 83.0 1.99							

Surrogates (% Recovery)	
Naphthalene-d8	
Phenanthrene-d10	



Client ID	MW-49 (091213)		MW-70 (091213)	
Lab ID	1310009-04		1310009-05	
Matrix	NAPL		NAPL	
Reference Method	Modified 8270D		Modified 8270D	
Batch ID	SO100413B03		SO100413B03	
Date Collected	09/12/2013		09/12/2013	
Date Received	09/19/2013		09/19/2013	
Date Prepped	09/24/2013		09/24/2013	
Date Analyzed	10/05/2013		10/05/2013	
Sample Size (wet)	0.1055		0.1006	
% Solid	100.00		100.00	
File ID	d32789.D		d32791.D	
Units	mg/Kg		mg/Kg	
Final Volume	20		20	
Dilution	1		1	
Reporting Limit	1.90		1.99	
Analytes	Result	SSRL	Result	SSRL
Benzo[a]pyrene-d12	110		110	
	Lab ID Matrix Reference Method Batch ID Date Collected Date Received Date Prepped Date Analyzed Sample Size (wet) % Solid File ID Units Final Volume Dilution Reporting Limit Analytes	Lab ID         1310009-04           Matrix         NAPL           Keference Method         Modified 8270D           Batch ID         SO100413B03           Date Collected         09/12/2013           Date Received         09/19/2013           Date Prepped         09/24/2013           Date Analyzed         10/05/2013           Sample Size (wet)         0.1055           % Solid         100.00           File ID         d32789.D           Units         mg/Kg           Final Volume         20           Dilution         1           Reporting Limit         1.90           Analytes         Result	Lab ID         1310009-04 Matrix           Matrix         NAPL           Reference Method         Modified 8270D           Batch ID         \$0100413B03           Date Collected         09/12/2013           Date Received         09/19/2013           Date Prepped         09/24/2013           Date Analyzed         10/05/2013           Sample Size (wet)         0.1055           % Solid         100.00           File ID         d32789.D           Units         mg/Kg           Final Volume         20           Dilution         1           Reporting Limit         1.90	Lab ID         1310009-04 Matrix         1310009-05 Matrix           Matrix         NAPL         NAPL           Reference Method         Modified 8270D         Modified 8270D           Batch ID         \$0100413803         \$0100413803           Date Collected         09/12/2013         09/12/2013           Date Received         09/19/2013         09/12/2013           Date Prepped         09/24/2013         09/24/2013           Date Analyzed         10/05/2013         10/05/2013           Sample Size (wet)         0.1055         0.1006           % Solid         100.00         100.00           File ID         d32789.D         d32791.D           Units         mg/Kg         mg/Kg           Final Volume         20         20           Dilution         1         1           Reporting Limit         1.90         1.99



- U: The analyte was analyzed for but not detected at the sample specific level reported. B: Found in associated blank as well as sample.

- J: Estimated value, below quantitation limit.
  E: Estimated value, exceeds the upper limit of calibration.

- D: Secondary Dilution Performed
  D1: Tertiary Dilution Performed
  a: Value outside of QC Limits.
- Surrogate value outside of acceptable range.

  X: It is not possible to calculate RPD, one result is below the detection limit, the other is above reporting limit.

  G: Matrix Interference.
- P: Greater than 40% RPD between the two columns, the higher value is reported according to the method. I: Due to interference, the lower value is reported.
- N: Spike recovery outside control limits. E: Estimated due to Interference. (Metals)

- Duplicate outside control limits.
   Spike compound. (Metals)
   Below CRDL, Project DL, or RL but greater than or equal to MDL
   Sample concentration is > 4 times the spike level, recovery limits do not apply. (Metals)
- S: Spike Compound. (Organics)
  §: RPD criteria not applicable to results less than 5 times the reporting limit. (Metals)
  T: Tentatively identified corexit compound.

- Т: Tentatively identified corexit compound.

   C: Co-elution.

   Z: Result not surrogate corrected.

   DL: Surrogate result diluted out of sample.

   W: Matrix interference may be present based on chemical reasonableness evaluation.

## Triton Analytics Corp. 16840 Barker Springs, #302 Houston, TX 77084 (281) 578-2289

TAC Reference: 8297
Requested By: Ted Healey/NewFields

Project Reference: Arcadis CSX Brunswick Rail Yard

Date: 10/17/2013

### Certificate of Analysis

Sample ID	Sulfur by ASTM D5453
	%wt
L1318627-01 MW-56 (9/12/13) 130	5 0.264
L1318627-02 MW-55 (9/12/13) 135	5 0.288
L1318627-03 MW-37 (9/12/13) 143	0.220
L1318627-04 MW-49 (9/12/13) 163	0 0.297
L1318627-05 MW-70 (9/16/13) 131	5 728 ppm



