

**Second
Five-Year Review Report
for
United States Coast Guard
Baltimore Yard
Baltimore, Maryland**



**COAST GUARD CONTRACT NUMBER HSCG50-14-D-PSL005
TASK ORDER NUMBER 70Z08318FNES00200**

JUNE 2019

SECOND FIVE-YEAR REVIEW REPORT

FOR

**UNITED STATES COAST GUARD BALTIMORE YARD
HAWKINS POINT ROAD
BALTIMORE, MARYLAND**

**Submitted to:
United States Coast Guard Yard
Facilities Engineering, Building 4
2401 Hawkins Point Road
Baltimore, Maryland 21226-1979**

**Submitted by:
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**COAST GUARD CONTRACT NUMBER HSCG50-14-D-PSL005
COAST GUARD TASK ORDER NUMBER 70Z08318FNES00200**

APPROVED BY:

V. Skwarek, CAPT, USCG 15 July 2019

VINCENT J. SKWAREK, CAPTAIN
COMMANDING OFFICER
UNITED STATES COAST GUARD
YARD
DATE

Five-Year Review Summary Form

SITE IDENTIFICATION		
Site Name: United States Coast Guard Baltimore Yard		
EPA ID: MD4690307844		
Region: 3	State: MD	City/County: Baltimore/Anne Arundel
SITE STATUS		
NPL Status: Final		
Multiple OUs? Yes	Has the site achieved construction completion? Yes	
REVIEW STATUS		
Lead agency: Other Federal Agency If “Other Federal Agency” was selected above, enter Agency name: United States Coast Guard		
Author name (Federal or State Project Manager): Derrick Josey		
Author affiliation: United States Coast Guard		
Review period: June 2014 – January 2019		
Date of site inspection: August 29, 2018		
Type of review: Statutory		
Review number: 2		
Triggering action date: June 29, 2009		
Due date (five years after triggering action date or last five-year review report): June 29, 2019		

Issues/Recommendations

OU(s) without Issues/Recommendations Identified in the Five-Year Review:
Site 7 (Operable Unit 2) – Former Burn Pit, Site 9 (Operable Unit 4) – Reported Bilge Spoils Area

Five-Year Review Summary Form (continued)

Issues and Recommendations Identified in the Five-Year Review:				
OU(s): None	Issue Category: No Issue			
	Issue: NA			
	Recommendation: NA			
Affect Current Protectiveness	Affect Future Protectiveness	Implementing Party	Oversight Party	Milestone Date
NA	NA	NA	NA	NA

Protectiveness Statements

<i>Operable Unit:</i> Site 7 (Operable Unit 2)	<i>Protectiveness Determination:</i> Protective	<i>Addendum Due Date (if applicable):</i> NA
<p><i>Protectiveness Statement:</i></p> <p>The remedy implemented at Site 7 is protective of human health and the environment. As part of the Site 7 remedy, contaminated soil was removed from around the buildings in 2009-2010 and disposed of offsite at a state-licensed facility. The excavations were backfilled with clean soil, and the ground surface was restored with vegetation, asphalt pavement, or concrete. Soil was not removed from beneath Buildings 30, 35, 36, 37 and an electrical transformer pad, but that soil is covered by the building floors (concrete) and concrete transformer pad. Therefore, soil is not accessible to human and ecological receptors, and there are no unacceptable risks to human and ecological receptors because soil exposure pathways are incomplete.</p> <p>Exposure to soil by excavation workers, which could result in unacceptable risks if excavation or development within the footprints of Buildings 30, 35, 36, 37 or the pad for the electrical transformer station were to occur, is prevented through maintenance of land use controls (LUCs) at the site. Exposure to groundwater from the surficial aquifer underlying Site 7, which could result in unacceptable risks, is prevented through the maintenance of LUCs at the site. Long-term protectiveness of the remedy are verified by annual LUC inspections to ensure that land use has not changed, that no excavation has occurred in the restricted areas, and signs warning of groundwater restrictions are still in place. Based on the implementation and continued maintenance of LUCs, the intent and goals of the ROD for Site 7 have been met.</p> <p>Recently, screening levels for evaluating human health risks associated with exposure to per- and polyfluoroalkyl substances (PFAS) were established. Based on historical activities at Site 7 (i.e., former burn pit), a PFAS investigation is recommended for Site 7, and a facility-wide PFAS investigation will be conducted for the YARD in the near future.</p>		

Operable Unit:
Site 9 (Operable Unit 4)

Protectiveness Determination:
Protective

Addendum Due Date
*(if applicable):*NA

Protectiveness Statement:

The remedy implemented at Site 9 is protective of human health and the environment. As part of the Site 9 remedy, contaminated soil was removed from the parking lot area and around Buildings 25 and 26, and contaminated sediment was dredged from Arundel Cove and disposed of offsite at a state-licensed facility. The excavations were backfilled with clean soil and the ground surface covered with vegetation, asphalt pavement, or concrete. Soil was not removed from beneath Buildings 25 and 26 and under three portions of Waesche Avenue, but the soil is covered by the building concrete floors. Therefore, soil is not accessible to human and ecological receptors, and there are no unacceptable risks because soil exposure pathways are incomplete. Exposure to soil, which could result in unacceptable risks if excavation or development beneath Buildings 25 and 26 and under three portions of Waesche Avenue were to occur, is prevented through maintenance of LUCs at the site. There are no unacceptable risks to ecological receptors in Arundel Cove because contaminated sediment was dredged and disposed of offsite at a state-licensed facility.

Long-term protectiveness of the remedy are verified by annual LUC inspections to ensure that land use has not changed, that no excavation has occurred in the restricted areas, and signs warning of digging restrictions are still in place. Based on the implementation and continued maintenance of LUCs, the intent and goals of the ROD for Site 9 have been met.

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ACRONYM LIST

ARAR	Applicable or Relevant and Appropriate Requirement
bgs	below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
COC	contaminant of concern
CSF	cancer slope factor
EE/CA	Engineering Evaluation/Cost Analysis
EPA	United States Environmental Protection Agency
FFA	Federal Facility Agreement
FS	Feasibility Study
HHRA	human health risk assessment
HRS	Hazard Ranking System
IRACR	Interim Remedial Action Completion Report
LUC	land use control
MCL	Maximum Contaminant Level
MDE	Maryland Department of the Environment
$\mu\text{g}/\text{m}^3$	micrograms per cubic meter
MNA	monitored natural attenuation
msl	mean sea level
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NFA	No Further Action
NPL	National Priorities List
ORC™	Oxygen Release Compound™
PA	Preliminary Assessment
PAH	polynuclear aromatic hydrocarbon
PFAS	per- and polyfluoroalkyl substances
ppbv	parts per billion-volume
PRG	Preliminary Remediation Goal
RA	Remedial Action
RACR	Remedial Action Completion Report
RAO	Remedial Action Objective
RCRA	Resource Conservation and Recovery Act
RD	Remedial Design
RI	Remedial Investigation
ROD	Record of Decision

SAIC	Science Applications International Corporation
SI	Site Inspection
SMCL	Secondary Maximum Contaminant Levels
TCLP	Toxicity Characteristic Leaching Procedure
USCG	United States Coast Guard
VISL	vapor intrusion screening level
YARD	United States Coast Guard Baltimore Yard

EXECUTIVE SUMMARY

This report presents the results of the second five-year review for U.S. Coast Guard (USCG) Baltimore Yard (YARD) Maryland, as required by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). This five-year review report was prepared for the USCG under Contract Number HSCG50-14-D-PSL005, Contract Task Order (CTO) 70Z08318FNES00200.

The purpose of this five-year review report is to document the evaluation of the effectiveness of remedies and remedial actions for the YARD sites that have a Record of Decision (ROD) in place and hazardous substances, pollutants, or contaminants remaining on-site at concentrations that do not allow for unlimited use and unrestricted exposure. The sites at the YARD requiring a five-year review comprise the following:

- Site 7 (Operable Unit 2) – Former Burn Pit
- Site 9 (Operable Unit 4) – Reported Bilge Spoils Area

The five-year review evaluation was accomplished through the review of relevant documents for Sites 7 and 9 pertaining to post-remedy implementation activities, analytical data and findings, and through site visits and inspections. The five-year review report identifies any circumstance that may prevent a particular remedy from functioning as designed or providing sufficient protection of human health or the environment. The overall evaluation of the effectiveness of each remedy is presented as a protectiveness statement.

Site 7 (Operable Unit 2) – Former Burn Pit

Site 7 was used for the disposal and intermittent incineration of liquids, solid waste, oil, batteries, and scrap metal from the late 1940s through 1963. Environmental investigations identified contamination in surface soil, subsurface soil, and groundwater requiring remedial action to be protective of human health and the environment. Soil excavations, on-site treatment, off-site disposal and land use controls (LUCs) have been implemented to address the surface and subsurface soil contamination. In-situ groundwater treatment, natural attenuation, and LUCs, have been implemented to address the groundwater contamination.

The review of documents, risk assumptions, and results of the site inspection indicate that Site 7 remedy is functioning as intended by the ROD. There were no changes in the physical conditions at the site. Changes in toxicity data and cleanup levels did not affect the protectiveness of the remedy. No other information has been identified that calls into the question of protectiveness of the remedy.

No deficiencies or issues impacting remedy protectiveness were identified during this five-year review for Site 7.

The overall protectiveness statement for Site 7 is that the remedy implemented (soil removal and LUC implementation) is protective of human health and the environment. Exposures to any remaining contamination not addressed through active remediation (i.e., soil excavations and insitu-groundwater treatment) is prevented through the LUCs implemented at the site. Long-term protectiveness of the remedy will be verified by annual LUC inspections to ensure that land use has not changed and monitoring of groundwater to verify natural attenuation.

Recently, screening levels for evaluating human health risks associated with exposure to per- and polyfluoroalkyl substances (PFAS) were established. Based on historical activities at Site 7 (i.e., former burn pit), a PFAS investigation is recommended for Site 7, and a facility-wide PFAS investigation will be conducted for the YARD in the near future.

Site 9 (Operable Unit 4) – Reported Bilge Spoils Area

Site 9 consisted of an all-purpose storage and work area used as a dump, scrap metal yard, and possible bilge spoils dumping area from the 1940s to 1960s. Bilge spoils consisted primarily of petroleum saturated sludge and general waste debris that collected within the lower portions of a ship's haul. Environmental investigations identified contamination in surface soil, subsurface soil, and sediment (i.e., Arundel Cove) requiring remedial action to be protective of human health and the environment. Soil excavations, on-site treatment, off-site disposal and LUCs were implemented to address the surface and subsurface soil contamination. Sediment removal (i.e., dredging) in Arundel Cove and off-site disposal of the sediments were implemented to address the sediment contamination.

The review of documents, risk assumptions, and results of the site inspection indicate that Site 9 remedy is functioning as intended by the ROD. There were no changes in the physical conditions at the site. Changes in toxicity data and cleanup levels did not affect the protectiveness of the remedy. No other information has been identified that calls into the question of protectiveness of the remedy.

No deficiencies or issues impacting remedy protectiveness were identified during this five-year review for Site 9. No recommendations or follow up actions were identified.

The overall protectiveness statement for Site 9 is that the remedy implemented (soil and sediment removal and implementation of LUCs) is protective of human health and the environment. Exposures to any remaining contamination in soils not addressed through active remediation (i.e., soil excavations) is prevented through the LUC implemented at the site. Long-term protectiveness of the remedy will be verified by annual LUC inspections to ensure that land use has not changed.

1.0 INTRODUCTION

1.1 INTRODUCTION

The purpose of five-year reviews is to determine whether implemented remedies are protective of human health and the environment. The methods, findings, and conclusions of the reviews are documented in Five-Year Review Reports. In addition, Five-Year Review Reports identify issues found during the review, if any, and identify recommendations to address them.

The United States Environmental Protection Agency (EPA) is responsible for implementing statutory five-year reviews pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) §121 and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). CERCLA §121 states:

“If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than every five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgement of the President that action is appropriate at such site in accordance with section [104] or [106], the president shall take or require such action. The President shall report to Congress a list of facilities at which such review is required, the results of all such reviews, and any actions taken as a result of such reviews.”

The Agency interpreted this requirement further in the NCP; 40 Code of Federal Regulations (CFR) §300.430(f)(4)(ii) states:

“If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after the initiation of the selected remedial action.”

For federal facility sites under the jurisdiction, custody, or control of the Department of Defense, Executive Order 12580 relieves the EPA of this responsibility and delegates the responsibility to the Department of Defense. The United States Coast Guard (USCG) is the lead agency responsible for five-year reviews at the United States Coast Guard Baltimore Yard (YARD), working with EPA and the Maryland Department of the Environment (MDE) through the Federal Facility Agreement (FFA) which was signed on August 27,

2008 by then Vice Admiral Clifford I Pearson, Chief of Staff of the USCG and on September 11, 2008 by Donald S. Welsch who was the Regional Administrator of the EPA Region III.

Tetra Tech, Inc., conducted this five-year review of the completed remedial actions implemented at Sites 7 and 9 at the YARD, located in Baltimore, Maryland. A general site location map of the YARD is presented as Figure 1-1, and the locations of the two sites are shown on Figure 1-2. This five-year review was prepared based on remedial actions that were conducted as of November 1, 2018.

This is the second five-year review for the YARD. The remediation for Sites 7 and 9 were not started at the same time however the triggering date for the Five-Year Review cycle is the initiation of the first remediation, which is the Remedial Action (RA) at Site 7 which began in June 2009. Because hazardous substances, pollutants, or contaminants remain at Sites 7 and 9 at the YARD in excess of levels that allow for unlimited use and unrestricted exposure, five-year reviews are required at these sites.

This five-year review included the following sites with RODs finalized after the listing of the facility on the National Priorities List (NPL) on September 5, 2002:

- Site 7 (Operable Unit 2), Former Burn Pit
- Site 9 (Operable Unit 4), Reported Bilge Spoils Area

Sites with No Further Action (NFA) RODs or Decision Documents are not included because five-year reviews are not required when the selected remedial action is NFA and there have been no changes in the site conditions and factors contributing to the assumptions underlying the NFA decision.

This report consists of four sections and four appendices, as follows:

- Section 1.0 discusses the purpose of the report, provides a summary of the history and site chronology of the YARD.
- Sections 2.0 and 3.0 are the five-year review details for Site 7 and Site 9, respectively, at the YARD. Each section includes a site chronology, background, summary of remedial actions performed, and five-year review findings, assessment, deficiency list, recommendations, and protectiveness statement.
- Section 4.0 provides a general summary, conclusions, and protectiveness statement for the YARD facility. This section also identifies when the next five-year review is required and the other tasks that should be performed as part of that five-year review.

- Appendix A contains Site-Specific Action Level Update Calculations.
- Appendix B contains land use control (LUC) documentation.
- Appendix C contains photographs of the LUC signs prohibiting digging at the YARD.
- Appendix D includes Site Inspection Checklists.
- Appendix E includes Site 7 Long-Term Monitoring Groundwater Analytical Data.

Administrative Components and Community Involvement

This Five-Year Review consisted of a review of relevant documents, interviews, and a site inspection. The following team members, assisted in the preparation of the Five-Year Review Report:

- Lisa Cunningham, EPA Region 3 Remedial Project Manager
- Kim Lemaster, MDE Remedial Project Manager
- Derrick Josey, CG Environmental Engineer
- John Slaughter, Tetra Tech Program Manager
- Scott Nesbit, Tetra Tech Project Manager
- Robert DeMarco, Tetra Tech Site Coordinator
- Matthew Kraus, Tetra Tetra Primary Author

An announcement about the review was provided in the Maryland Gazette. The completed Second Five-Year Review Report will be available in the Information Repositories which are maintained at Anne Arundel County Public Library, North County Area Branch, 1010 Eastway, Glen Burnie MD 21060, and the Brooklyn Park Branch, 1 East 11th Avenue, Baltimore, MD 21225. The completed Second Five-Year Review Report will also be available electronically at:

<http://www.dcms.uscg.mil/Our-Organization/Assistant-Commandant-for-Engineering-Logistics-CG-4-/Logistic-Centers/Surface-Forces-Logistics-Center/Coast-Guard-Yard/News/>

The next five-year-review for the YARD is required by 2024, 5 years from the date of the finalization of this review.

1.2 SITE CHRONOLOGY

A list of important historical events and relevant dates for the YARD is shown below. The identified events are illustrative, not comprehensive.

Event	Date
YARD established as Coast Guard training academy and boat repair facility	1899
Listed on Federal Agency Hazardous Waste Compliance Docket	1988
USCG Research and Development Center Investigation	1990
Preliminary Assessment (PA)	1993
Site Inspection (SI) performed to develop a Hazard Ranking System pre-score for the facility	2000
Placed on NPL	September 2002
Site 1 (Operable Unit 3) ROD signed	September 2007
Federal Facilities Agreement	September 2008
Site 4 (Operable Unit 1) ROD signed	May 2009
Site 7 (Operable Unit 2) ROD signed	September 2009
Site 8 (Operable Unit 5) ROD signed	September 2011
Site 9 (Operable Unit 4) ROD signed	June 2013

On February 12, 1988 the YARD was listed on the Federal Agency Hazardous Waste Compliance Docket. As a result, MDE performed an initial Preliminary Assessment (PA) of the YARD. When a CERCLA PA and/or Site Investigation (SI) are completed, sites are scored using the CERCLA Hazard Ranking System (HRS). A site with an HRS score of 28.5 or greater becomes eligible for the NPL list. The initial MDE PA was subsequently cited as deficient by EPA, and a PA-level HRS score was not established by MDE. A second PA and PA-level HRS score were completed by Science Applications International Corporation (SAIC) in 1993, in accordance with EPA CERCLA requirements and was submitted to EPA for review and approval (USCG, 1993). A total of 13 areas within the YARD were identified as potential areas of contamination, and an HRS score of 25 was calculated for the facility. In April 1994, EPA contacted USCG to indicate that the agency would review the PA and provide further notification of the facility's ultimate CERCLA status. In January 1998, soil and groundwater data from USCG studies were submitted to EPA as supplemental information for inclusion in the 1993 PA. The supplemental information indicated that four of the 13 SAIC sites were exempt from CERCLA because they were related to petroleum releases. After reviewing the supplemental information before USCG notified EPA of its intent to proceed with an SI and risk assessment for the nine non-petroleum sites (Sites 1, 4, 5, 6, 7, 8, 9, 11, and 13). MDE provided regulatory oversight to the USCG under the MDE Oil Control Program for the evaluation of the four petroleum sites. By 1999, EPA had not issued correspondence regarding the review status of the SAIC PA or other CERCLA-related environmental requirements for further action at the facility. Consequently, USCG voluntarily proceeded with an SI that included the development of a revised facility-wide HRS score for the nine non-petroleum sites. Based on information obtained from the SI and SAIC PA, the revised HRS score exceeded the minimum HRS score of 28.5 for inclusion on the NPL. As a result, the USCG proactively initiated an environmental investigation program for the nine non-petroleum sites identified in the 1999 SI. These sites were authorized by EPA for inclusion in the NPL listing in 2002.

Sites 5, 6, 11, and 13 were terminated because available data indicated there was no significant chemical contamination associated with these sources and did not result in RODs, Remedial Designs (RDs), or Remedial Actions.

NFA Decision Documents have been signed for the following sites:

- Site 1 (Operable Unit 3) – Drydock Sediment
- Site 4 (Operable Unit 1) – Salvage Lot
- Site 8 (Operable Unit 5) – Former Incinerator

1.2.1 Grove Site

A large precipitation event in 2014 eroded areas in the southeastern end of the YARD (referred to as the Grove) exposing bricks and metal debris within the subsurface. The Grove Site is a distinct environmental investigation area not located near or associated with Sites 7 and 9. In September 2014, a preliminary site investigation was conducted at the Grove Site which included a geophysical survey (terrain conductivity and utility location), test pit excavation, and soil sampling and analysis. Areas of waste and contaminated soil were detected with elevated concentrations of lead and other inorganic and organic contaminants. As a result of the preliminary investigation subsequent investigations are underway at the Grove Site including groundwater monitoring and a Site Investigation (SI). Remedial Investigation (RI) and Feasibility Study (FS) work at the Grove Site are expected to begin in 2019.

1.3 BACKGROUND

The YARD was originally established in 1899 as a Coast Guard training academy and boat repair facility. Industrial development of the property began around 1906 and continued for the next 30 years, with the construction of over 40 buildings by the late 1930s. In 1941, a bulkhead was constructed farther out into Curtis Creek, three piers were built, and two floating dry docks were moored beside the piers. The current waterfront configuration was essentially completed when construction was finished in the mid-1940s. Vessel repair and overhaul, buoy construction and maintenance, and various manufacturing operations continued into the 1960s and 1970s. Manufacturing operations were reduced at the YARD throughout the 1980s and 1990s. Major activities in the 1990s centered around the construction of a 3,500-ton shiplift, which significantly enhanced the YARD's ship maintenance and repair capability.

1.3.1 Physical Characteristics

The YARD is located on Hawkins Point Road, approximately 6 miles southwest of downtown Baltimore and 6 miles west of the Chesapeake Bay. Most of the facility lies within Anne Arundel Cove County, with the exception of the northernmost portion, which is within the Baltimore City limits. The YARD encompasses approximately 113 acres and is situated in a heavily industrialized area with a manganese ore processor to the east, the City of Baltimore landfill to the north, and a trucking company to the west.

Curtis Creek forms the southern boundary of the YARD, Arundel Cove, a tributary to Curtis Creek, borders the industrial area of the YARD on the east. The shipyard and associated industries are situated on the western side of Arundel Cove, and a residential and recreational area is located to the east.

1.3.2 Land and Resource Use

The YARD encompasses approximately 113 acres and is situated in a heavily industrialized area with a manganese ore processor to the east, the Baltimore City landfill to the north, and a trucking company to the west.

The YARD was originally established in 1899 as a USCG training academy and boat repair facility. Industrial development of the property began around 1906 and continued for the next 30 years, with the construction of over 40 buildings by the late 1930s. Although manufacturing operations were reduced at the YARD throughout the 1980s and 1990s, ship repair and maintenance activities have continued to the present.

Boat repairs were originally performed in Arundel Cove, and until 1941, only one 400-foot pier extended from the southern shoreline of the facility into Curtis Creek. A majority of the shipyard was constructed immediately prior to World War II. The 400-foot pier was removed, and the original shoreline was extended as much as 300 feet into Curtis Creek. A bulkhead consisting of sheet piling was installed at the edge of the creek, and a series of pilings and decking was constructed behind the bulkhead to support buildings and roads. A 3,000-ton floating drydock, a 320-foot pier with a tower crane, and two shipways were constructed along the bulkhead. By 1942, two additional 400-foot piers with tower cranes and a second drydock were added to the facility. The current waterfront is essentially the same as in the mid-1940s, with the exception of a new, 3,500-ton shiplift completed in the late 1990s.

1.3.3 Topography

The facility is situated approximately 30 feet above mean sea level (msl). The topography is generally flat, with a slight slope to the south. Unconsolidated sedimentary deposits, typical of Coastal Plain geology and dredge spoils underlie the YARD.

1.3.4 Hydrology

Groundwater in the area of the YARD occurs within the unconsolidated sediments of the Coastal Plain. Groundwater recharges by infiltration of precipitation and subsurface flow from adjacent areas, and discharges to Curtis Creek and Arundel Cove following a gentle sloping groundwater gradient. The Patapsco Formation, which underlies the site and most of the study area, is one of the most productive water-yielding formations in Maryland and the most extensively developed in Anne Arundel County.

Curtis Creek is a tidally-influenced estuary of the Chesapeake Bay, and a tributary of the Patapsco River. It is 8 miles by water to the Chesapeake Bay from where Curtis Bay (the mouth of Curtis Creek) meets the Patapsco River. The Patapsco River and all tributaries near the YARD including Curtis Creek are classified by the state of Maryland as Use I waters which are designated for water contact recreation, fishing and protection of aquatic life and wildlife (Tetra Tech, 2000).

1.4 SITE-SPECIFIC ACTION LEVEL CHANGES

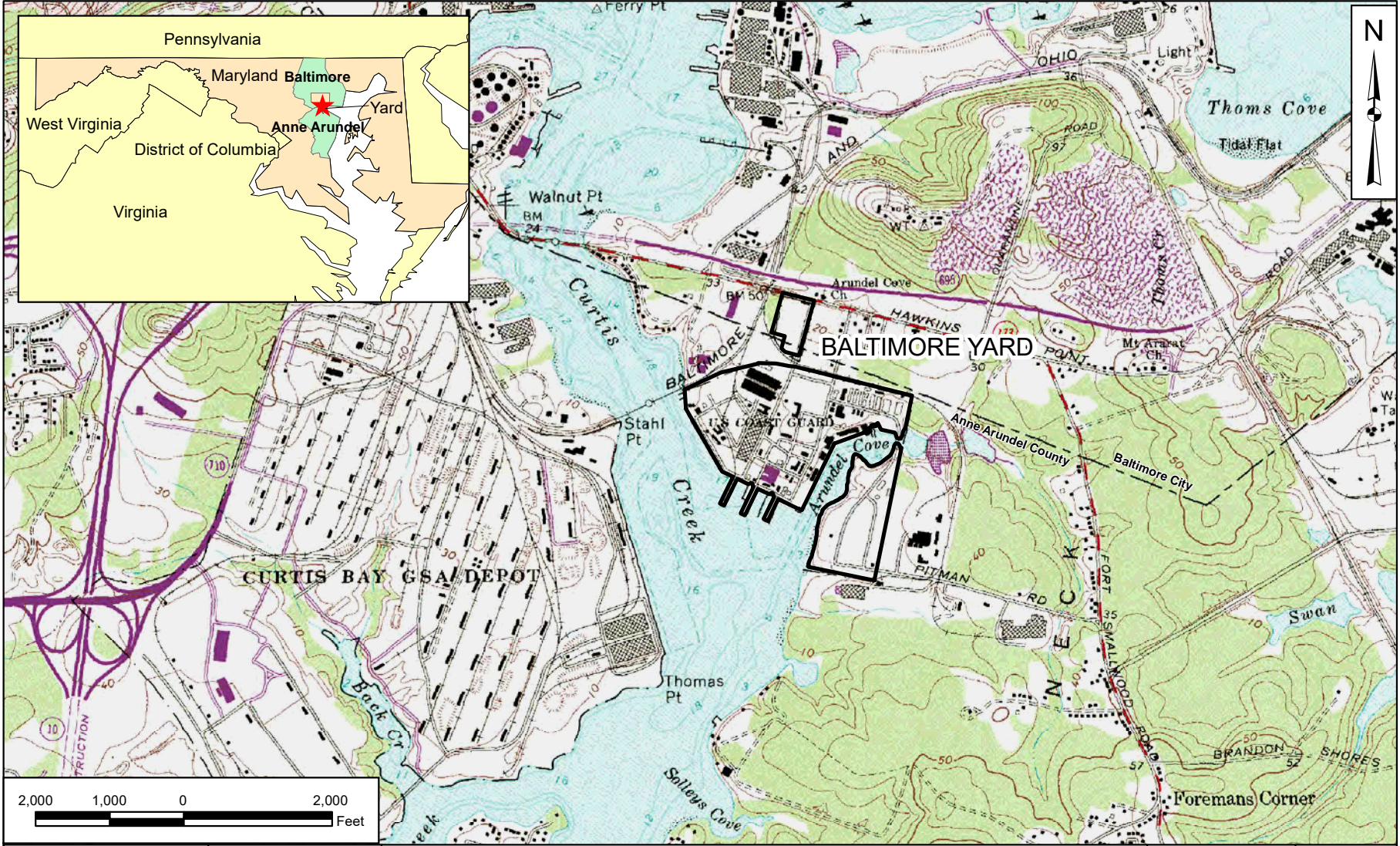
The Preliminary Remediation Goals (PRGs) identified in each of the RODs were reviewed, as were new federal and state regulations that have been promulgated since the signing of the ROD. In 2014 EPA updated exposure assumptions for receptors used to calculate PRGs. Additionally, toxicity information for benzeno(a)pyrene was updated since 2014. These changes resulted in higher cleanup level values (i.e., higher concentrations that are less stringent) for chemicals of concern (COCs) at Site 7 and Site 9; therefore, the site remedies continue to be protective of human health.

At Site 7, soil cleanup values increased for benzo(a)pyrene equivalents, copper, iron, manganese, mercury, vanadium, and xylenes; and groundwater cleanup values increased for 2-methylnaphthalene and vanadium. The PRG for chromium was not recalculated. As discussed in detail in Section 2.6.2, chromium exists in two forms; hexavalent and trivalent with hexavalent chromium being more toxic. There are no toxicity criteria available for total chromium and consequently total chromium was evaluated as hexavalent chromium in the Site 7 Human Health Risk Assessment (HHRA). As a result of changes in toxicity data from the time the ROD was signed to the First Five-Year Review (see Section 2.6.2) cancer risks from exposures to hexavalent chromium in soil would be higher than those estimated in the HHRA. Chromium was identified as a COC for child residents in the HHRA. Chromium would not have been identified as a COC in the HHRA if it had been evaluated as trivalent chromium. Based on site history, hexavalent chromium was not used at Site 7. Consequently it is likely the chromium is present as trivalent chromium and not hexavalent chromium at Site 7. In addition, at Site 7 the removal action removed all contamination except that underneath or within five feet of the buildings or the pad for the electrical transformer station. Since the contamination is underneath a portion of the buildings or in proximity to the buildings, there is no exposure pathway and therefore no unacceptable risks. If the buildings or the pad for the electrical

transformer station are demolished the risk calculations will be re-evaluated. Therefore, the PRG for chromium was not recalculated.

At Site 9, soil cleanup values increased (i.e., less stringent) for benzo(a)pyrene equivalents, 2,3,7,8-polychlorinated dibenzo-p-dioxin (TCDD) equivalents, arsenic, copper, and iron.

Appendix A contains the site-specific action level update calculations.



DRAWN BY D. COUCH	DATE 7/11/13
CHECKED BY S. WARINO	DATE 7/11/13
COST/SCHED-AREA	
SCALE AS NOTED	



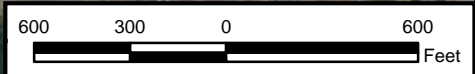
LOCATION MAP
UNITED STATES COAST GUARD YARD
BALITMORE, MARYLAND

CONTRACT NUMBER HSCG83-12-C-NES-003	TO NUMBER 112G04513
APPROVED BY S. NESBIT	DATE 7/11/13
APPROVED BY	DATE
FIGURE NO. 1 - 1	REV 0

Aerial photograph provided by ESRI's ArcGIS Online World Imagery map service (© 2015 ESRI and its data suppliers)



Legend
 Installation Boundary



DRAWN BY	DATE
J. ENGLISH	12/13/17
CHECKED BY	DATE
S. BRENNER	03/09/18
COST/SCHED-AREA	
SCALE AS NOTED	



FACILITY MAP WITH CERCLA SITES
 UNITED STATES COAST GUARD YARD
 BALTIMORE, MARYLAND

CONTRACT NUMBER	TO NUMBER
HSCG50-14-D-PSL005	—
APPROVED BY	DATE
S. BRENNER	03/09/18
APPROVED BY	DATE
—	—
FIGURE NO.	REV
1-2	0

2.0 SITE 7, FORMER BURN PIT

2.1 INTRODUCTION

Implementation of remedial actions at Site 7, Former Burn Pit, began in 2009. This five-year review includes an evaluation of previous data and provides a current status update for Site 7. This review is required because contaminants remain on site at concentrations that do not allow for unlimited use and unrestricted exposure.

2.2 SITE CHRONOLOGY

A list of important Site 7 historical events and relevant dates in the site chronology is shown below. The identified events are illustrative, not comprehensive.

Event	Date
Disposal and intermittent incineration of liquids, solid waste, oil, batteries, and scrap metal	1940s to 1963
USCG Research and Development Center conducted limited investigations	1989 to 1990
Preliminary Assessment completed	1993
USCG Former Burn Pit Sampling and Analysis	1997
Site Inspection (SI)	1999
Remedial Investigation (RI)	2006
Feasibility Study (FS)	2008
Record of Decision (ROD)	2009
Remedial Design	2009
Remedial Action	2009 - 2010
Land Use Control (LUC) Remedial Design (RD)	August 2012
Annual Land Use Control (LUC) inspections	2013 - ongoing

2.3 BACKGROUND

Physical Characteristics

Figure 1-2 is a generalized map of the YARD that shows the locations of the sites including Site 7. Site 7 is slightly less than 3 acres in size and is located in the northwestern section of the YARD along the facility's northern property boundary and parallel to the CSX Railroad property. The land encompassing Site 7 was originally developed in the early 1940s when the west bulkhead was installed and a natural slough was backfilled with sediments dredged from Curtis Creek. A portion of the site was used for the disposal and intermittent incineration of liquids, solid waste, oil, batteries, and scrap metal from the late 1940s through

1963. Figure 2-1 is a site location map showing the features of Site 7, the groundwater monitoring wells, and the surrounding area.

Land and Resource Use

Site 7 is slightly less than three acres in size. The land encompassing Site 7 was originally developed in the early 1940s when the west bulkhead was installed and a natural slough was backfilled with sediments dredged from Curtis Creek. From the late 1940s through 1963, Site 7 was reportedly used for the disposal and intermittent incineration of liquids, solid waste, oil, batteries, and scrap metal. Currently, Station Curtis Bay, Buildings 30 and 37, storage sheds, roads, walkways, a basketball court, and a manicured lawn are present at the site. Station Curtis Bay is the location of search and rescue personnel at the YARD and is manned and operational 24 hours a day seven days a week. In addition to the search and rescue operations at Station Curtis Bay, boat maintenance and refueling activities also currently take place at Site 7.

History of Contamination

A portion of Site 7 was used for the disposal and intermittent incineration of liquids, solid waste, oil, batteries, and scrap metal from the late 1940s through 1963. A review of historical facility aerial photographs indicated that various burn pits occupied slightly different locations within the site over time, with a maximum north/south offset of approximately 90 feet (USCG, 1990).

Initial Response and Basis for Taking Action

The USCG Research and Development Center conducted limited investigations of Site 7 from 1989 to 1990 (USCG, 1990). The investigations consisted of a file review, personnel interviews, and chemical analyses of soil and groundwater samples. The investigation was discontinued before its completion, and several samples were analyzed after the sample holding times. Analytical data obtained from the soil samples indicated the presence of unidentified hydrocarbons, polynuclear aromatic hydrocarbons (PAHs), alkyl-substituted benzene, naphthalene, and metals. Analytical results for groundwater samples were not available during the document review. However, the presence of atrazine and chlorinated hydrocarbons in well CB-14 is mentioned in Section 4.0 of the Research Development Center Report (USCG, 1990). A PA was completed in 1993 to identify locations of potential contamination facility wide (USCG, 1993). Limited additional historical information regarding Site 7 was obtained during the PA. However, during the Site 7 survey, oil was observed on the inside walls of the storm drain crossing the Former Burn Pit. YARD personnel confirmed that an oil sheen had been observed on water in the storm drain during previous years (USCG, 1993). Abatement measures, consisting of the installation and maintenance of an absorbent boom in the storm drain, were initiated. In 1997, YARD personnel collected three surface soil samples at the

northeastern end of Building 36 and analyzed for Toxicity Characteristic Leaching Procedure (TCLP) metals and total lead (USCG, 1998). Lead was the only metal that exceeded regulatory standards, with soil concentrations ranging from 980 mg/kg to 3,740 mg/kg. In 1999, a SI was performed to develop a Hazard Ranking System pre-score for the facility (USCG, 2000). Results of the soil sampling conducted as part of the SI indicated exceedances of several metals including lead and arsenic and numerous PAHs. An RI was initiated in November 2003 to further delineate the nature and extent of contamination (Tetra Tech, 2006). The Site 7 RI sampling program included the collection and analysis of 22 surface soil, 41 subsurface soil, nine groundwater, eight surface water, and 13 sediment samples. An FS investigation was conducted to resolve RI data gaps and to obtain additional data necessary to complete the FS (Tetra Tech, 2008). Based on the results of the FS investigation, the media of concern at Site 7 were determined to be surface soil, subsurface soil, and groundwater. The subsurface soil depth of concern ranged from 1 to 8 feet bgs. No risk to ecological receptors were identified based on exposure to soil or groundwater within the boundaries of the Former Burn Pit.

Evaluations of the vapor intrusion pathway during the RFI and Post-ROD investigations, which involved the collection of sub-slab soil gas samples at Buildings 30 and 37, indicated that the vapor intrusion pathway did not present unacceptable risks under a site-specific exposure scenario. The current (2017) EPA vapor intrusion screening levels (VISLs) for the major VOC contaminants of concern, including benzene, were reviewed for this FYR (detailed in following sections), and based on the site-specific exposure scenario, there is no identified unacceptable health risk from soil gas for this site.

2.4 REMEDIAL ACTIONS

2.4.1 Remedy Selection

The Remedial Action Objectives (RAOs) for Site 7, as documented in the ROD signed in September 2009, are:

- Prevent unacceptable human health risks associated with exposure to soil containing total xylenes (for construction workers only), benzo(a)pyrene equivalents, and metals concentrations exceeding resident PRGs.
- Prevent unacceptable human health risks associated with exposure to groundwater containing benzene, 2-methylnaphthalene, and metals with concentrations exceeding EPA Maximum Contaminant Levels (MCLs), secondary MCLs (SMCLs), and PRGs.

Based on the identified RAOs for Site 7, cleanup goals were established for soil and groundwater COCs for the protection of human receptors exposure to soil and groundwater. The updated soil COCs and cleanup goals based on changes in toxicity information and EPA exposure assumptions are presented on Table 2-1.

The selected alternative for soil was excavation, on-site treatment with chemical reagent (i.e., MAECTITE®), off-site disposal and LUCs, including prohibiting residential land use, annual inspections, and certification procedures. This selected alternative was considered to be protective of human health and the environment; no Applicable or Relevant and Appropriate Requirement (ARARs) are associated with the selected remedy.

The major components of the selected soil remedy included:

- Excavation of contaminated soil from the ground surface to the lower limit of the contaminated area. The area to be excavated included lawns and vegetated areas, sidewalks, curbing, a parking lot, and a basketball court. After excavation, the excavated areas were backfilled with clean fill to prior surface elevations, and lawns, sidewalks, roads, the basketball court, and other paved areas were replaced.
- The excavated soil was chemically treated on site to process leachable metals. The in-situ treatment of impacted soil occurred after excavation and prior to disposal. The reagent was mixed into the impacted soil, the reaction period ranged from 3 to 5 hours, and leachable metals were then converted to stable insoluble minerals within the soil matrix. Samples of the treated soil were then collected and analyzed to confirm that TCLP limits were met prior to disposal.
- LUCs to eliminate or reduce the potential for unacceptable human health risks as a result of exposure to remaining contaminated soil were implemented by restricting future excavation or development within the footprints of Buildings 30, 35, 36 and 37 and the pad for the electrical transformer station.

The major components of the groundwater remedy included:

- In-situ treatment of the benzene plume.
- Natural attenuation to reduce concentrations of inorganic contaminants (antimony, arsenic, barium, and vanadium).
- LUCs to prohibit all uses of groundwater from the surficial aquifer underlying Site 7.

2.4.2 Remedy Implementation

The Site 7 institutional controls remedy was implemented on 21 September 2012 when the Interim Remedial Action Completion Report (IRACR) was signed. LUC documentation for Site 7, including the LUC RD finalized in April 2012 is included in Appendix B. The LUC RD documents the following LUC performance objectives for Site 7:

- Restrict land use, specifically prohibiting excavation and development within the footprints of Buildings 30, 35, 36, and 37 and the pad for the electrical transformer station, to eliminate or reduce the potential for unacceptable human health risks as a result of exposure to contaminated soil that was not removed during the Remedial Action.
- Prohibit all uses of groundwater from the surficial aquifer underlying Site 7 (including, but not limited to human consumption, irrigation, heating/cooling purposes, and industrial processes) unless prior written approval is obtained from the USCG (in the event of a transfer of the property), EPA, and MDE.
- Maintain the integrity of any existing or future monitoring or remediation system(s) unless prior written approval for modifications is obtained from the USCG (in the event of a transfer of the property), EPA, and MDE.
- Annually inspect the site to confirm compliance with LUC objectives, and prepare and submit an annual compliance certification to EPA and MDE. Notify EPA and MDE prior to any property conveyance. Because hazardous substances remain on site in excess of levels that allow for unlimited use and unrestricted exposure, an initial review will also be conducted within 5 years after the initiation of the LUCs, and every 5 years thereafter, to ensure that the remedy continues to provide adequate protection of human health and the environment.

2.4.3 System Operations/Operation and Maintenance

With the exception of years 2014 to 2016, annual inspections of the site have been performed to ensure that the land use restrictions are being maintained since the signing of the IRACR in 2012 . No violations have been reported during the inspections. While formal, documented inspections were not conducted between 2014 and 2016, no change in land use or use of groundwater was observed by USCG environmental staff during those years. In addition, the integrity of the groundwater monitoring system at the site has been maintained as documented in the groundwater monitoring reports. Copies of annual certification letters from 2017 and 2018 are included in Appendix B.

Cost

Estimated inspection costs (to the nearest \$1,000) are \$3,000 per year.

2.5 FIVE-YEAR REVIEW PROCESS

2.5.1 Document and Analytical Data Review

This second five-year review consisted of a review of relevant documents for Site 7 including the SI, RI, ROD, and human and ecological risk documents.

Groundwater

The RI (Tetra Tech, 2006) delineated benzene in groundwater to the east of Building 30, as well as several other metals (barium, vanadium, antimony, and arsenic) in shallow groundwater greater than Groundwater Cleanup Goals. Evidence of petroleum contamination in the saturated zone, such as petroleum odors and stained soil, had been observed throughout the site prior to in-situ treatment and soil removal.

In-situ treatment was completed in April/May 2009 by the injection of Regenesis Oxygen Release Compound™ Advanced (ORC™) into the benzene plume to promote aerobic degradation of benzene and other organics, such as 2-methylnaphthalene. Additional degradation of organic compounds through natural biological degradation is also expected to occur. Natural processes, such as dilution, dispersion, and sorption will reduce the concentrations of metals.

Following ORC™ injection at Site 7, soil and waste was excavated, treated, and disposed off-site. The work was initiated in June 2009 and completed in accordance with the RA Work Plan (Tetra Tech, 2009). Impacted soil was excavated to depths below the water table [approximately 12 feet below ground surface (bgs)] and disposed off-site. No excavation was conducted under or within five feet of buildings. The site was restored after completion of the RA.

The effectiveness of these processes are being evaluated through the Long-Term Monitoring program. The results of the analytical data from the Long-Term Monitoring program are presented in Appendix E. The ORC groundwater treatment reduced benzene concentrations at wells located in the treatment area to below the groundwater standard. However, benzene (and other contaminants) at the Site 7 was also reduced by excavating contaminated soil in the source area shortly after completing the ORC program. As shown in Appendix E, benzene at downgradient well GW07-07 remained somewhat stable but decreased slightly over the monitoring period 2011-2018. These results indicate that upgradient source-area benzene concentrations were reduced sufficiently by the remedy to prevent high benzene concentrations from migrating from the source area to well GW07-07 and further east to Curtis Creek. The groundwater results in Appendix E also show that there are minor exceedances of several metals sporadically in several wells. Appendix E shows the updated cleanup levels based on EPA exposure assumptions that were revised in 2014.

Soil

At Site 7, soil cleanup values increased (i.e., higher concentrations that are less stringent) for benzo(a)pyrene equivalents, copper, iron, manganese, mercury, vanadium, and xylenes; because benzo(a)pyrene toxicity information and EPA exposure assumptions were revised since 2014. The PRG for chromium was not recalculated. Chromium exists in two forms; hexavalent and trivalent. Hexavalent is

the more toxic form. Toxicity criteria are not available for total chromium consequently total chromium was evaluated as being all hexavalent chromium in the HHRA. At the time the HHRA was prepared there was not an oral cancer slope factor (CSF) available for hexavalent chromium. An oral CSF from the New Jersey Department of Environmental Protection is now available. In addition hexavalent chromium is now considered to be a mutagenic chemical. As a result of these changes cancer risks from exposures to hexavalent chromium in soil would be higher than those estimated in the HHRA. Chromium was identified as a COC for child residents in the HHRA. Chromium would not have been identified as a COC in the HHRA if it had been evaluated as trivalent chromium. Based on site history hexavalent chromium was not used at Site 7. Consequently it is likely the chromium is present as trivalent chromium and not hexavalent chromium at Site 7. In addition, at Site 7 the removal action removed all contamination except that underneath a portion of the buildings. Since the contamination is underneath the buildings, there is no exposure pathway and therefore no unacceptable risks. If the buildings are demolished the risk calculations will be re-evaluated. Therefore, soil risks were not recalculated as part of the First or Second Five-Year Review.