# Appendix G

NPS MW-18 Boring Log and Construction Log

Page \_\_\_\_\_ of \_\_\_\_

### **ARCADIS**

# Sample Log

Well/Borin	g	NPS MW-18	<u>3</u> Projec	ct Name and No. <u>C</u>	SXT Brunswick	/ MD000843.001	10.0000 <sub>1</sub>	4		
Site					Drilling			Drilling		
Location	Brunswic	k, MD			Started	6/24/2013 (1	030)	Completed	6/24/13 (1350)	
Total Dept	h Drilled	15	feet	Hole Diameter	10 inches	Sampling Int	terval	continuous		feet
Length and										
of Samplin	g Device	26' / 2"		_	Type of Sampli	ng Device <u>s</u>	plit spo	on		
Drilling Me	thod	HSA		_	Drilling	Fluid Used		_		
Drilling Co	ntractor	DTCI		Driller B	ob Atkinson	н	lelper	Tom		
Prepared				ŀ	-lammer			Hammei	•	
Ву	K. Moran				Weight 140 lb			Drop	30	inches
Sample	Depth		Time/Hydraulio	:						
(feet below I	and surface)	Sample	Pressure or							
From	То	Recovery (feet)	Blows per 6 inches		Sample	Description				PID (ppm)
		(100.)	T							417
0	2	0.5	4,5,4,4	SOIL: Loose br	own/black san	dv soil with o	rganic	material, ro	ots	5.4
-			1,2,1,1			,	<u> </u>	,,		
2	4	0.3	3,1,1,1	SAA, few grave	ls					
			1	, , ,	_					
4	6	2	2,2,2,2,	4.0-4.25: black/	brown sandy s	oil with organ	nics - S	ATURATED		11.4, 0, 0, 0
				4.3-6.0: brown s	-					
				plasticity. MOIS				,,		
6	8	1.5	5,5,7,8	6.5-7.0: soft bro	wn clay. WET					6, 0, 1, 7
				7.0-8.0: very sti	ff brown clay v	vith a few ora	nge sp	ecs. LITTLE	MOISTURE.	
										35, 11.7,
8	10	2.2	6,7,8,10	8.0-8.5: soft bro	own silty clay,	little sand. WE	ET			15, 27
				8.5-10.0: Hard,	stiff red-browr	clay. Very res	sistant	to penetrat	ion. LITTLE	
				MOISTURE.						
										27, 32, 21,
10	12	2.1	4,5,7,7	10.0-12.0: Very	stiff red-browi	n clay. LITTLE	MOIST	TURE		27
12	14	2.2	7,8,10,12	12.0-14.0: SAA						0, 23, 12, 0
44	45	4.05	0.0	440450.044						22.0
14	15	1.25	8,9	14.0-15.0: SAA						22, 0
		<u> </u>		<u> </u>						
SOII SAN	IPLES CO	OLI ECTED	FROM 8 0-8	5 (VOCS) AND 8.	0-9.0 (TPH-GR	O. TPH-DRO/	ORO			
					til 11-GIV	-,DINO/	-::-			

#### **ARCADIS**

# Well Construction Log (Unconsolidated)

↓ LAND SURFACE	Well NPS MV	V-18	Town/C	ity Brunswick	
И	County Frederic	ck	State	MD	_
10 inch diameter	Permit No. FR-95-1	966			_
drilled hole	Land-Surface Elevat	ion and Datum:			
$\bowtie$		f	eet	Surveyed	
_ Well casing,	-	·	001	☐ Estimated	
4 inch diameter,	Installation Date(s)	6/24/2013			
schedule 40 PVC	` ,				
Backfill	Drilling Method	HSA			
X Grout Quickcrete	Drilling Contractor	DTCI			
Grout Quickcrete	Drilling Contractor	-			
<u> </u>	Drilling Fluid	N/A			
<u>/ 3'8"</u>					
	Development Techn	ique(s) and Date(s)			
Bentonite					
5'8" X pellets					
<u> </u>					
	Fluid Loss During D	rilling <u>C</u>	)		gallons
<u>7'2"</u>	Water Removed Dur	ing Development			gallons
N				4.05	
Well Screen.	Static Depth to Wate	<u></u>		1.95	feet below M.P.**
4inch diameter,	Pumping Depth to W	/ater _			_feet below M.P.**
SCH.40 PVC					
20 slot	Pumping Duration			mins	
	Yield		gpm	Date	
X Filter Pack	Specific Capacity			gpm/	ft
DSI "Well Gravel Pack"					
7 bags					
Formation Collaspse	Well Purpose	Monitoring Well			
15' 2"	Remarks				
15' 2"					