The current EPA VISLs (EPA, 2017) for the major VOC contaminants of concern were reviewed for this FYR with particular focus on benzene, chloroform, tetrachloroethene (PCE), and trichloroethene (TCE) which are either a groundwater COC (benzene), or had sub-slab vapor concentrations exceeding the prior sub-slab vapor screening levels (Appendix A). Based on the primary target sub-slab constituents, the conversions of current VISLs from micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) to parts per billion-volume (ppbv) (units for previous soil gas results) are as follows (based on conversion values derived from NIOSH Pocket Guide and IH calculations):

- Benzene: 3.76 ppbv (equivalent to 12 $\mu\text{g}/\text{m}^3$)
- Chloroform: 0.84 ppbv (equivalent to 4.1 $\mu\text{g}/\text{m}^3$)
- PCE: 53.1 ppbv (equivalent to 360 $\mu\text{g}/\text{m}^3$)
- TCE: 2.98 ppbv (equivalent to 16 $\mu\text{g}/\text{m}^3$)

These updated VISLs are higher than the target shallow soil gas screening values shown for the prior sub-slab soil gas sampling results (Appendix A). The prior sub-slab soil gas concentrations for benzene, chloroform, and PCE remain below the revised applicable VISLs. In the case of TCE, one sub-slab soil gas sampling location (samples SG7-1 and dup) had TCE concentrations of 3.7 ppbv and 3.9 ppbv that are slightly higher than the revised VISL of 2.98 ppbv. However, TCE concentrations in three soil gas samples (SG7-5, SG7-6, and SG7-7) that previously exceeded the prior target shallow soil gas screening value do not exceed (i.e., are less than) the 2017 TCE VISL. Therefore, the human health risk assessment remains unchanged based on original estimated exposure duration for base employees. There is no identified unacceptable health risk from sub-slab soil vapor for this site based on the site-specific exposure scenario.

Ecological Risk Screening

Site 7 encompasses approximately 2.8 acres immediately beyond the western boundary of Site 4, and is a former burn pit. The site is almost entirely covered by various buildings and ancillary structures, gravel and asphalt, densely packed soil, roads, and parking lots which provide essentially no habitat for terrestrial receptors. Vegetation other than a few small trees, ornamental shrubs and a small lawn is almost totally absent. The soil exposure pathway for potential ecological receptors is considered incomplete because contaminated soils were removed and backfilled with clean soil; therefore, there are no unacceptable risks to potential ecological receptors at the site.

2.5.2 Site Inspection

The site inspection conducted at Site 7 on November 7, 2013 included visual observations of the site and surrounding area. Currently, Buildings 30, 35, 36 and 37, an electrical transformer station, storage sheds, a maintenance canopy, roads, walkways, a basketball court, and a manicured lawn, and patio area are present at the site. Signs are posted at Station Curtis Bay stating that digging is prohibited without clearance from Facilities Environmental Branch. Photographs of these posted signs taken during the August 2018 site inspection are included in Appendix C, and the Site Inspection Checklist is included in Appendix D.

2.6 TECHNICAL ASSESSMENT

2.6.1 Question A: Is the Remedy Functioning as Intended by Decision Documents?

The review of documents, risk assumptions, and results of the site inspection indicate that the Site 7 remedy is functioning as intended by the 2009 ROD. As part of the Site 7 remedy, contaminated soil was removed from around the buildings in 2009-2010 and disposed of offsite at a state-licensed facility. The excavations were backfilled with clean soil and the ground surface was restored with vegetation, asphalt pavement, or concrete. Soil was not removed from beneath Buildings 30, 35, 36, 37 and an electrical transformer pad. However the soil is covered by the building floors (concrete) and concrete transformer pad; therefore, soil is not accessible to human and ecological receptors, and there are no unacceptable risks to human and ecological receptors because soil exposure pathways are incomplete.

The implementation of LUCs to prevent disturbance or use of soil within the footprints of Buildings 30, 35, 36, and 37 and the pad for the electrical transformer station and the groundwater from the surficial aquifer underlying Site 7 provides a significant degree of protection of human health and the environment. No activities were observed that would violate these LUCs. Based on the implementation of LUCs at the site, the intent and goals of the ROD for Site 7 have been met.

2.6.2 Question B: Are the Exposure Assumptions, Toxicity Data, Cleanup Levels, and RAOs Used at the Time of Remedy Selection Still Valid?

There have been no changes in the physical conditions of the site that would affect the protectiveness of the remedy. Soil cleanup values increased (i.e., higher concentrations that are less stringent) for benzo(a)pyrene equivalents, copper, iron, manganese, mercury, vanadium, and xylenes; and groundwater cleanup values increased for 2-methylnaphthalene and vanadium because benzo(a)pyrene toxicity information and EPA exposure assumptions were revised since 2014. The PRG for chromium was not recalculated. Chromium exists in two forms; hexavalent and trivalent. Hexavalent is the more toxic form. Toxicity criteria are not available for total chromium consequently total chromium was evaluated as being all hexavalent chromium in the HHRA. Chromium would not have been identified as a COC in the HHRA if it had been evaluated as trivalent chromium. Based on site history hexavalent chromium was not used at Site 7. Consequently it is likely the chromium is present as trivalent chromium and not hexavalent chromium at Site 7. In addition, at Site 7 the removal action removed all contamination except that underneath a portion of the buildings. Since the contamination is underneath the buildings, there is no exposure pathway for human and ecological receptors and therefore no unacceptable risks. If the buildings are demolished the risk calculations will be re-evaluated. Therefore, soil risks were not recalculated as part of the First or Second Five-Year Review.

Site-Specific Action Level Changes

PRGs were recalculated for COCS at Site 7 that were based on site-specific exposure assumptions and for benzo(a)pyrene equivalents because toxicity data was revised. Soil cleanup values increased (i.e., higher concentrations that are less stringent) for benzo(a)pyrene equivalents, copper, iron, manganese, mercury, vanadium, and xylenes; and groundwater cleanup values increased for 2-methylnaphthalene and vanadium. As stated previously toxicity criteria for chromium have been updated since the completion of the Site 7 HHRA. While chromium exists in two forms; hexavalent and trivalent with hexavalent being the more toxic form based on site history hexavalent chromium was not used at Site 7. In addition, at Site 7 the removal action removed all contamination except that underneath a portion of the buildings. Since the contamination is underneath the buildings, there is no exposure pathway and therefore no unacceptable risks. If the buildings are demolished the risk calculations will be re-evaluated. Therefore, the chromium PRG was not recalculated using the updated toxicity criteria for hexavalent chromium.

Changes in Exposure Pathways, Toxicity and Other Contaminant Characteristics, and Risk Assessment Methods

As discussed previously the risks from chromium in the Site 7 HHRA were based on hexavalent chromium. Hexavalent chromium toxicity have been updated since the completion of the HHRA; however based on

site history hexavalent chromium was not used at the site and if evaluated as trivalent chromium, chromium would not have been identified as a COC. In addition, at Site 7 the removal action removed all contamination except that underneath the buildings. Since the removal area was restored with clean fill and any remaining contaminated soil is underneath a portion of the buildings, there is no exposure pathway and therefore no unacceptable risks. If the buildings are demolished the risk calculations will be re-evaluated. Therefore, the updated toxicity criteria for hexavalent chromium do not affect the protectiveness of the remedy.

The exposure assumptions used are considered to be conservative and reasonable in evaluating risk and developing risk-based cleanup levels. However, in 2014 EPA update standard exposure assumptions; therefore, cleanup levels developed based on EPA exposure assumptions were updated and are included in Appendix A. Additionally, benzo(a)pyrene toxicity data was revised since 2014 and cleanup levels based on the revised toxicity data and exposure assumptions are provided in Appendix A. Sub-slab soil gas VISLs were updated in 2017 and have increased (i.e., are less stringent) for most VOCs detected in soil gas samples. There have been no changes to the standardized risk assessment methodology since the HHRA that could affect the protectiveness of the remedy.

2.6.3 Question C: Has Any Other Information Come to Light that Could Call into Question the Protectiveness of the Remedy?

No additional human health or ecological risks have been identified, and no weather-related events have affected the protectiveness of the remedy. No other information has been identified that calls into question of protectiveness of the remedy. Arsenic in groundwater at wells GW07-09, GW07-12, and GW07-13, and barium in groundwater at GW07-13 have been detected at concentrations above the Maryland groundwater standards. However, recent sampling indicates that arsenic concentrations at these wells are decreasing towards the groundwater standard, and have been less than the standard on several occasions (e.g., 2014, 2015, and 2017 at GW07-09; 2012, 2015 and 2016 at GW07-13). Barium at GW07-13 has been consistently decreasing during the last three sampling events (2016-2018), and has been less than the Maryland groundwater standard on occasions (e.g., 2012 and 2014). Concentrations of these metals can vary in groundwater samples as these results represent total metals concentrations in unfiltered samples. Sample concentrations can be affected by turbidity, which can vary from sample to sample and may entrain suspended sediment containing naturally-occurring metals such as arsenic and barium from the soil.

The selected remedy is still protective of human health and the environment because contaminated soil was removed from Site 7 and backfilled with clean soil. Groundwater is not used at the site and LUCs are in place to prohibit groundwater use and restrict excavating in groundwater. Additionally, metal concentrations in downgradient wells GW07-07, GW07-08, GW07-10, and GW07-11 are less than the groundwater standards indicating that Curtis Creek is unlikely to be impacted by elevated concentrations

of these constituents via groundwater seepage. These metals are not volatile and are not expected to impact soil vapor by their presence in groundwater. Therefore, there is no unacceptable risk to human or ecological receptors because exposure pathways are incomplete.

2.6.4 Technical Assessment Summary

According to the data reviewed and the site inspection, the Site 7 remedy is functioning as intended by the ROD. Changes did occur to soil cleanup levels for benzo(a)pyrene equivalents, copper, iron, manganese, mercury, vanadium, and xylenes; and groundwater cleanup values for 2-methylnaphthalene and vanadium because of changes to toxicity criteria for benzo(a)pyrene and 2014 revisions to EPA exposure assumptions. Sub-slab soil gas VISLs were updated in 2017 and have increased (i.e., are less stringent) for most VOCs detected in soil gas samples. Therefore, the human health risk assessment remains unchanged based on original estimated exposure duration for base employees. There is no identified unacceptable health risk from sub-slab soil vapor for this site based on the site-specific exposure scenario. There were changes to the toxicity criteria for chromium since the ROD was signed; however at Site 7 the removal action removed all contamination except that underneath the buildings. Since the contamination is underneath the buildings, there is no exposure pathway and therefore no unacceptable risks. If the buildings are demolished the risk calculations will be re-evaluated. There have been no changes in the physical conditions of the sites, or to the standardized risk assessment methodology that would affect the protectiveness of the remedy. There is no other information that calls into question the protectiveness of the remedy.

2.7 ISSUES

No deficiencies or issues impacting remedy protectiveness were identified during this five-year review of the Site 7 remedy. However, in recent years, screening levels for evaluating human health risks associated with exposure to per- and polyfluoroalkyl substances (PFAS) were established by the USEPA. PFAS is associated with a wide variety of activities and products such as fire fighting foams, textiles, fuels, chrome plating, waste disposal, pesticides, fire training pits, etc. Based on historical activities at Site 7 (i.e., former burn pit), PFAS may be present in the subsurface, although PFAS-containing materials are not specifically known to have been used at the site. However, a PFAS investigation is recommended for Site 7, and a facility-wide PFAS investigation will be conducted for the YARD in the near future to identify possible PFAS use, storage, releases, possible source areas, and set priorities for investigation of possible PFAS areas.

2.8 RECOMMENDATIONS AND FOLLOW-UP ACTIONS

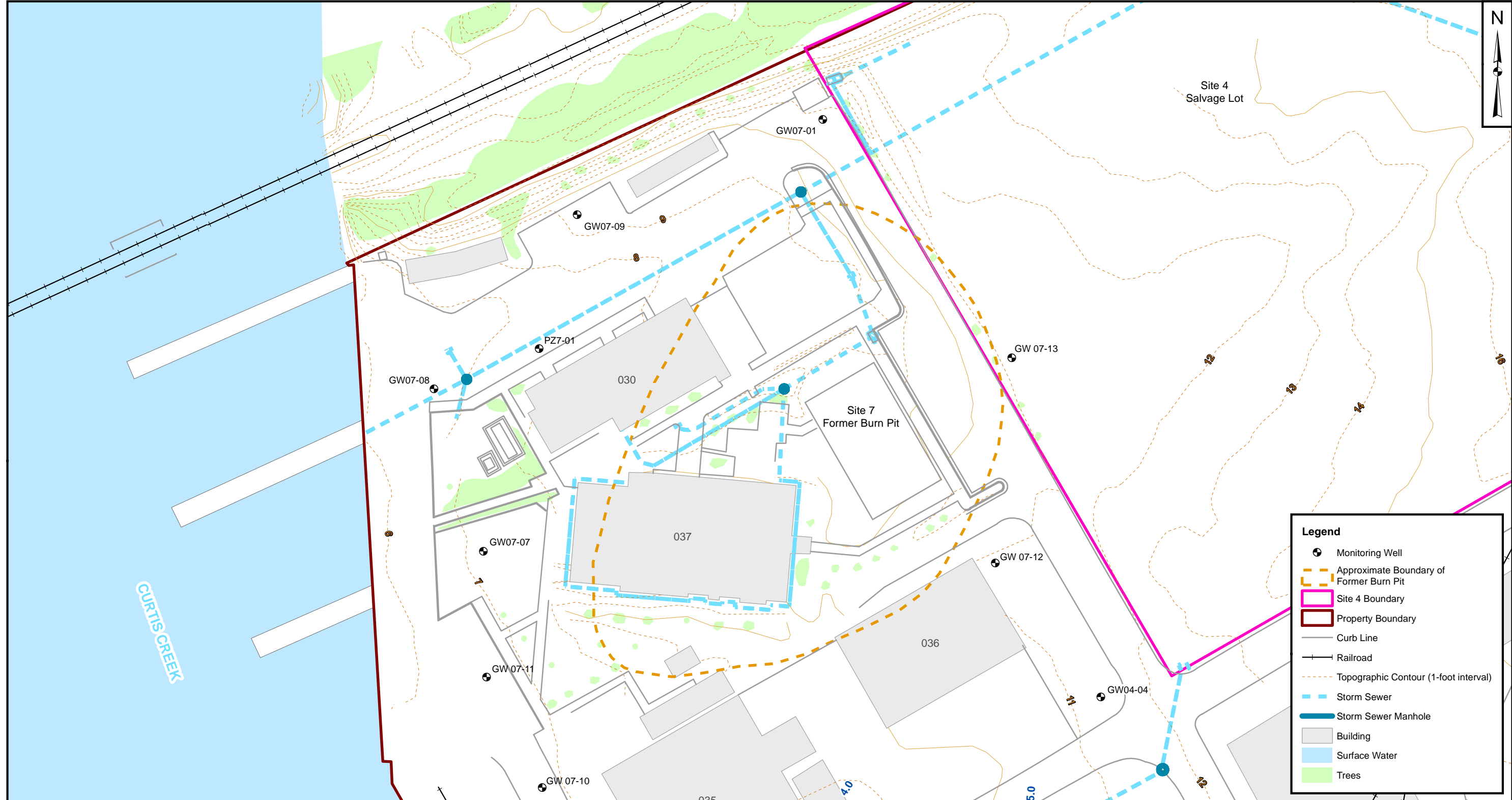
Based on the results of the analytical data collected as part of the long-term monitoring program the following recommendations for sampling have been made:

- Continue sampling the same suite of parameters in monitoring wells, because minor exceedances of several metals occur sporadically in several wells.
- Continue monitoring in accordance with the Site 7 and Site 9 LTM Work Plan (Tetra Tech, 2017). The 2018 monitoring event took place on October 8 & 9, 2018. Optimization recommendations will be made based on the results of the data.
- Benzene and 2-methylnaphthalene were not detected in any well at concentrations exceeding the groundwater cleanup goals. Therefore, the recommendation from the December 2012 sampling report that Monitored Natural Attenuation (MNA) sampling [for DO and carbon dioxide (CO₂) field test kits and laboratory-analyzed alkalinity] be stopped is still warranted. If benzene or 2-methylnaphthalene concentrations should rebound or increase, MNA sampling could be resumed.

2.9 PROTECTIVENESS STATEMENT

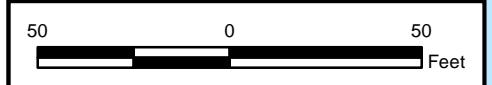
The remedy implemented at Site 7 is protective of human health and the environment. The Site 7 remedy removed contaminated soil from around the buildings in 2009-2010. The soil was disposed of offsite at a state-licensed facility, the excavations were backfilled with clean soil, and the ground surface was restored with vegetation, concrete, or asphalt pavement. Soil was not removed from beneath Buildings 30, 35, 36, 37 and an electrical transformer pad, but that soil is covered by building floors (concrete) and a concrete transformer pad. Therefore, soil is not accessible to human and ecological receptors, and there are no unacceptable risks because soil exposure pathways are incomplete. Sub-slab soil gas VISLs were updated in 2017 and have increased (i.e., are less stringent) for most VOCs detected in soil gas samples. Therefore, the human health risk assessment remains unchanged based on original estimated exposure duration for base employees. There is no identified unacceptable health risk from sub-slab soil vapor for this site based on the site-specific exposure scenario.

Exposure to soil, which could result in unacceptable risks if the site was developed for residential purposes, is prevented through maintenance of LUCs at the site. Long-term protectiveness of the remedy will be verified by annual LUC inspections to ensure that land use has not changed. Based on the implementation and continued maintenance of LUCs, the intent and goals of the ROD for Site 7 have been met.



Legend

- Monitoring Well
- Approximate Boundary of Former Burn Pit
- Site 4 Boundary
- Property Boundary
- Curb Line
- Railroad
- Topographic Contour (1-foot interval)
- Storm Sewer
- Storm Sewer Manhole
- Building
- Surface Water
- Trees



DRAWN BY	DATE
J. ENGLISH	03/08/18
CHECKED BY	DATE
S. BRENNER	03/09/18
REVISED BY	DATE
SCALE AS NOTED	



SITE 7 - FORMER BURN PIT
UNITED STATES COAST GUARD YARD
BALTIMORE, MARYLAND

CONTRACT NUMBER	CTO NUMBER
HSCG50-14-D-PSL005	
APPROVED BY	DATE
APPROVED BY	DATE
S. BRENNER	03/09/18
FIGURE NO.	REV
2-1	0

3.0 SITE 9, REPORTED BILGE SPOILS AREA

3.1 INTRODUCTION

The Site 9 soil remedial action was completed in 2013. This review is required because contaminants remain on site at concentrations that do not allow for unlimited use and unrestricted exposure.

3.2 SITE CHRONOLOGY

A list of important Site 9 historical events and relevant dates in the site chronology is shown below. The identified events are illustrative, not comprehensive.

Event	Date
Sheet-pile bulkhead wall constructed	Early 1940s
Storage and paining of buoys and possible bilge spoils dumping	1940s to 1950s
Preliminary Assessment completed	1993
Site Inspection (SI)	1999
Remedial Investigation (RI) initiated	February 2008
Sediment Screening Investigation	August 2009
Soil Engineering Evaluation/Cost Assessment (EE/CAs)	2010
Sediment Engineering Evaluation/Cost Assessment (EE/CAs)	2011
Sediment Dredging	2012-2013
Soil Removal	May 2010-April 2013
Record of Decision (ROD)	June 2013
Land Use Control (LUC) Remedial Design (RD)	August 2013
Annual Land Use Control (LUC) inspections	2013 - ongoing

3.3 BACKGROUND

Physical Characteristics

Site 9 is a relatively flat area that encompasses approximately 2 acres of Lot 23 located in the north eastern section of the YARD and the adjacent surface water and sediment in Arundel Cove. Lot 23 is an area of the YARD that was filled with various construction debris and waste materials over the years to extend the footprint of the YARD approximately 130 feet into Arundel Cove. Figure 3-1 is a site location map showing the features of Site 9 and the surrounding area.

Land and Resource Use

Site 9 is located in one of the oldest active sections of the facility; however, no historical information is known about the site before the early 1940s. During the early 1940s, a sheetpile bulkhead was constructed, extending the shoreline a maximum of 130 feet into Arundel Cove. Historical site photographs, dated 1943, show large quantities of scrap metal and wood timber debris at the site during the installation of the bulkhead. According to a 1943 YARD facility map and discussions with facility personnel, Site 9 was used for the storage and painting of buoys (McMenamin, 2002). From at least the 1940s through the 1950s, and possibly into the 1960s, Site 9 consisted of an all-purpose storage and work area used as a dump, scrap metal yard, and possible bilge spoils dumping area. Bilge spoils consisted primarily of petroleum saturated sludge and general waste debris that collected within the lower portions of a ship's hull. Since the 1970s, the site has been used for vehicle and trailer parking.

History of Contamination

According to a former YARD employee, who was in charge of Resource Conservation and Recovery Act (RCRA) compliance at the YARD, the southern and eastern parts of Lot 23 may have received incinerator ash from the former incinerator (Site 8) and from the former burn pit (Site 7). Bilge spoils, reportedly discharged to the site, consisted of waste water that occasionally had an oil sheen likely produced from the application of heavy grease to a boat's bilge interior as a rust inhibitor.

The structurally deficient steel bulkhead at Lot 23 was replaced in 2013 to eliminate the migration of contaminated subsurface soil from entering the cove through numerous holes present across the length of the bulkhead, especially at the high water mark. Prior to replacement, water could be seen discharging through some sections of the bulkhead in the surface water of Arundel Cove during precipitation events. Earlier repairs to the bulkhead in 2009 were not fully successful in eliminating contaminant migration to Arundel Cove.

Initial Response and Basis for Taking Action

A PA was completed in 1993 to identify locations of potential contamination facility wide (USCG, 1993). Limited historical data on Site 9 were collected; however the PA did report that Site 9 may have received ash from the former incinerator. Eight soil borings were collected as part of the SI. Fill material consisting of charred and non-charred wood fragments, gravel, steel bolts, ceramic and brick fragments, glass, scrap metal, wire, and concrete were observed in the boreholes from approximately 1 to 6 feet bgs. Metals and PAHs were detected at concentrations exceeding residential and industrial screening criteria. The majority of the exceedances were in the eastern and southern portion of Site 9. To further delineate nature and extent, an RI was initiated in February 2008. The RI sampling program included the collection and analysis

of 13 surface soil, 29 subsurface soil, 2 groundwater, 4 surface water, and 20 sediment samples. The RI identified surface soil, subsurface soil, and sediment as media of concern based on unacceptable risks to human health or the environment (Tetra Tech, 2010a). Two Engineering Evaluation/Cost Analyses (EE/CAs) were developed; one for soil (Tetra Tech, 2010b) and one for sediment (Tetra Tech, 2011b). These were done to evaluate removal action alternatives for each media, develop removal action objectives, and to ensure that the proposed actions complied with regulatory agencies. Removal action alternatives were screened on the basis of implementability, effectiveness, and cost. Soil PRGs were calculated for the soil EE/CA based on human health risk assessment for residential exposure to soil for benzo(a)pyrene equivalents, 2,3,7,8-TCDD equivalents, arsenic, copper, iron, and lead. Sediment PRGs were developed in the EE/CA for copper, lead, zinc, and total PAHs to meet background concentrations.

3.4 REMOVAL ACTIONS

3.4.1 Remedy Selection

Soil

To address potential risks identified at Site 9 soils during the RI, a removal action for soil was performed. Cleanup goals were established for soil COCs for the protection of human receptors exposure to soil. Soil COCs and updated cleanup goals based on changes in toxicity data and EPA exposure assumptions are presented on Table 3-1. The Final Action Memorandum included soil removal, and a Removal Action Work Plan was prepared (Tetra Tech, 2012c). The removal action for soil included excavation, on-site treatment, and off-site disposal of surface and subsurface soil containing carcinogenic PAHs, dioxins, arsenic, copper, iron, and lead. The removal action began in May 2010 and was completed in April 2013. Soil excavation depths varied from 4 to 18 feet bgs. Soil verification samples confirmed that PRGs were achieved for the majority of Site 9. However, during the completion of the removal action, contaminated soil and waste were observed beneath Buildings 25 and 26 and under three areas of Waesche Avenue shown as the LUC boundaries on Figure 3-1. The ROD identified that the remaining contamination beneath Buildings 25 and 26, and under Waesche Avenue would be addressed through implementation of LUCs (Tetra Tech, 2013c); the restricted soil areas are identified on Figure 3-1 labeled as LUC boundaries.

Sediment

Cleanup goals were established for sediment COCs for the protection of human receptors exposure to soil. The sediment COCs and cleanup goals are presented on Table 3-1. The Final Action Memorandum memorialized the removal action selected as the preferred alternative for sediment including removal (dredging) and off-site disposal, and sampling to confirm the removal of risk driving contaminants (PAHs, arsenic, copper, lead, mercury nickel, and zinc). The removal action began in December 2012 and was completed in January 2013 (Tetra Tech, 2013a). While several confirmation samples identified

contamination in excess of the PRGs, a detailed analysis of the confirmation samples confirmed that no additional dredging was necessary and that contaminant concentrations in Arundel Cove do not pose unacceptable risks to human health and the environment.

3.4.2 Remedy Implementation

Soil

The Site 9 soil remedy of institutional controls was implemented on 6 August 2013 when EPA approved the Removal Action Completion Report. LUC documentation for Site 9, including the LUC RD (Tetra Tech, 2013c) finalized in September 2013 (discussed below) and is included in Appendix B. The Site Inspection checklist is included in Appendix D.

LUCs

The LUC RD documents the following LUC performance objective for Site 9:

- Restrict land use to industrial use only, and prohibit excavation and development within the footprints of Buildings 25 and 26 and under the three areas of Waesche Avenue to eliminate or reduce the potential for unacceptable human health risks from exposure to contaminated soil.

3.4.3 System Operations/Operation and Maintenance

With the exception of years 2014 to 2016, annual inspections of the site have been performed to ensure that the land use restrictions are being maintained since the signing of the soil ROD in 2013 . No violations have been reported during the inspections. While formal, documented inspections were not conducted between 2014 and 2016, no change in land use was observed by USCG environmental staff during those years. Copies of annual certification letters from 2017 and 2018 are included in Appendix B.

Cost

For the soil remedy, estimated inspections costs (to the nearest \$1,000) are \$7,000 per year.

3.5 FIVE-YEAR REVIEW PROCESS

3.5.1 Document and Analytical Data Review

This five-year review consisted of a review of relevant documents for Site 9 including the SI, RI, and FS reports, and RODs.

Unacceptable human health risks were identified in the RI for soil. These unacceptable risks were addressed through the excavation of most of the soil contamination present at Site 9. However, during completion of the excavation contaminated soil and waste were observed beneath portions of Buildings 25 and 26 and under three areas of Waesche Avenue. This contaminated soil was not removed because accessing the soil beneath the structures and pavement to implement an excavation or treatment remedy would be excessively costly and is unnecessary to protect human health and the environment considering the current land use. The verification samples collected after the excavation were presented in the Soil Removal Action Completion Report (Tetra Tech, 2013b) and shows that no unacceptable risks were present in the excavation areas.

Ecological Risk Screening

Site 9 encompasses approximately 2 acres of land used as a vehicle parking lot and adjacent Arundel Cove. The site is almost completely covered with gravel or asphalt pavement. Vegetation at Site 9 is limited to narrow areas of regularly mowed grass along portions of the northern and eastern boundaries. Due to asphalt and gravel cover over most of Site 9, the site provides minimal habitat for terrestrial receptors. The soil exposure pathway for potential ecological receptors is considered incomplete because contaminated soils were removed and the site is now covered with a parking lot; therefore there are no complete exposure pathways for ecological receptors.

3.5.2 Site Inspection

The site inspection conducted at Site 9 on August 29, 2018 included visual observations of the site and surrounding area. The site is currently primarily an open paved area and is used for vehicle parking and short-term storage of small boats and trailers. There are two structures in the Site 9 foot print, Buildings 25 and 26. The Site Inspection Checklist is included in Appendix D.

3.6 TECHNICAL ASSESSMENT

3.6.1 Question A: Is the Remedy Functioning as Intended by Decision Documents?

The review of documents, risk assumptions, and results of the site inspection indicate that the Site 9 soil remedy is functioning as intended by the 2013 ROD. As part of the Site 9 remedy, contaminated soil was

excavated from the parking lot area, and contaminated sediment was dredged from Arundel Cove and disposed of at an offsite, state-licensed facility. The excavations were backfilled with clean soil and the ground surface was restored with vegetation, concrete, or asphalt pavement. Soil was not removed from beneath Buildings 25 and 26 and under three portions of Waesche Avenue, but the soil is covered by the building floors (concrete) or roadway asphalt pavement. Therefore, there are no unacceptable risks to human and ecological receptors because soil at the site is not accessible and soil exposure pathways are incomplete. Furthermore, the implementation of LUCs to prevent disturbance or use of soil provides a significant degree of protection of human health and the environment. There are no unacceptable risks to ecological receptors in Arundel Cove because contaminated sediment was dredged and disposed of offsite. No activities were observed that would violate these LUCs. Based on the previous removal actions and implementation of LUCs at the site, the intent and goals of the Site 9 soil ROD have been met.

3.6.2 Question B: Are the Exposure Assumptions, Toxicity Data, Cleanup Levels, and RAOs Used at the Time of Remedy Selection Still Valid?

There have been no changes in the physical conditions of the site that would affect the protectiveness of the remedy. Toxicity data for benzo(a)pyrene and EPA exposure assumptions were updated since the First-Five Year Review. Cleanup levels were updated and soil cleanup values increased (i.e., higher concentrations that are less stringent) for benzo(a)pyrene equivalents, 2,3,7,8-polychlorinated dibenzo-p-dioxin (TCDD) equivalents, arsenic, copper, and iron. Revised cleanup level calculations showing updated toxicity and EPA exposure assumptions are included in Appendix A.

ARAR and Site-Specific Action Level Changes

As stated in the Site 9 ROD, there are no action-, chemical-, or location-specific ARARs.

Changes in Exposure Pathways, Toxicity and Other Contaminant Characteristics, and Risk Assessment Methods

As stated above, toxicity data for benzo(a)pyrene and EPA exposure assumptions were updated since the First-Five Year Review. Cleanup levels were updated and soil cleanup values increased (i.e., higher concentrations that are less stringent) for benzo(a)pyrene equivalents, 2,3,7,8-polychlorinated dibenzo-p-dioxin (TCDD) equivalents, arsenic, copper, and iron. Revised cleanup level calculations showing updated toxicity and EPA exposure assumptions are included in Appendix A. There have been no changes to the standardized risk assessment methodology that could affect the protectiveness of the soil remedy.

3.6.3 Question C: Has Any Other Information Come to Light that Could Call into Question the Protectiveness of the Remedy?

No additional human health or ecological risks have been identified, and no weather-related events have affected the protectiveness of the soil remedy. No other information has been identified that calls into question of protectiveness of the remedy.

3.6.4 Technical Assessment Summary

According to the data reviewed and the site inspection, the remedies are functioning as intended by the RODs. There have been no changes in the physical conditions of the site or to the standardized risk assessment methodology that would affect the protectiveness of the remedies. There is no other information that calls into question the protectiveness of the remedy.

3.7 ISSUES

No issues affecting protectiveness were identified during this five-year review of the Site 9 soil remedy.

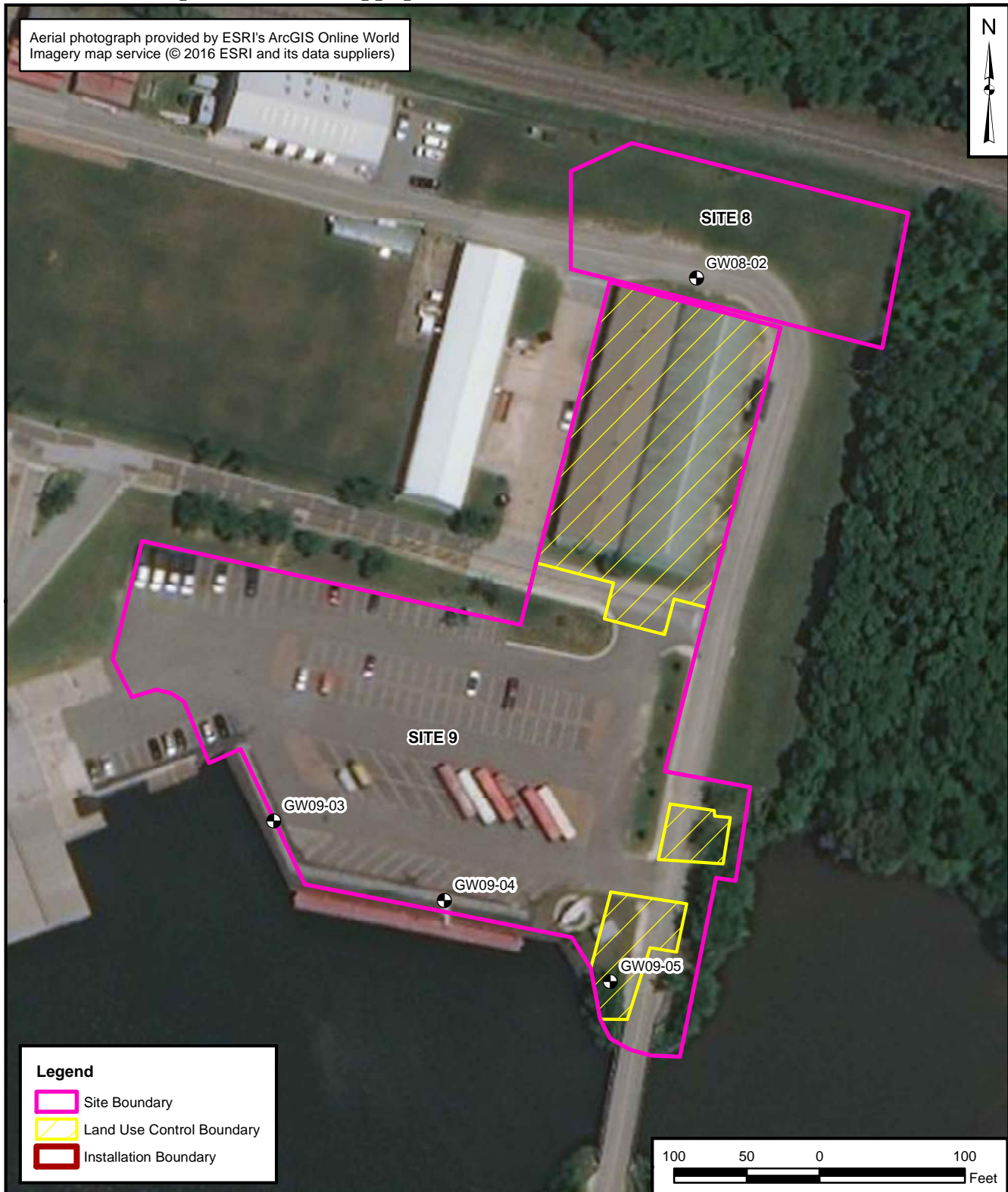
3.8 RECOMMENDATIONS AND FOLLOW-UP ACTIONS

Because no issues affecting the protectiveness of the remedy were identified, there are no recommendations for Site 9, and no follow-up actions are required.

3.9 PROTECTIVENESS STATEMENT

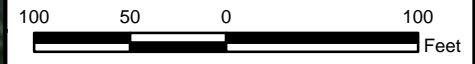
The soil remedy implemented at Site 9 is protective of human health and the environment. As part of the Site 9 remedy, contaminated soil was removed from the parking lot area, and contaminated sediment was dredged from Arundel Cove and disposed of offsite at a state-licensed facility. The excavation was backfilled with clean soil and the ground surface restored with vegetation, concrete, or asphalt pavement. Soil was not removed from beneath Buildings 25 and 26 and under three portions of Waesche Avenue, but the soil is covered by the building floors (concrete) or roadway asphalt pavement. Therefore, soil is not accessible to receptors, and there are no unacceptable risks to human and ecological receptors because soil exposure pathways are incomplete. Exposure to soil, which could result in unacceptable risks if the site was developed for residential purposes, is prevented through maintenance of LUCs at the site. Long-term protectiveness of the remedy will be verified by annual LUC inspections to ensure that land use has not changed. Based on the implementation and continued maintenance of LUCs, the intent and goals of the soil ROD for Site 9 have been met.

Aerial photograph provided by ESRI's ArcGIS Online World Imagery map service (© 2016 ESRI and its data suppliers)



Legend

- Site Boundary
- Land Use Control Boundary
- Installation Boundary



DRAWN BY	DATE
J. ENGLISH	12/12/17
CHECKED BY	DATE
S. BRENNER	03/30/18
COST/SCHED-AREA	
SCALE AS NOTED	



SITE 9
REPORTED BILGE SPOILS AREA
UNITED STATES COAST GUARD YARD
BALTIMORE, MARYLAND

CONTRACT NUMBER	TO NUMBER
HSCG50-14-D-PSL005	—
APPROVED BY	DATE
S. BRENNER	03/30/18
APPROVED BY	DATE
—	—
FIGURE NO.	REV
3-1	0

4.0 BASE-WIDE CONCLUSIONS AND RECOMMENDATIONS

The base-wide conclusions and recommendations of the second five-year review for the YARD are presented below. These conclusions and recommendations are provided in the form of a base-wide protectiveness statement and a summary of the requirements of the next five-year review.

4.1 PROTECTIVENESS STATEMENT

The remedial actions implemented at Sites 7 and 9 at the YARD are protective of human health and the environment. At Sites 7, and 9, contaminated soil and sediment (Site 9) were excavated/dredged and disposed of offsite at a state-licensed facility. The excavations were backfilled with clean soil, and the ground surface was restored with vegetation, concrete, or asphalt. Soil left beneath buildings, a transformer pad, and a road are covered. Therefore, soil is not accessible to human and ecological receptors, and there are no unacceptable risks because soil exposure pathways are incomplete. Additionally, LUCs prevent exposure that could result in unacceptable risks, thereby providing protection of human health and the environment. This second five-year review shows that the USCG is meeting the requirements of the RODs for Sites 7 and 9 at the YARD.

However, in recent years, screening levels for evaluating human health risks associated with exposure to per- and polyfluoroalkyl substances (PFAS) were established by the USEPA. Based on historical activities at Site 7 (i.e., former burn pit), PFAS may be present in the subsurface, although PFAS-containing materials are not specifically known to have been used at the site. However, a PFAS investigation is recommended for Site 7, and a facility-wide PFAS investigation will be conducted for the YARD in the near future.

4.2 NEXT REVIEW

This report represents the second five-year review conducted at the YARD. The next five-year review will be required within 5 years of the signature date of this review. The third five-year review will include the same sites as this second review and potentially the Grove Site if a ROD is signed for that site before the third five-year review, unless there are changes in site conditions or other factors or assumptions associated with the NFA decisions for the other sites at the facility.

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APPENDIX A

SITE-SPECIFIC ACTION LEVEL UPDATE CALCULATIONS

RISK ASSESSMENT SPREADSHEET - CALCULATION OF RISK-BASED CONCENTRATIONS FOR SOIL (PAGE ONE OF THREE)

EXPOSURE SCENARIO: **HYPOTHETICAL LIFELONG RESIDENTS**
 MEDIA: **SURFACE/SUBSURFACE SOIL**
 DATE: **OCTOBER 8, 2018**

THIS SPREADSHEET CALCULATES SCREENING LEVELS FOR EXPOSURES TO SOIL VIA INCIDENTAL INGESTION, DERMAL CONTACT, AND INHALATION

RELEVANT EQUATIONS:

Carcinogens

$$PRG_{soil} = \frac{TCR}{Intake_{oral} \times CSF_{oral} + Intake_{derm} \times CSF_{derm} + EC_{air} \times IUR}$$

Mutagenic

$$PRG_{soil} = \frac{TCR}{Intake_{ages\ 0-2} \times ADAF_{ages\ 0-2} + Intake_{ages\ 2-6} \times ADAF_{ages\ 2-6} + Intake_{ages\ 6-16} \times ADAF_{ages\ 6-16} + Intake_{ages\ >16} \times ADAF_{ages\ >16}}$$

Noncarcinogens

$$PRG_{soil} = \frac{THI}{\left(\frac{Intake_{oral}}{RID_{oral}}\right) + \left(\frac{Intake_{derm}}{RID_{derm}}\right) + \left(\frac{EC_{air}}{RIC}\right)}$$

$$Intake_{oral} = \frac{IR \times RBA \times EF \times ED \times FI \times CF}{BW \times AT}$$

$$Intake_{derm} = \frac{SA \times AF \times ABS \times EF \times ED \times CF}{BW \times AT}$$

$$EC_{air} = \frac{ET \times EF \times ED \times (1/PEF + 1/VF)}{AT \times 24 \text{ hours/day}}$$

INPUT ASSUMPTIONS:						Definition
Parameter	Child Ages 0 - 2	Child Ages 2 - 6	Adult Ages 6 - 16	Adult Ages > 16		
General	TCR = :	1E-06				Target Cancer Risk
	THI = :	1				Target Hazard Index
	EF = :	350	350	350	350	Exposure Frequency (days/year)
	ED = :	2	4	10	10	Exposure Duration (years)
	BW = :	15	15	80	80	Body Weight (kg)
	ATc = :	25,550				Averaging time for carcinogenic exposures (days)
	ATn = :	730	1,460	3,650	3,650	Averaging time for noncarcinogenic exposures (days)
	CF = :	1.0E-06				Conversion Factor (kg/mg)
	ADAF = :	Chemical Specific				Age Dependent Adjustment Factor
	Incidental Ingestion	IR = :	200	200	100	100
RBA = :		Chemical Specific				Relative Bioavailability
FI = :		1	1	1	1	Fraction from contaminated source (unitless)
Dermal Contact	SA = :	2,373	2,373	6,032	6,032	Skin surface available for contact (cm ² /day)
	AFc = :	0.2	0.2	0.07	0.07	Soil to skin adherence factor (mg/cm ²)
	ABS = :	Chemical Specific				Absorption factor (unitless)
Inhalation	ETc = :	24	24	24	24	Exposure time (hours/day)
	PEF = :	3.23E+09				Particulate emission factor (m ³ /kg)
	VF = :	Chemical Specific				Volatilization factor (m ³ /kg)

CHEMICAL	ABS	RBA	Cancer Slope Factor			Reference Dose		
			Oral (mg/kg/day) ⁻¹	Dermal (mg/kg/day) ⁻¹	Inhalation (ug/m ³) ⁻¹	Oral (mg/kg/day)	Dermal (mg/kg/day)	Inhalation (mg/m ³)
Benzo(a)pyrene	0.13	1	1.0E+00	1.0E+00	6.0E-04	3.0E-04	3.0E-04	2.0E-06
2,3,7,8-TCDD	0.03	1	1.3E+05	1.3E+05	3.8E+01	7.0E-10	7.0E-10	4.0E-08
Arsenic	0.03	0.6	1.5E+00	1.5E+00	4.3E-03	3.0E-04	3.0E-04	1.5E-05
Chromium III	0	1	NA	NA	NA	1.5E+00	2.0E-02	NA
Chromium VI	0	1	5.0E-01	2.0E+01	8.4E-02	3.0E-03	7.5E-05	1.0E-04
Copper	0	1	NA	NA	NA	4.0E-02	4.0E-02	NA
Iron	0	1	NA	NA	NA	7.0E-01	7.0E-01	NA
Manganese	0	1	NA	NA	NA	2.4E-02	9.6E-04	5.0E-05
Mercury	0	1	NA	NA	NA	3.0E-04	2.1E-05	3.0E-04
Vanadium	0	1	NA	NA	NA	5.0E-03	1.3E-04	1.0E-04
Xylenes (Total)	0	1	NA	NA	NA	2.0E-01	2.0E-01	1.0E-01

CHEMICAL	Age Dependent Adjustment Factor			
	Ages 0 - 2	Ages 2 - 6	Ages 6 - 16	Ages >16
Benzo(a)pyrene	10	3	3	1
2,3,7,8-TCDD	1	1	1	1
Arsenic	1	1	1	1
Chromium III	1	1	1	1
Chromium VI	10	3	3	1
Copper	1	1	1	1
Iron	1	1	1	1
Manganese	1	1	1	1
Mercury	1	1	1	1
Vanadium	1	1	1	1
Xylenes (Total)	1	1	1	1

RISK ASSESSMENT SPREADSHEET - CALCULATION OF RISK-BASED CONCENTRATIONS FOR SOIL (PAGE TWO OF THREE)

EXPOSURE SCENARIO: HYPOTHETICAL LIFELONG RESIDENTS
 MEDIA: SURFACE/SUBSURFACE SOIL
 DATE: OCTOBER 8, 2018

CHEMICAL	Carcinogenic Intake Factors			Noncarcinogenic Intake Factors		
	Oral (kg/kg/day)	Dermal (kg/kg/day)	Inhalation (kg/m ³)	Oral (kg/kg/day)	Dermal (kg/kg/day)	Inhalation (kg/m ³)
Benzo(a)pyrene	6.53E-06	2.18E-06	3.05E-10	1.28E-05	3.94E-06	2.97E-10
2,3,7,8-TCDD	1.44E-06	1.21E-07	1.42E-07	1.28E-05	9.10E-07	3.82E-07
Arsenic	8.63E-07	1.21E-07	1.10E-10	7.67E-06	9.10E-07	2.97E-10
Chromium III	1.44E-06	0.00E+00	1.10E-10	1.28E-05	0.00E+00	2.97E-10
Chromium VI	6.53E-06	0.00E+00	3.05E-10	1.28E-05	0.00E+00	2.97E-10
Copper	1.44E-06	0.00E+00	1.10E-10	1.28E-05	0.00E+00	2.97E-10
Iron	1.44E-06	0.00E+00	1.10E-10	1.28E-05	0.00E+00	2.97E-10
Manganese	1.44E-06	0.00E+00	1.10E-10	1.28E-05	0.00E+00	2.97E-10
Mercury	1.44E-06	0.00E+00	1.10E-10	1.28E-05	0.00E+00	2.97E-10
Vanadium	1.44E-06	0.00E+00	1.10E-10	1.28E-05	0.00E+00	2.97E-10
Xylenes (Total)	1.44E-06	0.00E+00	4.85E-05	1.28E-05	0.00E+00	1.30E-04

CHEMICAL	Soil Concentration	
	Carcinogenic (mg/kg)	Noncarcinogenic (mg/kg) ⁽¹⁾
Benzo(a)pyrene	0.11	18
2,3,7,8-TCDD	0.0000048	0.000051
Arsenic	0.68	35
Chromium III	NA	117,321
Chromium VI	0.30	234
Copper	NA	3,129
Iron	NA	54,750
Manganese	NA	1856
Mercury	NA	23
Vanadium	NA	391
Xylenes (Total)	NA	731

1 - Noncarcinogenic concentration is based on the child resident.