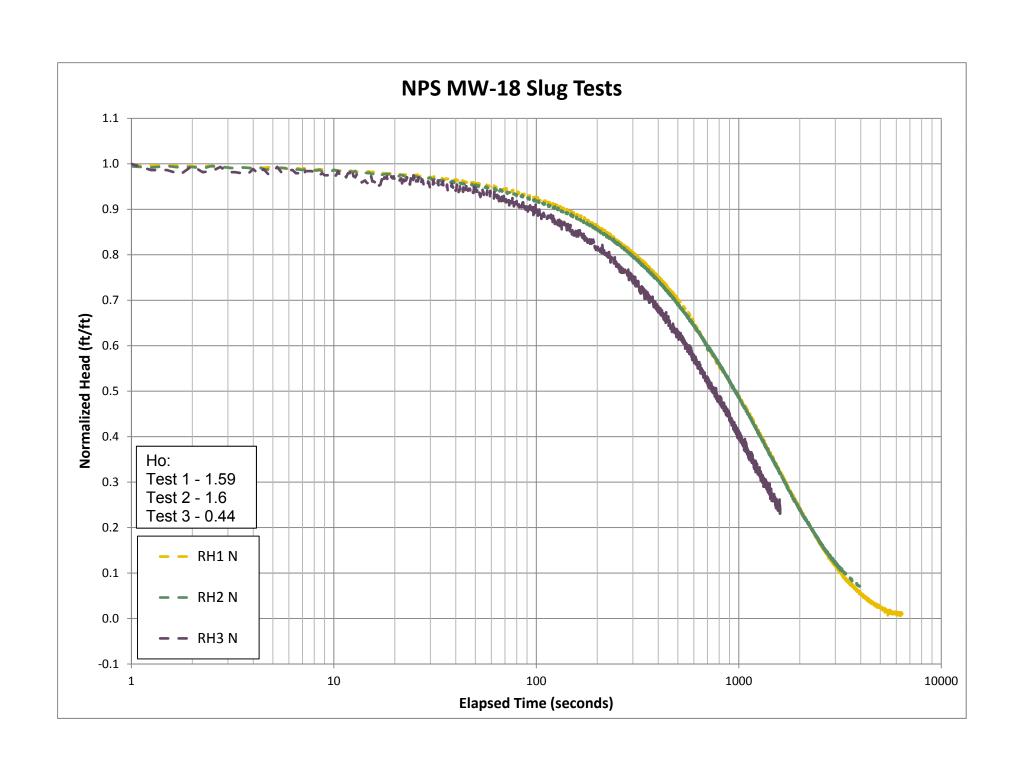
Prepared by

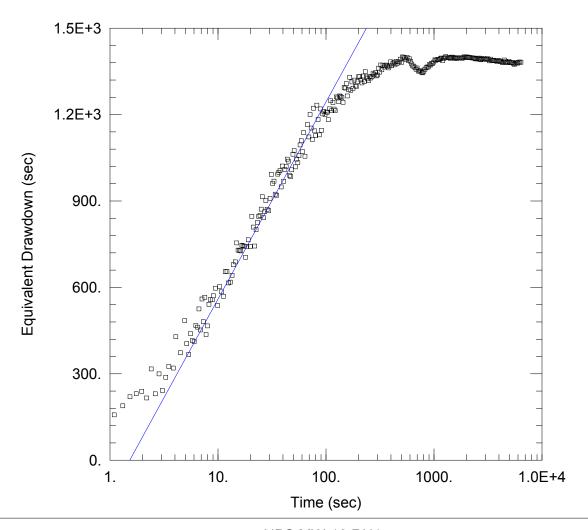
K. Moran



# Appendix H

NPS MW-18 Slug Test Results





### NPS MW-18 RH1

### PROJECT INFORMATION

Company: ARCADIS

Client: CSX

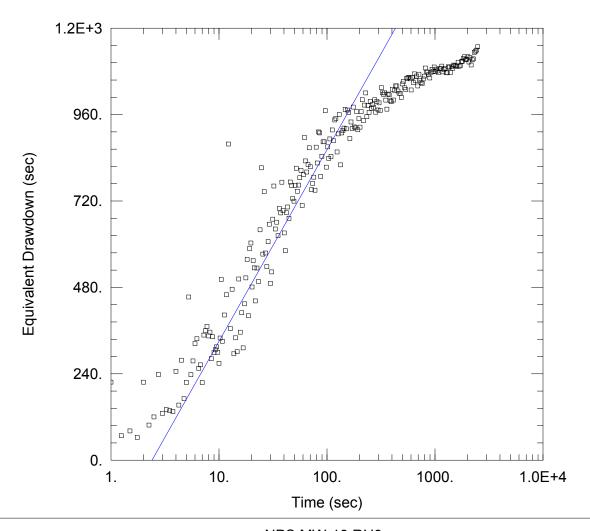
Project: MD000843.0011.00003

Location: Brunswick, MD
Test Well: NPS MW-18
Test Date: 7/25/13

#### SOLUTION

Aquifer Model: Confined Solution Method: Peres-Onur-Reynolds

 $T = 2.1 \text{ ft}^2/\text{day}$  S = 0.00084



#### NPS MW-18 RH3

### PROJECT INFORMATION

Company: ARCADIS

Client: CSX

Project: MD000843.0011.00003

Location: Brunswick, MD
Test Well: NPS MW-18
Test Date: 7/25/13

#### SOLUTION

Aquifer Model: Confined Solution Method: Peres-Onur-Reynolds

 $T = 2.7 \text{ ft}^2/\text{day}$  S = 0.0017