RISK ASSESSMENT SPREADSHEET - CALCULATION OF RISK-BASED CONCENTRATIONS FOR SOIL (PAGE THREE OF THREE)

CALCULATION OF AMBIENT AIR CONCENTRATION
SOURCE: U.S. EPA SOIL SCREENING GUIDANCE

Purpose: To calculate ambient air concentrations resulting from fugitive dust and volatilization from soil.

Relevant Equations:

$$C_{air} = C_s \times (1/PEF + 1/VF)$$

$$VF = \frac{Q/C \times (3.14 \times DA \times T)^{1/2} \times 10^{-4} \text{ m}^2/\text{cm}^2}{2 \times pb \times DA} \quad PEF = \frac{3600}{0.036 \times (1-V) \times (U_m/U_s)^3 \times F(x)}$$

$$DA = \frac{[(\theta_a^{10/3} \times Di \times H + \theta_w^{10/3} \times Dw)/n^2]}{pb \times Kd + \theta_w + \theta_a \times H}$$

$$C_{sat} = S/pb \times (Kd \times pb + \theta_w + H \times \theta_a)$$

INPUT PARAMETERS		
Parameter	Value	Definition
Q/C = :	87.3690	Inverse of mean conc. at center of source (g/m ² -s per kg/m ³).
T = :	8.2E+08	Exposure interval (seconds).
pb = :	1.5	Dry soil bulk density (g/cm ³).
ps = :	2.65	soil particle density (g/cm ³).
n = :	0.434	Total soil porosity (L _{pore} /L _{soil}).
θw = :	0.15	Water-filled soil porosity (L _{pore} /L _{soil}).
θa = :	0.284	Air-filled soil porosity (L _{air} /L _{soil}).
Di = :	Chemical specific	Diffusivity in air (cm ² /sec).
H' = :	Chemical specific	Dimensionless Henry's Law Constant.
Dw = :	Chemical specific	Diffusivity in water (cm ² /sec).
DA = :	Chemical specific	Apparent diffusivity (cm ² /sec).
Kd = :	Chemical specific	Soil-water partition coefficient (cm ³ /g).
Koc = :	Chemical specific	Soil organic carbon partition coefficient (cm ³ /g).
foc = :	0.006	Fraction organic carbon in soil (g/g).

Chemical	Volatile	Chemical Properties					Intermediate Calculations			
		Koc (cm ³ /g)	Di (cm ² /sec)	Dw (cm ² /sec)	S (mg/L)	H'	Kd (cm ³ /g)	Da (cm ² /sec)	VF (m ³ /kg)	Csat (mg/kg)
Surface Soil										
Benzo(a)pyrene	N	NA	NA	NA	NA	NA	NA	NA	1E+99	NA
2,3,7,8-TCDD	Y	2.49E+05	4.70E-02	6.76E-06	2.00E-04	2.04E-03	1.49E+03	3.46E-09	2.51E+06	2.99E-01
Arsenic	N	NA	NA	NA	NA	NA	NA	NA	1E+99	NA
Chromium III	N	NA	NA	NA	NA	NA	NA	NA	1E+99	NA
Chromium VI	N	NA	NA	NA	NA	NA	NA	NA	1E+99	NA
Copper	N	NA	NA	NA	NA	NA	NA	NA	1E+99	NA
Iron	N	NA	NA	NA	NA	NA	NA	NA	1E+99	NA
Manganese	N	NA	NA	NA	NA	NA	NA	NA	1E+99	NA
Mercury	N	NA	NA	NA	NA	NA	NA	NA	1E+99	NA
Vanadium	N	NA	NA	NA	NA	NA	NA	NA	1E+99	NA
Xylenes (Total)	Y	3.83E+02	6.85E-02	8.46E-06	1.06E+02	2.71E-01	2.30E+00	4.04E-04	7.35E+03	2.60E+02

RISK ASSESSMENT SPREADSHEET - CALCULATION OF RISK-BASED CLEANUP GOALS FOR GROUNDWATER

EXPOSURE SCENARIO: **HYPOTHETICAL LIFELONG RESIDENTS**

MEDIA: **GROUNDWATER**

DATE: **OCTOBER 8, 2018**

THIS SPREADSHEET CALCULATES CLEANUP LEVELS FOR EXPOSURES TO GROUNDWATER VIA INGESTION, DERMAL CONTACT, AND INHALATION

RELEVANT EQUATIONS:

Carcinogens

$$PRG_{GW} = \frac{TCR}{(Intake_{Child,ing} \times CSF_{oral}) + (Intake_{Child,derm} \times DA_{event} \times CSF_{derm}) + (Intake_{Child,inh} \times IUR)}$$

Mutagenic

$$PRG_{GW} = \frac{TCR}{Intake_{child(0-2)} \times CSF \times ADAF_{(0-2)} + Intake_{child(2-6)} \times CSF \times ADAF_{(2-6)} + Intake_{adult(6-16)} \times CSF \times ADAF_{(6-16)} + Intake_{adult(16-30)} \times CSF \times ADAF_{(16-30)}}$$

Noncarcinogenic:

$$PRG_{GW} = \frac{THI}{(Intake_{Child,ing} / RfD_{oral}) + (Intake_{Child,derm} \times DA_{event} / RfD_{derm}) + (Intake_{Child,inh} / RfC)}$$

$$Intake_{ing} = \frac{IR \times EF \times ED}{BW \times AT}$$

$$Intake_{derm} = \frac{DA_{Event} \times EV \times ED \times EF \times SA}{BW \times AT}$$

$$Intake_{inh} = \frac{S \times K \times EF \times ED}{AT \times Ra \times CF}$$

For Inorganics $DA_{event} = Kp \times CF \times t_{event}$

For Organics If $t_{event} \leq t^*$, then $DA_{event} = 2 \cdot Kp \cdot FA \cdot CF \cdot \sqrt{\frac{6 \cdot \tau \cdot t_{event}}{\pi}}$

If $t_{event} > t^*$ then $DA_{event} = Kp \cdot FA \cdot CF \cdot \left[\frac{t_{event}}{1+B} + 2 \cdot \tau \cdot \left(\frac{1+3B+3B^2}{(1+B)^2} \right) \right]$

Parameter	Child Ages 0 - 2	Child Ages 2 - 6	Adult Ages 6 - 16	Adult Ages > 16	Definition
TCR = :	1E-06				Target Cancer Risk
THI = :	1				Target Hazard Index
IR = :	0.78	0.78	2.5	2.5	Ingestion rate (L/day)
SA = :	6,365	6,365	19,652	19,652	Skin surface available for contact (cm ²)
DAevent = :	Chemical Specific				Absorbed dose per event (mg/cm ² -event)
EV = :	1	1	1	1	Event frequency (events/days)
EF = :	350	350	350	350	Exposure frequency (days/year)
ED = :	2	4	10	10	Exposure duration (years)
ET = :	24	24	24	24	Exposure time (hrs/day)
BW = :	15	15	80	80	Body weight (kg)
ATc = :	25,550				Averaging time for carcinogenic exposures (days)
ATn = :	2,190		7,300		Averaging time for noncarcinogenic exposures (days)
CF = :	0.001				Conversion Factor (L/cm ³)
Kp = :	Chemical Specific				Permeability coefficient (cm/hr)
Cw = :	Chemical Specific				Concentration of chemical in water (mg/L)
t _{event} = :	0.54		0.71		duration of event (hr/event)
tau = :	Chemical Specific				Lag time (hr)
t* = :	Chemical Specific				Time it takes to reach steady state (hr)
B = :	Chemical Specific				Dimensionless constant
FA = :	Chemical Specific				Fraction absorbed (dimensionless)
K = :	Chemical Specific				Mass Transfer Coefficient
Ra = :	0.017				Air Exchange Rate (1/min)
CF = :	1440				Conversion Factor (min/day)
Ds = :	42.6				Shower Duration (min)
Dt = :	60				Total Time in Bathroom (min)
Fr = :	10				Shower Water Flow Rate (L/min)
Sv = :	12				Shower Room Air Volume (m ³)
ts = :	0.5				Shower Droplet Drop Time (sec)
d = :	1				Shower Droplet Diameter (mm)
T1 = :	293				Calibration Water Temperature (K)
Ts = :	318				Shower Water Temperature (K)
m1 = :	1.002				Water Viscosity at T1, (cp)
ms = :	0.596				Water Viscosity at Ts (cp)

RISK ASSESSMENT SPREADSHEET - DIRECT DERMAL CONTACT WITH GROUNDWATER (PAGE TWO)

EXPOSURE SCENARIO: HYPOTHETICAL LIFELONG RESIDENTS
 MEDIA: GROUNDWATER
 DATE: OCTOBER 8, 2018

CHEMICAL	Organic or Inorganic	Estimated Kp (cm/hr)	FA	tau-event (hr)	B	t* (hr)	DAevent (L/cm ² - event)	
							Child	Adult
2-Methylnaphthalene	Organic	9.17E-02	1.00E+00	6.58E-01	4.21E-01	1.58E+00	1.51E-04	1.73E-04
Vanadium	Inorganic	1.00E-03	1.00E+00	2.03E-01	2.75E-03	4.87E-01	5.40E-07	7.10E-07

CHEMICAL	Cancer Slope Factor			Reference Dose			Volatile Yes or No	In EPD? Yes or No
	Oral (mg/kg/day) ⁻¹	Dermal (mg/kg/day) ⁻¹	Inhalation (ug/m ³) ⁻¹	Oral (mg/kg/day)	Dermal (mg/kg/day)	Inhalation (mg/m ³)		
2-Methylnaphthalene	NA	NA	NA	4.00E-03	4.00E-03	NA	Yes	Yes
Vanadium	NA	NA	NA	5.00E-03	1.30E-04	1.00E-04	No	Yes

CHEMICAL	ADAF			
	Ages 0 - 2	Ages 2 - 6	Ages 6 - 16	Ages > 16
2-Methylnaphthalene	1	1	1	1
Vanadium	1	1	1	1

CHEMICAL	Carcinogenic Intakes			Noncarcinogenic Intakes		
	Ingestion (L/kg/day)	Dermal (L/kg/day)	Inhalation (L/m ³)	Ingestion (L/kg/day)	Dermal (L/kg/day)	Inhalation (L/m ³)
2-Methylnaphthalene	1.28E-02	1.69E-02	1.52E-02	4.99E-02	6.15E-02	5.33E-02
Vanadium	1.28E-02	6.66E-05	0.00E+00	4.99E-02	2.20E-04	0.00E+00

CHEMICAL	Groundwater Concentration	
	Carcinogenic (ug/L)	Noncarcinogenic (ug/L)
2-Methylnaphthalene	NA	36
Vanadium	NA	86

RISK ASSESSMENT SPREADSHEET - CALCULATION OF RISK-BASED CONCENTRATIONS FOR SOIL (PAGE ONE OF THREE)

EXPOSURE SCENARIO: **CONSTRUCTION WORKERS**
 MEDIA: **SURFACE/SUBSURFACE SOIL**
 DATE: **OCTOBER 8, 2018**

THIS SPREADSHEET CALCULATES RISK-BASED CLEANUP GOALS FOR EXPOSURES TO SOIL
 THE INCIDENTAL INGESTION, DERMAL CONTACT, AND INHALATION ROUTES OF EXPOSURE ARE CONSIDERED.

RELEVANT EQUATION:

Carcinogens
$$PRG_{soil} = \frac{TCR}{Intake_{oral} \times CSF_{oral} + Intake_{derm} \times CSF_{derm} + EC_{air} \times IUR}$$

NonCarcinogens
$$PRG_{soil} = \frac{THI}{\left(\frac{Intake_{oral}}{RfD_{oral}}\right) + \left(\frac{Intake_{derm}}{RfD_{derm}}\right) + \left(\frac{EC_{air}}{RfC}\right)}$$

$$Intake_{oral} = \frac{IR \times RBA \times EF \times ED \times FI \times CF}{BW \times AT}$$

$$Intake_{derm} = \frac{SA \times AF \times ABS \times EF \times ED \times CF}{BW \times AT}$$

$$Intake_{inh} = \frac{EF \times ED \times ET \times (1/VF + 1/PEF)}{AT \times 24 \text{ Hours/day}}$$

INPUT ASSUMPTIONS:			
Parameter	Adult	Definition	
TCR = :	1.0E-06	Target Cancer Risk	
THI = :	1	Target Hazard Index	
EF = :	250	Exposure Frequency (days/year)	
ED = :	1	Exposure Duration (years)	
BW = :	80	Body Weight (kg)	
ATc = :	25,550	Averaging time for carcinogenic exposures (days)	
ATn = :	365	Averaging time for noncarcinogenic exposures (days)	
CF = :	1.0E-06	Conversion Factor (kg/mg)	
IR = :	330	Soil Ingestion Rate (mg/day)	
RBA = :	Chemical Specific	Relative Bioavailability (unitless)	
FI = :	1	Fraction from contaminated source (unitless)	
SA = :	3527	Skin surface available for contact (cm ² /day)	
AF = :	0.12	Soil to skin adherence factor (mg/cm ²)	
ABS = :	Chemical Specific	Absorption factor (unitless)	
ET = :	8	Exposure time (hr/day)	
PEF = :	1.40E+06	Particulate emission factor (m ³ /kg)	
VF = :	Chemical Specific	Volatilization Factor (m ³ /kg)	

CHEMICAL	ABS	RBA	Cancer Slope Factor			Reference Dose		
			Oral (mg/kg/day) ⁻¹	Dermal (mg/kg/day) ⁻¹	Inhalation (ug/m ³) ⁻¹	Oral (mg/kg/day)	Dermal (mg/kg/day)	Inhalation (mg/m ³)
Total Xylenes	0.03	1	NA	NA	NA	4.0E-01	4.0E-01	4.0E-01

RISK ASSESSMENT SPREADSHEET - CALCULATION OF RISK-BASED CONCENTRATIONS FOR SOIL (PAGE TWO OF THREE)

EXPOSURE SCENARIO: CONSTRUCTION WORKERS
 MEDIA: SURFACE/SUBSURFACE SOIL
 DATE: OCTOBER 8, 2018

CHEMICAL	Carcinogenic Intake Factors			Noncarcinogenic Intakes Factors		
	Oral (kg/kg/day)	Dermal (kg/kg/day)	Inhalation (kg/m ³)	Oral (kg/kg/day)	Dermal (kg/kg/day)	Inhalation (kg/m ³)
Total Xylenes	4.04E-08	1.55E-09	2.56E-06	2.83E-06	1.09E-07	1.79E-04

CHEMICAL	Soil Concentration	
	Carcinogenic (mg/kg)	Noncarcinogenic (mg/kg)
Total Xylenes	NA	2,198

RISK ASSESSMENT SPREADSHEET - CALCULATION OF RISK-BASED CONCENTRATIONS FOR SOIL (PAGE THREE OF THREE)

CALCULATION OF AMBIENT AIR CONCENTRATION
SOURCE: U.S. EPA SOIL SCREENING GUIDANCE

Purpose: To calculate ambient air concentrations resulting from fugitive dust and volatilization from soil.

Relevant Equations:

$$C_{air} = C_s \times (1/PEF + 1/VF)$$

$$VF = \frac{Q/C \times (3.14 \times DA \times T)^{1/2} \times 10^{-4} \text{ m}^2/\text{cm}^2}{2 \times pb \times DA} \quad PEF = \frac{3600}{0.036 \times (1-V) \times (U_m/U)^3 \times F(x)}$$

$$DA = \frac{[(\theta_a^{10/3} \times D_i \times H + \theta_w^{10/3} \times D_w)/n^2]}{pb \times K_d + \theta_w + \theta_a \times H}$$

$$C_{sat} = S/pb \times (K_d \times pb + \theta_w + H \times \theta_a)$$

INPUT PARAMETERS		
Parameter	Value	Definition
Q/C = :	14.31	Inverse of mean conc. at center of source (g/m ² -s per kg/m ³).
T = :	3.2E+07	Exposure interval (seconds).
pb = :	1.5	Dry soil bulk density (g/cm ³).
ps = :	2.65	soil particle density (g/cm ³).
n = :	0.434	Total soil porosity (L _{pore} /L _{soil}).
θw = :	0.15	Water-filled soil porosity (L _{pore} /L _{soil}).
θa = :	0.284	Air-filled soil porosity (L _{air} /L _{soil}).
D _i = :	Chemical specific	Diffusivity in air (cm ² /sec).
H' = :	Chemical specific	Dimensionless Henry's Law Constant.
D _w = :	Chemical specific	Diffusivity in water (cm ² /sec).
DA = :	Chemical specific	Apparent diffusivity (cm ² /sec).
K _d = :	Chemical specific	Soil-water partition coefficient (cm ³ /g).
K _{oc} = :	Chemical specific	Soil organic carbon partition coefficient (cm ³ /g).
f _{oc} = :	0.006	Fraction organic carbon in soil (g/g).
F _D = :	0.185	dispersion correction factor

Chemical	Volatile	Chemical Properties					Intermediate Calculations			
		K _{oc} (cm ³ /g)	D _i (cm ² /sec)	D _w (cm ² /sec)	S (mg/L)	H'	K _d (cm ³ /g)	D _a (cm ² /sec)	VF (m ³ /kg)	C _{sat} (mg/kg)
Surface Soil										
Total Xylenes	Y	3.83E+02	6.85E-02	8.46E-06	1.06E+02	2.71E-01	2.30E+00	4.04E-04	1.28E+03	2.60E+02

CLIENT Coast Guard		JOB NUMBER	
SUBJECT Example Calculation - Benzo(a)pyrene in Soil			
BASED ON		DRAWING NUMBER	
BY L. Cioferri	CHECKED BY	APPROVED BY	DATE 5/24/19

TCR

Carcinogen
PRG =

$$= \frac{\text{Intake}_{\text{oral}} \times \text{CSF}_{\text{oral}} + \text{Intake}_{\text{dermal}} \times \text{CSF}_{\text{dermal}} + \text{EC}_{\text{air}} \times \text{IUR}}{\text{TCR}}$$

Mutagenic
PRG =

$$= \frac{\text{TCR}}{\left(\text{Intake}_{\text{Age 0-2}} \times \text{ADAF}_{\text{Age 0-2}} + \text{Intake}_{\text{Age 2-6}} \times \text{ADAF}_{\text{Age 2-6}} + \text{Intake}_{\text{Age 6-16}} \times \text{ADAF}_{\text{Age 6-16}} + \text{Intake}_{\text{Age >16}} \times \text{ADAF}_{\text{Age >16}} \right)}$$

$$\text{Intake}_{\text{oral}} = \frac{\text{IR} \times \text{RBA} \times \text{EF} \times \text{ED} \times \text{FI} \times \text{CF}}{\text{BW} \times \text{AT}}$$

$$\text{Intake}_{\text{dermal}} = \frac{\text{SA} \times \text{AF} \times \text{ABS} \times \text{EF} \times \text{ED} \times \text{CF}}{\text{BW} \times \text{AT}}$$

$$\text{EC}_{\text{air}} = \frac{\text{ET} \times \text{EF} \times \text{ED} \times \left[\frac{1}{\text{PEF}} + \frac{1}{\text{VF}} \right]}{\text{AT} \times 24 \text{ hours/day}}$$

INPUT ASSUMPTIONS:						
	Parameter	Child Ages 0-2	Child Ages 2-6	Adult Ages 6-16	Adult Ages >16	Definition
General	TCR = :	1E-06				Target Cancer Risk
	THI = :	1				Target Hazard Index
	EF = :	350	350	350	350	Exposure Frequency (days/year)
	ED = :	2	4	10	10	Exposure Duration (years)
	BW = :	15	15	80	80	Body Weight (kg)
	ATc = :	25,550				Averaging time for carcinogenic exposures (days)
	ATn = :	730	1,460	3,650	3,650	Averaging time for noncarcinogenic exposures (days)
	CF = :	1.0E-06				Conversion Factor (kg/mg)
	ADAF = :	Chemical Specific				Age Dependent Adjustment Factor
Incidental Ingestion	IR = :	200	200	100	100	Soil Ingestion Rate (mg/day)
	RBA = :	Chemical Specific				Relative Bioavailability
	FI = :	1	1	1	1	Fraction from contaminated source (unitless)
Dermal Contact	SA = :	2,373	2,373	6,032	6,032	Skin surface available for contact (cm ² /day)
	AFc = :	0.2	0.2	0.07	0.07	Soil to skin adherence factor (mg/cm ²)
	ABS = :	Chemical Specific				Absorption factor (unitless)
Inhalation	ETc = :	24	24	24	24	Exposure time (hours/day)
	PEF = :	3.23E+09				Particulate emission factor (m ³ /kg)
	VF = :	Chemical Specific				Volatilization factor (m ³ /kg)

For Benzo(a)pyrene:

$$ADAF_{Age 0-2} = 10$$

$$ADAF_{Age 2-6} = 3$$

$$ADAF_{Age 6-16} = 3$$

$$ADAF_{Age >16} = 1$$

$$RBA = 1$$

$$ABS = 0.13$$

$$VF = 1E+99 \text{ m}^3/\text{kg}$$

$$CSF_{oral} = 1.0 (\text{mg}/\text{kg}/\text{day})^{-1}$$

$$CSF_{dermal} = 1.0 (\text{mg}/\text{kg}/\text{day})^{-1}$$

$$IUR = 6.0 E^{-04} (\text{ug}/\text{m}^3)^{-1}$$

CLIENT		JOB NUMBER	
SUBJECT			
BASED ON		DRAWING NUMBER	
BY	CHECKED BY	APPROVED BY	DATE

Carcinogenic Calculations

$$\begin{aligned} \text{Child Ages 0-2} &= \frac{200 \text{ mg/day} \times 1 \times 350 \text{ days/yr} \times 2 \text{ yr} \times 1 \times 1\text{E-06} \text{ kg/mg}}{15 \text{ kg} \times 25,550 \text{ days}} \\ \text{Intake}_{\text{oral}} &= 3.65\text{E-06} \text{ kg/kg/day} \end{aligned}$$

$$\begin{aligned} \text{Child Ages 2-6} &= \frac{200 \text{ mg/day} \times 1 \times 350 \text{ day/yr} \times 4 \text{ yr} \times 1 \times 1\text{E-06} \text{ kg/mg}}{15 \text{ kg} \times 25,550 \text{ days}} \\ \text{Intake}_{\text{oral}} &= 7.31\text{E-07} \text{ kg/kg/day} \end{aligned}$$

$$\begin{aligned} \text{Adult Ages 6-16} &= \frac{100 \text{ mg/day} \times 1 \times 350 \text{ day/yr} \times 10 \text{ yr} \times 1 \times 1\text{E-06} \text{ kg/mg}}{80 \text{ kg} \times 25,550 \text{ days}} \\ \text{Intake}_{\text{oral}} &= 1.71\text{E-07} \text{ kg/kg/day} \end{aligned}$$

$$\begin{aligned} \text{Adult Ages >16} &= \frac{100 \text{ mg/day} \times 1 \times 350 \text{ day/yr} \times 10 \text{ yr} \times 1 \times 1\text{E-06} \text{ kg/mg}}{80 \text{ kg} \times 25,550 \text{ days}} \\ \text{Intake}_{\text{oral}} &= 1.71\text{E-07} \text{ kg/kg/day} \end{aligned}$$

Oral Carcinogenic Intake =

$$\begin{aligned} &= (3.65\text{E-06} \text{ kg/kg/day} \times 10) + (7.31\text{E-07} \text{ kg/kg/day} \times 3) + (1.71\text{E-07} \text{ kg/kg/day} \times 3) + (1.71\text{E-07} \text{ kg/kg/day} \times 1) \\ &= 6.5\text{E-06} \text{ kg/kg/day} \end{aligned}$$

CLIENT		JOB NUMBER	
SUBJECT			
BASED ON		DRAWING NUMBER	
BY	CHECKED BY	APPROVED BY	DATE

$$\begin{aligned} \text{Child Ages 0-2} &= \frac{2,373 \text{ cm}^2/\text{day} \times 0.2 \text{ mg}/\text{cm}^2 \times 0.13 \times 350 \text{ day}/\text{yr} \times 2 \text{ yr} \times 1\text{E-}06 \text{ kg}/\text{mg}}{15 \text{ kg} \times 25,550 \text{ days}} \\ \text{Intake dermal} &= 1.13\text{E-}07 \text{ kg}/\text{kg}/\text{day} \end{aligned}$$

$$\begin{aligned} \text{Child Ages 2-6} &= \frac{2,373 \text{ cm}^2/\text{day} \times 0.2 \text{ mg}/\text{cm}^2 \times 0.13 \times 350 \text{ day}/\text{yr} \times 4 \text{ yr} \times 1\text{E-}06 \text{ kg}/\text{mg}}{15 \text{ kg} \times 25,550 \text{ days}} \\ \text{Intake dermal} &= 2.25\text{E-}07 \text{ kg}/\text{kg}/\text{day} \end{aligned}$$

$$\begin{aligned} \text{Adult Ages 6-16} &= \frac{6,032 \text{ cm}^2/\text{day} \times 0.07 \text{ mg}/\text{cm}^2 \times 0.13 \times 350 \text{ day}/\text{yr} \times 10 \text{ yr} \times 1\text{E-}06 \text{ kg}/\text{mg}}{80 \text{ kg} \times 25,550 \text{ days}} \\ \text{Intake dermal} &= 9.40\text{E-}08 \text{ kg}/\text{kg}/\text{day} \end{aligned}$$

$$\begin{aligned} \text{Adult Ages >16} &= \frac{6,032 \text{ cm}^2/\text{day} \times 0.07 \text{ mg}/\text{cm}^2 \times 0.13 \times 350 \text{ day}/\text{yr} \times 10 \text{ yr} \times 1\text{E-}06 \text{ kg}/\text{mg}}{80 \text{ kg} \times 25,550 \text{ days}} \\ \text{Intake dermal} &= 9.40\text{E-}08 \text{ kg}/\text{kg}/\text{day} \end{aligned}$$

Dermal Carcinogenic Intake =

$$\begin{aligned} & (1.13\text{E-}07 \text{ kg}/\text{kg}/\text{day} \times 10) + (2.25\text{E-}07 \text{ kg}/\text{kg}/\text{day} \times 3) + (9.40\text{E-}08 \text{ kg}/\text{kg}/\text{day} \times 3) + (9.40\text{E-}08 \text{ kg}/\text{kg}/\text{day} \times 1) \\ & = 2.18\text{E-}06 \text{ kg}/\text{kg}/\text{day} \end{aligned}$$

CLIENT		JOB NUMBER	
SUBJECT			
BASED ON		DRAWING NUMBER	
BY	CHECKED BY	APPROVED BY	DATE

$$\begin{aligned} \text{Child Ages 0-2} \\ \text{EC}_{\text{air}} &= \frac{24 \text{ hrs/day} \times 350 \text{ days/yr} \times 2 \text{ yrs} \times \left[\frac{1}{3.23 \times 10^9 \text{ m}^3/\text{kg}} + \frac{1}{1 \times 10^9 \text{ m}^3/\text{kg}} \right]}{25,550 \text{ days} \times 24 \text{ hrs/day}} \\ &= 8.48 \times 10^{-12} \text{ kg/m}^3 \end{aligned}$$

$$\begin{aligned} \text{Child Ages 2-6} \\ \text{EC}_{\text{air}} &= \frac{24 \text{ hrs/day} \times 350 \text{ days/yr} \times 4 \text{ yrs} \times \left[\frac{1}{3.23 \times 10^9 \text{ m}^3/\text{kg}} + \frac{1}{1 \times 10^9 \text{ m}^3/\text{kg}} \right]}{25,550 \text{ days} \times 24 \text{ hrs/day}} \\ &= 1.69 \times 10^{-11} \text{ kg/m}^3 \end{aligned}$$

$$\begin{aligned} \text{Adult Ages 6-16} \\ \text{EC}_{\text{air}} &= \frac{24 \text{ hrs/day} \times 350 \text{ days/yr} \times 10 \text{ yrs} \times \left[\frac{1}{3.23 \times 10^9 \text{ m}^3/\text{kg}} + \frac{1}{1 \times 10^9 \text{ m}^3/\text{kg}} \right]}{25,550 \text{ days} \times 24 \text{ hrs/day}} \\ &= 4.23 \times 10^{-11} \text{ kg/m}^3 \end{aligned}$$

$$\begin{aligned} \text{Adult Ages >16} \\ \text{EC}_{\text{air}} &= \frac{24 \text{ hrs/day} \times 350 \text{ days/yr} \times 10 \text{ yrs} \times \left[\frac{1}{3.23 \times 10^9 \text{ m}^3/\text{kg}} + \frac{1}{1 \times 10^9 \text{ m}^3/\text{kg}} \right]}{25,550 \text{ days} \times 24 \text{ hrs/day}} \\ &= 4.23 \times 10^{-11} \text{ kg/m}^3 \end{aligned}$$

Inhalation Carcinogenic Intake =

$$\begin{aligned} & (8.48 \times 10^{-12} \text{ kg/m}^3 \times 10) + (1.69 \times 10^{-11} \text{ kg/m}^3 \times 3) \times (4.23 \times 10^{-11} \text{ kg/m}^3 \times 3) + (4.23 \times 10^{-11} \text{ kg/m}^3 \times 1) \\ &= 3.0 \times 10^{-10} \text{ kg/m}^3 \end{aligned}$$

CLIENT		JOB NUMBER	
SUBJECT			
BASED ON		DRAWING NUMBER	
BY	CHECKED BY	APPROVED BY	DATE

$$\text{PRG soil} = 1 \text{ E} - 06 /$$

$$\left[6.5 \text{ E} - 06 \text{ kg/kg/day} \times 1.0 (\text{mg/kg/day})^{-1} + 2.18 \text{ E} - 06 \text{ kg/kg/day} \times 1.0 (\text{mg/kg/day})^{-1} \right. \\ \left. + 3.0 \text{ E} - 10 \text{ kg/m}^3 \times 6.0 \text{ E} - 04 (\text{ug/m}^3)^{-1} \times 1000 \text{ ug/mg} \right] \\ = 1.1 \text{ E} - 01 \text{ mg/kg}$$

CLIENT Coast Guard		JOB NUMBER	
SUBJECT Example Calculation - 2,3,7,8-TCDD - Ambient Air			
BASED ON		DRAWING NUMBER	
BY L. Ciofani	CHECKED BY	APPROVED BY	DATE 5/24/19

$$VF = \frac{QC \times (3.14 \times DA \times T)^{1/2} \times 10^{-4} \text{ m}^2 / \text{cm}^2}{2 \times pb \times DA}$$

$$DA = \frac{[(\theta_a^{10/3} \times D_i \times H^1 + \theta_w^{10/3} \times D_w) / n^2]}{pb \times kd + \theta_w + \theta_a \times H^1}$$

$$DA = \frac{[(0.284 \frac{\text{L}_{\text{pore}}}{\text{L}_{\text{soil}}^{10/3}} \times 4.70 \text{E-}02 \frac{\text{cm}^2}{\text{sec}} \times 2.04 \text{E-}03 + 0.15 \frac{\text{L}_{\text{pore}}}{\text{L}_{\text{soil}}^{10/3}} \times 6.76 \text{E-}06 \frac{\text{cm}^2}{\text{sec}})] \times 0.434^{2/3} \frac{\text{cm}^2}{\text{sec}}}{1.5 \text{ g/cm}^3 \times 1.49 \text{E+}03 \frac{\text{cm}^3}{\text{g}} + 0.15 \frac{\text{L}_{\text{pore}}}{\text{L}_{\text{soil}}} + 0.284 \frac{\text{L}_{\text{pore}}}{\text{L}_{\text{soil}}} \times 2.04 \text{E-}03}$$

$$= 3.46 \text{E-}09 \text{ cm}^2 / \text{sec}$$

$$VF = \frac{87.369 \frac{\text{g/m}^2 \cdot \text{s}}{\text{kg/m}^3} \times (3.14 \times 3.46 \text{E-}09 \frac{\text{cm}^2}{\text{sec}} \times 8.2 \text{E+}08 \text{ sec})^{1/2} \times 10^{-4} \text{ m}^2 / \text{cm}^2}{2 \times 1.5 \text{ g/cm}^3 \times 3.46 \text{E-}09 \text{ cm}^2 / \text{sec}}$$

$$= 2.51 \text{E+}06 \text{ m}^3 / \text{kg}$$

$$EC_{\text{air}} = \frac{ET \times EF \times ED \times [1 / (PEF + 1)] / VF}{AT \times 24 \text{ hrs/day}}$$

INPUT ASSUMPTIONS:						
	Parameter	Child Ages 0 - 2	Child Ages 2 - 6	Adult Ages 6 - 16	Adult Ages > 16	Definition
General	TCR = :	1E-06				Target Cancer Risk
	THI = :	1				Target Hazard Index
	EF = :	350	350	350	350	Exposure Frequency (days/year)
	ED = :	2	4	10	10	Exposure Duration (years)
	BW = :	15	15	80	80	Body Weight (kg)
	ATc = :	25,550				Averaging time for carcinogenic exposures (days)
	ATn = :	730	1,460	3,650	3,650	Averaging time for noncarcinogenic exposures (days)
	CF = :	1.0E-06				Conversion Factor (kg/mg)
ADAF = :	Chemical Specific				Age Dependent Adjustment Factor	
Inhalation	ET = :	24	24	24	24	Exposure time (hours/day)
	PEF = :	3.23E+09				Particulate emission factor (m ³ /kg)
	VF = :	Chemical Specific				Volatilization factor (m ³ /kg)

For 2,3,7,8-TCDD:

ADAF
Age 0-2 = 1

ADAF
Age 2-6 = 1

ADAF
Age 6-16 = 1

ADAF
Age >16 = 1

VF = Calculated (see page 1)

CLIENT		JOB NUMBER	
SUBJECT			
BASED ON		DRAWING NUMBER	
BY	CHECKED BY	APPROVED BY	DATE

For
Cancer
Intake

$$\begin{aligned}
 \text{Child Ages 0-2} &= 24 \text{ hrs/day} \times 350 \text{ day/yr} \times 2 \text{ yrs} \times \left[\frac{1}{3.23 \times 10^9 \text{ m}^3/\text{kg}} + \frac{1}{2.51 \times 10^6 \text{ m}^3/\text{kg}} \right] \\
 E_{\text{air}} &= \frac{25,550 \text{ day} \times 24 \text{ hrs/day}}{25,550 \text{ day} \times 24 \text{ hrs/day}} \\
 &= 1.09 \times 10^{-8} \text{ kg/m}^3
 \end{aligned}$$

$$\begin{aligned}
 \text{Child Ages 2-6} &= 24 \text{ hrs/day} \times 350 \text{ day/yr} \times 4 \text{ yrs} \times \left[\frac{1}{3.23 \times 10^9 \text{ m}^3/\text{kg}} + \frac{1}{2.51 \times 10^6 \text{ m}^3/\text{kg}} \right] \\
 E_{\text{air}} &= \frac{25,550 \text{ day} \times 24 \text{ hrs/day}}{25,550 \text{ day} \times 24 \text{ hrs/day}} \\
 &= 2.18 \times 10^{-8} \text{ kg/m}^3
 \end{aligned}$$

$$\begin{aligned}
 \text{Adult Ages 6-16} &= 24 \text{ hrs/day} \times 350 \text{ day/yr} \times 10 \text{ yrs} \times \left[\frac{1}{3.23 \times 10^9 \text{ m}^3/\text{kg}} + \frac{1}{2.51 \times 10^6 \text{ m}^3/\text{kg}} \right] \\
 E_{\text{air}} &= \frac{25,550 \text{ day} \times 24 \text{ hrs/day}}{25,550 \text{ day} \times 24 \text{ hrs/day}} \\
 &= 5.46 \times 10^{-8} \text{ kg/m}^3
 \end{aligned}$$

$$\begin{aligned}
 \text{Adult Ages } >16 &= 24 \text{ hrs/day} \times 350 \text{ days/yr} \times 10 \text{ yrs} \times \left[\frac{1}{3.23 \times 10^9 \text{ m}^3/\text{kg}} + \frac{1}{2.51 \times 10^6 \text{ m}^3/\text{kg}} \right] \\
 E_{\text{air}} &= \frac{25,550 \text{ day} \times 24 \text{ hrs/day}}{25,550 \text{ day} \times 24 \text{ hrs/day}} \\
 &= 5.46 \times 10^{-8} \text{ kg/m}^3
 \end{aligned}$$

Inhalation

Carcinogenic Intake =

$$\begin{aligned}
 & \left(1.09 \times 10^{-8} \frac{\text{kg}}{\text{m}^3} \times 1 \right) + \left(2.18 \times 10^{-8} \text{ kg/m}^3 \times 1 \right) + \left(5.46 \times 10^{-8} \text{ kg/m}^3 \times 1 \right) + \left(5.46 \times 10^{-8} \text{ kg/m}^3 \times 1 \right) \\
 &= 1.42 \times 10^{-7} \text{ kg/m}^3
 \end{aligned}$$

CLIENT Coast Guard		JOB NUMBER	
SUBJECT Example Calculation - 2-Methylnaphthalene in Groundwater			
BASED ON		DRAWING NUMBER	
BY L. Ciofani	CHECKED BY	APPROVED BY	DATE 5/24/19

Noncarcinogenic PRG

$$= \frac{THI}{\left(\text{Intake}_{\text{Child}}^{\text{ing}} / RfD_{\text{Doral}} \right) + \left(\text{Intake}_{\text{Child}}^{\text{derm}} \times RfD_{\text{dermal}} \right) + \left(\text{Intake}_{\text{Child}}^{\text{inh}} / RfC \right)}$$

$$\text{Intake}_{\text{ing}} = \frac{IR \times EF \times ED}{BW \times AT}$$

$$\text{Intake}_{\text{derm}} = \frac{DA_{\text{event}} \times EV \times ED \times EF \times SA}{BW \times AT}$$

$$\text{Intake}_{\text{inh}} = \frac{S \times K \times EF \times ED}{AT \times Ra \times CF}$$

When $t_{\text{event}} < t^*$, $DA_{\text{event}} = 2 \times K_p \times FA \times CF \sqrt{\frac{C_0 \times \tan \cdot t_{\text{event}}}{\pi}}$

Para-meter	Child Ages 0 - 2	Child Ages 2 - 6	Definition
TCR =:	1E-06		Target Cancer Risk
THI =:	1		Target Hazard Index
IR =:	0.78	0.78	Ingestion rate (L/day)
SA =:	6,365	6,365	Skin surface available for contact (cm ²)
DAevent =:	Chemical Specific		Absorbed dose per event (mg/cm ² -event)
EV =:	1	1	Event frequency (events/days)
EF =:	350	350	Exposure frequency (days/year)
ED =:	2	4	Exposure duration (years)
ET =:	24	24	Exposure time (hrs/day)
BW =:	15	15	Body weight (kg)
ATc =:	25,550		Averaging time for carcinogenic exposures (days)
ATn =:	2,190		Averaging time for noncarcinogenic exposures (days)
CF =:	0.001		Conversion Factor (L/cm ³)
Kp =:	Chemical Specific		Permeability coefficient (cm/hr)
Cw =:	Chemical Specific		Concentration of chemical in water (mg/L)
tevent =:	0.54		duration of event (hr/event)
tau =:	Chemical Specific		Lag time (hr)
t* =:	Chemical Specific		Time it takes to reach steady state (hr)
B =:	Chemical Specific		Dimensionless constant
FA =:	Chemical Specific		Fraction absorbed (dimensionless)
K =:	Chemical Specific		Mass Transfer Coefficient
Ra =:	0.017		Air Exchange Rate (1/min)
CF =:	1440		Conversion Factor (min/day)
Ds =:	42.6		Shower Duration (min)
Dt =:	60		Total Time in Bathroom (min)
Fr =:	10		Shower Water Flow Rate (L/min)
Sv =:	12		Shower Room Air Volume (m ³)
ts =:	0.5		Shower Dropler Drop Time (sec)
d =:	1		Shower Droplet Diameter (mm)
T1 =:	293		Calibration Water Temperature (K)
Ts =:	318		Shower Water Temperature (K)
m1 =:	1.002		Water Viscosity at T1, (cp)
ms =:	0.596		Water Viscosity at Ts (cp)

For 2-methylnaphthalene:

$$K_p = 9.17E-02 \text{ cm/hr}$$

$$\tau_{\text{event}} = 6.58E-01 \text{ hr}$$

$$t^* = 1.58 \text{ hr}$$

$$B = 4.21E-01$$

$$FA = 1$$

DAevent = calculated

$$K = 19.78$$

$$RfD_{\text{oral}} = 4.0E-03 \text{ mg/kg/day}$$

$$RfD_{\text{dermal}} = 4.0E-03 \text{ mg/kg/day}$$

RfC = Not available

Parameter	Value	Definition
MW =:	Chemical-specific	Molecular Weight (g/mol)
RT =:	2.4E-02	Ideal gas constant x absolute temperature (atm-m ³ /mol)
H =:	Chemical-specific	Henry's Law constant (atm-m ³ /mol)
Us =:	0.596	water viscosity at Ts (cp)
U1 =:	1.002	water viscosity at T1 (cp)

Relevant Equations:

$$K = Ds + \{ \exp(-Ra \times Dt) - \exp[Ra \times (Ds - Dt)] \} / Ra$$

$$k1 = 20 \text{ cm/hr} \times (44/MW)^{0.5}$$

$$K_{al} = K_I \times [(T1 \times Us) / (Ts \times U1)]^{-0.5}$$

$$k_g = 3000 \text{ cm/hr} \times (18/MW)^{0.5}$$

$$C_{wd} = C_w \times [1 - \exp(-K_{al} \times ts/60d)]$$

$$K_I = 1 / [1/k1 + RT / (H \times k_g)]$$

$$S = C_{wd} \times FR/SV$$

For 2-methylnaphthalene:

$$MW = 1.42E+02 \text{ g/mol}$$

$$H = 5.18E-04 \text{ atm-m}^3/\text{mol}$$

CLIENT		JOB NUMBER	
SUBJECT			
BASED ON		DRAWING NUMBER	
BY	CHECKED BY	APPROVED BY	DATE

$$DA_{\text{event}} = 2 \times 9.17 \times 10^{-02} \frac{\text{cm}}{\text{hr}} \times 1 \times 0.001 \frac{\text{L}}{\text{cm}^3} \times \sqrt{\frac{6 \times 6.58 \times 10^{-01} \text{ hr} \times 0.54 \text{ hr}}{11}} \frac{\text{hr}}{\text{event}}$$

$$= 1.51 \times 10^{-04} \text{ L/cm}^2\text{-event}$$

Volatilization from Showering

$$K_1 = 20 \frac{\text{cm}}{\text{hr}} \times \left(44 / 1.42 \times 10^2 \frac{\text{g}}{\text{mol}} \right)^{0.5} = 11.1 \text{ cm/hr}$$

$$K_g = 3000 \text{ cm/hr} \times \left(18 / 1.42 \times 10^2 \frac{\text{g}}{\text{mol}} \right)^{0.5} = 1068 \text{ cm/hr}$$

$$K_L = 1 \left[1 / 11.1 \frac{\text{cm}}{\text{hr}} + 2.4 \times 10^{-02} \frac{\text{atm} \cdot \text{m}^3}{\text{mol}} / \left(5.18 \times 10^{-04} \frac{\text{atm} \cdot \text{m}^3}{\text{mol}} \times 1068 \text{ cm/hr} \right) \right]$$

$$= 7.5 \text{ cm/hr}$$

$$K_{al} = 11 \text{ cm/hr} \times \left[293 \text{ K} \times 0.596 \text{ cp} / (318 \text{ K} \times 1.002 \text{ cp}) \right]^{0.5}$$

$$= 10 \text{ cm/hr}$$

$$C_{wd} = 1 - \exp(-10 \text{ cm/hr} \times 0.5 \text{ sec} / (60 \times 1 \text{ mm}) / 1000)$$

$$= 8.1 \times 10^{-05} \text{ cm/hr}$$

$$S = 8.1 \times 10^{-05} \text{ cm/hr} \times 10 \text{ L/min} / 12 \text{ m}^3 = 6.75 \times 10^{-05} \text{ mg/m}^3\text{-min}$$

CLIENT		JOB NUMBER	
SUBJECT			
BASED ON		DRAWING NUMBER	
BY	CHECKED BY	APPROVED BY	DATE

Noncarcinogenic Calculations

$$\text{Intake}_{\text{mg}} = \frac{0.78 \text{ L/day} \times 350 \text{ days/yr} \times (2 \text{ yrs} + 4 \text{ yrs})}{15 \text{ kg} \times 2,190 \text{ days}}$$

$$= 4.99 \text{ E}^{-02} \text{ L/kg/day}$$

$$\text{Intake}_{\text{derm}} = \frac{1.51 \text{ E}^{-04} \frac{\text{L}}{\text{cm}^2 \cdot \text{event}} \times 1 \frac{\text{event}}{\text{day}} \times (2 \text{ yrs} + 4 \text{ yrs}) \times 350 \frac{\text{day}}{\text{yr}} \times 6,365 \text{ cm}^2}{15 \text{ kg} \times 2,190 \text{ days}}$$

$$= 6.14 \text{ E}^{-02} \text{ L/kg/days}$$

$$\text{Intake}_{\text{inh}} = \frac{6.75 \text{ E}^{-05} \frac{\text{mg}}{\text{m}^3} \cdot \text{min} \times 9.78 \text{ min} \times 350 \frac{\text{day}}{\text{yr}} \times (2 \text{ yrs} + 4 \text{ yrs})}{2,190 \text{ days} \times 0.017 \frac{1}{\text{min}} \times 1440 \frac{\text{min}}{\text{day}}}$$

$$= 5.3 \text{ L/m}^3$$

$$\text{PRG} = \frac{1}{\left(\frac{4.99 \text{ E}^{-02} \text{ L}}{\text{kg} \cdot \text{day}} \right) + \left(\frac{6.14 \text{ E}^{-02} \text{ L/kg/day}}{4 \text{ E}^{-03} \text{ mg/kg/day}} \right)}$$

$$= 3.7 \text{ E}^{-02} \text{ mg/L} \times \frac{1000 \frac{\mu\text{g}}{\text{mg}}}{1} = 37 \text{ } \mu\text{g/L}$$

Inhalation pathway not included in PRG calculation because the RfC for 2-methylnaphthalene is not available.

Site-specific VISL Results
Resident Equation Inputs

* Inputted values different from Resident defaults are highlighted.
 Output generated 13JUN2019:17:05:30

Variable	Resident Air Default Value	Form-input Value
AF _{gw} (Attenuation Factor Groundwater) unitless	0.001	0.001
AF _{ss} (Attenuation Factor Sub-Slab) unitless	0.03	0.03
ED _{res} (exposure duration) years	26	26
ED ₀₋₂ (mutagenic exposure duration first phase) years	2	2
ED ₂₋₆ (mutagenic exposure duration second phase) years	4	4
ED ₆₋₁₆ (mutagenic exposure duration third phase) years	10	10
ED ₁₆₋₂₆ (mutagenic exposure duration fourth phase) years	10	10
EF _{res} (exposure frequency) days/year	350	350
EF ₀₋₂ (mutagenic exposure frequency first phase) days/year	350	350
EF ₂₋₆ (mutagenic exposure frequency second phase) days/year	350	350
EF ₆₋₁₆ (mutagenic exposure frequency third phase) days/year	350	350
EF ₁₆₋₂₆ (mutagenic exposure frequency fourth phase) days/year	350	350
ET _{res} (exposure time) hours/day	24	24
ET ₀₋₂ (mutagenic exposure time first phase) hours/day	24	24
ET ₂₋₆ (mutagenic exposure time second phase) hours/day	24	24
ET ₆₋₁₆ (mutagenic exposure time third phase) hours/day	24	24
ET ₁₆₋₂₆ (mutagenic exposure time fourth phase) hours/day	24	24
THQ (target hazard quotient) unitless	0.1	1
LT (lifetime) years	70	70
TR (target risk) unitless	1.0E-06	1.0E-06

Resident Vapor Intrusion Screening Levels (VISL)

Key: I = IRIS; P = PPRTV; O = OPP; A = ATSDR; C = Cal EPA; X = PPRTV Screening Level; H = HEAST; D = DWSHA; W = TEF applied; E = RPF applied; U = user provided; G = see RSL User's Guide Section 5; CA = cancer; NC = noncancer.

Chemical	CAS Number	Does the chemical meet the definition for volatility? (HLC>1E-5 or VP>1)	Does the chemical have inhalation toxicity data? (IUR and/or RfC)	Is Chemical Sufficiently Volatile and Toxic to Pose Inhalation Risk Via Vapor Intrusion from Soil Source? ($C_{vp} > C_{ia,Target?}$)	Is Chemical Sufficiently Volatile and Toxic to Pose Inhalation Risk Via Vapor Intrusion from Groundwater Source? ($C_{hc} > C_{ia,Target?}$)	Target Indoor Air Concentration (TCR=1E-06 or THQ=1) $MIN(C_{ia,c}; C_{ia,nc})$ ($\mu g/m^3$)	Toxicity Basis
Acetone	67-64-1	Yes	Yes	Yes	Yes	3.22E+04	NC
Benzene	71-43-2	Yes	Yes	Yes	Yes	3.60E-01	CA
Carbon Tetrachloride	56-23-5	Yes	Yes	Yes	Yes	4.68E-01	CA
Chloroform	67-66-3	Yes	Yes	Yes	Yes	1.22E-01	CA
Chloromethane	74-87-3	Yes	Yes	Yes	Yes	9.39E+01	NC
Dichlorodifluoromethane	75-71-8	Yes	Yes	Yes	Yes	1.04E+02	NC
Dichloroethylene, 1,2-cis-	156-59-2	Yes	No	No Inhal. Tox. Info	No Inhal. Tox. Info		
Dichloroethylene, 1,2-trans-	156-60-5	Yes	No	No Inhal. Tox. Info	No Inhal. Tox. Info		
Dichloropropane, 1,2-	78-87-5	Yes	Yes	Yes	Yes	7.59E-01	CA
Ethylbenzene	100-41-4	Yes	Yes	Yes	Yes	1.12E+00	CA
Methyl Ethyl Ketone (2-Butanone)	78-93-3	Yes	Yes	Yes	Yes	5.21E+03	NC
Methyl Isobutyl Ketone (4-methyl-2-pentanone)	108-10-1	Yes	Yes	Yes	Yes	3.13E+03	NC
Methyl tert-Butyl Ether (MTBE)	1634-04-4	Yes	Yes	Yes	Yes	1.08E+01	CA
Styrene	100-42-5	Yes	Yes	Yes	Yes	1.04E+03	NC
Tetrachloroethane, 1,1,2,2-	79-34-5	Yes	Yes	Yes	Yes	4.84E-02	CA
Tetrachloroethylene	127-18-4	Yes	Yes	Yes	Yes	1.08E+01	CA
Toluene	108-88-3	Yes	Yes	Yes	Yes	5.21E+03	NC
Trichloro-1,2,2-trifluoroethane, 1,1,2-	76-13-1	Yes	Yes	Yes	Yes	5.21E+03	NC
Trichloroethylene	79-01-6	Yes	Yes	Yes	Yes	4.78E-01	CA
Trichlorofluoromethane	75-69-4	Yes	No	No Inhal. Tox. Info	No Inhal. Tox. Info		
Xylene, P-	106-42-3	Yes	Yes	Yes	Yes	1.04E+02	NC
Xylene, m-	108-38-3	Yes	Yes	Yes	Yes	1.04E+02	NC
Xylene, o-	95-47-6	Yes	Yes	Yes	Yes	1.04E+02	NC
Extra Chemical methylene chloride	NA	No	No	No (not volatile)	No (not volatile)		

Resident Vapor Intrusion Screening Levels (VISL)

Key: I = IRIS; P = PPRTV; O = OPP; A = ATSDR; C = Cal EPA; X = PPRTV Screening Level; H = HEAST; D = DWSHA; W = TEF applied; E = RPF applied; U = user provided; G = see RSL User's Guide Section 5; CA = cancer; NC = noncancer.

Chemical	Target Sub-Slab and Near-source Soil Gas Concentration (TCR=1E-06 or THQ=1) $C_{sg, Target}$ ($\mu\text{g}/\text{m}^3$)	Target Groundwater Concentration (TCR=1E-06 or THQ=1) $C_{gw, Target}$ ($\mu\text{g}/\text{L}$)	Is Target Groundwater Concentration < MCL? ($C_{gw} < \text{MCL}$?)	Pure Phase Vapor Concentration C_{vp} (25°C) ($\mu\text{g}/\text{m}^3$)	Maximum Groundwater Vapor Concentration C_{hc} ($\mu\text{g}/\text{m}^3$)	Temperature for Maximum Groundwater Vapor Concentration ($^\circ\text{C}$)
Acetone	1.07E+06	2.25E+07	--	7.25E+08	1.43E+09	25
Benzene	1.20E+01	1.59E+00	Yes (5)	3.98E+08	4.06E+08	25
Carbon Tetrachloride	1.56E+01	4.15E-01	Yes (5)	9.51E+08	8.95E+08	25
Chloroform	4.07E+00	8.14E-01	Yes (80)	1.26E+09	1.19E+09	25
Chloromethane	3.13E+03	2.60E+02	--	1.17E+10	1.92E+09	25
Dichlorodifluoromethane	3.48E+03	7.44E+00	--	3.15E+10	3.93E+09	25
Dichloroethylene, 1,2-cis-				1.04E+09	1.07E+09	25
Dichloroethylene, 1,2-trans-				1.73E+09	1.73E+09	25
Dichloropropane, 1,2-	2.53E+01	6.58E+00	No (5)	3.24E+08	3.23E+08	25
Ethylbenzene	3.74E+01	3.49E+00	Yes (700)	5.48E+07	5.44E+07	25
Methyl Ethyl Ketone (2-Butanone)	1.74E+05	2.24E+06	--	3.51E+08	5.19E+08	25
Methyl Isobutyl Ketone (4-methyl-2-pentanone)	1.04E+05	5.55E+05	--	1.07E+08	1.07E+08	25
Methyl tert-Butyl Ether (MTBE)	3.60E+02	4.50E+02	--	1.19E+09	1.22E+09	25
Styrene	3.48E+04	9.28E+03	No (100)	3.58E+07	3.49E+07	25
Tetrachloroethane, 1,1,2,2-	1.61E+00	3.23E+00	--	4.17E+07	4.25E+07	25
Tetrachloroethylene	3.60E+02	1.49E+01	No (5)	1.65E+08	1.49E+08	25
Toluene	1.74E+05	1.92E+04	No (1000)	1.41E+08	1.43E+08	25
Trichloro-1,2,2-trifluoroethane, 1,1,2-	1.74E+05	2.42E+02	--	3.65E+09	3.66E+09	25
Trichloroethylene	1.59E+01	1.19E+00	Yes (5)	4.88E+08	5.15E+08	25
Trichlorofluoromethane				5.93E+09	4.36E+09	25
Xylene, P-	3.48E+03	3.70E+02	--	5.05E+07	4.57E+07	25
Xylene, m-	3.48E+03	3.55E+02	--	4.73E+07	4.73E+07	25
Xylene, o-	3.48E+03	4.92E+02	--	3.77E+07	3.77E+07	25
Extra Chemical methylene chloride						25

Resident Vapor Intrusion Screening Levels (VISL)

Key: I = IRIS; P = PPRTV; O = OPP; A = ATSDR; C = Cal EPA; X = PPRTV Screening Level; H = HEAST; D = DWSHA; W = TEF applied; E = RPF applied; U = user provided; G = see RSL User's Guide Section 5; CA = cancer; NC = noncancer.

Chemical	Lower Explosive Limit LEL (% by volume)	LEL Ref	IUR (ug/m ³) ⁻¹	IUR Ref	RfC (mg/m ³)	RfC Ref	Mutagenic Indicator	Carcinogenic VISL TCR=1E-06 C _{ia,c} (μg/m ³)	Noncarcinogenic VISL THQ=1 C _{ia,nc} (μg/m ³)
Acetone	2.50	U			3.09E+01	U	No		3.22E+04
Benzene	1.20	U	7.80E-06	U	3.00E-02	U	No	3.60E-01	3.13E+01
Carbon Tetrachloride			6.00E-06	U	1.00E-01	U	No	4.68E-01	1.04E+02
Chloroform			2.30E-05	U	9.77E-02	U	No	1.22E-01	1.02E+02
Chloromethane	8.10	U			9.00E-02	U	No		9.39E+01
Dichlorodifluoromethane					1.00E-01	U	No		1.04E+02
Dichloroethylene, 1,2-cis-	3.00	U					No		
Dichloroethylene, 1,2-trans-	6.00	U					No		
Dichloropropane, 1,2-	3.40	U	3.70E-06	U	4.00E-03	U	No	7.59E-01	4.17E+00
Ethylbenzene	0.80	U	2.50E-06	U	1.00E+00	U	No	1.12E+00	1.04E+03
Methyl Ethyl Ketone (2-Butanone)	1.40	U			5.00E+00	U	No		5.21E+03
Methyl Isobutyl Ketone (4-methyl-2-pentanone)	1.20	U			3.00E+00	U	No		3.13E+03
Methyl tert-Butyl Ether (MTBE)	2.00	U	2.60E-07	U	3.00E+00	U	No	1.08E+01	3.13E+03
Styrene	0.90	U			1.00E+00	U	No		1.04E+03
Tetrachloroethane, 1,1,2,2-			5.80E-05	U			No	4.84E-02	
Tetrachloroethylene			2.60E-07	U	4.00E-02	U	No	1.08E+01	4.17E+01
Toluene	1.10	U			5.00E+00	U	No		5.21E+03
Trichloro-1,2,2-trifluoroethane, 1,1,2-					5.00E+00	U	No		5.21E+03
Trichloroethylene	8.00	U	4.10E-06	U	2.00E-03	U	Mut	4.78E-01	2.09E+00
Trichlorofluoromethane							No		
Xylene, P-	1.10	U			1.00E-01	U	No		1.04E+02
Xylene, m-	1.10	U			1.00E-01	U	No		1.04E+02
Xylene, o-	0.90	U			1.00E-01	U	No		1.04E+02
Extra Chemical methylene chloride							No		

Chemical	CAS Number	Does the chemical meet the definition for volatility? (HLC>1E-5 or VP>1)	Does the chemical have inhalation toxicity data? (IUR and/or RfC)	MW	MW Ref	Vapor Pressure VP (mm Hg)	VP Ref	S (mg/L)	S Ref
Acetone	67-64-1	Yes	Yes	58.08	U	2.32E+02	U	1.00E+06	U
Benzene	71-43-2	Yes	Yes	78.12	U	9.48E+01	U	1.79E+03	U
Carbon Tetrachloride	56-23-5	Yes	Yes	153.82	U	1.15E+02	U	7.93E+02	U
Chloroform	67-66-3	Yes	Yes	119.38	U	1.97E+02	U	7.95E+03	U
Chloromethane	74-87-3	Yes	Yes	50.49	U	4.30E+03	U	5.32E+03	U
Dichlorodifluoromethane	75-71-8	Yes	Yes	120.91	U	4.85E+03	U	2.80E+02	U
Dichloroethylene, 1,2-cis-	156-59-2	Yes	No	96.94	U	2.00E+02	U	6.41E+03	U
Dichloroethylene, 1,2-trans-	156-60-5	Yes	No	96.94	U	3.31E+02	U	4.52E+03	U
Dichloropropane, 1,2-	78-87-5	Yes	Yes	112.99	U	5.33E+01	U	2.80E+03	U
Ethylbenzene	100-41-4	Yes	Yes	106.17	U	9.60E+00	U	1.69E+02	U
Methyl Ethyl Ketone (2-Butanone)	78-93-3	Yes	Yes	72.11	U	9.06E+01	U	2.23E+05	U
Methyl Isobutyl Ketone (4-methyl-2-pentanone)	108-10-1	Yes	Yes	100.16	U	1.99E+01	U	1.90E+04	U
Methyl tert-Butyl Ether (MTBE)	1634-04-4	Yes	Yes	88.15	U	2.50E+02	U	5.10E+04	U
Styrene	100-42-5	Yes	Yes	104.15	U	6.40E+00	U	3.10E+02	U
Tetrachloroethane, 1,1,2,2-	79-34-5	Yes	Yes	167.85	U	4.62E+00	U	2.83E+03	U
Tetrachloroethylene	127-18-4	Yes	Yes	165.83	U	1.85E+01	U	2.06E+02	U
Toluene	108-88-3	Yes	Yes	92.14	U	2.84E+01	U	5.26E+02	U
Trichloro-1,2,2-trifluoroethane, 1,1,2-	76-13-1	Yes	Yes	187.38	U	3.62E+02	U	1.70E+02	U
Trichloroethylene	79-01-6	Yes	Yes	131.39	U	6.90E+01	U	1.28E+03	U
Trichlorofluoromethane	75-69-4	Yes	No	137.37	U	8.03E+02	U	1.10E+03	U
Xylene, P-	106-42-3	Yes	Yes	106.17	U	8.84E+00	U	1.62E+02	U
Xylene, m-	108-38-3	Yes	Yes	106.17	U	8.29E+00	U	1.61E+02	U
Xylene, o-	95-47-6	Yes	Yes	106.17	U	6.61E+00	U	1.78E+02	U
Extra Chemical methylene chloride	NA	No	No						

Appendix A

Sub-Slab Vapor Intrusion Screening Levels - 2017

Chemical	Resident Sub-Slab Soil Vapor Screening Level (EPA VISL-2017) ($\mu\text{g}/\text{m}^3$)	Resident Sub-Slab Soil Vapor Screening Level (EPA VISL-2017) (ppbv)	2017 VISL Increase ¹ (+) or Decrease (-) from 2011 Screening Level (ppbv)
2-Butanone (methyl ethyl ketone)	174000	59088	+
4-Methyl-2-pentanone	104000	25387	+
Acetone	1070000	451060	+
Benzene	12	4	+
Carbon tetrachloride	15.6	2.5	+
Chloroform	4.07	0.83	+
Chloromethane	3130	1516	+
<i>cis</i> - 1,2-Dichloroethene	NA	NA	NA
<i>trans</i> - 1,2-Dichloroethene	NA	NA	NA
1,2-Dichloropropane	25.3	5.47	-
Ethylbenzene	37.4	8.6	+
Trichlorofluoromethane (Freon 11)	NA	NA	NA
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	174000	22704	-
Dichlorodifluoromethane (Freon 12)	3480	704	+
Xylene, <i>m</i> -, <i>p</i> -	3480	801	-
Methyl tert-Butyl Ether	360	100	-
Methylene chloride	3380	973	+
Xylene, <i>o</i> -	3480	801	-
Styrene	34800	8169	+
1,1,2,2-Tetrachloroethane	1.61	0.23	-
Tetrachloroethene	360	53	+
Toluene	174000	46167	+
Trichloroethene	15.9	3.0	+

1 Increase (+) indicates more recent VISL concentration increased and is less stringent than previous screening value. See Table 3 in 2011 USCG YARD sub-slab soil vapor memorandum included in this appendix.

Corresponds to a resident risk level of 1×10^{-6} and HI=1.

$\mu\text{g}/\text{m}^3$ = micrograms per cubic meter

NA = not available

EPA = United States Environmental Protection Agency

ppbv = parts per billion-volume

VISL = vapor intrusion screening level (EPA, 2017)

Site-specific VISL Results
Resident Equation Inputs

* Inputted values different from Resident defaults are highlighted.
 Output generated 13JUN2019:17:48:28

Variable	Resident Air Default Value	Form-input Value
AF _{gw} (Attenuation Factor Groundwater) unitless	0.001	0.001
AF _{ss} (Attenuation Factor Sub-Slab) unitless	0.03	0.03
ED _{res} (exposure duration) years	26	26
ED ₀₋₂ (mutagenic exposure duration first phase) years	2	2
ED ₂₋₆ (mutagenic exposure duration second phase) years	4	4
ED ₆₋₁₆ (mutagenic exposure duration third phase) years	10	10
ED ₁₆₋₂₆ (mutagenic exposure duration fourth phase) years	10	10
EF _{res} (exposure frequency) days/year	350	350
EF ₀₋₂ (mutagenic exposure frequency first phase) days/year	350	350
EF ₂₋₆ (mutagenic exposure frequency second phase) days/year	350	350
EF ₆₋₁₆ (mutagenic exposure frequency third phase) days/year	350	350
EF ₁₆₋₂₆ (mutagenic exposure frequency fourth phase) days/year	350	350
ET _{res} (exposure time) hours/day	24	24
ET ₀₋₂ (mutagenic exposure time first phase) hours/day	24	24
ET ₂₋₆ (mutagenic exposure time second phase) hours/day	24	24
ET ₆₋₁₆ (mutagenic exposure time third phase) hours/day	24	24
ET ₁₆₋₂₆ (mutagenic exposure time fourth phase) hours/day	24	24
THQ (target hazard quotient) unitless	0.1	1
LT (lifetime) years	70	70
TR (target risk) unitless	1.0E-06	1.0E-06

Resident Vapor Intrusion Screening Levels (VISL)

Key: I = IRIS; P = PPRTV; O = OPP; A = ATSDR; C = Cal EPA; X = PPRTV Screening Level; H = HEAST; D = DWSHA; W = TEF applied; E = RPF applied; U = user provided; G = see RSL User's Guide Section 5; CA = cancer; NC = noncancer.

Chemical	CAS Number	Does the chemical meet the definition for volatility? (HLC>1E-5 or VP>1)	Does the chemical have inhalation toxicity data? (IUR and/or RfC)	Is Chemical Sufficiently Volatile and Toxic to Pose Inhalation Risk Via Vapor Intrusion from Soil Source? ($C_{vp} > C_{ia}, Target?$)	Is Chemical Sufficiently Volatile and Toxic to Pose Inhalation Risk Via Vapor Intrusion from Groundwater Source? ($C_{hc} > C_{ia}, Target?$)	Target Indoor Air Concentration (TCR=1E-06 or THQ=1) $MIN(C_{ia,c}, C_{ia,nc})$ ($\mu g/m^3$)	Toxicity Basis
Methylene Chloride	75-09-2	Yes	Yes	Yes	Yes	1.01E+02	CA

Chemical	Target Sub-Slab and Near-source Soil Gas Concentration (TCR=1E-06 or THQ=1) $C_{sg}, Target$ ($\mu g/m^3$)	Target Groundwater Concentration (TCR=1E-06 or THQ=1) $C_{gw}, Target$ ($\mu g/L$)	Is Target Groundwater Concentration < MCL? ($C_{gw} < MCL?$)	Pure Phase Vapor Concentration $C_{vp} \setminus (25^\circ C) \setminus$ ($\mu g/m^3$)	Maximum Groundwater Vapor Concentration $C_{hc} \setminus$ ($\mu g/m^3$)	Temperature for Maximum Groundwater Vapor Concentration ($^\circ C$)
Methylene Chloride	3.38E+03	7.63E+02	No (5)	1.99E+09	1.73E+09	25

Chemical	Lower Explosive Limit LEL (% by volume)	LEL Ref	IUR (ug/m^3) ⁻¹	IUR Ref	RfC (mg/m ³)	RfC Ref	Mutagenic Indicator	Carcinogenic VISL TCR=1E-06 $C_{ia,c}$ ($\mu g/m^3$)	Noncarcinogenic VISL THQ=1 $C_{ia,nc}$ ($\mu g/m^3$)
Methylene Chloride	13.00	U	1.00E-08	U	6.00E-01	U	Mut	1.01E+02	6.26E+02

Chemical	CAS Number	Does the chemical meet the definition for volatility? (HLC>1E-5 or VP>1)	Does the chemical have inhalation toxicity data? (IUR and/or RfC)	MW	MW Ref	Vapor Pressure VP (mm Hg)	VP Ref	S (mg/L)	S Ref	MCL (ug/L)	HLC (atm-m ³ /mole)
Methylene Chloride	75-09-2	Yes	Yes	84.93	U	4.35E+02	U	1.30E+04	U	5	3.25E-03

Chemical	Henry's Law Constant (unitless)	H ⁺ and HLC Ref	Henry's Law Constant Used in Calcs (unitless)	D _a \ (cm ² /s)	D _a \ Ref	D _w \ (cm ² /s)	D _w \ Ref	Normal Boiling Point BP (K)	BP Ref	Critical Temperature TC (K)	TC Ref
Methylene Chloride	1.33E-01	U	1.33E-01	9.99E-02	U	1.25E-05	U	313.15	U	5.08E+02	U

Chemical	Enthalpy of vaporization at the normal boiling point $\Delta H_{v,b}$ \ (cal/mol)	$\Delta H_{v,b}$ \ Ref	K _{oc} \ (cm ³ /g)	K _{oc} \ Ref	Lower Explosive Limit LEL (% by volume)	LEL Ref
Methylene Chloride	6710.00	U	21.7	U	13.00	U



October 21, 2010

Mr. Robert A. DeMarco
Environmental Engineer
U.S. Coast Guard Yard
2401 Hawkins Point Road
Baltimore, Maryland 21226-1797

Subject: Site 7 Former Burn Pit Air Sampling Data Summary
United States Coast Guard, Baltimore, MD
Tetra Tech NUS Project No. 112G02841

Dear Mr. DeMarco:

Tetra Tech, Inc. has completed the August 2011 sub-slab soil gas monitoring at the Site 7 Former Burn Pit of the United States Coast Guard (USCG) Yard, Hawkins Point Road in Baltimore, Maryland under Task Order Number **DTCG83-02-F-3YD023**. This letter summarizes the sub-slab soil gas sampling data for the occupied Buildings 30 and 37 and includes our recommendations for follow-up investigation and sampling.

Sub-Slab Soil Gas Sampling

Sub-slab soil gas sampling was performed in Buildings 30 and 37 at the Site 7 Former Burn Pit to assess the potential for subsurface vapor intrusion of volatile and semi-volatile organic site contaminants into the overlying buildings on August 31, 2011.

In accordance with the U.S. Environmental Protection Agency (EPA) Method Toxic Organics (TO)-15, 6-liter stainless steel SUMMA® canisters equipped with 30-minute air flow regulators were placed at four locations throughout each building as shown on Figure 3-3 below. Table 1 below lists the sample numbers and sampling locations. The sampling ports were installed and sealed on January 18, 2008 and re-used for this survey. Samples SG7-1 through SG7-4 were collected in Building 30 and Samples SG7-5 through SG7-8 were collected in Building 37. For quality control purposes, duplicates of Samples SG7-1 and SG7-8 and a trip blank were collected.

Table 1 Sub-Slab Soil Gas Sample Locations United States Coast Guard Yard Baltimore, Maryland		
Building	Location	Sample Number
30	Maintenance garage floor at NE corner	SG7-1
	Room 211 battery room in NE corner below rubber mat	SG7-2
	Male head wet room in SW corner	SG7-3
	AC Boundry in SW corner below fridge	SG7-4
37	RSS Locker (behind locked chain-link gate)	SG7-5
	XPO locker off kitchen in SE corner	SG7-6
	Male berthing room below sink (right back corner below carpet tile)	SG7-7
	Entry area floor near flag and couch	SG7-8

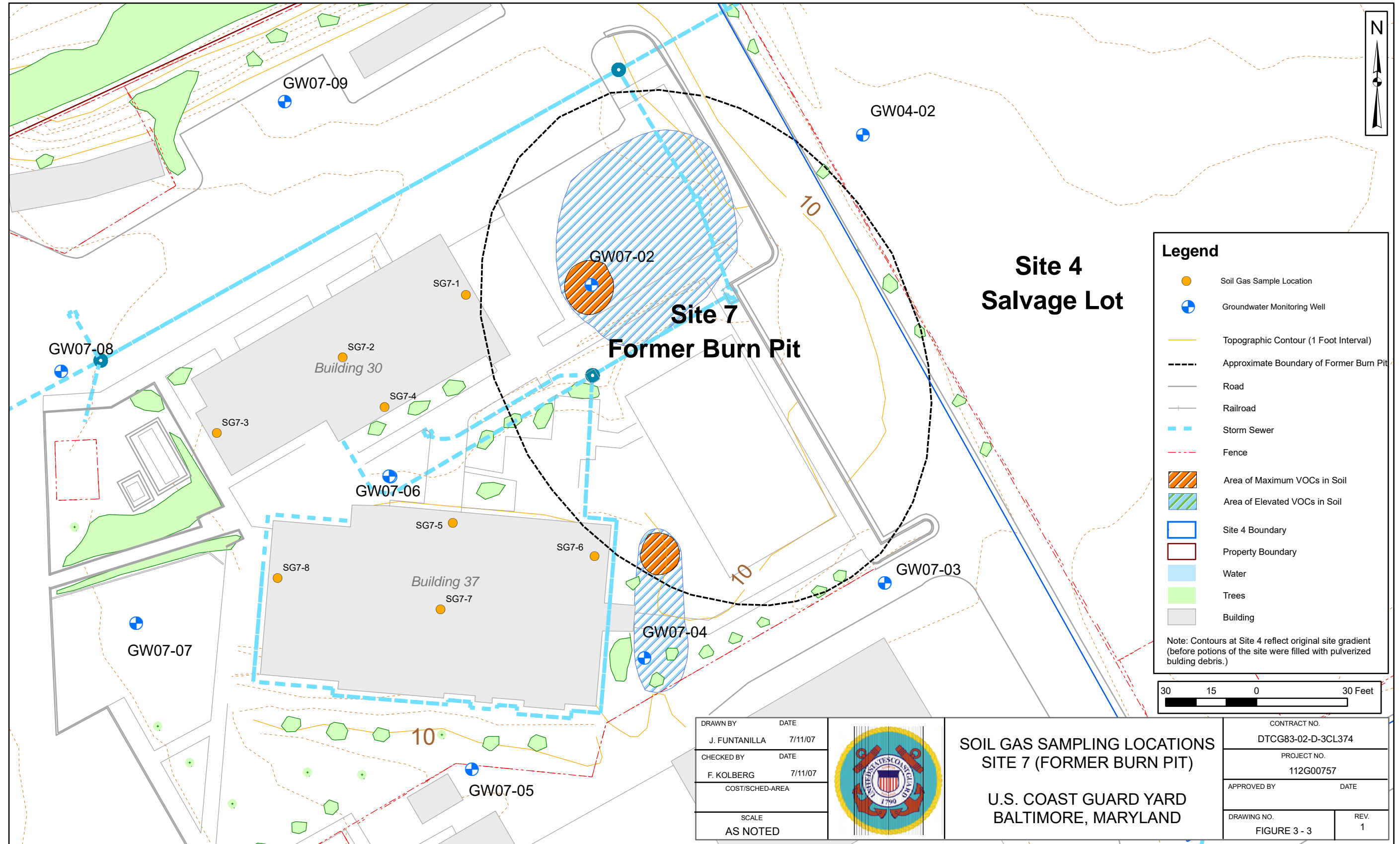


A total of eleven (11) canisters were used in this sampling event. The SUMMA® canisters were evacuated, cleaned and batch-certified by Air Toxics, Ltd., of Folsom, California. The initial and final vacuum pressures were recorded on the laboratory-provided chain-of-custody form. The canisters were labeled with a unique identification tag (i.e., SG7--#). The air samples were express mailed to the laboratory the same day. A standard turnaround time for laboratory analysis was requested. Copies of the chain-of-custody forms and laboratory reports are provided in Attachment A.

EPA Method TO-15 evaluates both polar and non-polar volatile organic compounds (VOCs) by gas chromatography/mass spectrometry (GC/MS). A list of the 69 target compounds identified and quantified by this method is provided in Table 2 below. General classes of compounds detected by this method include alcohols, aliphatic and aromatic hydrocarbons, acetates, ethers, freons, and chlorinated hydrocarbons.

Table 2 EPA Method TO-15 Target Analytes		
Acetone	trans-1,2-Dichloroethene	2-Hexanone (MBK)
Acetonitrile	1,1-Dichloroethane	Isopropyl alcohol (2-propanol)
Acrylonitrile	1,2-Dichloroethane	4-Methyl-2-pentanone (MIBK)
Benzene	1,2-Dichloropropane	Methyl-tert-butyl ether (MTBE)
Benzyl chloride	cis-1,3-Dichloropropene	Methylene chloride
Bromodichloromethane	trans-1,3-Dichloropropene	Propylene
Bromoethane (ethyl bromide)	Dibromochloromethane	Styrene
Bromoethene (Vinyl bromide)	1,2-Dibromoethane	Tertiary butyl alcohol (TBA)
Bromoform	1,3-Dichlorobenzene	1,1,2,2-Tetrachloroethane
Bromomethane	1,4-Dichlorobenzene	Tetrachloroethene
1,3-Butadiene	1,2-Dichlorobenzene	Tetrahydrofuran
2-Butanone (MEK)	1,4-Dioxane	Toluene
Carbon disulfide	Ethanol	1,2,4-Trichlorobenzene
Carbon tetrachloride	Ethyl acetate	1,1,1-Trichloroethane (TCA)
Chlorobenzene	Ethylbenzene	1,1,2-Trichloroethane
Chloroethane	4-Ethyltoluene	Trichloroethene
Chloroform	Freon 11 (Trichlorofluoromethane)	1,3,5-Trimethylbenzene
Chloromethane	Freon 12 (Dichlorodifluoromethane)	1,2,4-Trimethylbenzene
3-Chloropropene (Allyl chloride)	Freon 113 (1,1,2-Trichlorotrifluoroethane)	2,2,4-Trimethylpentane (isooctane)
2-Chlorotoluene	Freon 114 (1,2-Dichlorotetrafluoroethane)	Xylene (meta & para)
Cyclohexane	n-Heptane	Xylene (ortho)
cis-1,2-Dichloroethene	Hexachloro-1,3-butadiene	Vinyl acetate
1,1-Dichloroethene	n-Hexane	Vinyl chloride

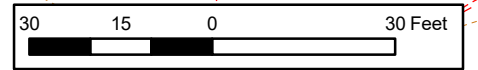
Table 3 below presents the soil gas sampling results expressed in parts per billion by volume (ppbv) and the corresponding EPA target shallow soil gas screening levels. Only compounds detected above the practical quantitation limit are shown. Twenty-three of the 69 target analytes were detected in the soil gas samples. Sub-slab soil gas samples from Building 30 showed several VOCs in concentrations varying from 0.014 ppbv to 5256 ppbv. Building 37 sub-slab soil gas samples revealed several VOCs in concentrations ranging from 0.02 ppb to 33 ppbv.



Legend

- Soil Gas Sample Location
- ⊕ Groundwater Monitoring Well
- Topographic Contour (1 Foot Interval)
- Approximate Boundary of Former Burn Pit
- Road
- Railroad
- Storm Sewer
- Fence
- Area of Maximum VOCs in Soil
- Area of Elevated VOCs in Soil
- Site 4 Boundary
- Property Boundary
- Water
- Trees
- Building

Note: Contours at Site 4 reflect original site gradient (before portions of the site were filled with pulverized bulding debris.)



DRAWN BY	DATE
J. FUNTANILLA	7/11/07
CHECKED BY	DATE
F. KOLBERG	7/11/07
COST/SCHED-AREA	
SCALE	
AS NOTED	



**SOIL GAS SAMPLING LOCATIONS
SITE 7 (FORMER BURN PIT)**

**U.S. COAST GUARD YARD
BALTIMORE, MARYLAND**

CONTRACT NO. DTCG83-02-D-3CL374	
PROJECT NO. 112G00757	
APPROVED BY	DATE
DRAWING NO. FIGURE 3 - 3	REV. 1

**Table 3
Sub-Slab Soil Gas Sampling Results
Site 7 Former Burn Pit
United States Coast Guard Yard
Baltimore, Maryland
August 31, 2011**

Chemical	Target Shallow Soil Gas Concentration ⁽¹⁾	SG7-1	DUP-02	SG7-2	SG7-3	SG7-4	SG7-5	SG7-6	SG7-7	SG7-8	DUP-01
2-Butanone (Methyl Ethyl Ketone)	3,400	ND	ND	0.47 J	0.29 J	0.4 J	0.23 J	0.28 J	0.28 J	1.0	0.93
4-Methyl-2-pentanone	200	ND	ND	ND	ND	0.064 J	0.058 J	ND	ND	0.69	0.73
Acetone	1,500	ND	ND	3 B	3.3 B	5.4 B	1.8 B	3.2 B	2.5 B	18	18
Benzene	0.98	ND	ND	0.061 B	0.065 B	0.053 B	0.089 J	0.077 J	0.098 J	0.64	0.64
Carbon Tetrachloride	0.26	ND	ND	0.081 J	0.094 J	0.057 J	0.065 J	0.057 J	0.08 J	0.078 J	0.079 J
Chloroform	0.22	3.7 B	4.5 B	0.06 B	0.078 B	0.05 B	0.27 B	0.82 J	0.28 B	0.25 B	0.27 B
Chloromethane	12	ND	ND	0.31	0.075 J	0.094 J	0.099 J	0.074 J	ND	0.73	0.71
cis-1,2-Dichloroethene	88	ND	ND	ND	ND	ND	0.035 J	0.095 J	ND	ND	ND
trans-1,2-Dichloroethene	180	ND	ND	ND	ND	ND	ND	0.026 J	ND	ND	ND
1,2-Dichloropropane	8.7	ND	ND	ND	ND	ND	0.03 J	ND	ND	ND	ND
Ethyl Benzene	5.1	ND	ND	ND	0.037 J	0.089 J	0.25	0.037 J	0.039 J	0.52	0.55
Freon 11	12,000	12 B	12 B	14	2	21	31	3.7 J	1.4	1.3	1.3
Freon 113	39,000	ND	ND	0.078 J	0.045 J	0.045 J	0.05 J	0.047 J	0.052 J	0.074 J	0.09 J
Freon 12	400	5256	4800	1.7	3.4	40	33	1.2 J	0.55	0.64	0.69
m,p-Xylene	16,000	ND	ND	0.09 J	0.098 J	0.34	0.53	0.073 J	0.12 J	1.5	1.6
Methyl tert-butyl ether	8,300	ND	ND	ND	ND	ND	ND	ND	ND	0.026 J	ND
Methylene Chloride	15	ND	ND	0.39 B	0.18 B	0.26 B	0.21 B	0.51 B	0.18 B	0.43 B	0.43 B
o-Xylene	16,000	ND	ND	0.042 J	0.041 J	0.21	0.24	0.027 J	0.061 J	0.52	0.5
Styrene	2,300	ND	ND	ND	ND	ND	ND	ND	0.036 J	0.059 J	0.055 J
1,1,2,2-Tetrachloroethane	610	ND	ND	0.004 B	ND	0.0028B	ND	0.004 B	0.062	ND	ND
Tetrachloroethene	1.2	42 B	42 B	1.2	0.45 B	1	0.33 B	0.5 B	0.39 B	0.058 B	0.61 B
Toluene	1,100	ND	ND	0.13 B	0.15 B	0.16 B	0.42	0.16 B	0.17 B	2.2	2.2
Trichloroethene	0.041	3.7 J	3.9 J	0.016 J	0.033	0.014 J	0.75	0.77 J	0.17	0.02 J	0.02 J

Notes:

All concentrations in ppbv. Highlighted values and compounds exceed the target shallow soil gas screening values.

1 - Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils. November 2002. EPA530-F-02-052. Values are from Table 2c and correspond to a target cancer risk level of 1E-6 or HI =1 and an attenuation factor of 0.1.

J - Estimated value.

B - Positive result is considered to be an artifact of blank contamination and should not be considered present.

ND - Not detected.

Comparison of the sub-slab soil gas data to the target shallow soil gas concentrations listed in Table 2C in the November 2002 *EPA Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils* document shows that most compounds were detected at concentrations below the respective EPA target shallow soil gas screening level. However, there are exceedances for trichloroethylene (TCE) and chloroform for Buildings 30 and 37. Soil gas concentrations that are highlighted in Table 3 exceed the target shallow soil gas screening level for the specific analyte. TCE was identified in Building 30 sub-slab soil gas at one location (Sample SG7-1 and corresponding duplicate sample DUP-02) at concentrations up to two orders of magnitude above the target soil gas screening level. TCE concentrations were one order of magnitude higher than the target soil gas screening level at three locations in Building 37 (SG7-5, 6, and 7). Chloroform was identified in only one sample location (SG7-6 in Building 37) at a concentration that is approximately four times higher than the respective target soil gas screening level. Data validation by the Tetra Tech Quality Assurance Officer showed that the chloroform detections in the other seven air samples were artifacts of laboratory blank contamination and were not considered positive findings. The full data validation report is provided in Attachment B.

A comparison of the August 2011 soil gas results with those obtained in the January 2008 soil gas survey for Buildings 30 and 37 reveals the following:

- Only two VOCs (TCE and chloroform) showed exceedances above the respective EPA target shallow soil gas screening level in August 2011 compared to four VOCs (TCE, tetrachloroethylene, chloroform and ethyl benzene) in January 2008. There are a total of six exceedances in 2011 and 13 exceedances in 2008. Thus, there are fewer VOCs detected and fewer exceedances in 2011 than in 2008.
- In August 2011, TCE exceedances were identified in one Building 30 location (SG7-1, maintenance garage) and three of four Building 37 locations, with TCE concentrations varying from 0.17 ppbv to 3.9 ppbv. TCE exceedances were identified at all four Building 37 locations in January 2008 at concentrations ranging from 0.14 ppbv to 2.8 ppbv; no TCE exceedances were identified in Building 30. Thus, TCE concentrations remained relatively consistent from 2008 to 2011; however, TCE has now been detected in the Building 30 sub-slab soil gas.
- In August 2011, sub-slab soil gas samples from below Building 30 showed several VOCs in concentrations varying from 0.014 ppbv to 5256 ppbv. Building 37 sub-slab soil gas samples revealed several VOCs in concentrations ranging from 0.02 ppb to 33 ppbv. The January 2008 soil gas study showed VOC concentrations below Building 30 varying from 0.016 ppbv to 120 ppbv. Building 37 sub-slab soil gas samples revealed VOCs in concentrations ranging from 0.026 ppb to 70 ppbv.
- TCE exceedances are up to two orders of magnitude higher than the shallow soil gas screening level in both the January 2008 and August 2011 data.

The sub-slab soil gas screening levels correspond to a target indoor residential cancer risk level of one cancer case per million persons (or $1E-6$) and assume that the building slab reduces the vapor concentrations that could potentially migrate into the buildings by $1/10^{\text{th}}$ (or 0.1 attenuation factor). The screening values are conservative and are based on a thirty (30)-year exposure duration. Tetra Tech understands that USCG Station Curtis Bay (SCB) employees serve up to 4 years maximum at the Yard and depending on their specific assignment may work various schedules. For the purposes of this report, we assume a weekly work schedule of two (2) twenty-four hour days on followed by two days off. This schedule likely results in the greatest number of hours at SCB. Thus, the potential exposure duration for the USCG SCB employees is very limited in comparison to the EPA assumptions, which directly corresponds to a significant reduction in the risk for adverse chronic health effects.



Mr. Robert DeMarco
U.S. Coast Guard Yard, Baltimore, MD
October 21, 2011 - Page 6

The EPA has just released an updated *Toxicological Review of Trichloroethylene* (September 2011) (<http://www.epa.gov/iris/supdocs/0199index.html>) which concludes that “TCE poses a potential human health hazard for noncancer toxicity to the CNS [central nervous system], kidney, liver, immune system, male reproductive system, and developing fetus” and that “TCE is characterized as carcinogenic to humans by all routes of exposure.”

Based on the above findings and EPA’s updated evaluation of TCE cancer and non-cancer risks, Tetra Tech recommends that additional site investigation should be performed to:

- Identify potential background and site operation VOC sources, in particular TCE;
- Verify the condition of potential pathways from the subsurface to the building interiors (e.g., sumps, pipes, conduits, drains, foundation/slab cracks, etc.);
- Review chemical inventories, product labels and material safety data sheets (MSDSs) to determine whether the chemical components include TCE; and
- Evaluate indoor air concentrations of TCE in Building 37 which has residential quarters and Building 30 where the highest TCE soil gas concentrations were detected.

It has been a pleasure to assist you with the subsurface investigation at Site 7. If you have further questions, please do not hesitate to contact the undersigned at 610-337-7660.

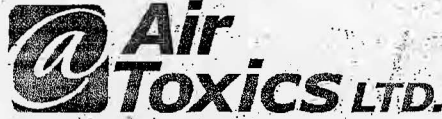
Sincerely,

Michelle F. Gillie, CIH, CPEA
Corporate Health & Safety Director/Senior Scientist

Attachments

Attachment A
Sub-Slab Soil Gas Sampling
Chain-of-Custody Forms and Analytical Laboratory Reports

Draft



CHAIN-OF-CUSTODY RECORD

Sample Transportation Notice

Relinquishing signature on this document indicates that sample is being shipped in compliance with all applicable local, State, Federal, national, and international laws, regulations and ordinances of any kind. Air Toxics Limited assumes no liability with respect to the collection, handling or shipping of these samples. Relinquishing signature also indicates agreement to hold harmless, defend, and indemnify Air Toxics Limited against any claim, demand, or action, of any kind, related to the collection, handling, or shipping of samples. D.O.T. Hotline (800) 467-4922

180 BLUE RAVINE ROAD, SUITE B
FOLSOM, CA 95630-4719
(916) 985-1000 FAX (916) 985-1020

Project Manager Mark Sladic

Collected by: (Print and Sign) Dawn Mackiewicz

Company Tetra Tech Email Mark.Sladic@TetraTech.com

Address 661 Anderson Dr City Pittsburgh State PA Zip 15220

Phone (412) 921-7134 Fax _____

Project Info:		Turn Around Time:	<input checked="" type="checkbox"/> Normal <input type="checkbox"/> Rush <small>specify</small>	<small>Initials/Date</small> Pressurized by: _____ Date: _____ Pressurization Gas: _____ Nitrogen: _____
P.O. # _____	Project # <u>112602841</u>			
Project Name <u>USCG Site 7</u>				

Lab ID	Field Sample I.D. (Location)	Can #	Date of Collection	Time of Collection	Analyses Requested	Canister Pressure/Vacuum			
						Initial	Final	Received	Final
<u>0248</u>	<u>SG7-6</u>	<u>94943</u>	<u>8/31/11</u>	<u>1011/1149</u>	<u>TO-15</u>	<u>-30</u>	<u>-1.5</u>		
<u>0249</u>	<u>SG7-5</u>	<u>3475</u>		<u>1017/1154</u>		<u>-30</u>	<u>-1.0</u>		
<u>0249</u>	<u>SG7-8</u>	<u>12940</u>		<u>1031/1156</u>		<u>-29.5</u>	<u>0.0</u>		
<u>0249</u>	<u>SG7-7</u>	<u>5716</u>		<u>1100/1203</u>		<u>-30</u>	<u>-1.0</u>		
<u>0249</u>	<u>SG7-2</u>	<u>35166</u>		<u>1108/1208</u>		<u>-30</u>	<u>-2.0</u>		
<u>0249</u>	<u>SG7-4</u>	<u>33916</u>		<u>1114/1214</u>		<u>-30</u>	<u>-3.5</u>		
<u>0249</u>	<u>SG7-1</u>	<u>34754</u>		<u>1127/1215</u>		<u>-30</u>	<u>-2.5</u>		
<u>0249</u>	<u>SG7-3</u>	<u>34223</u>		<u>1146/1227</u>		<u>-30</u>	<u>-4.5</u>		
<u>0249</u>	<u>DUP-01</u>	<u>13843</u>				<u>-30</u>	<u>0.0</u>		
<u>0249</u>	<u>DUP-02 (ms/msd)</u>	<u>424</u>	<u>↓</u>		<u>↓</u>	<u>-30</u>	<u>-2.5</u>		

Relinquished by: (signature) <u>Dawn Mackiewicz</u> Date/Time <u>8/31/11 @ 1730</u>	Received by: (signature) <u>Mark Sladic</u> Date/Time <u>9.1.11 09:50</u>	Notes:
Relinquished by: (signature) _____ Date/Time _____	Received by: (signature) _____ Date/Time _____	
Relinquished by: (signature) _____ Date/Time _____	Received by: (signature) _____ Date/Time _____	

Shipper Name: <u>Tetra Tech</u>	Temp (C): <u>NA</u>	Condition: <u>Good</u>	Work Order: <u>1109024</u>
Use Only		Yes No <u>None</u>	

@ Air TOXICS LTD.
CHAIN-OF-CUSTODY RECORD

Sample Transportation Notice

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(916) 985-1000 FAX (916) 985-1020

Project Manager Mark Sladic
Collected by: (Print and Sign) Dawn Markiewicz Dawn Markiewicz
Company Tetra Tech Email _____
Address 661 Anderson Dr City Pittsburgh State PA Zip 15220
Phone (412) 921-7134 Fax _____

Project Info: P.O. # _____ Project # <u>112602841</u> Project Name <u>USCG Site 7</u>	Turn Around Time: <input checked="" type="checkbox"/> Normal <input type="checkbox"/> Rush specify _____	Lab Use Only: Pressurized by: _____ Date: _____ Pressurization Gas: <u>N₂</u> He _____
---	--	---

Lab I.D.	Field Sample I.D. (Location)	Can #	Date of Collection	Time of Collection	Analyses Requested	Canister Pressure/Vacuum			
						Initial	Final	Receipt	Final (psf)
<u>11AB</u>	<u>Trp Blank</u>	<u>34466</u>	<u>—</u>	<u>—</u>	<u>TO-15</u>	<u>—</u>	<u>—</u>		

Relinquished by: (signature) <u>Dawn Markiewicz</u> Date/Time _____	Received by: (signature) <u>Jan</u> Date/Time <u>APR 9 11 0900</u>	Notes:
Relinquished by: (signature) _____ Date/Time _____	Received by: (signature) _____ Date/Time _____	
Relinquished by: (signature) _____ Date/Time _____	Received by: (signature) _____ Date/Time _____	

Lab Use Only	Shipper Name	Air Bill #	Temp: (°C)	Condition	Custody Seals Intact?	Work Order #
	<u>Tetra Tech</u>		<u>NT</u>	<u>Good</u>	Yes No <u>None</u>	<u>112602841</u>

9/26/2011

Ms. Michelle Gillie
Tetra Tech EC, Inc.
234 Mall Boulevard
Suite 260
King of Prussia PA 19406

Project Name: USCG Site 7
Project #: 112G02841
Workorder #: 1109024

Dear Ms. Michelle Gillie

The following report includes the data for the above referenced project for sample(s) received on 9/1/2011 at Air Toxics Ltd.

The data and associated QC analyzed by Modified TO-15 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Air Toxics Ltd. for your air analysis needs. Air Toxics Ltd. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Ausha Scott at 916-985-1000 if you have any questions regarding the data in this report.

Regards,



Ausha Scott
Project Manager

WORK ORDER #: 1109024

Work Order Summary

CLIENT:	Ms. Michelle Gillie Tetra Tech 234 Mall Boulevard Suite 260 King of Prussia, PA 19406	BILL TO:	Accounts Payable/Pittsburg Tetra Tech EC, Inc. Foster Plaza 7 661 Anderson Drive Pittsburgh, PA 15220-2745
PHONE:	(610) 491-9688	P.O. #	1076172
FAX:	(610) 491-9645	PROJECT #	112G02841 USCG Site 7
DATE RECEIVED:	09/01/2011	CONTACT:	Ausha Scott
DATE COMPLETED:	09/15/2011		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	SG7-6	Modified TO-15	0.4 psi	5 psi
01B	SG7-6	Modified TO-15	0.4psi	5 psi
02A	SG7-5	Modified TO-15	0.6psi	5 psi
02AA	SG7-5 Lab Duplicate	Modified TO-15	0.6psi	5 psi
02B	SG7-5	Modified TO-15	0.6psi	5 psi
02BB	SG7-5 Lab Duplicate	Modified TO-15	0.6psi	5 psi
03A	SG7-8	Modified TO-15	0.6psi	5 psi
03B	SG7-8	Modified TO-15	0.6psi	5 psi
04A	SG7-7	Modified TO-15	0.4psi	5 psi
04B	SG7-7	Modified TO-15	0.4psi	5 psi
05A	SG7-2	Modified TO-15	0.4 "Hg	5 psi
05B	SG7-2	Modified TO-15	0.4 "Hg	5 psi
06A	SG7-4	Modified TO-15	0.6 "Hg	5 psi
06B	SG7-4	Modified TO-15	0.6 "Hg	5 psi
07A	SG7-1	Modified TO-15	2.0 "Hg	5 psi
08A	SG7-3	Modified TO-15	3.0 "Hg	5 psi
08AA	SG7-3 Lab Duplicate	Modified TO-15	3.0 "Hg	5 psi

Continued on next page

WORK ORDER #: 1109024

Work Order Summary

CLIENT:	Ms. Michelle Gillie Tetra Tech 234 Mall Boulevard Suite 260 King of Prussia, PA 19406	BILL TO:	Accounts Payable/Pittsburg Tetra Tech EC, Inc. Foster Plaza 7 661 Anderson Drive Pittsburgh, PA 15220-2745
PHONE:	(610) 491-9688	P.O. #	1076172
FAX:	(610) 491-9645	PROJECT #	112G02841 USCG Site 7
DATE RECEIVED:	09/01/2011	CONTACT:	Ausha Scott
DATE COMPLETED:	09/15/2011		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
08B	SG7-3	Modified TO-15	3.0 "Hg	5 psi
08BB	SG7-3 Lab Duplicate	Modified TO-15	3.0 "Hg	5 psi
09A	DUP-01	Modified TO-15	0.6psi	5 psi
09B	DUP-01	Modified TO-15	0.6psi	5 psi
10A	DUP-02 (MS/MSD)	Modified TO-15	1.6 "Hg	5 psi
10AA	DUP-02 (MS/MSD) Lab Duplicate	Modified TO-15	1.6 "Hg	5 psi
11A	Trip Blank	Modified TO-15	28.8 "Hg	5 psi
11B	Trip Blank	Modified TO-15	28.8 "Hg	5 psi
12A	Lab Blank	Modified TO-15	NA	NA
12B	Lab Blank	Modified TO-15	NA	NA
12C	Lab Blank	Modified TO-15	NA	NA
12D	Lab Blank	Modified TO-15	NA	NA
12E	Lab Blank	Modified TO-15	NA	NA
13A	CCV	Modified TO-15	NA	NA
13B	CCV	Modified TO-15	NA	NA
13C	CCV	Modified TO-15	NA	NA
13D	CCV	Modified TO-15	NA	NA
13E	CCV	Modified TO-15	NA	NA
14A	LCS	Modified TO-15	NA	NA
14AA	LCSD	Modified TO-15	NA	NA


Continued on next page

WORK ORDER #: 1109024

Work Order Summary

CLIENT:	Ms. Michelle Gillie Tetra Tech 234 Mall Boulevard Suite 260 King of Prussia, PA 19406	BILL TO:	Accounts Payable/Pittsburg Tetra Tech EC, Inc. Foster Plaza 7 661 Anderson Drive Pittsburgh, PA 15220-2745
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DATE COMPLETED:	09/15/2011		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
14B	LCS	Modified TO-15	NA	NA
14BB	LCSD	Modified TO-15	NA	NA
14C	LCS	Modified TO-15	NA	NA
14CC	LCSD	Modified TO-15	NA	NA
14D	LCS	Modified TO-15	NA	NA
14DD	LCSD	Modified TO-15	NA	NA
14E	LCS	Modified TO-15	NA	NA
14EE	LCSD	Modified TO-15	NA	NA

CERTIFIED BY: 
Laboratory Director

DATE: 09/15/11

Certification numbers: AZ Licensure AZ0719, CA NELAP - 02110CA, LA NELAP - 02089,
NY NELAP - 11291, TX NELAP - T104704434-11-3, UT NELAP -CA009332011-1, WA NELAP - C935
Name of Accrediting Agency: NELAP/Florida Department of Health, Scope of Application: Clean Air Act,
Accreditation number: E87680, Effective date: 07/01/11 , Expiration date: 06/30/12.

Air Toxics Ltd. certifies that the test results contained in this report meet all requirements of the NELAC standards
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(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

**LABORATORY NARRATIVE
Modified TO-15 Full Scan/SIM
Tetra Tech EC, Inc.
Workorder# 1109024**

Eleven 6 Liter Summa Canister (SIM Certified) samples were received on September 01, 2011. The laboratory performed analysis via modified EPA Method TO-15 using GC/MS in the Full Scan and SIM acquisition modes. The method involves concentrating up to 1.0 liters of air. The concentrated aliquot is then flash vaporized and swept through a water management system to remove water vapor. Following dehumidification, the sample passes directly into the GC/MS for analysis.

This workorder was independently validated prior to submittal using 'USEPA National Functional Guidelines' as generally applied to the analysis of volatile organic compounds in air. A rules-based, logic driven, independent validation engine was employed to assess completeness, evaluate pass/fail of relevant project quality control requirements and verification of all quantified amounts.

Method modifications taken to run these samples are summarized in the table below. Specific project requirements may over-ride the ATL modifications.

<i>Requirement</i>	<i>TO-15</i>	<i>ATL Modifications</i>
ICAL %RSD acceptance criteria	$\leq 30\%$ RSD with 2 compounds allowed out to <math>< 40\%</math> RSD	For Full Scan: 30% RSD with 4 compounds allowed out to <math>< 40\%</math> RSD For SIM: Project specific; default criteria is $\leq 30\%$ RSD with 10% of compounds allowed out to <math>< 40\%</math> RSD
Daily Calibration	+/- 30% Difference	For Full Scan: $\leq 30\%$ Difference with four allowed out up to $\leq 40\%$.; flag and narrate outliers For SIM: Project specific; default criteria is $\leq 30\%$ Difference with 10% of compounds allowed out up to $\leq 40\%$.; flag and narrate outliers
Blank and standards	Zero air	Nitrogen
Method Detection Limit	Follow 40CFR Pt.136 App. B	The MDL met all relevant requirements in Method TO-15 (statistical MDL less than the LOQ). The concentration of the spiked replicate may have exceeded 10X the calculated MDL in some cases

Receiving Notes

Despite the use of flow controllers for sample collection, the final canister vacuums for samples SG7-6, SG7-5, SG7-8, SG7-7, SG7-2 and DUP-01 were measured at ambient pressure in the field. These ambient pressure readings were confirmed by the laboratory upon sample receipt.

Analytical Notes

The results for samples SG7-6, SG7-5, SG7-5 Lab Duplicate, SG7-8, SG7-7, SG7-2, SG7-4, SG7-3, SG7-3 Lab Duplicate, DUP-01 and Trip Blank in this report were acquired from two separate data

files originating from the same analytical run. The two data files have the same base file name and are differentiated with a "sim" extension on the SIM data file.

As per project specific client request the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit. All The canisters used for this project have been certified to the Reporting Limit for the target analytes included in this workorder. Concentrations that are below the level at which the canister was certified may be false positives.

Samples SG7-1, DUP-02 (MS/MSD) and DUP-02 (MS/MSD) Lab Duplicate were transferred from SIM/Low Level analysis to full scan TO-15 due to high levels of target compounds.

Dilution was performed on samples SG7-1, DUP-02 (MS/MSD) and DUP-02 (MS/MSD) Lab Duplicate due to the presence of high level target species.

The Laboratory Control Spike Duplicate (LCSD) analyzed on September 08, 2011 did not meet in-house generated control limits for Freon 113 and 1,1-Dichloroethene.

Freon 12 exceeded the calibration range for sample DUP-02 (MS/MSD) Lab Duplicate.

Surrogate 4-Bromofluorobenzene did not meet in-house generated control limits in sample SG7-6 (01A/01B).

The %RSD for 1,1-Dichloroethene was outside the allowed limits for the initial calibration.

1,1,2,2-Tetrachloroethane and Bromomethane were manually integrated in the initial calibration.

Definition of Data Qualifying Flags

Eight qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit.

UJ- Non-detected compound associated with low bias in the CCV and/or LCS.

N - The identification is based on presumptive evidence.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	SG7-6	Date/Time Analyzed:	9/2/11 06:09 PM
Lab ID:	1109024-01A	Dilution Factor:	1.30
Date/Time Collecte	8/31/11 11:49 AM	Instrument/File name:	msda.i / a090216
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,1-Trichloroethane	71-55-6	0.15	0.35	0.71	0.18 J
1,1,2-Trichloroethane	79-00-5	0.13	0.35	0.71	Not Detected U
1,1-Dichloroethane	75-34-3	0.053	0.26	0.53	Not Detected U
1,1-Dichloroethene	75-35-4	0.085	0.26	0.52	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	0.93	1.2	4.8	Not Detected U
1,2-Dibromoethane (EDB)	106-93-4	0.085	0.50	1.0	Not Detected U
1,2-Dichlorobenzene	95-50-1	0.24	0.39	0.78	Not Detected U
1,2-Dichloroethane	107-06-2	0.075	0.26	0.53	Not Detected U
1,2-Dichloropropane	78-87-5	0.11	0.30	0.60	Not Detected U
1,3-Dichlorobenzene	541-73-1	0.22	0.39	0.78	Not Detected U
1,4-Dichlorobenzene	106-46-7	0.30	0.39	0.78	0.44 J
2-Butanone (Methyl Ethyl Ketone)	78-93-3	0.097	0.19	1.9	0.82 J
4-Methyl-2-pentanone	108-10-1	0.21	0.27	0.53	Not Detected U
Acetone	67-64-1	0.21	0.37	1.5	7.6
Benzene	71-43-2	0.034	0.21	0.42	0.24 J
Bromodichloromethane	75-27-4	0.12	0.44	0.87	Not Detected U
Bromoform	75-25-2	0.15	0.67	1.3	Not Detected U
Bromomethane	74-83-9	0.12	0.40	0.50	Not Detected U
Carbon Disulfide	75-15-0	0.14	0.20	2.0	Not Detected U
Carbon Tetrachloride	56-23-5	0.14	0.41	0.82	0.36 J
Chlorobenzene	108-90-7	0.049	0.30	0.60	Not Detected U
Chloroethane	75-00-3	0.085	0.17	1.7	Not Detected U



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:		SG7-6		Date/Time Analyzed:		9/2/11 06:09 PM	
Lab ID:		1109024-01A		Dilution Factor:		1.30	
Date/Time Collecte		8/31/11 11:49 AM		Instrument/Filename:		msda.i / a090216	
Media:		6 Liter Summa Canister (SIM Certified)					
Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)		
Chloroform	67-66-3	0.10	0.32	0.63	4.0		
Chloromethane	74-87-3	0.080	0.21	0.27	0.15 J		
cis-1,2-Dichloroethene	156-59-2	0.13	0.26	0.52	0.38 J		
cis-1,3-Dichloropropene	10061-01-5	0.057	0.29	0.59	Not Detected U		
Dibromochloromethane	124-48-1	0.070	0.55	1.1	Not Detected U		
Ethyl Benzene	100-41-4	0.14	0.28	0.56	0.16 J		
Freon 11	75-69-4	0.068	0.36	0.73	20		
Freon 113	76-13-1	0.13	0.50	1.0	0.36 J		
Freon 12	75-71-8	0.074	0.33	0.64	6.2		
m,p-Xylene	108-38-3	0.11	0.28	0.56	0.32 J		
Methyl tert-butyl ether	1634-04-4	0.043	0.23	0.47	Not Detected U		
Methylene Chloride	75-09-2	0.088	0.22	0.90	1.8		
o-Xylene	95-47-6	0.090	0.28	0.56	0.12 J		
Styrene	100-42-5	0.12	0.28	0.55	Not Detected U		
Tetrachloroethene	127-18-4	0.16	0.44	0.88	3.4		
Toluene	108-88-3	0.082	0.24	0.49	0.59		
trans-1,2-Dichloroethene	156-60-5	0.055	0.26	0.52	0.10 J		
trans-1,3-Dichloropropene	10061-02-6	0.13	0.29	0.59	Not Detected U		
Vinyl Chloride	75-01-4	0.022	0.17	0.33	Not Detected U		



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	SG7-6	Date/Time Analyzed:	9/2/11 06:09 PM
Lab ID:	1109024-01A	Dilution Factor:	1.30
Date/Time Collecte	8/31/11 11:49 AM	Instrument/Filename:	msda.i / a090216
Media:	6 Liter Summa Canister (SIM Certified)		

J = Estimated value.

U = The analyte was analyzed for, but not detected. The associated numerical value is at or below the MDL.

Q = Exceeds Quality Control limits.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	68-134	101
4-Bromofluorobenzene	460-00-4	83-115	73 Q
Toluene-d8	2037-26-5	89-109	94



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	SG7-6	Date/Time Analyzed:	9/2/11 06:09 PM
Lab ID:	1109024-01B	Dilution Factor:	1.30
Date/Time Collecte	8/31/11 11:49 AM	Instrument/Filename:	msda.i / a090216sim
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,2,2-Tetrachloroethane	79-34-5	0.012	0.036	0.18	0.028 J
Trichloroethene	79-01-6	0.0047	0.028	0.14	4.2

J = Estimated value.

Q = Exceeds Quality Control limits.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	78-132	103
4-Bromofluorobenzene	460-00-4	85-114	74 Q
Toluene-d8	2037-26-5	92-107	95



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	SG7-5	Date/Time Analyzed:	9/2/11 06:45 PM
Lab ID:	1109024-02A	Dilution Factor:	1.29
Date/Time Collecte	8/31/11 11:54 AM	Instrument/Filename:	msda.i / a090217
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,1-Trichloroethane	71-55-6	0.15	0.35	0.70	0.50 J
1,1,2-Trichloroethane	79-00-5	0.13	0.35	0.70	Not Detected U
1,1-Dichloroethane	75-34-3	0.052	0.26	0.52	0.053 J
1,1-Dichloroethene	75-35-4	0.085	0.26	0.51	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	0.92	1.1	4.8	Not Detected U
1,2-Dibromoethane (EDB)	106-93-4	0.085	0.50	0.99	Not Detected U
1,2-Dichlorobenzene	95-50-1	0.24	0.39	0.78	Not Detected U
1,2-Dichloroethane	107-06-2	0.074	0.26	0.52	Not Detected U
1,2-Dichloropropane	78-87-5	0.11	0.30	0.60	0.14 J
1,3-Dichlorobenzene	541-73-1	0.22	0.39	0.78	Not Detected U
1,4-Dichlorobenzene	106-46-7	0.30	0.39	0.78	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	0.096	0.19	1.9	0.68 J
4-Methyl-2-pentanone	108-10-1	0.20	0.26	0.53	0.24 J
Acetone	67-64-1	0.21	0.37	1.5	4.2
Benzene	71-43-2	0.034	0.21	0.41	0.28 J
Bromodichloromethane	75-27-4	0.12	0.43	0.86	Not Detected U
Bromoform	75-25-2	0.15	0.67	1.3	Not Detected U
Bromomethane	74-83-9	0.12	0.40	0.50	Not Detected U
Carbon Disulfide	75-15-0	0.14	0.20	2.0	Not Detected U
Carbon Tetrachloride	56-23-5	0.14	0.40	0.81	0.41 J
Chlorobenzene	108-90-7	0.049	0.30	0.59	Not Detected U
Chloroethane	75-00-3	0.084	0.17	1.7	Not Detected U



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Chloroform	67-66-3	0.099	0.32	0.63	1.3
Chloromethane	74-87-3	0.080	0.21	0.27	0.20 J
cis-1,2-Dichloroethene	156-59-2	0.13	0.26	0.51	0.14 J
cis-1,3-Dichloropropene	10061-01-5	0.057	0.29	0.58	Not Detected U
Dibromochloromethane	124-48-1	0.069	0.55	1.1	Not Detected U
Ethyl Benzene	100-41-4	0.14	0.28	0.56	1.1
Freon 11	75-69-4	0.068	0.36	0.72	180
Freon 113	76-13-1	0.13	0.49	0.99	0.38 J
Freon 12	75-71-8	0.073	0.33	0.64	160
m,p-Xylene	108-38-3	0.11	0.28	0.56	2.3
Methyl tert-butyl ether	1634-04-4	0.042	0.23	0.46	Not Detected U
Methylene Chloride	75-09-2	0.087	0.22	0.90	0.72 J
o-Xylene	95-47-6	0.090	0.28	0.56	1.0
Styrene	100-42-5	0.12	0.27	0.55	Not Detected U
Tetrachloroethene	127-18-4	0.16	0.44	0.88	2.3
Toluene	108-88-3	0.082	0.24	0.49	1.6
trans-1,2-Dichloroethene	156-60-5	0.054	0.26	0.51	Not Detected U
trans-1,3-Dichloropropene	10061-02-6	0.13	0.29	0.58	Not Detected U
Vinyl Chloride	75-01-4	0.022	0.16	0.33	Not Detected U

J = Estimated value.

U = The analyte was analyzed for, but not detected. The associated numerical value is at or below the MDL.



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	SG7-5	Date/Time Analyzed:	9/2/11 06:45 PM
Lab ID:	1109024-02A	Dilution Factor:	1.29
Date/Time Collecte	8/31/11 11:54 AM	Instrument/Filename:	msda.i / a090217
Media:	6 Liter Summa Canister (SIM Certified)		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	68-134	112
4-Bromofluorobenzene	460-00-4	83-115	101
Toluene-d8	2037-26-5	89-109	98



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	SG7-5 Lab Duplicate	Date/Time Analyzed:	9/2/11 07:57 PM
Lab ID:	1109024-02AA	Dilution Factor:	1.29
Date/Time Collecte	8/31/11 11:54 AM	Instrument/Filename:	msda.i / a090219
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,1-Trichloroethane	71-55-6	0.15	0.35	0.70	0.46 J
1,1,2-Trichloroethane	79-00-5	0.13	0.35	0.70	Not Detected U
1,1-Dichloroethane	75-34-3	0.052	0.26	0.52	0.097 J
1,1-Dichloroethene	75-35-4	0.085	0.26	0.51	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	0.92	1.1	4.8	Not Detected U
1,2-Dibromoethane (EDB)	106-93-4	0.085	0.50	0.99	Not Detected U
1,2-Dichlorobenzene	95-50-1	0.24	0.39	0.78	Not Detected U
1,2-Dichloroethane	107-06-2	0.074	0.26	0.52	Not Detected U
1,2-Dichloropropane	78-87-5	0.11	0.30	0.60	0.15 J
1,3-Dichlorobenzene	541-73-1	0.22	0.39	0.78	Not Detected U
1,4-Dichlorobenzene	106-46-7	0.30	0.39	0.78	0.51 J
2-Butanone (Methyl Ethyl Ketone)	78-93-3	0.096	0.19	1.9	0.71 J
4-Methyl-2-pentanone	108-10-1	0.20	0.26	0.53	0.24 J
Acetone	67-64-1	0.21	0.37	1.5	4.2
Benzene	71-43-2	0.034	0.21	0.41	0.32 J
Bromodichloromethane	75-27-4	0.12	0.43	0.86	Not Detected U
Bromoform	75-25-2	0.15	0.67	1.3	Not Detected U
Bromomethane	74-83-9	0.12	0.40	0.50	Not Detected U
Carbon Disulfide	75-15-0	0.14	0.20	2.0	Not Detected U
Carbon Tetrachloride	56-23-5	0.14	0.40	0.81	0.45 J
Chlorobenzene	108-90-7	0.049	0.30	0.59	Not Detected U
Chloroethane	75-00-3	0.084	0.17	1.7	Not Detected U



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	SG7-5 Lab Duplicate	Date/Time Analyzed:	9/2/11 07:57 PM
Lab ID:	1109024-02AA	Dilution Factor:	1.29
Date/Time Collecte	8/31/11 11:54 AM	Instrument/Filename:	msda.i / a090219
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Chloroform	67-66-3	0.099	0.32	0.63	1.3
Chloromethane	74-87-3	0.080	0.21	0.27	0.19 J
cis-1,2-Dichloroethene	156-59-2	0.13	0.26	0.51	0.13 J
cis-1,3-Dichloropropene	10061-01-5	0.057	0.29	0.58	Not Detected U
Dibromochloromethane	124-48-1	0.069	0.55	1.1	Not Detected U
Ethyl Benzene	100-41-4	0.14	0.28	0.56	0.98
Freon 11	75-69-4	0.068	0.36	0.72	170
Freon 113	76-13-1	0.13	0.49	0.99	0.41 J
Freon 12	75-71-8	0.073	0.33	0.64	160
m,p-Xylene	108-38-3	0.11	0.28	0.56	2.3
Methyl tert-butyl ether	1634-04-4	0.042	0.23	0.46	Not Detected U
Methylene Chloride	75-09-2	0.087	0.22	0.90	0.66 J
o-Xylene	95-47-6	0.090	0.28	0.56	0.99
Styrene	100-42-5	0.12	0.27	0.55	0.14 J
Tetrachloroethene	127-18-4	0.16	0.44	0.88	2.3
Toluene	108-88-3	0.082	0.24	0.49	1.6
trans-1,2-Dichloroethene	156-60-5	0.054	0.26	0.51	Not Detected U
trans-1,3-Dichloropropene	10061-02-6	0.13	0.29	0.58	Not Detected U
Vinyl Chloride	75-01-4	0.022	0.16	0.33	Not Detected U

J = Estimated value.

U = The analyte was analyzed for, but not detected. The associated numerical value is at or below the MDL.



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	SG7-5 Lab Duplicate	Date/Time Analyzed:	9/2/11 07:57 PM
Lab ID:	1109024-02AA	Dilution Factor:	1.29
Date/Time Collecte	8/31/11 11:54 AM	Instrument/Filename:	msda.i / a090219
Media:	6 Liter Summa Canister (SIM Certified)		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	68-134	112
4-Bromofluorobenzene	460-00-4	83-115	104
Toluene-d8	2037-26-5	89-109	98



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	SG7-5	Date/Time Analyzed:	9/2/11 06:45 PM
Lab ID:	1109024-02B	Dilution Factor:	1.29
Date/Time Collecte	8/31/11 11:54 AM	Instrument/Filename:	msda.i / a090217sim
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,2,2-Tetrachloroethane	79-34-5	0.012	0.035	0.18	Not Detected U
Trichloroethene	79-01-6	0.0046	0.028	0.14	4.0

U = The analyte was analyzed for, but not detected. The associated numerical value is at or below the MDL.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	78-132	112
4-Bromofluorobenzene	460-00-4	85-114	100
Toluene-d8	2037-26-5	92-107	98



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	SG7-5 Lab Duplicate	Date/Time Analyzed:	9/2/11 07:57 PM
Lab ID:	1109024-02BB	Dilution Factor:	1.29
Date/Time Collecte	8/31/11 11:54 AM	Instrument/Filename:	msda.i / a090219sim
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,2,2-Tetrachloroethane	79-34-5	0.012	0.035	0.18	Not Detected U
Trichloroethene	79-01-6	0.0046	0.028	0.14	4.0

U = The analyte was analyzed for, but not detected. The associated numerical value is at or below the MDL.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	78-132	111
4-Bromofluorobenzene	460-00-4	85-114	102
Toluene-d8	2037-26-5	92-107	98



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	SG7-8	Date/Time Analyzed:	9/2/11 10:36 PM
Lab ID:	1109024-03A	Dilution Factor:	1.29
Date/Time Collecte	8/31/11 11:56 AM	Instrument/Filename:	msda.i / a090223
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,1-Trichloroethane	71-55-6	0.15	0.35	0.70	Not Detected U
1,1,2-Trichloroethane	79-00-5	0.13	0.35	0.70	Not Detected U
1,1-Dichloroethane	75-34-3	0.052	0.26	0.52	Not Detected U
1,1-Dichloroethene	75-35-4	0.085	0.26	0.51	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	0.92	1.1	4.8	Not Detected U
1,2-Dibromoethane (EDB)	106-93-4	0.085	0.50	0.99	Not Detected U
1,2-Dichlorobenzene	95-50-1	0.24	0.39	0.78	Not Detected U
1,2-Dichloroethane	107-06-2	0.074	0.26	0.52	0.082 J
1,2-Dichloropropane	78-87-5	0.11	0.30	0.60	Not Detected U
1,3-Dichlorobenzene	541-73-1	0.22	0.39	0.78	Not Detected U
1,4-Dichlorobenzene	106-46-7	0.30	0.39	0.78	0.35 J
2-Butanone (Methyl Ethyl Ketone)	78-93-3	0.096	0.19	1.9	3.0
4-Methyl-2-pentanone	108-10-1	0.20	0.26	0.53	2.8
Acetone	67-64-1	0.21	0.37	1.5	42
Benzene	71-43-2	0.034	0.21	0.41	2.0
Bromodichloromethane	75-27-4	0.12	0.43	0.86	0.27 J
Bromoform	75-25-2	0.15	0.67	1.3	Not Detected U
Bromomethane	74-83-9	0.12	0.40	0.50	Not Detected U
Carbon Disulfide	75-15-0	0.14	0.20	2.0	0.32 J
Carbon Tetrachloride	56-23-5	0.14	0.40	0.81	0.49 J
Chlorobenzene	108-90-7	0.049	0.30	0.59	Not Detected U
Chloroethane	75-00-3	0.084	0.17	1.7	Not Detected U



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Chloroform	67-66-3	0.099	0.32	0.63	1.2
Chloromethane	74-87-3	0.080	0.21	0.27	1.5
cis-1,2-Dichloroethene	156-59-2	0.13	0.26	0.51	Not Detected U
cis-1,3-Dichloropropene	10061-01-5	0.057	0.29	0.58	Not Detected U
Dibromochloromethane	124-48-1	0.069	0.55	1.1	Not Detected U
Ethyl Benzene	100-41-4	0.14	0.28	0.56	2.3
Freon 11	75-69-4	0.068	0.36	0.72	7.2
Freon 113	76-13-1	0.13	0.49	0.99	0.56 J
Freon 12	75-71-8	0.073	0.33	0.64	3.1
m,p-Xylene	108-38-3	0.11	0.28	0.56	6.5
Methyl tert-butyl ether	1634-04-4	0.042	0.23	0.46	0.094 J
Methylene Chloride	75-09-2	0.087	0.22	0.90	1.5
o-Xylene	95-47-6	0.090	0.28	0.56	2.2
Styrene	100-42-5	0.12	0.27	0.55	0.25 J
Tetrachloroethene	127-18-4	0.16	0.44	0.88	0.39 J
Toluene	108-88-3	0.082	0.24	0.49	8.2
trans-1,2-Dichloroethene	156-60-5	0.054	0.26	0.51	Not Detected U
trans-1,3-Dichloropropene	10061-02-6	0.13	0.29	0.58	Not Detected U
Vinyl Chloride	75-01-4	0.022	0.16	0.33	Not Detected U

U = The analyte was analyzed for, but not detected. The associated numerical value is at or below the MDL.
J = Estimated value.



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	SG7-8	Date/Time Analyzed:	9/2/11 10:36 PM
Lab ID:	1109024-03A	Dilution Factor:	1.29
Date/Time Collecte	8/31/11 11:56 AM	Instrument/Filename:	msda.i / a090223
Media:	6 Liter Summa Canister (SIM Certified)		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	68-134	100
4-Bromofluorobenzene	460-00-4	83-115	102
Toluene-d8	2037-26-5	89-109	101



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	SG7-8	Date/Time Analyzed:	9/2/11 10:36 PM
Lab ID:	1109024-03B	Dilution Factor:	1.29
Date/Time Collecte	8/31/11 11:56 AM	Instrument/Filename:	msda.i / a090223sim
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,2,2-Tetrachloroethane	79-34-5	0.012	0.035	0.18	Not Detected U
Trichloroethene	79-01-6	0.0046	0.028	0.14	0.11 J

J = Estimated value.

U = The analyte was analyzed for, but not detected. The associated numerical value is at or below the MDL.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	78-132	100
4-Bromofluorobenzene	460-00-4	85-114	100
Toluene-d8	2037-26-5	92-107	102



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	SG7-7	Date/Time Analyzed:	9/8/11 12:33 PM
Lab ID:	1109024-04A	Dilution Factor:	1.30
Date/Time Collecte	8/31/11 12:03 PM	Instrument/File name:	msda.i / a090807
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,1-Trichloroethane	71-55-6	0.15	0.35	0.71	0.46 J
1,1,2-Trichloroethane	79-00-5	0.13	0.35	0.71	Not Detected U
1,1-Dichloroethane	75-34-3	0.053	0.26	0.53	0.057 J
1,1-Dichloroethene	75-35-4	0.085	0.26	0.52	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	0.93	1.2	4.8	Not Detected U
1,2-Dibromoethane (EDB)	106-93-4	0.085	0.50	1.0	Not Detected U
1,2-Dichlorobenzene	95-50-1	0.24	0.39	0.78	Not Detected U
1,2-Dichloroethane	107-06-2	0.075	0.26	0.53	0.061 J
1,2-Dichloropropane	78-87-5	0.11	0.30	0.60	Not Detected U
1,3-Dichlorobenzene	541-73-1	0.22	0.39	0.78	Not Detected U
1,4-Dichlorobenzene	106-46-7	0.30	0.39	0.78	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	0.097	0.19	1.9	0.81 J
4-Methyl-2-pentanone	108-10-1	0.21	0.27	0.53	Not Detected U
Acetone	67-64-1	0.21	0.37	1.5	6.0
Benzene	71-43-2	0.034	0.21	0.42	0.31 J
Bromodichloromethane	75-27-4	0.12	0.44	0.87	0.15 J
Bromoform	75-25-2	0.15	0.67	1.3	Not Detected U
Bromomethane	74-83-9	0.12	0.40	0.50	Not Detected U
Carbon Disulfide	75-15-0	0.14	0.20	2.0	Not Detected U
Carbon Tetrachloride	56-23-5	0.14	0.41	0.82	0.50 J
Chlorobenzene	108-90-7	0.049	0.30	0.60	0.057 J
Chloroethane	75-00-3	0.085	0.17	1.7	Not Detected U



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Chloroform	67-66-3	0.10	0.32	0.63	1.4
Chloromethane	74-87-3	0.080	0.21	0.27	Not Detected U
cis-1,2-Dichloroethene	156-59-2	0.13	0.26	0.52	Not Detected U
cis-1,3-Dichloropropene	10061-01-5	0.057	0.29	0.59	Not Detected U
Dibromochloromethane	124-48-1	0.070	0.55	1.1	Not Detected U
Ethyl Benzene	100-41-4	0.14	0.28	0.56	0.17 J
Freon 11	75-69-4	0.068	0.36	0.73	8.1
Freon 113	76-13-1	0.13	0.50	1.0	0.39 J
Freon 12	75-71-8	0.074	0.33	0.64	2.7
m,p-Xylene	108-38-3	0.11	0.28	0.56	0.51 J
Methyl tert-butyl ether	1634-04-4	0.043	0.23	0.47	Not Detected U
Methylene Chloride	75-09-2	0.088	0.22	0.90	0.64 J
o-Xylene	95-47-6	0.090	0.28	0.56	0.26 J
Styrene	100-42-5	0.12	0.28	0.55	0.15 J
Tetrachloroethene	127-18-4	0.16	0.44	0.88	2.7
Toluene	108-88-3	0.082	0.24	0.49	0.63
trans-1,2-Dichloroethene	156-60-5	0.055	0.26	0.52	Not Detected U
trans-1,3-Dichloropropene	10061-02-6	0.13	0.29	0.59	Not Detected U
Vinyl Chloride	75-01-4	0.022	0.17	0.33	Not Detected U

U = The analyte was analyzed for, but not detected. The associated numerical value is at or below the MDL.
J = Estimated value.



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	SG7-7	Date/Time Analyzed:	9/8/11 12:33 PM
Lab ID:	1109024-04A	Dilution Factor:	1.30
Date/Time Collecte	8/31/11 12:03 PM	Instrument/Filename:	msda.i / a090807
Media:	6 Liter Summa Canister (SIM Certified)		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	68-134	113
4-Bromofluorobenzene	460-00-4	83-115	113
Toluene-d8	2037-26-5	89-109	95



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	SG7-7	Date/Time Analyzed:	9/8/11 12:33 PM
Lab ID:	1109024-04B	Dilution Factor:	1.30
Date/Time Collecte	8/31/11 12:03 PM	Instrument/Filename:	msda.i / a090807sim
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,2,2-Tetrachloroethane	79-34-5	0.012	0.036	0.18	0.43
Trichloroethene	79-01-6	0.0047	0.028	0.14	0.92

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	78-132	113
4-Bromofluorobenzene	460-00-4	85-114	113
Toluene-d8	2037-26-5	92-107	97



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	SG7-2	Date/Time Analyzed:	9/8/11 01:09 PM
Lab ID:	1109024-05A	Dilution Factor:	1.36
Date/Time Collecte	8/31/11 12:08 PM	Instrument/File name:	msda.i / a090808
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,1-Trichloroethane	71-55-6	0.16	0.37	0.74	0.18 J
1,1,2-Trichloroethane	79-00-5	0.13	0.37	0.74	Not Detected U
1,1-Dichloroethane	75-34-3	0.055	0.28	0.55	Not Detected U
1,1-Dichloroethene	75-35-4	0.089	0.27	0.54	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	0.97	1.2	5.0	Not Detected U
1,2-Dibromoethane (EDB)	106-93-4	0.089	0.52	1.0	Not Detected U
1,2-Dichlorobenzene	95-50-1	0.25	0.41	0.82	Not Detected U
1,2-Dichloroethane	107-06-2	0.078	0.28	0.55	Not Detected U
1,2-Dichloropropane	78-87-5	0.11	0.31	0.63	Not Detected U
1,3-Dichlorobenzene	541-73-1	0.23	0.41	0.82	Not Detected U
1,4-Dichlorobenzene	106-46-7	0.32	0.41	0.82	0.34 J
2-Butanone (Methyl Ethyl Ketone)	78-93-3	0.10	0.20	2.0	1.4 J
4-Methyl-2-pentanone	108-10-1	0.22	0.28	0.56	Not Detected U
Acetone	67-64-1	0.22	0.39	1.6	9.8
Benzene	71-43-2	0.035	0.22	0.43	0.19 J
Bromodichloromethane	75-27-4	0.13	0.46	0.91	Not Detected U
Bromoform	75-25-2	0.16	0.70	1.4	Not Detected U
Bromomethane	74-83-9	0.13	0.42	0.53	Not Detected U
Carbon Disulfide	75-15-0	0.15	0.21	2.1	1.2 J
Carbon Tetrachloride	56-23-5	0.14	0.43	0.86	0.51 J
Chlorobenzene	108-90-7	0.052	0.31	0.63	Not Detected U
Chloroethane	75-00-3	0.089	0.18	1.8	Not Detected U



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Chloroform	67-66-3	0.10	0.33	0.66	0.29 J
Chloromethane	74-87-3	0.084	0.22	0.28	0.64
cis-1,2-Dichloroethene	156-59-2	0.14	0.27	0.54	Not Detected U
cis-1,3-Dichloropropene	10061-01-5	0.060	0.31	0.62	Not Detected U
Dibromochloromethane	124-48-1	0.073	0.58	1.2	Not Detected U
Ethyl Benzene	100-41-4	0.14	0.30	0.59	Not Detected U
Freon 11	75-69-4	0.072	0.38	0.76	80
Freon 113	76-13-1	0.14	0.52	1.0	0.60 J
Freon 12	75-71-8	0.077	0.35	0.67	8.2
m,p-Xylene	108-38-3	0.11	0.30	0.59	0.39 J
Methyl tert-butyl ether	1634-04-4	0.045	0.24	0.49	Not Detected U
Methylene Chloride	75-09-2	0.092	0.24	0.94	1.3
o-Xylene	95-47-6	0.094	0.30	0.59	0.18 J
Styrene	100-42-5	0.13	0.29	0.58	Not Detected U
Tetrachloroethene	127-18-4	0.17	0.46	0.92	8.0
Toluene	108-88-3	0.086	0.26	0.51	0.50 J
trans-1,2-Dichloroethene	156-60-5	0.057	0.27	0.54	Not Detected U
trans-1,3-Dichloropropene	10061-02-6	0.14	0.31	0.62	Not Detected U
Vinyl Chloride	75-01-4	0.023	0.17	0.35	Not Detected U

U = The analyte was analyzed for, but not detected. The associated numerical value is at or below the MDL.
J = Estimated value.



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	SG7-2	Date/Time Analyzed:	9/8/11 01:09 PM
Lab ID:	1109024-05A	Dilution Factor:	1.36
Date/Time Collecte	8/31/11 12:08 PM	Instrument/Filename:	msda.i / a090808
Media:	6 Liter Summa Canister (SIM Certified)		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	68-134	107
4-Bromofluorobenzene	460-00-4	83-115	99
Toluene-d8	2037-26-5	89-109	95



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	SG7-2	Date/Time Analyzed:	9/8/11 01:09 PM
Lab ID:	1109024-05B	Dilution Factor:	1.36
Date/Time Collecte	8/31/11 12:08 PM	Instrument/Filename:	msda.i / a090808sim
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,2,2-Tetrachloroethane	79-34-5	0.012	0.037	0.19	0.028 J
Trichloroethene	79-01-6	0.0049	0.029	0.15	0.084 J

J = Estimated value.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	78-132	108
4-Bromofluorobenzene	460-00-4	85-114	99
Toluene-d8	2037-26-5	92-107	96



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	SG7-4	Date/Time Analyzed:	9/8/11 02:39 PM
Lab ID:	1109024-06A	Dilution Factor:	1.37
Date/Time Collecte	8/31/11 12:14 PM	Instrument/File name:	msda.i / a090810
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,1-Trichloroethane	71-55-6	0.16	0.37	0.75	Not Detected U
1,1,2-Trichloroethane	79-00-5	0.14	0.37	0.75	Not Detected U
1,1-Dichloroethane	75-34-3	0.056	0.28	0.55	Not Detected U
1,1-Dichloroethene	75-35-4	0.090	0.27	0.54	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	0.98	1.2	5.1	Not Detected U
1,2-Dibromoethane (EDB)	106-93-4	0.090	0.53	1.0	Not Detected U
1,2-Dichlorobenzene	95-50-1	0.25	0.41	0.82	Not Detected U
1,2-Dichloroethane	107-06-2	0.079	0.28	0.55	Not Detected U
1,2-Dichloropropane	78-87-5	0.11	0.32	0.63	Not Detected U
1,3-Dichlorobenzene	541-73-1	0.23	0.41	0.82	Not Detected U
1,4-Dichlorobenzene	106-46-7	0.32	0.41	0.82	0.39 J
2-Butanone (Methyl Ethyl Ketone)	78-93-3	0.10	0.20	2.0	1.2 J
4-Methyl-2-pentanone	108-10-1	0.22	0.28	0.56	0.26 J
Acetone	67-64-1	0.22	0.39	1.6	13
Benzene	71-43-2	0.036	0.22	0.44	0.17 J
Bromodichloromethane	75-27-4	0.13	0.46	0.92	Not Detected U
Bromoform	75-25-2	0.16	0.71	1.4	Not Detected U
Bromomethane	74-83-9	0.13	0.42	0.53	Not Detected U
Carbon Disulfide	75-15-0	0.15	0.21	2.1	0.16 J
Carbon Tetrachloride	56-23-5	0.15	0.43	0.86	0.36 J
Chlorobenzene	108-90-7	0.052	0.32	0.63	Not Detected U
Chloroethane	75-00-3	0.090	0.18	1.8	Not Detected U



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	SG7-4	Date/Time Analyzed:	9/8/11 02:39 PM
Lab ID:	1109024-06A	Dilution Factor:	1.37
Date/Time Collecte	8/31/11 12:14 PM	Instrument/File name:	msda.i / a090810
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Chloroform	67-66-3	0.10	0.33	0.67	0.24 J
Chloromethane	74-87-3	0.085	0.23	0.28	0.19 J
cis-1,2-Dichloroethene	156-59-2	0.14	0.27	0.54	Not Detected U
cis-1,3-Dichloropropene	10061-01-5	0.060	0.31	0.62	Not Detected U
Dibromochloromethane	124-48-1	0.074	0.58	1.2	Not Detected U
Ethyl Benzene	100-41-4	0.14	0.30	0.59	0.39 J
Freon 11	75-69-4	0.072	0.38	0.77	120
Freon 113	76-13-1	0.14	0.52	1.0	0.35 J
Freon 12	75-71-8	0.078	0.35	0.68	200
m,p-Xylene	108-38-3	0.11	0.30	0.59	1.5
Methyl tert-butyl ether	1634-04-4	0.045	0.25	0.49	Not Detected U
Methylene Chloride	75-09-2	0.093	0.24	0.95	0.89 J
o-Xylene	95-47-6	0.095	0.30	0.59	0.90
Styrene	100-42-5	0.13	0.29	0.58	Not Detected U
Tetrachloroethene	127-18-4	0.17	0.46	0.93	6.9
Toluene	108-88-3	0.087	0.26	0.52	0.59
trans-1,2-Dichloroethene	156-60-5	0.058	0.27	0.54	Not Detected U
trans-1,3-Dichloropropene	10061-02-6	0.14	0.31	0.62	Not Detected U
Vinyl Chloride	75-01-4	0.023	0.18	0.35	Not Detected U

J = Estimated value.

U = The analyte was analyzed for, but not detected. The associated numerical value is at or below the MDL.



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	SG7-4	Date/Time Analyzed:	9/8/11 02:39 PM
Lab ID:	1109024-06A	Dilution Factor:	1.37
Date/Time Collecte	8/31/11 12:14 PM	Instrument/Filename:	msda.i / a090810
Media:	6 Liter Summa Canister (SIM Certified)		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	68-134	101
4-Bromofluorobenzene	460-00-4	83-115	97
Toluene-d8	2037-26-5	89-109	94



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	SG7-4	Date/Time Analyzed:	9/8/11 02:39 PM
Lab ID:	1109024-06B	Dilution Factor:	1.37
Date/Time Collecte	8/31/11 12:14 PM	Instrument/Filename:	msda.i / a090810sim
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,2,2-Tetrachloroethane	79-34-5	0.012	0.038	0.19	0.019 J
Trichloroethene	79-01-6	0.0049	0.029	0.15	0.076 J

J = Estimated value.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	78-132	103
4-Bromofluorobenzene	460-00-4	85-114	99
Toluene-d8	2037-26-5	92-107	95



EPA METHOD TO-15 GC/MS FULL SCAN
USCG Site 7

Client ID:	SG7-1	Date/Time Analyzed:	9/7/11 02:40 PM
Lab ID:	1109024-07A	Dilution Factor:	28.8
Date/Time Collecte	8/31/11 12:15 PM	Instrument/File name:	msd6.i / 6090713
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,1-Trichloroethane	71-55-6	8.5	31	78	Not Detected U
1,1,2,2-Tetrachloroethane	79-34-5	13	40	99	Not Detected U
1,1,2-Trichloroethane	79-00-5	14	31	78	Not Detected U
1,1-Dichloroethane	75-34-3	8.6	23	58	Not Detected U
1,1-Dichloroethene	75-35-4	22	23	57	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	58	170	430	Not Detected U
1,2-Dibromoethane (EDB)	106-93-4	18	44	110	Not Detected U
1,2-Dichlorobenzene	95-50-1	15	35	86	Not Detected U
1,2-Dichloroethane	107-06-2	7.5	23	58	7.7 J
1,2-Dichloropropane	78-87-5	18	27	66	Not Detected U
1,3-Dichlorobenzene	541-73-1	15	35	86	Not Detected U
1,4-Dichlorobenzene	106-46-7	17	35	86	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	7.5	34	170	Not Detected U
4-Methyl-2-pentanone	108-10-1	12	24	59	Not Detected U
Acetone	67-64-1	26	55	140	Not Detected U
Benzene	71-43-2	6.5	18	46	Not Detected U
Bromodichloromethane	75-27-4	12	38	96	Not Detected U
Bromoform	75-25-2	25	60	150	Not Detected U
Bromomethane	74-83-9	7.6	22	56	Not Detected U
Carbon Disulfide	75-15-0	8.7	18	180	15 J
Carbon Tetrachloride	56-23-5	14	36	91	Not Detected U
Chlorobenzene	108-90-7	6.0	26	66	Not Detected U



EPA METHOD TO-15 GC/MS FULL SCAN
USCG Site 7

Client ID:		SG7-1		Date/Time Analyzed:		9/7/11 02:40 PM	
Lab ID:		1109024-07A		Dilution Factor:		28.8	
Date/Time Collecte		8/31/11 12:15 PM		Instrument/File Name:		msd6.i / 6090713	
Media:		6 Liter Summa Canister (SIM Certified)					
Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)		
Chloroethane	75-00-3	28	61	150	Not Detected		U
Chloroform	67-66-3	9.7	28	70	18 J		
Chloromethane	74-87-3	34	48	120	Not Detected		U
cis-1,2-Dichloroethene	156-59-2	17	23	57	Not Detected		U
cis-1,3-Dichloropropene	10061-01-5	11	26	65	Not Detected		U
Dibromochloromethane	124-48-1	16	49	120	Not Detected		U
Ethyl Benzene	100-41-4	4.0	25	62	Not Detected		U
Freon 11	75-69-4	4.3	32	81	66 J		
Freon 113	76-13-1	28	44	110	Not Detected		U
Freon 12	75-71-8	10	28	71	26000		
m,p-Xylene	108-38-3	7.3	25	62	Not Detected		U
Methyl tert-butyl ether	1634-04-4	7.8	21	52	Not Detected		U
Methylene Chloride	75-09-2	5.7	20	50	Not Detected		U
o-Xylene	95-47-6	7.6	25	62	Not Detected		U
Styrene	100-42-5	7.1	24	61	Not Detected		U
Tetrachloroethene	127-18-4	7.4	39	98	290		
Toluene	108-88-3	4.6	22	54	Not Detected		U
trans-1,2-Dichloroethene	156-60-5	19	23	57	Not Detected		U
trans-1,3-Dichloropropene	10061-02-6	12	26	65	Not Detected		U
Trichloroethene	79-01-6	12	31	77	20 J		
Vinyl Chloride	75-01-4	4.1	15	37	Not Detected		U



EPA METHOD TO-15 GC/MS FULL SCAN

USCG Site 7

Client ID:	SG7-1	Date/Time Analyzed:	9/7/11 02:40 PM
Lab ID:	1109024-07A	Dilution Factor:	28.8
Date/Time Collecte	8/31/11 12:15 PM	Instrument/Filename:	msd6.i / 6090713
Media:	6 Liter Summa Canister (SIM Certified)		

U = The analyte was analyzed for, but not detected. The associated numerical value is at or below the MDL.

J = Estimated value.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	72-138	121
4-Bromofluorobenzene	460-00-4	75-122	91
Toluene-d8	2037-26-5	87-114	103



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	SG7-3	Date/Time Analyzed:	9/8/11 03:15 PM
Lab ID:	1109024-08A	Dilution Factor:	1.49
Date/Time Collecte	8/31/11 12:27 PM	Instrument/Filename:	msda.i / a090811
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,1-Trichloroethane	71-55-6	0.18	0.41	0.81	0.74 J
1,1,2-Trichloroethane	79-00-5	0.15	0.41	0.81	Not Detected U
1,1-Dichloroethane	75-34-3	0.060	0.30	0.60	Not Detected U
1,1-Dichloroethene	75-35-4	0.098	0.30	0.59	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	1.1	1.3	5.5	Not Detected U
1,2-Dibromoethane (EDB)	106-93-4	0.098	0.57	1.1	Not Detected U
1,2-Dichlorobenzene	95-50-1	0.28	0.45	0.90	Not Detected U
1,2-Dichloroethane	107-06-2	0.086	0.30	0.60	Not Detected U
1,2-Dichloropropane	78-87-5	0.12	0.34	0.69	Not Detected U
1,3-Dichlorobenzene	541-73-1	0.25	0.45	0.90	Not Detected U
1,4-Dichlorobenzene	106-46-7	0.35	0.45	0.90	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	0.11	0.22	2.2	0.86 J
4-Methyl-2-pentanone	108-10-1	0.24	0.30	0.61	Not Detected U
Acetone	67-64-1	0.24	0.42	1.8	7.9
Benzene	71-43-2	0.039	0.24	0.48	0.21 J
Bromodichloromethane	75-27-4	0.14	0.50	1.0	Not Detected U
Bromoform	75-25-2	0.17	0.77	1.5	Not Detected U
Bromomethane	74-83-9	0.14	0.46	0.58	Not Detected U
Carbon Disulfide	75-15-0	0.16	0.23	2.3	2.9
Carbon Tetrachloride	56-23-5	0.16	0.47	0.94	0.59 J
Chlorobenzene	108-90-7	0.056	0.34	0.68	Not Detected U
Chloroethane	75-00-3	0.098	0.20	2.0	Not Detected U



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	SG7-3	Date/Time Analyzed:	9/8/11 03:15 PM
Lab ID:	1109024-08A	Dilution Factor:	1.49
Date/Time Collecte	8/31/11 12:27 PM	Instrument/File name:	msda.i / a090811
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Chloroform	67-66-3	0.11	0.36	0.73	0.38 J
Chloromethane	74-87-3	0.092	0.25	0.31	0.15 J
cis-1,2-Dichloroethene	156-59-2	0.15	0.30	0.59	Not Detected U
cis-1,3-Dichloropropene	10061-01-5	0.066	0.34	0.68	Not Detected U
Dibromochloromethane	124-48-1	0.080	0.63	1.3	Not Detected U
Ethyl Benzene	100-41-4	0.16	0.32	0.65	0.16 J
Freon 11	75-69-4	0.078	0.42	0.84	11
Freon 113	76-13-1	0.15	0.57	1.1	0.35 J
Freon 12	75-71-8	0.084	0.38	0.74	17
m,p-Xylene	108-38-3	0.12	0.32	0.65	0.43 J
Methyl tert-butyl ether	1634-04-4	0.049	0.27	0.54	Not Detected U
Methylene Chloride	75-09-2	0.10	0.26	1.0	0.63 J
o-Xylene	95-47-6	0.10	0.32	0.65	0.18 J
Styrene	100-42-5	0.14	0.32	0.63	Not Detected U
Tetrachloroethene	127-18-4	0.19	0.50	1.0	3.1
Toluene	108-88-3	0.094	0.28	0.56	0.57
trans-1,2-Dichloroethene	156-60-5	0.063	0.30	0.59	Not Detected U
trans-1,3-Dichloropropene	10061-02-6	0.15	0.34	0.68	Not Detected U
Vinyl Chloride	75-01-4	0.025	0.19	0.38	Not Detected U

J = Estimated value.

U = The analyte was analyzed for, but not detected. The associated numerical value is at or below the MDL.



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	SG7-3	Date/Time Analyzed:	9/8/11 03:15 PM
Lab ID:	1109024-08A	Dilution Factor:	1.49
Date/Time Collecte	8/31/11 12:27 PM	Instrument/Filename:	msda.i / a090811
Media:	6 Liter Summa Canister (SIM Certified)		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	68-134	98
4-Bromofluorobenzene	460-00-4	83-115	95
Toluene-d8	2037-26-5	89-109	93



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	SG7-3 Lab Duplicate	Date/Time Analyzed:	9/8/11 03:50 PM
Lab ID:	1109024-08AA	Dilution Factor:	1.49
Date/Time Collecte	8/31/11 12:27 PM	Instrument/Filename:	msda.i / a090812
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,1-Trichloroethane	71-55-6	0.18	0.41	0.81	0.72 J
1,1,2-Trichloroethane	79-00-5	0.15	0.41	0.81	Not Detected U
1,1-Dichloroethane	75-34-3	0.060	0.30	0.60	Not Detected U
1,1-Dichloroethene	75-35-4	0.098	0.30	0.59	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	1.1	1.3	5.5	Not Detected U
1,2-Dibromoethane (EDB)	106-93-4	0.098	0.57	1.1	Not Detected U
1,2-Dichlorobenzene	95-50-1	0.28	0.45	0.90	Not Detected U
1,2-Dichloroethane	107-06-2	0.086	0.30	0.60	Not Detected U
1,2-Dichloropropane	78-87-5	0.12	0.34	0.69	Not Detected U
1,3-Dichlorobenzene	541-73-1	0.25	0.45	0.90	Not Detected U
1,4-Dichlorobenzene	106-46-7	0.35	0.45	0.90	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	0.11	0.22	2.2	0.92 J
4-Methyl-2-pentanone	108-10-1	0.24	0.30	0.61	Not Detected U
Acetone	67-64-1	0.24	0.42	1.8	8.0
Benzene	71-43-2	0.039	0.24	0.48	0.21 J
Bromodichloromethane	75-27-4	0.14	0.50	1.0	Not Detected U
Bromoform	75-25-2	0.17	0.77	1.5	Not Detected U
Bromomethane	74-83-9	0.14	0.46	0.58	Not Detected U
Carbon Disulfide	75-15-0	0.16	0.23	2.3	2.9
Carbon Tetrachloride	56-23-5	0.16	0.47	0.94	0.60 J
Chlorobenzene	108-90-7	0.056	0.34	0.68	Not Detected U
Chloroethane	75-00-3	0.098	0.20	2.0	Not Detected U



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	SG7-3 Lab Duplicate	Date/Time Analyzed:	9/8/11 03:50 PM
Lab ID:	1109024-08AA	Dilution Factor:	1.49
Date/Time Collecte	8/31/11 12:27 PM	Instrument/File name:	msda.i / a090812
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Chloroform	67-66-3	0.11	0.36	0.73	0.38 J
Chloromethane	74-87-3	0.092	0.25	0.31	0.14 J
cis-1,2-Dichloroethene	156-59-2	0.15	0.30	0.59	Not Detected U
cis-1,3-Dichloropropene	10061-01-5	0.066	0.34	0.68	Not Detected U
Dibromochloromethane	124-48-1	0.080	0.63	1.3	Not Detected U
Ethyl Benzene	100-41-4	0.16	0.32	0.65	Not Detected U
Freon 11	75-69-4	0.078	0.42	0.84	11
Freon 113	76-13-1	0.15	0.57	1.1	0.28 J
Freon 12	75-71-8	0.084	0.38	0.74	17
m,p-Xylene	108-38-3	0.12	0.32	0.65	0.41 J
Methyl tert-butyl ether	1634-04-4	0.049	0.27	0.54	Not Detected U
Methylene Chloride	75-09-2	0.10	0.26	1.0	0.67 J
o-Xylene	95-47-6	0.10	0.32	0.65	0.15 J
Styrene	100-42-5	0.14	0.32	0.63	Not Detected U
Tetrachloroethene	127-18-4	0.19	0.50	1.0	3.0
Toluene	108-88-3	0.094	0.28	0.56	0.57
trans-1,2-Dichloroethene	156-60-5	0.063	0.30	0.59	Not Detected U
trans-1,3-Dichloropropene	10061-02-6	0.15	0.34	0.68	Not Detected U
Vinyl Chloride	75-01-4	0.025	0.19	0.38	Not Detected U

J = Estimated value.

U = The analyte was analyzed for, but not detected. The associated numerical value is at or below the MDL.



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	SG7-3 Lab Duplicate	Date/Time Analyzed:	9/8/11 03:50 PM
Lab ID:	1109024-08AA	Dilution Factor:	1.49
Date/Time Collecte	8/31/11 12:27 PM	Instrument/Filename:	msda.i / a090812
Media:	6 Liter Summa Canister (SIM Certified)		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	68-134	96
4-Bromofluorobenzene	460-00-4	83-115	96
Toluene-d8	2037-26-5	89-109	93



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	SG7-3	Date/Time Analyzed:	9/8/11 03:15 PM
Lab ID:	1109024-08B	Dilution Factor:	1.49
Date/Time Collecte	8/31/11 12:27 PM	Instrument/Filename:	msda.i / a090811sim
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,2,2-Tetrachloroethane	79-34-5	0.013	0.041	0.20	Not Detected U
Trichloroethene	79-01-6	0.0054	0.032	0.16	0.17

U = The analyte was analyzed for, but not detected. The associated numerical value is at or below the MDL.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	78-132	98
4-Bromofluorobenzene	460-00-4	85-114	95
Toluene-d8	2037-26-5	92-107	94



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

USCG Site 7

Client ID:	SG7-3 Lab Duplicate	Date/Time Analyzed:	9/8/11 03:50 PM
Lab ID:	1109024-08BB	Dilution Factor:	1.49
Date/Time Collecte	8/31/11 12:27 PM	Instrument/Filename:	msda.i / a090812sim
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,2,2-Tetrachloroethane	79-34-5	0.013	0.041	0.20	Not Detected U
Trichloroethene	79-01-6	0.0054	0.032	0.16	0.18

U = The analyte was analyzed for, but not detected. The associated numerical value is at or below the MDL.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	78-132	98
4-Bromofluorobenzene	460-00-4	85-114	97
Toluene-d8	2037-26-5	92-107	94



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	DUP-01	Date/Time Analyzed:	9/8/11 04:33 PM
Lab ID:	1109024-09A	Dilution Factor:	1.29
Date/Time Collecte	8/31/11 12:00 AM	Instrument/File name:	msda.i / a090813
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,1-Trichloroethane	71-55-6	0.15	0.35	0.70	Not Detected U
1,1,2-Trichloroethane	79-00-5	0.13	0.35	0.70	Not Detected U
1,1-Dichloroethane	75-34-3	0.052	0.26	0.52	Not Detected U
1,1-Dichloroethene	75-35-4	0.085	0.26	0.51	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	0.92	1.1	4.8	Not Detected U
1,2-Dibromoethane (EDB)	106-93-4	0.085	0.50	0.99	Not Detected U
1,2-Dichlorobenzene	95-50-1	0.24	0.39	0.78	Not Detected U
1,2-Dichloroethane	107-06-2	0.074	0.26	0.52	0.098 J
1,2-Dichloropropane	78-87-5	0.11	0.30	0.60	Not Detected U
1,3-Dichlorobenzene	541-73-1	0.22	0.39	0.78	Not Detected U
1,4-Dichlorobenzene	106-46-7	0.30	0.39	0.78	0.45 J
2-Butanone (Methyl Ethyl Ketone)	78-93-3	0.096	0.19	1.9	2.8
4-Methyl-2-pentanone	108-10-1	0.20	0.26	0.53	3.0
Acetone	67-64-1	0.21	0.37	1.5	42
Benzene	71-43-2	0.034	0.21	0.41	2.0
Bromodichloromethane	75-27-4	0.12	0.43	0.86	0.26 J
Bromoform	75-25-2	0.15	0.67	1.3	Not Detected U
Bromomethane	74-83-9	0.12	0.40	0.50	Not Detected U
Carbon Disulfide	75-15-0	0.14	0.20	2.0	0.32 J
Carbon Tetrachloride	56-23-5	0.14	0.40	0.81	0.50 J
Chlorobenzene	108-90-7	0.049	0.30	0.59	Not Detected U
Chloroethane	75-00-3	0.084	0.17	1.7	Not Detected U



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	DUP-01	Date/Time Analyzed:	9/8/11 04:33 PM
Lab ID:	1109024-09A	Dilution Factor:	1.29
Date/Time Collecte	8/31/11 12:00 AM	Instrument/Filename:	msda.i / a090813
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Chloroform	67-66-3	0.099	0.32	0.63	1.3
Chloromethane	74-87-3	0.080	0.21	0.27	1.4
cis-1,2-Dichloroethene	156-59-2	0.13	0.26	0.51	Not Detected U
cis-1,3-Dichloropropene	10061-01-5	0.057	0.29	0.58	Not Detected U
Dibromochloromethane	124-48-1	0.069	0.55	1.1	Not Detected U
Ethyl Benzene	100-41-4	0.14	0.28	0.56	2.4
Freon 11	75-69-4	0.068	0.36	0.72	7.6
Freon 113	76-13-1	0.13	0.49	0.99	0.69 J
Freon 12	75-71-8	0.073	0.33	0.64	3.4
m,p-Xylene	108-38-3	0.11	0.28	0.56	6.8
Methyl tert-butyl ether	1634-04-4	0.042	0.23	0.46	0.10 J
Methylene Chloride	75-09-2	0.087	0.22	0.90	1.5
o-Xylene	95-47-6	0.090	0.28	0.56	2.2
Styrene	100-42-5	0.12	0.27	0.55	0.23 J
Tetrachloroethene	127-18-4	0.16	0.44	0.88	0.42 J
Toluene	108-88-3	0.082	0.24	0.49	8.5
trans-1,2-Dichloroethene	156-60-5	0.054	0.26	0.51	Not Detected U
trans-1,3-Dichloropropene	10061-02-6	0.13	0.29	0.58	Not Detected U
Vinyl Chloride	75-01-4	0.022	0.16	0.33	Not Detected U

U = The analyte was analyzed for, but not detected. The associated numerical value is at or below the MDL.
J = Estimated value.



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	DUP-01	Date/Time Analyzed:	9/8/11 04:33 PM
Lab ID:	1109024-09A	Dilution Factor:	1.29
Date/Time Collecte	8/31/11 12:00 AM	Instrument/Filename:	msda.i / a090813
Media:	6 Liter Summa Canister (SIM Certified)		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	68-134	100
4-Bromofluorobenzene	460-00-4	83-115	98
Toluene-d8	2037-26-5	89-109	101



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

USCG Site 7

Client ID:	DUP-01	Date/Time Analyzed:	9/8/11 04:33 PM
Lab ID:	1109024-09B	Dilution Factor:	1.29
Date/Time Collecte	8/31/11 12:00 AM	Instrument/Filename:	msda.i / a090813sim
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,2,2-Tetrachloroethane	79-34-5	0.012	0.035	0.18	Not Detected U
Trichloroethene	79-01-6	0.0046	0.028	0.14	0.11 J

J = Estimated value.

U = The analyte was analyzed for, but not detected. The associated numerical value is at or below the MDL.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	78-132	103
4-Bromofluorobenzene	460-00-4	85-114	101
Toluene-d8	2037-26-5	92-107	102



EPA METHOD TO-15 GC/MS FULL SCAN
USCG Site 7

Client ID:	DUP-02 (MS/MSD)	Date/Time Analyzed:	9/7/11 02:06 PM
Lab ID:	1109024-10A	Dilution Factor:	28.4
Date/Time Collecte	8/31/11 12:00 AM	Instrument/File name:	msd6.i / 6090712
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,1-Trichloroethane	71-55-6	8.4	31	77	Not Detected U
1,1,2,2-Tetrachloroethane	79-34-5	13	39	97	Not Detected U
1,1,2-Trichloroethane	79-00-5	14	31	77	Not Detected U
1,1-Dichloroethane	75-34-3	8.5	23	57	Not Detected U
1,1-Dichloroethene	75-35-4	22	22	56	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	57	170	420	Not Detected U
1,2-Dibromoethane (EDB)	106-93-4	18	44	110	Not Detected U
1,2-Dichlorobenzene	95-50-1	14	34	85	Not Detected U
1,2-Dichloroethane	107-06-2	7.4	23	57	Not Detected U
1,2-Dichloropropane	78-87-5	18	26	66	Not Detected U
1,3-Dichlorobenzene	541-73-1	14	34	85	Not Detected U
1,4-Dichlorobenzene	106-46-7	17	34	85	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	7.4	34	170	Not Detected U
4-Methyl-2-pentanone	108-10-1	12	23	58	Not Detected U
Acetone	67-64-1	26	54	130	Not Detected U
Benzene	71-43-2	6.4	18	45	Not Detected U
Bromodichloromethane	75-27-4	12	38	95	Not Detected U
Bromoform	75-25-2	25	59	150	Not Detected U
Bromomethane	74-83-9	7.5	22	55	Not Detected U
Carbon Disulfide	75-15-0	8.6	18	180	Not Detected U
Carbon Tetrachloride	56-23-5	14	36	89	Not Detected U
Chlorobenzene	108-90-7	5.9	26	65	Not Detected U



EPA METHOD TO-15 GC/MS FULL SCAN
USCG Site 7

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Chloroethane	75-00-3	28	60	150	Not Detected U
Chloroform	67-66-3	9.6	28	69	22 J
Chloromethane	74-87-3	33	47	120	Not Detected U
cis-1,2-Dichloroethene	156-59-2	16	22	56	Not Detected U
cis-1,3-Dichloropropene	10061-01-5	11	26	64	Not Detected U
Dibromochloromethane	124-48-1	16	48	120	Not Detected U
Ethyl Benzene	100-41-4	4.0	25	62	Not Detected U
Freon 11	75-69-4	4.2	32	80	67 J
Freon 113	76-13-1	27	44	110	Not Detected U
Freon 12	75-71-8	10	28	70	24000
m,p-Xylene	108-38-3	7.2	25	62	Not Detected U
Methyl tert-butyl ether	1634-04-4	7.7	20	51	Not Detected U
Methylene Chloride	75-09-2	5.6	20	49	Not Detected U
o-Xylene	95-47-6	7.5	25	62	Not Detected U
Styrene	100-42-5	7.0	24	60	Not Detected U
Tetrachloroethene	127-18-4	7.4	38	96	280
Toluene	108-88-3	4.6	21	54	Not Detected U
trans-1,2-Dichloroethene	156-60-5	19	22	56	Not Detected U
trans-1,3-Dichloropropene	10061-02-6	12	26	64	Not Detected U
Trichloroethene	79-01-6	12	30	76	21 J
Vinyl Chloride	75-01-4	4.0	14	36	Not Detected U



EPA METHOD TO-15 GC/MS FULL SCAN

USCG Site 7

Client ID:	DUP-02 (MS/MSD)	Date/Time Analyzed:	9/7/11 02:06 PM
Lab ID:	1109024-10A	Dilution Factor:	28.4
Date/Time Collecte	8/31/11 12:00 AM	Instrument/Filename:	msd6.i / 6090712
Media:	6 Liter Summa Canister (SIM Certified)		

U = The analyte was analyzed for, but not detected. The associated numerical value is at or below the MDL.

J = Estimated value.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	72-138	114
4-Bromofluorobenzene	460-00-4	75-122	94
Toluene-d8	2037-26-5	87-114	104



EPA METHOD TO-15 GC/MS FULL SCAN
USCG Site 7

Client ID:	DUP-02 (MS/MSD) Lab Duplicate	Date/Time Analyzed:	9/7/11 01:37 PM
Lab ID:	1109024-10AA	Dilution Factor:	14.2
Date/Time Collecte	8/31/11 12:00 AM	Instrument/File name:	msd6.i / 6090711
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,1-Trichloroethane	71-55-6	4.2	15	39	Not Detected U
1,1,2,2-Tetrachloroethane	79-34-5	6.5	19	49	Not Detected U
1,1,2-Trichloroethane	79-00-5	6.8	15	39	Not Detected U
1,1-Dichloroethane	75-34-3	4.2	11	29	Not Detected U
1,1-Dichloroethene	75-35-4	11	11	28	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	28	84	210	Not Detected U
1,2-Dibromoethane (EDB)	106-93-4	8.9	22	54	Not Detected U
1,2-Dichlorobenzene	95-50-1	7.2	17	43	Not Detected U
1,2-Dichloroethane	107-06-2	3.7	11	29	4.5 J
1,2-Dichloropropane	78-87-5	9.0	13	33	Not Detected U
1,3-Dichlorobenzene	541-73-1	7.2	17	43	Not Detected U
1,4-Dichlorobenzene	106-46-7	8.4	17	43	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	3.7	17	84	Not Detected U
4-Methyl-2-pentanone	108-10-1	5.8	12	29	Not Detected U
Acetone	67-64-1	13	27	67	Not Detected U
Benzene	71-43-2	3.2	9.1	23	Not Detected U
Bromodichloromethane	75-27-4	6.0	19	48	Not Detected U
Bromoform	75-25-2	12	29	73	Not Detected U
Bromomethane	74-83-9	3.8	11	28	Not Detected U
Carbon Disulfide	75-15-0	4.3	8.8	88	4.4 J
Carbon Tetrachloride	56-23-5	7.1	18	45	Not Detected U
Chlorobenzene	108-90-7	3.0	13	33	Not Detected U



EPA METHOD TO-15 GC/MS FULL SCAN
USCG Site 7

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Chloroethane	75-00-3	14	30	75	Not Detected U
Chloroform	67-66-3	4.8	14	35	15 J
Chloromethane	74-87-3	17	23	59	Not Detected U
cis-1,2-Dichloroethene	156-59-2	8.2	11	28	Not Detected U
cis-1,3-Dichloropropene	10061-01-5	5.3	13	32	Not Detected U
Dibromochloromethane	124-48-1	7.9	24	60	Not Detected U
Ethyl Benzene	100-41-4	2.0	12	31	Not Detected U
Freon 11	75-69-4	2.1	16	40	62
Freon 113	76-13-1	14	22	54	Not Detected U
Freon 12	75-71-8	5.1	14	35	24000 J
m,p-Xylene	108-38-3	3.6	12	31	Not Detected U
Methyl tert-butyl ether	1634-04-4	3.8	10	26	Not Detected U
Methylene Chloride	75-09-2	2.8	9.9	25	3.2 J
o-Xylene	95-47-6	3.7	12	31	Not Detected U
Styrene	100-42-5	3.5	12	30	Not Detected U
Tetrachloroethene	127-18-4	3.7	19	48	270
Toluene	108-88-3	2.3	11	27	Not Detected U
trans-1,2-Dichloroethene	156-60-5	9.5	11	28	Not Detected U
trans-1,3-Dichloropropene	10061-02-6	6.0	13	32	Not Detected U
Trichloroethene	79-01-6	5.8	15	38	6.5 J
Vinyl Chloride	75-01-4	2.0	7.2	18	Not Detected U



EPA METHOD TO-15 GC/MS FULL SCAN

USCG Site 7

Client ID:	DUP-02 (MS/MSD) Lab Duplicate	Date/Time Analyzed:	9/7/11 01:37 PM
Lab ID:	1109024-10AA	Dilution Factor:	14.2
Date/Time Collecte	8/31/11 12:00 AM	Instrument/Filename:	msd6.i / 6090711
Media:	6 Liter Summa Canister (SIM Certified)		

J = Estimated value.

U = The analyte was analyzed for, but not detected. The associated numerical value is at or below the MDL.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	72-138	119
4-Bromofluorobenzene	460-00-4	75-122	95
Toluene-d8	2037-26-5	87-114	102



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	Trip Blank	Date/Time Analyzed:	9/8/11 05:22 PM
Lab ID:	1109024-11A	Dilution Factor:	1.00
Date/Time Collecte	NA - Not Applicable	Instrument/File name:	msda.i / a090814
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,1-Trichloroethane	71-55-6	0.12	0.27	0.54	Not Detected U
1,1,2-Trichloroethane	79-00-5	0.099	0.27	0.54	Not Detected U
1,1-Dichloroethane	75-34-3	0.040	0.20	0.40	Not Detected U
1,1-Dichloroethene	75-35-4	0.066	0.20	0.40	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	0.71	0.89	3.7	Not Detected U
1,2-Dibromoethane (EDB)	106-93-4	0.066	0.38	0.77	Not Detected U
1,2-Dichlorobenzene	95-50-1	0.18	0.30	0.60	Not Detected U
1,2-Dichloroethane	107-06-2	0.058	0.20	0.40	Not Detected U
1,2-Dichloropropane	78-87-5	0.083	0.23	0.46	Not Detected U
1,3-Dichlorobenzene	541-73-1	0.17	0.30	0.60	Not Detected U
1,4-Dichlorobenzene	106-46-7	0.23	0.30	0.60	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	0.074	0.15	1.5	Not Detected U
4-Methyl-2-pentanone	108-10-1	0.16	0.20	0.41	Not Detected U
Acetone	67-64-1	0.16	0.28	1.2	0.23 J
Benzene	71-43-2	0.026	0.16	0.32	0.026 J
Bromodichloromethane	75-27-4	0.094	0.34	0.67	Not Detected U
Bromoform	75-25-2	0.12	0.52	1.0	Not Detected U
Bromomethane	74-83-9	0.095	0.31	0.39	Not Detected U
Carbon Disulfide	75-15-0	0.11	0.16	1.6	Not Detected U
Carbon Tetrachloride	56-23-5	0.11	0.31	0.63	Not Detected U
Chlorobenzene	108-90-7	0.038	0.23	0.46	Not Detected U
Chloroethane	75-00-3	0.065	0.13	1.3	Not Detected U



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	Trip Blank	Date/Time Analyzed:	9/8/11 05:22 PM
Lab ID:	1109024-11A	Dilution Factor:	1.00
Date/Time Collecte	NA - Not Applicable	Instrument/Filename:	msda.i / a090814
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Chloroform	67-66-3	0.077	0.24	0.49	Not Detected U
Chloromethane	74-87-3	0.062	0.16	0.21	Not Detected U
cis-1,2-Dichloroethene	156-59-2	0.10	0.20	0.40	Not Detected U
cis-1,3-Dichloropropene	10061-01-5	0.044	0.23	0.45	Not Detected U
Dibromochloromethane	124-48-1	0.054	0.42	0.85	Not Detected U
Ethyl Benzene	100-41-4	0.10	0.22	0.43	Not Detected U
Freon 11	75-69-4	0.053	0.28	0.56	Not Detected U
Freon 113	76-13-1	0.10	0.38	0.77	Not Detected U
Freon 12	75-71-8	0.057	0.26	0.49	Not Detected U
m,p-Xylene	108-38-3	0.084	0.22	0.43	Not Detected U
Methyl tert-butyl ether	1634-04-4	0.033	0.18	0.36	Not Detected U
Methylene Chloride	75-09-2	0.068	0.17	0.69	0.32 J
o-Xylene	95-47-6	0.070	0.22	0.43	Not Detected U
Styrene	100-42-5	0.096	0.21	0.42	Not Detected U
Tetrachloroethene	127-18-4	0.13	0.34	0.68	Not Detected U
Toluene	108-88-3	0.063	0.19	0.38	Not Detected U
trans-1,2-Dichloroethene	156-60-5	0.042	0.20	0.40	Not Detected U
trans-1,3-Dichloropropene	10061-02-6	0.10	0.23	0.45	Not Detected U
Vinyl Chloride	75-01-4	0.017	0.13	0.26	Not Detected U

U = The analyte was analyzed for, but not detected. The associated numerical value is at or below the MDL.
J = Estimated value.



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	Trip Blank	Date/Time Analyzed:	9/8/11 05:22 PM
Lab ID:	1109024-11A	Dilution Factor:	1.00
Date/Time Collecte	NA - Not Applicable	Instrument/Filename:	msda.i / a090814
Media:	6 Liter Summa Canister (SIM Certified)		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	68-134	91
4-Bromofluorobenzene	460-00-4	83-115	100
Toluene-d8	2037-26-5	89-109	101



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

USCG Site 7

Client ID:	Trip Blank	Date/Time Analyzed:	9/8/11 05:22 PM
Lab ID:	1109024-11B	Dilution Factor:	1.00
Date/Time Collecte	NA - Not Applicable	Instrument/Filename:	msda.i / a090814sim
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,2,2-Tetrachloroethane	79-34-5	0.0090	0.028	0.14	Not Detected U
Trichloroethene	79-01-6	0.0036	0.022	0.11	0.020 J

J = Estimated value.

U = The analyte was analyzed for, but not detected. The associated numerical value is at or below the MDL.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	78-132	93
4-Bromofluorobenzene	460-00-4	85-114	100
Toluene-d8	2037-26-5	92-107	102



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	Lab Blank	Date/Time Analyzed:	9/2/11 01:07 PM
Lab ID:	1109024-12A	Dilution Factor:	1.00
Date/Time Collecte	NA - Not Applicable	Instrument/Filename:	msda.i / a090209a
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,1-Trichloroethane	71-55-6	0.12	0.27	0.54	Not Detected U
1,1,2-Trichloroethane	79-00-5	0.099	0.27	0.54	Not Detected U
1,1-Dichloroethane	75-34-3	0.040	0.20	0.40	Not Detected U
1,1-Dichloroethene	75-35-4	0.066	0.20	0.40	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	0.71	0.89	3.7	Not Detected U
1,2-Dibromoethane (EDB)	106-93-4	0.066	0.38	0.77	Not Detected U
1,2-Dichlorobenzene	95-50-1	0.18	0.30	0.60	Not Detected U
1,2-Dichloroethane	107-06-2	0.058	0.20	0.40	Not Detected U
1,2-Dichloropropane	78-87-5	0.083	0.23	0.46	Not Detected U
1,3-Dichlorobenzene	541-73-1	0.17	0.30	0.60	Not Detected U
1,4-Dichlorobenzene	106-46-7	0.23	0.30	0.60	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	0.074	0.15	1.5	Not Detected U
4-Methyl-2-pentanone	108-10-1	0.16	0.20	0.41	Not Detected U
Acetone	67-64-1	0.16	0.28	1.2	0.17 J
Benzene	71-43-2	0.026	0.16	0.32	0.030 J
Bromodichloromethane	75-27-4	0.094	0.34	0.67	Not Detected U
Bromoform	75-25-2	0.12	0.52	1.0	Not Detected U
Bromomethane	74-83-9	0.095	0.31	0.39	Not Detected U
Carbon Disulfide	75-15-0	0.11	0.16	1.6	Not Detected U
Carbon Tetrachloride	56-23-5	0.11	0.31	0.63	Not Detected U
Chlorobenzene	108-90-7	0.038	0.23	0.46	Not Detected U
Chloroethane	75-00-3	0.065	0.13	1.3	Not Detected U



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	Lab Blank	Date/Time Analyzed:	9/2/11 01:07 PM
Lab ID:	1109024-12A	Dilution Factor:	1.00
Date/Time Collecte	NA - Not Applicable	Instrument/Filename:	msda.i / a090209a
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Chloroform	67-66-3	0.077	0.24	0.49	Not Detected U
Chloromethane	74-87-3	0.062	0.16	0.21	Not Detected U
cis-1,2-Dichloroethene	156-59-2	0.10	0.20	0.40	Not Detected U
cis-1,3-Dichloropropene	10061-01-5	0.044	0.23	0.45	Not Detected U
Dibromochloromethane	124-48-1	0.054	0.42	0.85	Not Detected U
Ethyl Benzene	100-41-4	0.10	0.22	0.43	Not Detected U
Freon 11	75-69-4	0.053	0.28	0.56	Not Detected U
Freon 113	76-13-1	0.10	0.38	0.77	Not Detected U
Freon 12	75-71-8	0.057	0.26	0.49	Not Detected U
m,p-Xylene	108-38-3	0.084	0.22	0.43	Not Detected U
Methyl tert-butyl ether	1634-04-4	0.033	0.18	0.36	Not Detected U
Methylene Chloride	75-09-2	0.068	0.17	0.69	0.26 J
o-Xylene	95-47-6	0.070	0.22	0.43	Not Detected U
Styrene	100-42-5	0.096	0.21	0.42	Not Detected U
Tetrachloroethene	127-18-4	0.13	0.34	0.68	Not Detected U
Toluene	108-88-3	0.063	0.19	0.38	Not Detected U
trans-1,2-Dichloroethene	156-60-5	0.042	0.20	0.40	Not Detected U
trans-1,3-Dichloropropene	10061-02-6	0.10	0.23	0.45	Not Detected U
Vinyl Chloride	75-01-4	0.017	0.13	0.26	Not Detected U

U = The analyte was analyzed for, but not detected. The associated numerical value is at or below the MDL.
J = Estimated value.



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	Lab Blank	Date/Time Analyzed:	9/2/11 01:07 PM
Lab ID:	1109024-12A	Dilution Factor:	1.00
Date/Time Collecte	NA - Not Applicable	Instrument/Filename:	msda.i / a090209a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	68-134	103
4-Bromofluorobenzene	460-00-4	83-115	103
Toluene-d8	2037-26-5	89-109	99



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

USCG Site 7

Client ID:	Lab Blank	Date/Time Analyzed:	9/2/11 01:07 PM
Lab ID:	1109024-12B	Dilution Factor:	1.00
Date/Time Collecte	NA - Not Applicable	Instrument/Filename:	msda.i / a090209asim
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,2,2-Tetrachloroethane	79-34-5	0.0090	0.028	0.14	0.033 J
Trichloroethene	79-01-6	0.0036	0.022	0.11	0.0094 J

J = Estimated value.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	78-132	102
4-Bromofluorobenzene	460-00-4	85-114	100
Toluene-d8	2037-26-5	92-107	101



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	Lab Blank	Date/Time Analyzed:	9/8/11 11:42 AM
Lab ID:	1109024-12C	Dilution Factor:	1.00
Date/Time Collecte	NA - Not Applicable	Instrument/File name:	msda.i / a090806a
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,1-Trichloroethane	71-55-6	0.12	0.27	0.54	Not Detected U
1,1,2-Trichloroethane	79-00-5	0.099	0.27	0.54	Not Detected U
1,1-Dichloroethane	75-34-3	0.040	0.20	0.40	Not Detected U
1,1-Dichloroethene	75-35-4	0.066	0.20	0.40	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	0.71	0.89	3.7	Not Detected U
1,2-Dibromoethane (EDB)	106-93-4	0.066	0.38	0.77	Not Detected U
1,2-Dichlorobenzene	95-50-1	0.18	0.30	0.60	Not Detected U
1,2-Dichloroethane	107-06-2	0.058	0.20	0.40	Not Detected U
1,2-Dichloropropane	78-87-5	0.083	0.23	0.46	Not Detected U
1,3-Dichlorobenzene	541-73-1	0.17	0.30	0.60	Not Detected U
1,4-Dichlorobenzene	106-46-7	0.23	0.30	0.60	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	0.074	0.15	1.5	Not Detected U
4-Methyl-2-pentanone	108-10-1	0.16	0.20	0.41	Not Detected U
Acetone	67-64-1	0.16	0.28	1.2	0.28 J
Benzene	71-43-2	0.026	0.16	0.32	Not Detected U
Bromodichloromethane	75-27-4	0.094	0.34	0.67	Not Detected U
Bromoform	75-25-2	0.12	0.52	1.0	Not Detected U
Bromomethane	74-83-9	0.095	0.31	0.39	Not Detected U
Carbon Disulfide	75-15-0	0.11	0.16	1.6	Not Detected U
Carbon Tetrachloride	56-23-5	0.11	0.31	0.63	Not Detected U
Chlorobenzene	108-90-7	0.038	0.23	0.46	Not Detected U
Chloroethane	75-00-3	0.065	0.13	1.3	Not Detected U



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	Lab Blank	Date/Time Analyzed:	9/8/11 11:42 AM
Lab ID:	1109024-12C	Dilution Factor:	1.00
Date/Time Collecte	NA - Not Applicable	Instrument/Filename:	msda.i / a090806a
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Chloroform	67-66-3	0.077	0.24	0.49	Not Detected U
Chloromethane	74-87-3	0.062	0.16	0.21	Not Detected U
cis-1,2-Dichloroethene	156-59-2	0.10	0.20	0.40	Not Detected U
cis-1,3-Dichloropropene	10061-01-5	0.044	0.23	0.45	Not Detected U
Dibromochloromethane	124-48-1	0.054	0.42	0.85	Not Detected U
Ethyl Benzene	100-41-4	0.10	0.22	0.43	Not Detected U
Freon 11	75-69-4	0.053	0.28	0.56	Not Detected U
Freon 113	76-13-1	0.10	0.38	0.77	Not Detected U
Freon 12	75-71-8	0.057	0.26	0.49	Not Detected U
m,p-Xylene	108-38-3	0.084	0.22	0.43	Not Detected U
Methyl tert-butyl ether	1634-04-4	0.033	0.18	0.36	Not Detected U
Methylene Chloride	75-09-2	0.068	0.17	0.69	0.34 J
o-Xylene	95-47-6	0.070	0.22	0.43	Not Detected U
Styrene	100-42-5	0.096	0.21	0.42	Not Detected U
Tetrachloroethene	127-18-4	0.13	0.34	0.68	Not Detected U
Toluene	108-88-3	0.063	0.19	0.38	Not Detected U
trans-1,2-Dichloroethene	156-60-5	0.042	0.20	0.40	Not Detected U
trans-1,3-Dichloropropene	10061-02-6	0.10	0.23	0.45	Not Detected U
Vinyl Chloride	75-01-4	0.017	0.13	0.26	Not Detected U

U = The analyte was analyzed for, but not detected. The associated numerical value is at or below the MDL.
J = Estimated value.



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	Lab Blank	Date/Time Analyzed:	9/8/11 11:42 AM
Lab ID:	1109024-12C	Dilution Factor:	1.00
Date/Time Collecte	NA - Not Applicable	Instrument/Filename:	msda.i / a090806a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	68-134	115
4-Bromofluorobenzene	460-00-4	83-115	99
Toluene-d8	2037-26-5	89-109	98



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	Lab Blank	Date/Time Analyzed:	9/8/11 11:42 AM
Lab ID:	1109024-12D	Dilution Factor:	1.00
Date/Time Collecte	NA - Not Applicable	Instrument/Filename:	msda.i / a090806asim
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,2,2-Tetrachloroethane	79-34-5	0.0090	0.028	0.14	0.045 J
Trichloroethene	79-01-6	0.0036	0.022	0.11	0.0077 J

J = Estimated value.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	78-132	117
4-Bromofluorobenzene	460-00-4	85-114	99
Toluene-d8	2037-26-5	92-107	100



EPA METHOD TO-15 GC/MS FULL SCAN
USCG Site 7

Client ID:	Lab Blank	Date/Time Analyzed:	9/7/11 01:03 PM
Lab ID:	1109024-12E	Dilution Factor:	1.00
Date/Time Collecte	NA - Not Applicable	Instrument/Filename:	msd6.i / 6090710a
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,1-Trichloroethane	71-55-6	0.30	1.1	2.7	0.34 J
1,1,2,2-Tetrachloroethane	79-34-5	0.46	1.4	3.4	Not Detected U
1,1,2-Trichloroethane	79-00-5	0.48	1.1	2.7	Not Detected U
1,1-Dichloroethane	75-34-3	0.30	0.81	2.0	0.34 J
1,1-Dichloroethene	75-35-4	0.78	0.79	2.0	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	2.0	5.9	15	5.6 J
1,2-Dibromoethane (EDB)	106-93-4	0.62	1.5	3.8	0.73 J
1,2-Dichlorobenzene	95-50-1	0.51	1.2	3.0	1.1 J
1,2-Dichloroethane	107-06-2	0.26	0.81	2.0	0.49 J
1,2-Dichloropropane	78-87-5	0.64	0.92	2.3	Not Detected U
1,3-Dichlorobenzene	541-73-1	0.51	1.2	3.0	1.1 J
1,4-Dichlorobenzene	106-46-7	0.59	1.2	3.0	1.4 J
2-Butanone (Methyl Ethyl Ketone)	78-93-3	0.26	1.2	5.9	Not Detected U
4-Methyl-2-pentanone	108-10-1	0.41	0.82	2.0	Not Detected U
Acetone	67-64-1	0.91	1.9	4.8	0.96 J
Benzene	71-43-2	0.23	0.64	1.6	Not Detected U
Bromodichloromethane	75-27-4	0.42	1.3	3.4	0.54 J
Bromoform	75-25-2	0.88	2.1	5.2	Not Detected U
Bromomethane	74-83-9	0.26	0.78	1.9	Not Detected U
Carbon Disulfide	75-15-0	0.30	0.62	6.2	1.0 J
Carbon Tetrachloride	56-23-5	0.50	1.2	3.1	Not Detected U
Chlorobenzene	108-90-7	0.21	0.92	2.3	0.44 J



EPA METHOD TO-15 GC/MS FULL SCAN

USCG Site 7

Client ID: Lab Blank Lab ID: 1109024-12E Date/Time Collecte NA - Not Applicable Media: NA - Not Applicable		Date/Time Analyzed: 9/7/11 01:03 PM Dilution Factor: 1.00 Instrument/Filename: msd6.i / 6090710a			
Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Chloroethane	75-00-3	0.98	2.1	5.3	Not Detected U
Chloroform	67-66-3	0.34	0.98	2.4	0.51 J
Chloromethane	74-87-3	1.2	1.6	4.1	Not Detected U
cis-1,2-Dichloroethene	156-59-2	0.58	0.79	2.0	Not Detected U
cis-1,3-Dichloropropene	10061-01-5	0.38	0.91	2.3	Not Detected U
Dibromochloromethane	124-48-1	0.56	1.7	4.2	0.58 J
Ethyl Benzene	100-41-4	0.14	0.87	2.2	Not Detected U
Freon 11	75-69-4	0.15	1.1	2.8	0.49 J
Freon 113	76-13-1	0.96	1.5	3.8	Not Detected U
Freon 12	75-71-8	0.36	0.99	2.5	Not Detected U
m,p-Xylene	108-38-3	0.25	0.87	2.2	Not Detected U
Methyl tert-butyl ether	1634-04-4	0.27	0.72	1.8	Not Detected U
Methylene Chloride	75-09-2	0.20	0.69	1.7	0.52 J
o-Xylene	95-47-6	0.26	0.87	2.2	Not Detected U
Styrene	100-42-5	0.24	0.85	2.1	Not Detected U
Tetrachloroethene	127-18-4	0.26	1.4	3.4	0.58 J
Toluene	108-88-3	0.16	0.75	1.9	0.20 J
trans-1,2-Dichloroethene	156-60-5	0.67	0.79	2.0	Not Detected U
trans-1,3-Dichloropropene	10061-02-6	0.43	0.91	2.3	0.70 J
Trichloroethene	79-01-6	0.41	1.1	2.7	1.1 J
Vinyl Chloride	75-01-4	0.14	0.51	1.3	Not Detected U



EPA METHOD TO-15 GC/MS FULL SCAN
USCG Site 7

Client ID:	Lab Blank	Date/Time Analyzed:	9/7/11 01:03 PM
Lab ID:	1109024-12E	Dilution Factor:	1.00
Date/Time Collecte	NA - Not Applicable	Instrument/Filename:	msd6.i / 6090710a
Media:	NA - Not Applicable		

U = The analyte was analyzed for, but not detected. The associated numerical value is at or below the MDL.
J = Estimated value.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	72-138	129
4-Bromofluorobenzene	460-00-4	75-122	97
Toluene-d8	2037-26-5	87-114	102



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	CCV	Date/Time Analyzed:	9/2/11 08:55 AM
Lab ID:	1109024-13A	Dilution Factor:	1.00
Date/Time Collecte	NA - Not Applicable	Instrument/Filename:	msda.i / a090202a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1,1-Trichloroethane	71-55-6	89
1,1,2-Trichloroethane	79-00-5	100
1,1-Dichloroethane	75-34-3	102
1,1-Dichloroethene	75-35-4	99
1,2,4-Trichlorobenzene	120-82-1	106
1,2-Dibromoethane (EDB)	106-93-4	104
1,2-Dichlorobenzene	95-50-1	94
1,2-Dichloroethane	107-06-2	101
1,2-Dichloropropane	78-87-5	98
1,3-Dichlorobenzene	541-73-1	96
1,4-Dichlorobenzene	106-46-7	99
2-Butanone (Methyl Ethyl Ketone)	78-93-3	91
4-Methyl-2-pentanone	108-10-1	106
Acetone	67-64-1	99
Benzene	71-43-2	97
Bromodichloromethane	75-27-4	99
Bromoform	75-25-2	82
Bromomethane	74-83-9	79
Carbon Disulfide	75-15-0	98
Carbon Tetrachloride	56-23-5	84
Chlorobenzene	108-90-7	93
Chloroethane	75-00-3	83



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	CCV	Date/Time Analyzed:	9/2/11 08:55 AM
Lab ID:	1109024-13A	Dilution Factor:	1.00
Date/Time Collecte	NA - Not Applicable	Instrument/Filename:	msda.i / a090202a
Media:	NA - Not Applicable		
Compound	CAS#	%Recovery	
Chloroform	67-66-3	92	
Chloromethane	74-87-3	99	
cis-1,2-Dichloroethene	156-59-2	91	
cis-1,3-Dichloropropene	10061-01-5	95	
Dibromochloromethane	124-48-1	106	
Ethyl Benzene	100-41-4	80	
Freon 11	75-69-4	87	
Freon 113	76-13-1	106	
Freon 12	75-71-8	93	
m,p-Xylene	108-38-3	79	
Methyl tert-butyl ether	1634-04-4	92	
Methylene Chloride	75-09-2	83	
o-Xylene	95-47-6	81	
Styrene	100-42-5	82	
Tetrachloroethene	127-18-4	104	
Toluene	108-88-3	94	
trans-1,2-Dichloroethene	156-60-5	92	
trans-1,3-Dichloropropene	10061-02-6	102	
Vinyl Chloride	75-01-4	96	



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	CCV	Date/Time Analyzed:	9/2/11 08:55 AM
Lab ID:	1109024-13A	Dilution Factor:	1.00
Date/Time Collecte	NA - Not Applicable	Instrument/Filename:	msda.i / a090202a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	68-134	104
4-Bromofluorobenzene	460-00-4	83-115	109
Toluene-d8	2037-26-5	89-109	100



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

USCG Site 7

Client ID:	CCV	Date/Time Analyzed:	9/2/11 08:55 AM
Lab ID:	1109024-13B	Dilution Factor:	1.00
Date/Time Collecte	NA - Not Applicable	Instrument/Filename:	msda.i / a090202asim
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1,2,2-Tetrachloroethane	79-34-5	107
Trichloroethene	79-01-6	89

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	78-132	101
4-Bromofluorobenzene	460-00-4	85-114	108
Toluene-d8	2037-26-5	92-107	101



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	CCV	Date/Time Analyzed:	9/8/11 08:31 AM
Lab ID:	1109024-13C	Dilution Factor:	1.00
Date/Time Collecte	NA - Not Applicable	Instrument/Filename:	msda.i / a090802a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1,1-Trichloroethane	71-55-6	87
1,1,2-Trichloroethane	79-00-5	87
1,1-Dichloroethane	75-34-3	96
1,1-Dichloroethene	75-35-4	90
1,2,4-Trichlorobenzene	120-82-1	113
1,2-Dibromoethane (EDB)	106-93-4	91
1,2-Dichlorobenzene	95-50-1	90
1,2-Dichloroethane	107-06-2	94
1,2-Dichloropropane	78-87-5	94
1,3-Dichlorobenzene	541-73-1	86
1,4-Dichlorobenzene	106-46-7	89
2-Butanone (Methyl Ethyl Ketone)	78-93-3	85
4-Methyl-2-pentanone	108-10-1	102
Acetone	67-64-1	97
Benzene	71-43-2	93
Bromodichloromethane	75-27-4	92
Bromoform	75-25-2	100
Bromomethane	74-83-9	79
Carbon Disulfide	75-15-0	94
Carbon Tetrachloride	56-23-5	79
Chlorobenzene	108-90-7	93
Chloroethane	75-00-3	77



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	CCV	Date/Time Analyzed:	9/8/11 08:31 AM
Lab ID:	1109024-13C	Dilution Factor:	1.00
Date/Time Collecte	NA - Not Applicable	Instrument/Filename:	msda.i / a090802a
Media:	NA - Not Applicable		
Compound	CAS#	%Recovery	
Chloroform	67-66-3	86	
Chloromethane	74-87-3	99	
cis-1,2-Dichloroethene	156-59-2	85	
cis-1,3-Dichloropropene	10061-01-5	92	
Dibromochloromethane	124-48-1	95	
Ethyl Benzene	100-41-4	92	
Freon 11	75-69-4	82	
Freon 113	76-13-1	98	
Freon 12	75-71-8	93	
m,p-Xylene	108-38-3	91	
Methyl tert-butyl ether	1634-04-4	94	
Methylene Chloride	75-09-2	85	
o-Xylene	95-47-6	93	
Styrene	100-42-5	92	
Tetrachloroethene	127-18-4	94	
Toluene	108-88-3	92	
trans-1,2-Dichloroethene	156-60-5	85	
trans-1,3-Dichloropropene	10061-02-6	92	
Vinyl Chloride	75-01-4	94	



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	CCV	Date/Time Analyzed:	9/8/11 08:31 AM
Lab ID:	1109024-13C	Dilution Factor:	1.00
Date/Time Collecte	NA - Not Applicable	Instrument/Filename:	msda.i / a090802a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	68-134	98
4-Bromofluorobenzene	460-00-4	83-115	103
Toluene-d8	2037-26-5	89-109	100



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

USCG Site 7

Client ID:	CCV	Date/Time Analyzed:	9/8/11 08:31 AM
Lab ID:	1109024-13D	Dilution Factor:	1.00
Date/Time Collecte	NA - Not Applicable	Instrument/Filename:	msda.i / a090802sima
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1,2,2-Tetrachloroethane	79-34-5	92
Trichloroethene	79-01-6	87

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	78-132	101
4-Bromofluorobenzene	460-00-4	85-114	103
Toluene-d8	2037-26-5	92-107	102



EPA METHOD TO-15 GC/MS FULL SCAN

USCG Site 7

Client ID:	CCV	Date/Time Analyzed:	9/7/11 11:09 AM
Lab ID:	1109024-13E	Dilution Factor:	1.00
Date/Time Collecte	NA - Not Applicable	Instrument/Filename:	msd6.i / 6090706a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1,1-Trichloroethane	71-55-6	120
1,1,2,2-Tetrachloroethane	79-34-5	113
1,1,2-Trichloroethane	79-00-5	102
1,1-Dichloroethane	75-34-3	108
1,1-Dichloroethene	75-35-4	113
1,2,4-Trichlorobenzene	120-82-1	102
1,2-Dibromoethane (EDB)	106-93-4	107
1,2-Dichlorobenzene	95-50-1	110
1,2-Dichloroethane	107-06-2	120
1,2-Dichloropropane	78-87-5	100
1,3-Dichlorobenzene	541-73-1	115
1,4-Dichlorobenzene	106-46-7	111
2-Butanone (Methyl Ethyl Ketone)	78-93-3	104
4-Methyl-2-pentanone	108-10-1	106
Acetone	67-64-1	105
Benzene	71-43-2	107
Bromodichloromethane	75-27-4	118
Bromoform	75-25-2	115
Bromomethane	74-83-9	98
Carbon Disulfide	75-15-0	104
Carbon Tetrachloride	56-23-5	128
Chlorobenzene	108-90-7	104



EPA METHOD TO-15 GC/MS FULL SCAN

USCG Site 7

Client ID:	CCV	Date/Time Analyzed:	9/7/11 11:09 AM
Lab ID:	1109024-13E	Dilution Factor:	1.00
Date/Time Collecte	NA - Not Applicable	Instrument/Filename:	msd6.i / 6090706a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Chloroethane	75-00-3	105
Chloroform	67-66-3	115
Chloromethane	74-87-3	113
cis-1,2-Dichloroethene	156-59-2	101
cis-1,3-Dichloropropene	10061-01-5	114
Dibromochloromethane	124-48-1	113
Ethyl Benzene	100-41-4	106
Freon 11	75-69-4	124
Freon 113	76-13-1	100
Freon 12	75-71-8	122
m,p-Xylene	108-38-3	110
Methyl tert-butyl ether	1634-04-4	111
Methylene Chloride	75-09-2	109
o-Xylene	95-47-6	112
Styrene	100-42-5	115
Tetrachloroethene	127-18-4	103
Toluene	108-88-3	110
trans-1,2-Dichloroethene	156-60-5	102
trans-1,3-Dichloropropene	10061-02-6	118
Trichloroethene	79-01-6	109
Vinyl Chloride	75-01-4	102



EPA METHOD TO-15 GC/MS FULL SCAN
USCG Site 7

Client ID:	CCV	Date/Time Analyzed:	9/7/11 11:09 AM
Lab ID:	1109024-13E	Dilution Factor:	1.00
Date/Time Collecte	NA - Not Applicable	Instrument/Filename:	msd6.i / 6090706a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	72-138	119
4-Bromofluorobenzene	460-00-4	75-122	108
Toluene-d8	2037-26-5	87-114	105



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	LCS	Date/Time Analyzed:	9/2/11 09:33 AM
Lab ID:	1109024-14A	Dilution Factor:	1.00
Date/Time Collecte	NA - Not Applicable	Instrument/Filename:	msda.i / a090203a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1,1-Trichloroethane	71-55-6	76
1,1,2-Trichloroethane	79-00-5	77
1,1-Dichloroethane	75-34-3	84
1,1-Dichloroethene	75-35-4	84
1,2,4-Trichlorobenzene	120-82-1	91
1,2-Dibromoethane (EDB)	106-93-4	81
1,2-Dichlorobenzene	95-50-1	76
1,2-Dichloroethane	107-06-2	85
1,2-Dichloropropane	78-87-5	85
1,3-Dichlorobenzene	541-73-1	75
1,4-Dichlorobenzene	106-46-7	77
2-Butanone (Methyl Ethyl Ketone)	78-93-3	74
4-Methyl-2-pentanone	108-10-1	90
Acetone	67-64-1	89
Benzene	71-43-2	85
Bromodichloromethane	75-27-4	82
Bromoform	75-25-2	85
Bromomethane	74-83-9	77
Carbon Disulfide	75-15-0	102
Carbon Tetrachloride	56-23-5	59
Chlorobenzene	108-90-7	84
Chloroethane	75-00-3	76

* % Recovery is calculated using unrounded analytical results.



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	LCS	Date/Time Analyzed:	9/2/11 09:33 AM
Lab ID:	1109024-14A	Dilution Factor:	1.00
Date/Time Collecte	NA - Not Applicable	Instrument/Filename:	msda.i / a090203a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Chloroform	67-66-3	76
Chloromethane	74-87-3	90
cis-1,2-Dichloroethene	156-59-2	76
cis-1,3-Dichloropropene	10061-01-5	82
Dibromochloromethane	124-48-1	79
Ethyl Benzene	100-41-4	82
Freon 11	75-69-4	96
Freon 113	76-13-1	86
Freon 12	75-71-8	83
m,p-Xylene	108-38-3	85
Methyl tert-butyl ether	1634-04-4	74
Methylene Chloride	75-09-2	79
o-Xylene	95-47-6	85
Styrene	100-42-5	80
Tetrachloroethene	127-18-4	81
Toluene	108-88-3	84
trans-1,2-Dichloroethene	156-60-5	84
trans-1,3-Dichloropropene	10061-02-6	80
Vinyl Chloride	75-01-4	87

* % Recovery is calculated using unrounded analytical results.



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	LCS	Date/Time Analyzed:	9/2/11 09:33 AM
Lab ID:	1109024-14A	Dilution Factor:	1.00
Date/Time Collecte	NA - Not Applicable	Instrument/Filename:	msda.i / a090203a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	68-134	94
4-Bromofluorobenzene	460-00-4	83-115	101
Toluene-d8	2037-26-5	89-109	102

* % Recovery is calculated using unrounded analytical results.



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	LCSD	Date/Time Analyzed:	9/2/11 10:09 AM
Lab ID:	1109024-14AA	Dilution Factor:	1.00
Date/Time Collecte	NA - Not Applicable	Instrument/Filename:	msda.i / a090204a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1,1-Trichloroethane	71-55-6	79
1,1,2-Trichloroethane	79-00-5	79
1,1-Dichloroethane	75-34-3	88
1,1-Dichloroethene	75-35-4	89
1,2,4-Trichlorobenzene	120-82-1	89
1,2-Dibromoethane (EDB)	106-93-4	81
1,2-Dichlorobenzene	95-50-1	75
1,2-Dichloroethane	107-06-2	87
1,2-Dichloropropane	78-87-5	86
1,3-Dichlorobenzene	541-73-1	75
1,4-Dichlorobenzene	106-46-7	77
2-Butanone (Methyl Ethyl Ketone)	78-93-3	80
4-Methyl-2-pentanone	108-10-1	89
Acetone	67-64-1	90
Benzene	71-43-2	84
Bromodichloromethane	75-27-4	84
Bromoform	75-25-2	85
Bromomethane	74-83-9	77
Carbon Disulfide	75-15-0	104
Carbon Tetrachloride	56-23-5	62
Chlorobenzene	108-90-7	84
Chloroethane	75-00-3	78

* % Recovery is calculated using unrounded analytical results.



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

USCG Site 7

Client ID:	LCSD	Date/Time Analyzed:	9/2/11 10:09 AM
Lab ID:	1109024-14AA	Dilution Factor:	1.00
Date/Time Collecte	NA - Not Applicable	Instrument/Filename:	msda.i / a090204a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Chloroform	67-66-3	81
Chloromethane	74-87-3	89
cis-1,2-Dichloroethene	156-59-2	79
cis-1,3-Dichloropropene	10061-01-5	82
Dibromochloromethane	124-48-1	80
Ethyl Benzene	100-41-4	82
Freon 11	75-69-4	97
Freon 113	76-13-1	92
Freon 12	75-71-8	82
m,p-Xylene	108-38-3	82
Methyl tert-butyl ether	1634-04-4	78
Methylene Chloride	75-09-2	78
o-Xylene	95-47-6	83
Styrene	100-42-5	78
Tetrachloroethene	127-18-4	82
Toluene	108-88-3	82
trans-1,2-Dichloroethene	156-60-5	90
trans-1,3-Dichloropropene	10061-02-6	82
Vinyl Chloride	75-01-4	85

* % Recovery is calculated using unrounded analytical results.



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	LCSD	Date/Time Analyzed:	9/2/11 10:09 AM
Lab ID:	1109024-14AA	Dilution Factor:	1.00
Date/Time Collecte	NA - Not Applicable	Instrument/Filename:	msda.i / a090204a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	68-134	102
4-Bromofluorobenzene	460-00-4	83-115	104
Toluene-d8	2037-26-5	89-109	102

* % Recovery is calculated using unrounded analytical results.



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

USCG Site 7

Client ID:	LCS	Date/Time Analyzed:	9/2/11 09:33 AM
Lab ID:	1109024-14B	Dilution Factor:	1.00
Date/Time Collecte	NA - Not Applicable	Instrument/Filename:	msda.i / a090203asim
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1,2,2-Tetrachloroethane	79-34-5	84
Trichloroethene	79-01-6	77

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	78-132	95
4-Bromofluorobenzene	460-00-4	85-114	102
Toluene-d8	2037-26-5	92-107	104

* % Recovery is calculated using unrounded analytical results.



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

USCG Site 7

Client ID:	LCSD	Date/Time Analyzed:	9/2/11 10:09 AM
Lab ID:	1109024-14BB	Dilution Factor:	1.00
Date/Time Collecte	NA - Not Applicable	Instrument/Filename:	msda.i / a090204asim
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1,2,2-Tetrachloroethane	79-34-5	85
Trichloroethene	79-01-6	77

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	78-132	99
4-Bromofluorobenzene	460-00-4	85-114	102
Toluene-d8	2037-26-5	92-107	102

* % Recovery is calculated using unrounded analytical results.



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	LCS	Date/Time Analyzed:	9/8/11 09:10 AM
Lab ID:	1109024-14C	Dilution Factor:	1.00
Date/Time Collecte	NA - Not Applicable	Instrument/Filename:	msda.i / a090803a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1,1-Trichloroethane	71-55-6	100
1,1,2-Trichloroethane	79-00-5	96
1,1-Dichloroethane	75-34-3	112
1,1-Dichloroethene	75-35-4	62
1,2,4-Trichlorobenzene	120-82-1	116
1,2-Dibromoethane (EDB)	106-93-4	100
1,2-Dichlorobenzene	95-50-1	101
1,2-Dichloroethane	107-06-2	109
1,2-Dichloropropane	78-87-5	106
1,3-Dichlorobenzene	541-73-1	97
1,4-Dichlorobenzene	106-46-7	99
2-Butanone (Methyl Ethyl Ketone)	78-93-3	98
4-Methyl-2-pentanone	108-10-1	114
Acetone	67-64-1	110
Benzene	71-43-2	103
Bromodichloromethane	75-27-4	106
Bromoform	75-25-2	110
Bromomethane	74-83-9	57
Carbon Disulfide	75-15-0	127
Carbon Tetrachloride	56-23-5	100
Chlorobenzene	108-90-7	101
Chloroethane	75-00-3	79

* % Recovery is calculated using unrounded analytical results.



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	LCS	Date/Time Analyzed:	9/8/11 09:10 AM
Lab ID:	1109024-14C	Dilution Factor:	1.00
Date/Time Collecte	NA - Not Applicable	Instrument/Filename:	msda.i / a090803a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Chloroform	67-66-3	101
Chloromethane	74-87-3	105
cis-1,2-Dichloroethene	156-59-2	99
cis-1,3-Dichloropropene	10061-01-5	101
Dibromochloromethane	124-48-1	106
Ethyl Benzene	100-41-4	99
Freon 11	75-69-4	95
Freon 113	76-13-1	60
Freon 12	75-71-8	98
m,p-Xylene	108-38-3	98
Methyl tert-butyl ether	1634-04-4	105
Methylene Chloride	75-09-2	88
o-Xylene	95-47-6	100
Styrene	100-42-5	101
Tetrachloroethene	127-18-4	100
Toluene	108-88-3	99
trans-1,2-Dichloroethene	156-60-5	112
trans-1,3-Dichloropropene	10061-02-6	102
Vinyl Chloride	75-01-4	98

* % Recovery is calculated using unrounded analytical results.



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	LCS	Date/Time Analyzed:	9/8/11 09:10 AM
Lab ID:	1109024-14C	Dilution Factor:	1.00
Date/Time Collecte	NA - Not Applicable	Instrument/Filename:	msda.i / a090803a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	68-134	106
4-Bromofluorobenzene	460-00-4	83-115	101
Toluene-d8	2037-26-5	89-109	100

* % Recovery is calculated using unrounded analytical results.



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	LCSD	Date/Time Analyzed:	9/8/11 09:45 AM
Lab ID:	1109024-14CC	Dilution Factor:	1.00
Date/Time Collecte	NA - Not Applicable	Instrument/Filename:	msda.i / a090804a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1,1-Trichloroethane	71-55-6	98
1,1,2-Trichloroethane	79-00-5	99
1,1-Dichloroethane	75-34-3	112
1,1-Dichloroethene	75-35-4	52 Q
1,2,4-Trichlorobenzene	120-82-1	121
1,2-Dibromoethane (EDB)	106-93-4	104
1,2-Dichlorobenzene	95-50-1	102
1,2-Dichloroethane	107-06-2	113
1,2-Dichloropropane	78-87-5	108
1,3-Dichlorobenzene	541-73-1	100
1,4-Dichlorobenzene	106-46-7	103
2-Butanone (Methyl Ethyl Ketone)	78-93-3	96
4-Methyl-2-pentanone	108-10-1	114
Acetone	67-64-1	111
Benzene	71-43-2	104
Bromodichloromethane	75-27-4	109
Bromoform	75-25-2	113
Bromomethane	74-83-9	61
Carbon Disulfide	75-15-0	126
Carbon Tetrachloride	56-23-5	98
Chlorobenzene	108-90-7	103
Chloroethane	75-00-3	77

* % Recovery is calculated using unrounded analytical results.



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	LCSD	Date/Time Analyzed:	9/8/11 09:45 AM
Lab ID:	1109024-14CC	Dilution Factor:	1.00
Date/Time Collecte	NA - Not Applicable	Instrument/Filename:	msda.i / a090804a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Chloroform	67-66-3	101
Chloromethane	74-87-3	100
cis-1,2-Dichloroethene	156-59-2	97
cis-1,3-Dichloropropene	10061-01-5	102
Dibromochloromethane	124-48-1	109
Ethyl Benzene	100-41-4	100
Freon 11	75-69-4	96
Freon 113	76-13-1	56 Q
Freon 12	75-71-8	92
m,p-Xylene	108-38-3	103
Methyl tert-butyl ether	1634-04-4	101
Methylene Chloride	75-09-2	87
o-Xylene	95-47-6	105
Styrene	100-42-5	105
Tetrachloroethene	127-18-4	101
Toluene	108-88-3	98
trans-1,2-Dichloroethene	156-60-5	110
trans-1,3-Dichloropropene	10061-02-6	103
Vinyl Chloride	75-01-4	94

Q = Exceeds Quality Control limits.

* % Recovery is calculated using unrounded analytical results.



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

USCG Site 7

Client ID:	LCSD	Date/Time Analyzed:	9/8/11 09:45 AM
Lab ID:	1109024-14CC	Dilution Factor:	1.00
Date/Time Collecte	NA - Not Applicable	Instrument/Filename:	msda.i / a090804a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	68-134	106
4-Bromofluorobenzene	460-00-4	83-115	103
Toluene-d8	2037-26-5	89-109	99

* % Recovery is calculated using unrounded analytical results.



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

USCG Site 7

Client ID:	LCS	Date/Time Analyzed:	9/8/11 09:10 AM
Lab ID:	1109024-14D	Dilution Factor:	1.00
Date/Time Collecte	NA - Not Applicable	Instrument/Filename:	msda.i / a090803asim
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1,2,2-Tetrachloroethane	79-34-5	106
Trichloroethene	79-01-6	96

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	78-132	108
4-Bromofluorobenzene	460-00-4	85-114	102
Toluene-d8	2037-26-5	92-107	101

* % Recovery is calculated using unrounded analytical results.



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

USCG Site 7

Client ID:	LCSD	Date/Time Analyzed:	9/8/11 09:45 AM
Lab ID:	1109024-14DD	Dilution Factor:	1.00
Date/Time Collecte	NA - Not Applicable	Instrument/Filename:	msda.i / a090804asim
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1,2,2-Tetrachloroethane	79-34-5	105
Trichloroethene	79-01-6	97

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	78-132	103
4-Bromofluorobenzene	460-00-4	85-114	103
Toluene-d8	2037-26-5	92-107	101

* % Recovery is calculated using unrounded analytical results.



EPA METHOD TO-15 GC/MS FULL SCAN

USCG Site 7

Client ID:	LCS	Date/Time Analyzed:	9/7/11 11:30 AM
Lab ID:	1109024-14E	Dilution Factor:	1.00
Date/Time Collecte	NA - Not Applicable	Instrument/Filename:	msd6.i / 6090707a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1,1-Trichloroethane	71-55-6	130
1,1,2,2-Tetrachloroethane	79-34-5	113
1,1,2-Trichloroethane	79-00-5	101
1,1-Dichloroethane	75-34-3	118
1,1-Dichloroethene	75-35-4	129
1,2,4-Trichlorobenzene	120-82-1	98
1,2-Dibromoethane (EDB)	106-93-4	107
1,2-Dichlorobenzene	95-50-1	110
1,2-Dichloroethane	107-06-2	124
1,2-Dichloropropane	78-87-5	102
1,3-Dichlorobenzene	541-73-1	113
1,4-Dichlorobenzene	106-46-7	106
2-Butanone (Methyl Ethyl Ketone)	78-93-3	111
4-Methyl-2-pentanone	108-10-1	107
Acetone	67-64-1	103
Benzene	71-43-2	110
Bromodichloromethane	75-27-4	120
Bromoform	75-25-2	110
Bromomethane	74-83-9	112
Carbon Disulfide	75-15-0	136
Carbon Tetrachloride	56-23-5	135
Chlorobenzene	108-90-7	102

* % Recovery is calculated using unrounded analytical results.



EPA METHOD TO-15 GC/MS FULL SCAN
USCG Site 7

Client ID:	LCS	Date/Time Analyzed:	9/7/11 11:30 AM
Lab ID:	1109024-14E	Dilution Factor:	1.00
Date/Time Collecte	NA - Not Applicable	Instrument/Filename:	msd6.i / 6090707a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Chloroethane	75-00-3	113
Chloroform	67-66-3	122
Chloromethane	74-87-3	115
cis-1,2-Dichloroethene	156-59-2	106
cis-1,3-Dichloropropene	10061-01-5	113
Dibromochloromethane	124-48-1	109
Ethyl Benzene	100-41-4	103
Freon 11	75-69-4	127
Freon 113	76-13-1	107
Freon 12	75-71-8	129
m,p-Xylene	108-38-3	108
Methyl tert-butyl ether	1634-04-4	119
Methylene Chloride	75-09-2	113
o-Xylene	95-47-6	112
Styrene	100-42-5	115
Tetrachloroethene	127-18-4	96
Toluene	108-88-3	110
trans-1,2-Dichloroethene	156-60-5	120
trans-1,3-Dichloropropene	10061-02-6	119
Trichloroethene	79-01-6	112
Vinyl Chloride	75-01-4	112

* % Recovery is calculated using unrounded analytical results.



EPA METHOD TO-15 GC/MS FULL SCAN
USCG Site 7

Client ID:	LCS	Date/Time Analyzed:	9/7/11 11:30 AM
Lab ID:	1109024-14E	Dilution Factor:	1.00
Date/Time Collecte	NA - Not Applicable	Instrument/Filename:	msd6.i / 6090707a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	72-138	122
4-Bromofluorobenzene	460-00-4	75-122	103
Toluene-d8	2037-26-5	87-114	106

* % Recovery is calculated using unrounded analytical results.



EPA METHOD TO-15 GC/MS FULL SCAN
USCG Site 7

Client ID:	LCSD	Date/Time Analyzed:	9/7/11 11:52 AM
Lab ID:	1109024-14EE	Dilution Factor:	1.00
Date/Time Collecte	NA - Not Applicable	Instrument/Filename:	msd6.i / 6090708a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1,1-Trichloroethane	71-55-6	121
1,1,2,2-Tetrachloroethane	79-34-5	114
1,1,2-Trichloroethane	79-00-5	102
1,1-Dichloroethane	75-34-3	112
1,1-Dichloroethene	75-35-4	119
1,2,4-Trichlorobenzene	120-82-1	105
1,2-Dibromoethane (EDB)	106-93-4	110
1,2-Dichlorobenzene	95-50-1	109
1,2-Dichloroethane	107-06-2	121
1,2-Dichloropropane	78-87-5	104
1,3-Dichlorobenzene	541-73-1	115
1,4-Dichlorobenzene	106-46-7	104
2-Butanone (Methyl Ethyl Ketone)	78-93-3	104
4-Methyl-2-pentanone	108-10-1	108
Acetone	67-64-1	97
Benzene	71-43-2	110
Bromodichloromethane	75-27-4	122
Bromoform	75-25-2	113
Bromomethane	74-83-9	102
Carbon Disulfide	75-15-0	129
Carbon Tetrachloride	56-23-5	128
Chlorobenzene	108-90-7	103

* % Recovery is calculated using unrounded analytical results.



EPA METHOD TO-15 GC/MS FULL SCAN

USCG Site 7

Client ID:	LCSD	Date/Time Analyzed:	9/7/11 11:52 AM
Lab ID:	1109024-14EE	Dilution Factor:	1.00
Date/Time Collecte	NA - Not Applicable	Instrument/Filename:	msd6.i / 6090708a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Chloroethane	75-00-3	106
Chloroform	67-66-3	112
Chloromethane	74-87-3	101
cis-1,2-Dichloroethene	156-59-2	103
cis-1,3-Dichloropropene	10061-01-5	116
Dibromochloromethane	124-48-1	111
Ethyl Benzene	100-41-4	105
Freon 11	75-69-4	120
Freon 113	76-13-1	103
Freon 12	75-71-8	119
m,p-Xylene	108-38-3	110
Methyl tert-butyl ether	1634-04-4	117
Methylene Chloride	75-09-2	109
o-Xylene	95-47-6	114
Styrene	100-42-5	114
Tetrachloroethene	127-18-4	97
Toluene	108-88-3	110
trans-1,2-Dichloroethene	156-60-5	112
trans-1,3-Dichloropropene	10061-02-6	120
Trichloroethene	79-01-6	113
Vinyl Chloride	75-01-4	107

* % Recovery is calculated using unrounded analytical results.



EPA METHOD TO-15 GC/MS FULL SCAN
USCG Site 7

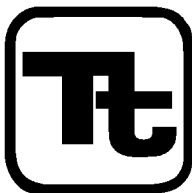
Client ID:	LCSD	Date/Time Analyzed:	9/7/11 11:52 AM
Lab ID:	1109024-14EE	Dilution Factor:	1.00
Date/Time Collecte	NA - Not Applicable	Instrument/Filename:	msd6.i / 6090708a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	72-138	115
4-Bromofluorobenzene	460-00-4	75-122	102
Toluene-d8	2037-26-5	87-114	106

* % Recovery is calculated using unrounded analytical results.

Attachment B
Tetra Tech Data Validation Report

Draft



TETRA TECH NUS

PHIL-XXXX

TO: MICHELLE GILLIE DATE: OCTOBER 20, 2011
FROM: RUSSELL SLOBODA COPIES: FILE
SUBJECT: ORGANIC DATA VALIDATION – VOC
USCG, BALTIMORE, MARYLAND
SDG NO. 1109024

SAMPLES: 11/Air/

SG7-1	SG7-2	SG7-3	SG7-4
SG7-5	SG7-6	SG7-7	SG7-8
DUP-01	DUP-02	Trip Blank 20110831	

OVERVIEW

The sample set for the US Coast Guard – Baltimore, MD, SDG 1109024 consists of 8 air environmental samples (designated SG7-), two field duplicates (designated DUP-), and one field quality control (QC) blank (designated Trip Blank). All samples were analyzed for Target Compound List (TCL) Volatile Organic Compounds (VOCs).

The samples were collected by Tetra Tech NUS on August, 31, 2011 and analyzed by Air Toxics of Folsom, California. Sample DUP-01 was a field duplicate of sample SG7-8, and sample DUP-02 was a field duplicate of sample SG7-1.

The analyses were conducted using modified EPA Method TO-15 using Gas Chromatography/Mass Spectrometry (GC/MS) in the Full Scan and Selected Ion Monitoring (SIM) acquisition modes.

SUMMARY

All analytes were successfully analyzed in all samples. The findings offered in this report are based upon a general review of all available data including data completeness, holding times until analysis, GC/MS tuning and calibration data, laboratory and field quality control blank results, system monitoring compound recoveries, laboratory duplicate results, laboratory control spike results, internal standards performance, compound identification, compound quantitation, and field duplicate results.

MINOR PROBLEMS

- The following table summarizes the analytes detected as contaminants in the laboratory blanks at the maximum concentrations indicated:

<u>Compound</u>	<u>Maximum Concentration</u>	<u>Action Level</u>
1,1,1-Trichloroethane	0.34 µg/m ³	1.7 µg/m ³
1,1,2,2-Tetrachloroethane	0.045 µg/m ³	0.225 µg/m ³
1,1-Dichloroethane	0.34 µg/m ³	1.7 µg/m ³
1,2-Dichloroethane	0.49 µg/m ³	2.45 µg/m ³
1,2,4-Trichlorobenzene	5.6 µg/m ³	28 µg/m ³

<u>Compound</u>	<u>Maximum Concentration</u>	<u>Action Level</u>
1,2-Dichlorobenzene	1.1 µg/m ³	5.5 µg/m ³
1,3-Dichlorobenzene	1.1 µg/m ³	5.5 µg/m ³
1,4-Dichlorobenzene	1.4 µg/m ³	7 µg/m ³
1,2-Dibromoethane	0.73 µg/m ³	3.65 µg/m ³
Acetone	0.96 µg/m ³	9.6 µg/m ³
Benzene	0.03 µg/m ³	0.15 µg/m ³
Bromodichloromethane	0.54 µg/m ³	2.7 µg/m ³
Chlorodibromomethane	0.58 µg/m ³	2.9 µg/m ³
Carbon Disulfide	1 µg/m ³	5 µg/m ³
Chlorobenzene	0.44 µg/m ³	2.2 µg/m ³
Chloroform	0.51 µg/m ³	2.55 µg/m ³
Methylene Chloride	0.52 µg/m ³	5.2 µg/m ³
Tetrachloroethene	0.58 µg/m ³	2.9 µg/m ³
Toluene	0.2 µg/m ³	1 µg/m ³
Trans-1,3-dichloropropene	0.7 µg/m ³	3.5 µg/m ³
Trichloroethene	0.0094 µg/m ³	0.047 µg/m ³
Trichlorofluoromethane	0.49 µg/m ³	2.45 µg/m ³

Samples affected: The action levels apply to all air environmental samples.

Adjustments were made for the sample dilution factors. Results reported at concentrations within the action level are qualified (B) and are considered to be false positives (artifacts of blank contamination). No qualifications were made for 1,2,4-trichlorobenzene, 1,2-dibromoethane, 1,2-dichlorobenzene, 1,3-dichlorobenzene, chlorodibromomethane, trans-1,3-dichloropropene, and trichloroethene because these compounds were not detected or were present at levels above the action level in the associated samples.

- The System Monitoring Compound percent recovery (%R) for 4-bromofluorobenzene was below the lower quality control (QC) limit in sample SG7-6. Associated positive results were qualified estimated (J), except where superseded by the qualifier (B) for blank contamination.
- The Laboratory Control Spike (LCS) and/or Laboratory Control Spike Duplicate (LCSD) for 1,1-dichloroethene and 1,1,2-trichloro-1,2,2-trifluoroethane were below the lower QC limits. Associated positive and non-detected results were qualified estimated (J/UJ), respectively.
- The laboratory duplicate of sample DUP-02 exhibited imprecision for trichloroethene with a relative percent difference (RPD) exceeding 50%. Associated results were qualified estimated (J).
- The compound identification data for methyl tert-butyl ether (MTBE) in sample DUP-01 were examined and the characteristic ions with mass to charge (m/z) ratios of 41 and 57 were not present at the correct retention time or in the correct abundances relative to the primary ion with m/z 73, and the primary ion with m/z 73 was attributed to an interference caused by a siloxane species displaying ions with m/z values of 73 and 207. The trace level result for MTBE was replaced with a non-detected value, qualified estimated (UJ).
- The initial calibration Relative Response Factor (RRF) for carbon tetrachloride exceeded the QC criterion of 30% Relative Standard Deviation (%RSD). Associated positive results were qualified estimated (J).
- Positive results at concentrations less than the reporting limits (RLs) were qualified as estimated (J), except where superseded by the qualifier (B) for blank contamination.

NOTES

Dilution was performed on samples SG7-1 and DUP-02 due to the presence of high level target species. For this same reason, these two samples were analyzed as full scan and not SIM for all target compounds.

The initial calibration RRF for 1,1-dichloroethene exceeded the QC criterion of 30% RSD. Associated results were non-detected and were not qualified.

EXECUTIVE SUMMARY

Laboratory Performance: Twenty-two compounds were detected in laboratory blanks at low concentrations. Two compounds exceeded the initial calibration RRF %RSD criterion. Two compounds displayed LCS/LCSD recoveries below the lower QC limits.

Other Factors Affecting Data Quality: One system monitoring compound exceeded the QC limit for %R in one sample. MS/MSD recoveries were below the lower QC limits for two compounds. One compound displayed a high %RPD in the laboratory duplicate analysis. Spectral interference was noted for MTBE caused by siloxanes in one sample.

The data for these analyses were reviewed with reference to the EPA "Functional Guidelines for Organic Data Review", as amended for use within EPA Region 3 (9/94).

The text of this report has been formatted to address only those problem areas affecting data quality.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the Functional Guidelines and the Quality Assurance Project Plan (QAPP)."



Tetra Tech NUS, Inc.
Russell Sloboda
Data Validation Quality Assurance Officer

Attachments:

1. Appendix A - Qualified Analytical Results
2. Appendix B - Laboratory Analytical Results
3. Appendix C - Support Documentation

APPENDIX A

Qualified Analytical Results

Data Qualifier Key:

- B - Positive result is considered to be an artifact of blank contamination and should not be considered present.
- J - Value is considered estimated due to exceedance of technical quality control or because result is less than the Contract Required Quantitation Limit (CRQL).
- K - Positive result is considered biased high due to exceedance of technical quality control criteria.
- L - Positive result is considered biased low due to exceedance of technical quality control criteria.
- U - Value is a non-detected result as reported by the laboratory.
- UL - Non-detected result is considered biased low due to exceedance of technical quality control criteria.
- UR - Non-detected result is considered unusable due to exceedance of technical quality control criteria.

Validated Results for VOCs in Summa Canister Samples by Full Scan GC/MS Analysis
SDG 1109024, Method TO-15
USCG Baltimore, Maryland

PROJ_NO: 02841	NSAMPLE	DUP-01				DUP-02				SG7-1				SG7-2			
SDG: 1109024	LAB_ID	1109024-09A				1109024-10A				1109024-07A				1109024-05A			
FRACTION: OV	SAMP_DATE	8/31/2011				8/31/2011				8/31/2011				8/31/2011			
MEDIA: AIR	QC_TYPE	NM				NM				NM				NM			
	DUP_OF	SG7-8				SG7-1				DUP-02							
	DILUTION FAC.	1.29	1.29			28.4	28.4			28.8	28.8			1.36	1.36		
		RESULT MG/M3	RESULT PPBV	QUAL	QUAL CODE	RESULT UG/M3	RESULT PPBV	QUAL	QUAL CODE	RESULT UG/M3	RESULT PPBV	QUAL	QUAL CODE	RESULT UG/M3	RESULT PPBV	QUAL	QUAL CODE
1,1,1-TRICHLOROETHANE		0.7		U		77		U		78		U		0.18	0.033	B	A
1,1,2,2-TETRACHLOROETHANE		NA	NA	NA	NA	97		U		99		U		NA	NA	NA	NA
1,1,2-TRICHLOROETHANE		0.7		U		77		U		78		U		0.74		U	
1,1,2-TRICHLOROTRIFLUOROETHANE		0.69	0.09	J	P, E	110		UJ	E	110		UJ	E	0.6	0.078	J	E
1,1-DICHLOROETHANE		0.52		U		57		U		58		U		0.55		U	
1,1-DICHLOROETHENE		0.51		UJ	E	56		UJ	E	57		UJ	E	0.54		UJ	E
1,2,4-TRICHLOROBENZENE		4.8		U		420		U		430		U		5		U	
1,2-DIBROMOETHANE		0.99		U		110		U		110		U		1		U	
1,2-DICHLOROBENZENE		0.78		U		85		U		86		U		0.82		U	
1,2-DICHLOROETHANE		0.098	0.024	B	A	57		U		7.7	1.9	B	A	0.55		U	
1,2-DICHLOROPROPANE		0.6		U		66		U		66		U		0.63		U	
1,3-DICHLOROBENZENE		0.78		U		85		U		86		U		0.82		U	
1,4-DICHLOROBENZENE		0.45	0.075	B	A	85		U		86		U		0.34	0.056	B	A
2-BUTANONE		2.8	0.93	U		170		U		170		U		1.4	0.47	J	P
4-METHYL-2-PENTANONE		3	0.73	U		58		U		59		U		0.56		U	
ACETONE		42	18	U		130		U		140		U		9.8	3	B	A
BENZENE		2	0.64	U		45		U		46		U		0.19	0.061	B	A
BROMODICHLOROMETHANE		0.26	0.039	B	A	95		U		96		U		0.91		U	
BROMOFORM		1.3		U		150		U		150		U		1.4		U	
BROMOMETHANE		0.5		U		55		U		56		U		0.53		U	
CARBON DISULFIDE		0.32	0.1	B	A	180		U		15	4.8	B	A	1.2	0.39	B	A
CARBON TETRACHLORIDE		0.5	0.079	J	P, C	89		U		91		U		0.51	0.081	J	P, C
CHLOROBENZENE		0.59		U		65		U		66		U		0.63		U	
CHLORODIBROMOMETHANE		1.1		U		120		U		120		U		1.2		U	
CHLOROETHANE		1.7		U		150		U		150		U		1.8		U	
CHLOROFORM		1.3	0.27	B	A	22	4.5	B	A	18	3.7	B	A	0.29	0.06	B	A
CHLOROMETHANE		1.4	0.71	U		120		U		120		U		0.64	0.31	U	
CIS-1,2-DICHLOROETHENE		0.51		U		56		U		57		U		0.54		U	
CIS-1,3-DICHLOROPROPENE		0.58		U		64		U		65		U		0.62		U	
DICHLORODIFLUOROMETHANE		3.4	0.69	U		24000	4800	U		26000	5256	U		8.2	1.7	U	
ETHYLBENZENE		2.4	0.55	U		62		U		62		U		0.59		U	
M+P-XYLENES		6.8	1.6	U		62		U		62		U		0.39	0.09	J	P
METHYL TERT-BUTYL ETHER		0.46		UJ	W	51		U		52		U		0.49		U	
METHYLENE CHLORIDE		1.5	0.43	B	A	49		U		50		U		1.3	0.39	B	A
O-XYLENE		2.2	0.5	U		62		U		62		U		0.18	0.042	J	P
STYRENE		0.23	0.055	J	P	60		U		61		U		0.58		U	
TETRACHLOROETHENE		0.42	0.61	B	A	280	42	B	A	290	42	B	A	8	1.2	U	
TOLUENE		8.5	2.2	U		54		U		54		U		0.5	0.13	B	A
TRANS-1,2-DICHLOROETHENE		0.51		U		56		U		57		U		0.54		U	
TRANS-1,3-DICHLOROPROPENE		0.58		U		64		U		65		U		0.62		U	
TRICHLOROETHENE		NA	NA	NA	NA	21	3.9	J	P, F	20	3.7	J	P	NA	NA	NA	NA
TRICHLOROFLUOROMETHANE		7.6	1.3	U		67	12	B	A	66	12	B	A	80	14	U	
VINYL CHLORIDE		0.33		U		36		U		37		U		0.35		U	

Validated Results for VOCs in Summa Canister Samples by Full Scan GC/MS Analysis
SDG 1109024, Method TO-15
USCG Baltimore, Maryland

PROJ_NO: 02841	NSAMPLE	SG7-3				SG7-4				SG7-5				SG7-6			
SDG: 1109024	LAB_ID	1109024-08A				1109024-06A				1109024-02A				1109024-01A			
FRACTION: OV	SAMP_DATE	8/31/2011				8/31/2011				8/31/2011				8/31/2011			
MEDIA: AIR	QC_TYPE	NM				NM				NM				NM			
	DUP_OF																
	DILUTION FAC.	1.49	1.49			1.37	1.37			1.29	1.29			1.3	1.3		
		RESULT UG/M3	RESULT PPBV	QUAL	QUAL CODE	RESULT UG/M3	RESULT PPBV	QUAL	QUAL CODE	RESULT UG/M3	RESULT PPBV	QUAL	QUAL CODE	RESULT UG/M3	RESULT PPBV	QUAL	QUAL CODE
1,1,1-TRICHLOROETHANE		0.74	0.14	B	A	0.75		U		0.5	0.091	B	A	0.18	0.033	B	A
1,1,2,2-TETRACHLOROETHANE		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-TRICHLOROETHANE		0.81		U		0.75		U		0.7		U		0.71		UJ	R
1,1,2-TRICHLOROETHANE		0.35	0.045	J	E	0.35	0.045	J	P, E	0.38	0.05	J	P, E	0.36	0.047	J	R, P, E
1,1-DICHLOROETHANE		0.6		U		0.55		U		0.053	0.013	B	A	0.53		UJ	R
1,1-DICHLOROETHANE		0.59		UJ	E	0.54		UJ	E	0.51		UJ	E	0.52		UJ	R, E
1,2,4-TRICHLOROBENZENE		5.5		U		5.1		U		4.8		U		4.8		UJ	R
1,2-DIBROMOETHANE		1.1		U		1		U		0.99		U		1		UJ	R
1,2-DICHLOROBENZENE		0.9		U		0.82		U		0.78		U		0.78		UJ	R
1,2-DICHLOROETHANE		0.6		U		0.55		U		0.52		U		0.53		UJ	R
1,2-DICHLOROPROPANE		0.69		U		0.63		U		0.14	0.03	J	P	0.6		UJ	R
1,3-DICHLOROBENZENE		0.9		U		0.82		U		0.78		U		0.78		UJ	R
1,4-DICHLOROBENZENE		0.9		U		0.39	0.065	B	A	0.68		U		0.44	0.073	B	A
2-BUTANONE		0.86	0.29	J		1.2	0.4	J	P	0.78	0.23	J	P	0.82	0.28	J	R,P
4-METHYL-2-PENTANONE		0.61		U		0.26	0.064	J	P	0.24	0.058	J	P	0.53		UJ	R
ACETONE		7.9	3.3	B	A	13	5.4	B	A	4.2	1.8	B	A	7.6	3.2	B	A
BENZENE		0.21	0.065	B	A	0.17	0.053	B	A	0.28	0.089	J	P	0.24	0.077	J	R
BROMODICHLOROMETHANE		1		U		0.92		U		0.86		U		0.87		UJ	R
BROMOFORM		1.5		U		1.4		U		1.3		U		1.3		UJ	R
BROMOMETHANE		0.58		U		0.53		U		0.5		U		0.5		UJ	R
CARBON DISULFIDE		2.9	0.93			0.16	0.052	B	A	2		U		2		UJ	R
CARBON TETRACHLORIDE		0.59	0.094	J	P, C	0.36	0.057	J	P, C	0.41	0.065	J	P, C	0.36	0.057	J	P, R, C
CHLOROBENZENE		0.68		U		0.63		U		0.59		U		0.6		UJ	R
CHLORODIBROMOMETHANE		1.3		U		1.2		U		1.1		U		1.1		UJ	R
CHLOROETHANE		2		U		1.8		U		1.7		U		1.7		UJ	R
CHLOROFORM		0.38	0.078	B	A	0.24	0.05	B	A	1.3	0.27	B	A	4	0.82	J	R
CHLOROMETHANE		0.15	0.075	J	P	0.19	0.094	J	P	0.2	0.099	J	P	0.15	0.074	J	R,P
CIS-1,2-DICHLOROETHENE		0.59		U		0.54		U		0.14	0.035	J	P	0.38	0.095	J	R,P
CIS-1,3-DICHLOROPROPENE		0.68		U		0.62		U		0.58		U		0.59		UJ	R
DICHLORODIFLUOROMETHANE		17	3.4			200	40			160	33			6.2	1.2	J	R
ETHYLBENZENE		0.16	0.037	J	P	0.39	0.089	J	P	1.1	0.25			0.16	0.037	J	R,P
M+P-XYLENES		0.43	0.098	J	P	1.5	0.34			2.3	0.53			0.32	0.073	J	R,P
METHYL TERT-BUTYL ETHER		0.54		U		0.49		U		0.46		U		0.47		UJ	R
METHYLENE CHLORIDE		0.63	0.18	B	A	0.89	0.26	B	A	0.72	0.21	B	A	1.8	0.51	B	A
O-XYLENE		0.18	0.041	J	P	0.9	0.21			1	0.24			0.12	0.027	J	R,P
STYRENE		0.63		U		0.58		U		0.55		U		0.55		UJ	R
TETRACHLOROETHENE		3.1	0.45	B	A	6.9	1			2.3	0.33	B	A	3.4	0.5	B	A
TOLUENE		0.57	0.15	B	A	0.59	0.16	B	A	1.6	0.42			0.59	0.16	B	A
TRANS-1,2-DICHLOROETHENE		0.59		U		0.54		U		0.51		U		0.1	0.026	J	R,P
TRANS-1,3-DICHLOROPROPENE		0.68		U		0.62		U		0.58		U		0.59		UJ	R
TRICHLOROETHENE		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TRICHLOROFLUOROMETHANE		11	2			120	21			180	31			20	3.7	J	R
VINYL CHLORIDE		0.38		U		0.35		U		0.33		U		0.33		UJ	R

Validated Results for VOCs in Summa Canister Samples by Full Scan GC/MS Analysis
SDG 1109024, Method TO-15
USCG Baltimore, Maryland

PROJ_NO: 02841		NSAMPLE SG7-7				SG7-8				Trip Blank_20110831			
SDG: 1109024		LAB_ID 1109024-04A				1109024-03A				1109024-11A			
FRACTION: OV		SAMP_DATE 8/31/2011				8/31/2011				1/1/1990			
MEDIA: AIR		QC_TYPE NM				NM				NM			
		DUP_OF				DUP-01							
		DILUTION FAC.											
		1.3	1.3			1.29	1.29			1	1		
		RESULT UG/M3	RESULT PPBV	QUAL	QUAL CODE	RESULT UG/M3	RESULT PPBV	QUAL	QUAL CODE	RESULT UG/M3	RESULT PPBV	QUAL	QUAL CODE
1,1,1-TRICHLOROETHANE		0.46	0.084	B	A	0.7		U		0.54		U	
1,1,2,2-TETRACHLOROETHANE		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-TRICHLOROETHANE		0.71		U		0.7		U		0.54		U	
1,1,2-TRICHLOROTRIFLUOROETHANE		0.39	0.052	J	P, E	0.56	0.074	J	P, E	0.77		UJ	E
1,1-DICHLOROETHANE		0.057	0.014	B	A	0.52		U		0.4		U	
1,1-DICHLOROETHENE		0.52		UJ	E	0.51		UJ	E	0.4		UJ	E
1,2,4-TRICHLOROENZENE		4.8		U		4.8		U		3.7		U	
1,2-DIBROMOETHANE		1		U		0.99		U		0.77		U	
1,2-DICHLOROENZENE		0.78		U		0.78		U		0.6		U	
1,2-DICHLOROETHANE		0.061	0.015	B	A	0.082	0.02	B	A	0.4		U	
1,2-DICHLOROPROPANE		0.6		U		0.6		U		0.46		U	
1,3-DICHLOROENZENE		0.78		U		0.78		U		0.6		U	
1,4-DICHLOROENZENE		0.78		U		0.35	0.058	B	A	0.6		U	
2-BUTANONE		0.81	0.28	J	P	3	1			1.5		U	
4-METHYL-2-PENTANONE		0.53		U		2.8	0.69			0.41		U	
ACETONE		6	2.5	B	A	42	18			0.23	0.095	J	P
BENZENE		0.31	0.098	J	P	2	0.64			0.026	0.008	J	P
BROMODICHLOROMETHANE		0.15	0.023	B	A	0.27	0.04	B	A	0.67		U	
BROMOFORM		1.3		U		1.3		U		1		U	
BROMOMETHANE		0.5		U		0.5		U		0.39		U	
CARBON DISULFIDE		2		U		0.32	0.1	B	A	1.6		U	
CARBON TETRACHLORIDE		0.5	0.08	J	P, C	0.49	0.078	J	P, C	0.63		U	
CHLOROBENZENE		0.057	0.012	B	A	0.59		U		0.46		U	
CHLORODIBROMOMETHANE		1.1		U		1.1		U		0.85		U	
CHLOROETHANE		1.7		U		1.7		U		1.3		U	
CHLOROFORM		1.4	0.28	B	A	1.2	0.25	B	A	0.49		U	
CHLOROMETHANE		0.27		U		1.5	0.73			0.21		U	
CIS-1,2-DICHLOROETHENE		0.52		U		0.51		U		0.4		U	
CIS-1,3-DICHLOROPROPENE		0.59		U		0.58		U		0.45		U	
DICHLORODIFLUOROMETHANE		2.7	0.55			3.1	0.64			0.49		U	
ETHYLBENZENE		0.17	0.039	J	P	2.3	0.52			0.43		U	
M+P-XYLENES		0.51	0.12	J	P	6.5	1.5			0.43		U	
METHYL TERT-BUTYL ETHER		0.47		U		0.094	0.026	J	P	0.36		U	
METHYLENE CHLORIDE		0.64	0.18	B	A	1.5	0.43	B	A	0.32	0.093	J	P
O-XYLENE		0.26	0.061	J	P	2.2	0.52			0.43		U	
STYRENE		0.15	0.036	J	P	0.25	0.059	J	P	0.42		U	
TETRACHLOROETHENE		2.7	0.39	B	A	0.39	0.058	B	A	0.68		U	
TOLUENE		0.63	0.17	B	A	8.2	2.2			0.38		U	
TRANS-1,2-DICHLOROETHENE		0.52		U		0.51		U		0.4		U	
TRANS-1,3-DICHLOROPROPENE		0.59		U		0.58		U		0.45		U	
TRICHLOROETHENE		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TRICHLOROFUOROMETHANE		8.1	1.4			7.2	1.3			0.56		U	
VINYL CHLORIDE		0.33		U		0.33		U		0.26		U	

Validated Results for VOCs in Summa Canister Samples by SIM GC/MS Analysis
SDG 1109024, Method TO-15
USCG Baltimore, Maryland

PROJ_NO: 02841	NSAMPLE	DUP-01				SG7-2				SG7-3				SG7-4				SG7-5			
SDG: 1109024	LAB_ID	1109024-09B				1109024-05B				1109024-06B				1109024-02B							
FRACTION: OVSIM	SAMP_DATE	8/31/2011				8/31/2011				8/31/2011				8/31/2011							
MEDIA: AIR	QC_TYPE	NM				NM				NM				NM							
	DUP_OF	SG7-8																			
	DILUTION FAC	1.29	1.29			1.36	1.36			1.49	1.49			1.37	1.37			1.29	1.29		
		RESULT UG/M3	RESULT PPBV	QUAL	QUAL CODE	RESULT UG/M3	RESULT PPBV	QUAL	QUAL CODE	RESULT UG/M3	RESULT PPBV	QUAL	QUAL CODE	RESULT UG/M3	RESULT PPBV	QUAL	QUAL CODE	RESULT UG/M3	RESULT PPBV	QUAL	QUAL CODE
1,1,2,2-TETRACHLOROETHANE		0.18		U		0.028	0.004	B	A	0.2		U		0.019	0.002	B	A	0.18		U	
TRICHLOROETHENE		0.11	0.02	J	P	0.084	0.016	J	P	0.17	0.033			0.076	0.014	J	P	4	0.75		

Validated Results for VOCs in Summa Canister Samples by SIM GC/MS Analysis
SDG 1109024, Method TO-15
USCG Baltimore, Maryland

PROJ_NO: 02841	NSAMPLE	SG7-6				SG7-7				SG7-8				Trip Blank_20110831			
SDG: 1109024	LAB_ID	1109024-01B				1109024-04B				1109024-03B				1109024-11B			
FRACTION: OVSIM	SAMP_DATE	8/31/2011				8/31/2011				8/31/2011				1/1/1990			
MEDIA: AIR	QC_TYPE	NM				NM				NM				NM			
	DUP_OF									DUP-01							
	DILUTION FAC	1.3		1.3		1.3		1.3		1.29		1.29		1		1	
		RESULT UG/M3	RESULT PPBV	QUAL	QUAL CODE	RESULT UG/M3	RESULT PPBV	QUAL	QUAL CODE	RESULT UG/M3	RESULT PPBV	QUAL	QUAL CODE	RESULT UG/M3	RESULT PPBV	QUAL	QUAL CODE
1,1,2,2-TETRACHLOROETHANE		0.028	0.004	B	A	0.43	0.062			0.18		U		0.14		U	
TRICHLOROETHENE		4.2	0.77	J	R	0.92	0.17			0.11	0.02	J	P	0.02	0.0036	J	

Qualifier Codes:

- a = Lab Blank Contamination
- b = Field Blank Contamination
- c = Calibration (i.e., %RSDs, %Ds, ICVs, CCVs, RPDs, RRFs, etc.) Noncompliance
- d = MS/MSD Noncompliance
- e = LSC/LSCD Noncompliance
- f = Laboratory Duplicate Imprecision
- g = Field Duplicate Imprecision
- h = Holding Time Exceedance
- i = ICP Serial Dilution Noncompliance
- j = GFAA PDS – GFAA MSA's $r < 0.995$ (correlation coefficient)
- k = ICP Interference – include ICSAB %Rs
- l = Instrument Calibration Range Exceedance
- m = Sample Preservation
- n = Internal Standard Noncompliance
- n01 = Internal Standard Recovery Noncompliance Dioxins
- n02 = Recovery Standard Noncompliance Dioxins
- n03 = Clean-up Standard Noncompliance Dioxins
- o = Poor Instrument Performance (i.e. baseline drifting)
- p = Uncertainty Near Detection Limit ($< 2 \times$ IDL for inorganics and $<$ CRQL for organics)
- q = Other Problems (can encompass of number of issues)
- r = Surrogates Recovery Noncompliance
- s = Pesticide/PCB Resolution
- t = % Breakdown Noncompliance for DDT and Endrin
- u = Pesticide/PCB % Difference Between Columns for Positive Results
- v = Non-linear Calibrations, Tuning $r < 0.995$ (correlation coefficient)
- w = Ratios of characteristic ions outside of ion ratio criteria or retention times
- x = Signal to noise response drop
- y = Percent solids $< 30\%$
- z = Uncertainty at 2 sigma deviation is greater than sample activity

APPENDIX B

Laboratory Analytical Results



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	SG7-6	Date/Time Analyzed:	9/2/11 06:09 PM
Lab ID:	1109024-01A	Dilution Factor:	1.30
Date/Time Collecte	8/31/11 11:49 AM	Instrument/File name:	msda.i / a090216
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,1-Trichloroethane	71-55-6	0.15	0.35	0.71	0.18 J
1,1,2-Trichloroethane	79-00-5	0.13	0.35	0.71	Not Detected U
1,1-Dichloroethane	75-34-3	0.053	0.26	0.53	Not Detected U
1,1-Dichloroethene	75-35-4	0.085	0.26	0.52	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	0.93	1.2	4.8	Not Detected U
1,2-Dibromoethane (EDB)	106-93-4	0.085	0.50	1.0	Not Detected U
1,2-Dichlorobenzene	95-50-1	0.24	0.39	0.78	Not Detected U
1,2-Dichloroethane	107-06-2	0.075	0.26	0.53	Not Detected U
1,2-Dichloropropane	78-87-5	0.11	0.30	0.60	Not Detected U
1,3-Dichlorobenzene	541-73-1	0.22	0.39	0.78	Not Detected U
1,4-Dichlorobenzene	106-46-7	0.30	0.39	0.78	0.44 J
2-Butanone (Methyl Ethyl Ketone)	78-93-3	0.097	0.19	1.9	0.82 J
4-Methyl-2-pentanone	108-10-1	0.21	0.27	0.53	Not Detected U
Acetone	67-64-1	0.21	0.37	1.5	7.6
Benzene	71-43-2	0.034	0.21	0.42	0.24 J
Bromodichloromethane	75-27-4	0.12	0.44	0.87	Not Detected U
Bromoform	75-25-2	0.15	0.67	1.3	Not Detected U
Bromomethane	74-83-9	0.12	0.40	0.50	Not Detected U
Carbon Disulfide	75-15-0	0.14	0.20	2.0	Not Detected U
Carbon Tetrachloride	56-23-5	0.14	0.41	0.82	0.36 J
Chlorobenzene	108-90-7	0.049	0.30	0.60	Not Detected U
Chloroethane	75-00-3	0.085	0.17	1.7	Not Detected U



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:		SG7-6		Date/Time Analyzed:		9/2/11 06:09 PM	
Lab ID:		1109024-01A		Dilution Factor:		1.30	
Date/Time Collecte		8/31/11 11:49 AM		Instrument/Filename:		msda.i / a090216	
Media:		6 Liter Summa Canister (SIM Certified)					
Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)		
Chloroform	67-66-3	0.10	0.32	0.63	4.0		
Chloromethane	74-87-3	0.080	0.21	0.27	0.15 J		
cis-1,2-Dichloroethene	156-59-2	0.13	0.26	0.52	0.38 J		
cis-1,3-Dichloropropene	10061-01-5	0.057	0.29	0.59	Not Detected U		
Dibromochloromethane	124-48-1	0.070	0.55	1.1	Not Detected U		
Ethyl Benzene	100-41-4	0.14	0.28	0.56	0.16 J		
Freon 11	75-69-4	0.068	0.36	0.73	20		
Freon 113	76-13-1	0.13	0.50	1.0	0.36 J		
Freon 12	75-71-8	0.074	0.33	0.64	6.2		
m,p-Xylene	108-38-3	0.11	0.28	0.56	0.32 J		
Methyl tert-butyl ether	1634-04-4	0.043	0.23	0.47	Not Detected U		
Methylene Chloride	75-09-2	0.088	0.22	0.90	1.8		
o-Xylene	95-47-6	0.090	0.28	0.56	0.12 J		
Styrene	100-42-5	0.12	0.28	0.55	Not Detected U		
Tetrachloroethene	127-18-4	0.16	0.44	0.88	3.4		
Toluene	108-88-3	0.082	0.24	0.49	0.59		
trans-1,2-Dichloroethene	156-60-5	0.055	0.26	0.52	0.10 J		
trans-1,3-Dichloropropene	10061-02-6	0.13	0.29	0.59	Not Detected U		
Vinyl Chloride	75-01-4	0.022	0.17	0.33	Not Detected U		



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	SG7-6	Date/Time Analyzed:	9/2/11 06:09 PM
Lab ID:	1109024-01A	Dilution Factor:	1.30
Date/Time Collecte	8/31/11 11:49 AM	Instrument/Filename:	msda.i / a090216
Media:	6 Liter Summa Canister (SIM Certified)		

J = Estimated value.

U = The analyte was analyzed for, but not detected. The associated numerical value is at or below the MDL.

Q = Exceeds Quality Control limits.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	68-134	101
4-Bromofluorobenzene	460-00-4	83-115	73 Q
Toluene-d8	2037-26-5	89-109	94



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

USCG Site 7

Client ID:	SG7-6	Date/Time Analyzed:	9/2/11 06:09 PM
Lab ID:	1109024-01B	Dilution Factor:	1.30
Date/Time Collecte	8/31/11 11:49 AM	Instrument/Filename:	msda.i / a090216sim
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,2,2-Tetrachloroethane	79-34-5	0.012	0.036	0.18	0.028 J
Trichloroethene	79-01-6	0.0047	0.028	0.14	4.2

J = Estimated value.

Q = Exceeds Quality Control limits.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	78-132	103
4-Bromofluorobenzene	460-00-4	85-114	74 Q
Toluene-d8	2037-26-5	92-107	95



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	SG7-5	Date/Time Analyzed:	9/2/11 06:45 PM
Lab ID:	1109024-02A	Dilution Factor:	1.29
Date/Time Collecte	8/31/11 11:54 AM	Instrument/Filename:	msda.i / a090217
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,1-Trichloroethane	71-55-6	0.15	0.35	0.70	0.50 J
1,1,2-Trichloroethane	79-00-5	0.13	0.35	0.70	Not Detected U
1,1-Dichloroethane	75-34-3	0.052	0.26	0.52	0.053 J
1,1-Dichloroethene	75-35-4	0.085	0.26	0.51	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	0.92	1.1	4.8	Not Detected U
1,2-Dibromoethane (EDB)	106-93-4	0.085	0.50	0.99	Not Detected U
1,2-Dichlorobenzene	95-50-1	0.24	0.39	0.78	Not Detected U
1,2-Dichloroethane	107-06-2	0.074	0.26	0.52	Not Detected U
1,2-Dichloropropane	78-87-5	0.11	0.30	0.60	0.14 J
1,3-Dichlorobenzene	541-73-1	0.22	0.39	0.78	Not Detected U
1,4-Dichlorobenzene	106-46-7	0.30	0.39	0.78	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	0.096	0.19	1.9	0.68 J
4-Methyl-2-pentanone	108-10-1	0.20	0.26	0.53	0.24 J
Acetone	67-64-1	0.21	0.37	1.5	4.2
Benzene	71-43-2	0.034	0.21	0.41	0.28 J
Bromodichloromethane	75-27-4	0.12	0.43	0.86	Not Detected U
Bromoform	75-25-2	0.15	0.67	1.3	Not Detected U
Bromomethane	74-83-9	0.12	0.40	0.50	Not Detected U
Carbon Disulfide	75-15-0	0.14	0.20	2.0	Not Detected U
Carbon Tetrachloride	56-23-5	0.14	0.40	0.81	0.41 J
Chlorobenzene	108-90-7	0.049	0.30	0.59	Not Detected U
Chloroethane	75-00-3	0.084	0.17	1.7	Not Detected U



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Chloroform	67-66-3	0.099	0.32	0.63	1.3
Chloromethane	74-87-3	0.080	0.21	0.27	0.20 J
cis-1,2-Dichloroethene	156-59-2	0.13	0.26	0.51	0.14 J
cis-1,3-Dichloropropene	10061-01-5	0.057	0.29	0.58	Not Detected U
Dibromochloromethane	124-48-1	0.069	0.55	1.1	Not Detected U
Ethyl Benzene	100-41-4	0.14	0.28	0.56	1.1
Freon 11	75-69-4	0.068	0.36	0.72	180
Freon 113	76-13-1	0.13	0.49	0.99	0.38 J
Freon 12	75-71-8	0.073	0.33	0.64	160
m,p-Xylene	108-38-3	0.11	0.28	0.56	2.3
Methyl tert-butyl ether	1634-04-4	0.042	0.23	0.46	Not Detected U
Methylene Chloride	75-09-2	0.087	0.22	0.90	0.72 J
o-Xylene	95-47-6	0.090	0.28	0.56	1.0
Styrene	100-42-5	0.12	0.27	0.55	Not Detected U
Tetrachloroethene	127-18-4	0.16	0.44	0.88	2.3
Toluene	108-88-3	0.082	0.24	0.49	1.6
trans-1,2-Dichloroethene	156-60-5	0.054	0.26	0.51	Not Detected U
trans-1,3-Dichloropropene	10061-02-6	0.13	0.29	0.58	Not Detected U
Vinyl Chloride	75-01-4	0.022	0.16	0.33	Not Detected U

J = Estimated value.

U = The analyte was analyzed for, but not detected. The associated numerical value is at or below the MDL.



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	SG7-5	Date/Time Analyzed:	9/2/11 06:45 PM
Lab ID:	1109024-02A	Dilution Factor:	1.29
Date/Time Collecte	8/31/11 11:54 AM	Instrument/Filename:	msda.i / a090217
Media:	6 Liter Summa Canister (SIM Certified)		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	68-134	112
4-Bromofluorobenzene	460-00-4	83-115	101
Toluene-d8	2037-26-5	89-109	98



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

USCG Site 7

Client ID:	SG7-5	Date/Time Analyzed:	9/2/11 06:45 PM
Lab ID:	1109024-02B	Dilution Factor:	1.29
Date/Time Collecte	8/31/11 11:54 AM	Instrument/Filename:	msda.i / a090217sim
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,2,2-Tetrachloroethane	79-34-5	0.012	0.035	0.18	Not Detected U
Trichloroethene	79-01-6	0.0046	0.028	0.14	4.0

U = The analyte was analyzed for, but not detected. The associated numerical value is at or below the MDL.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	78-132	112
4-Bromofluorobenzene	460-00-4	85-114	100
Toluene-d8	2037-26-5	92-107	98



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	SG7-8	Date/Time Analyzed:	9/2/11 10:36 PM
Lab ID:	1109024-03A	Dilution Factor:	1.29
Date/Time Collecte	8/31/11 11:56 AM	Instrument/File name:	msda.i / a090223
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,1-Trichloroethane	71-55-6	0.15	0.35	0.70	Not Detected U
1,1,2-Trichloroethane	79-00-5	0.13	0.35	0.70	Not Detected U
1,1-Dichloroethane	75-34-3	0.052	0.26	0.52	Not Detected U
1,1-Dichloroethene	75-35-4	0.085	0.26	0.51	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	0.92	1.1	4.8	Not Detected U
1,2-Dibromoethane (EDB)	106-93-4	0.085	0.50	0.99	Not Detected U
1,2-Dichlorobenzene	95-50-1	0.24	0.39	0.78	Not Detected U
1,2-Dichloroethane	107-06-2	0.074	0.26	0.52	0.082 J
1,2-Dichloropropane	78-87-5	0.11	0.30	0.60	Not Detected U
1,3-Dichlorobenzene	541-73-1	0.22	0.39	0.78	Not Detected U
1,4-Dichlorobenzene	106-46-7	0.30	0.39	0.78	0.35 J
2-Butanone (Methyl Ethyl Ketone)	78-93-3	0.096	0.19	1.9	3.0
4-Methyl-2-pentanone	108-10-1	0.20	0.26	0.53	2.8
Acetone	67-64-1	0.21	0.37	1.5	42
Benzene	71-43-2	0.034	0.21	0.41	2.0
Bromodichloromethane	75-27-4	0.12	0.43	0.86	0.27 J
Bromoform	75-25-2	0.15	0.67	1.3	Not Detected U
Bromomethane	74-83-9	0.12	0.40	0.50	Not Detected U
Carbon Disulfide	75-15-0	0.14	0.20	2.0	0.32 J
Carbon Tetrachloride	56-23-5	0.14	0.40	0.81	0.49 J
Chlorobenzene	108-90-7	0.049	0.30	0.59	Not Detected U
Chloroethane	75-00-3	0.084	0.17	1.7	Not Detected U



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Chloroform	67-66-3	0.099	0.32	0.63	1.2
Chloromethane	74-87-3	0.080	0.21	0.27	1.5
cis-1,2-Dichloroethene	156-59-2	0.13	0.26	0.51	Not Detected U
cis-1,3-Dichloropropene	10061-01-5	0.057	0.29	0.58	Not Detected U
Dibromochloromethane	124-48-1	0.069	0.55	1.1	Not Detected U
Ethyl Benzene	100-41-4	0.14	0.28	0.56	2.3
Freon 11	75-69-4	0.068	0.36	0.72	7.2
Freon 113	76-13-1	0.13	0.49	0.99	0.56 J
Freon 12	75-71-8	0.073	0.33	0.64	3.1
m,p-Xylene	108-38-3	0.11	0.28	0.56	6.5
Methyl tert-butyl ether	1634-04-4	0.042	0.23	0.46	0.094 J
Methylene Chloride	75-09-2	0.087	0.22	0.90	1.5
o-Xylene	95-47-6	0.090	0.28	0.56	2.2
Styrene	100-42-5	0.12	0.27	0.55	0.25 J
Tetrachloroethene	127-18-4	0.16	0.44	0.88	0.39 J
Toluene	108-88-3	0.082	0.24	0.49	8.2
trans-1,2-Dichloroethene	156-60-5	0.054	0.26	0.51	Not Detected U
trans-1,3-Dichloropropene	10061-02-6	0.13	0.29	0.58	Not Detected U
Vinyl Chloride	75-01-4	0.022	0.16	0.33	Not Detected U

U = The analyte was analyzed for, but not detected. The associated numerical value is at or below the MDL.
J = Estimated value.



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	SG7-8	Date/Time Analyzed:	9/2/11 10:36 PM
Lab ID:	1109024-03A	Dilution Factor:	1.29
Date/Time Collecte	8/31/11 11:56 AM	Instrument/Filename:	msda.i / a090223
Media:	6 Liter Summa Canister (SIM Certified)		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	68-134	100
4-Bromofluorobenzene	460-00-4	83-115	102
Toluene-d8	2037-26-5	89-109	101



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

USCG Site 7

Client ID:	SG7-8	Date/Time Analyzed:	9/2/11 10:36 PM
Lab ID:	1109024-03B	Dilution Factor:	1.29
Date/Time Collecte	8/31/11 11:56 AM	Instrument/Filename:	msda.i / a090223sim
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,2,2-Tetrachloroethane	79-34-5	0.012	0.035	0.18	Not Detected U
Trichloroethene	79-01-6	0.0046	0.028	0.14	0.11 J

J = Estimated value.

U = The analyte was analyzed for, but not detected. The associated numerical value is at or below the MDL.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	78-132	100
4-Bromofluorobenzene	460-00-4	85-114	100
Toluene-d8	2037-26-5	92-107	102



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	SG7-7	Date/Time Analyzed:	9/8/11 12:33 PM
Lab ID:	1109024-04A	Dilution Factor:	1.30
Date/Time Collecte	8/31/11 12:03 PM	Instrument/File name:	msda.i / a090807
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,1-Trichloroethane	71-55-6	0.15	0.35	0.71	0.46 J
1,1,2-Trichloroethane	79-00-5	0.13	0.35	0.71	Not Detected U
1,1-Dichloroethane	75-34-3	0.053	0.26	0.53	0.057 J
1,1-Dichloroethene	75-35-4	0.085	0.26	0.52	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	0.93	1.2	4.8	Not Detected U
1,2-Dibromoethane (EDB)	106-93-4	0.085	0.50	1.0	Not Detected U
1,2-Dichlorobenzene	95-50-1	0.24	0.39	0.78	Not Detected U
1,2-Dichloroethane	107-06-2	0.075	0.26	0.53	0.061 J
1,2-Dichloropropane	78-87-5	0.11	0.30	0.60	Not Detected U
1,3-Dichlorobenzene	541-73-1	0.22	0.39	0.78	Not Detected U
1,4-Dichlorobenzene	106-46-7	0.30	0.39	0.78	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	0.097	0.19	1.9	0.81 J
4-Methyl-2-pentanone	108-10-1	0.21	0.27	0.53	Not Detected U
Acetone	67-64-1	0.21	0.37	1.5	6.0
Benzene	71-43-2	0.034	0.21	0.42	0.31 J
Bromodichloromethane	75-27-4	0.12	0.44	0.87	0.15 J
Bromoform	75-25-2	0.15	0.67	1.3	Not Detected U
Bromomethane	74-83-9	0.12	0.40	0.50	Not Detected U
Carbon Disulfide	75-15-0	0.14	0.20	2.0	Not Detected U
Carbon Tetrachloride	56-23-5	0.14	0.41	0.82	0.50 J
Chlorobenzene	108-90-7	0.049	0.30	0.60	0.057 J
Chloroethane	75-00-3	0.085	0.17	1.7	Not Detected U



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Chloroform	67-66-3	0.10	0.32	0.63	1.4
Chloromethane	74-87-3	0.080	0.21	0.27	Not Detected U
cis-1,2-Dichloroethene	156-59-2	0.13	0.26	0.52	Not Detected U
cis-1,3-Dichloropropene	10061-01-5	0.057	0.29	0.59	Not Detected U
Dibromochloromethane	124-48-1	0.070	0.55	1.1	Not Detected U
Ethyl Benzene	100-41-4	0.14	0.28	0.56	0.17 J
Freon 11	75-69-4	0.068	0.36	0.73	8.1
Freon 113	76-13-1	0.13	0.50	1.0	0.39 J
Freon 12	75-71-8	0.074	0.33	0.64	2.7
m,p-Xylene	108-38-3	0.11	0.28	0.56	0.51 J
Methyl tert-butyl ether	1634-04-4	0.043	0.23	0.47	Not Detected U
Methylene Chloride	75-09-2	0.088	0.22	0.90	0.64 J
o-Xylene	95-47-6	0.090	0.28	0.56	0.26 J
Styrene	100-42-5	0.12	0.28	0.55	0.15 J
Tetrachloroethene	127-18-4	0.16	0.44	0.88	2.7
Toluene	108-88-3	0.082	0.24	0.49	0.63
trans-1,2-Dichloroethene	156-60-5	0.055	0.26	0.52	Not Detected U
trans-1,3-Dichloropropene	10061-02-6	0.13	0.29	0.59	Not Detected U
Vinyl Chloride	75-01-4	0.022	0.17	0.33	Not Detected U

U = The analyte was analyzed for, but not detected. The associated numerical value is at or below the MDL.
J = Estimated value.



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	SG7-7	Date/Time Analyzed:	9/8/11 12:33 PM
Lab ID:	1109024-04A	Dilution Factor:	1.30
Date/Time Collecte	8/31/11 12:03 PM	Instrument/Filename:	msda.i / a090807
Media:	6 Liter Summa Canister (SIM Certified)		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	68-134	113
4-Bromofluorobenzene	460-00-4	83-115	113
Toluene-d8	2037-26-5	89-109	95



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	SG7-7	Date/Time Analyzed:	9/8/11 12:33 PM
Lab ID:	1109024-04B	Dilution Factor:	1.30
Date/Time Collecte	8/31/11 12:03 PM	Instrument/Filename:	msda.i / a090807sim
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,2,2-Tetrachloroethane	79-34-5	0.012	0.036	0.18	0.43
Trichloroethene	79-01-6	0.0047	0.028	0.14	0.92

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	78-132	113
4-Bromofluorobenzene	460-00-4	85-114	113
Toluene-d8	2037-26-5	92-107	97



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	SG7-2	Date/Time Analyzed:	9/8/11 01:09 PM
Lab ID:	1109024-05A	Dilution Factor:	1.36
Date/Time Collecte	8/31/11 12:08 PM	Instrument/File name:	msda.i / a090808
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,1-Trichloroethane	71-55-6	0.16	0.37	0.74	0.18 J
1,1,2-Trichloroethane	79-00-5	0.13	0.37	0.74	Not Detected U
1,1-Dichloroethane	75-34-3	0.055	0.28	0.55	Not Detected U
1,1-Dichloroethene	75-35-4	0.089	0.27	0.54	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	0.97	1.2	5.0	Not Detected U
1,2-Dibromoethane (EDB)	106-93-4	0.089	0.52	1.0	Not Detected U
1,2-Dichlorobenzene	95-50-1	0.25	0.41	0.82	Not Detected U
1,2-Dichloroethane	107-06-2	0.078	0.28	0.55	Not Detected U
1,2-Dichloropropane	78-87-5	0.11	0.31	0.63	Not Detected U
1,3-Dichlorobenzene	541-73-1	0.23	0.41	0.82	Not Detected U
1,4-Dichlorobenzene	106-46-7	0.32	0.41	0.82	0.34 J
2-Butanone (Methyl Ethyl Ketone)	78-93-3	0.10	0.20	2.0	1.4 J
4-Methyl-2-pentanone	108-10-1	0.22	0.28	0.56	Not Detected U
Acetone	67-64-1	0.22	0.39	1.6	9.8
Benzene	71-43-2	0.035	0.22	0.43	0.19 J
Bromodichloromethane	75-27-4	0.13	0.46	0.91	Not Detected U
Bromoform	75-25-2	0.16	0.70	1.4	Not Detected U
Bromomethane	74-83-9	0.13	0.42	0.53	Not Detected U
Carbon Disulfide	75-15-0	0.15	0.21	2.1	1.2 J
Carbon Tetrachloride	56-23-5	0.14	0.43	0.86	0.51 J
Chlorobenzene	108-90-7	0.052	0.31	0.63	Not Detected U
Chloroethane	75-00-3	0.089	0.18	1.8	Not Detected U



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Chloroform	67-66-3	0.10	0.33	0.66	0.29 J
Chloromethane	74-87-3	0.084	0.22	0.28	0.64
cis-1,2-Dichloroethene	156-59-2	0.14	0.27	0.54	Not Detected U
cis-1,3-Dichloropropene	10061-01-5	0.060	0.31	0.62	Not Detected U
Dibromochloromethane	124-48-1	0.073	0.58	1.2	Not Detected U
Ethyl Benzene	100-41-4	0.14	0.30	0.59	Not Detected U
Freon 11	75-69-4	0.072	0.38	0.76	80
Freon 113	76-13-1	0.14	0.52	1.0	0.60 J
Freon 12	75-71-8	0.077	0.35	0.67	8.2
m,p-Xylene	108-38-3	0.11	0.30	0.59	0.39 J
Methyl tert-butyl ether	1634-04-4	0.045	0.24	0.49	Not Detected U
Methylene Chloride	75-09-2	0.092	0.24	0.94	1.3
o-Xylene	95-47-6	0.094	0.30	0.59	0.18 J
Styrene	100-42-5	0.13	0.29	0.58	Not Detected U
Tetrachloroethene	127-18-4	0.17	0.46	0.92	8.0
Toluene	108-88-3	0.086	0.26	0.51	0.50 J
trans-1,2-Dichloroethene	156-60-5	0.057	0.27	0.54	Not Detected U
trans-1,3-Dichloropropene	10061-02-6	0.14	0.31	0.62	Not Detected U
Vinyl Chloride	75-01-4	0.023	0.17	0.35	Not Detected U

U = The analyte was analyzed for, but not detected. The associated numerical value is at or below the MDL.
J = Estimated value.



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	SG7-2	Date/Time Analyzed:	9/8/11 01:09 PM
Lab ID:	1109024-05A	Dilution Factor:	1.36
Date/Time Collecte	8/31/11 12:08 PM	Instrument/Filename:	msda.i / a090808
Media:	6 Liter Summa Canister (SIM Certified)		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	68-134	107
4-Bromofluorobenzene	460-00-4	83-115	99
Toluene-d8	2037-26-5	89-109	95



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	SG7-2	Date/Time Analyzed:	9/8/11 01:09 PM
Lab ID:	1109024-05B	Dilution Factor:	1.36
Date/Time Collecte	8/31/11 12:08 PM	Instrument/Filename:	msda.i / a090808sim
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,2,2-Tetrachloroethane	79-34-5	0.012	0.037	0.19	0.028 J
Trichloroethene	79-01-6	0.0049	0.029	0.15	0.084 J

J = Estimated value.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	78-132	108
4-Bromofluorobenzene	460-00-4	85-114	99
Toluene-d8	2037-26-5	92-107	96



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	SG7-4	Date/Time Analyzed:	9/8/11 02:39 PM
Lab ID:	1109024-06A	Dilution Factor:	1.37
Date/Time Collecte	8/31/11 12:14 PM	Instrument/File name:	msda.i / a090810
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,1-Trichloroethane	71-55-6	0.16	0.37	0.75	Not Detected U
1,1,2-Trichloroethane	79-00-5	0.14	0.37	0.75	Not Detected U
1,1-Dichloroethane	75-34-3	0.056	0.28	0.55	Not Detected U
1,1-Dichloroethene	75-35-4	0.090	0.27	0.54	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	0.98	1.2	5.1	Not Detected U
1,2-Dibromoethane (EDB)	106-93-4	0.090	0.53	1.0	Not Detected U
1,2-Dichlorobenzene	95-50-1	0.25	0.41	0.82	Not Detected U
1,2-Dichloroethane	107-06-2	0.079	0.28	0.55	Not Detected U
1,2-Dichloropropane	78-87-5	0.11	0.32	0.63	Not Detected U
1,3-Dichlorobenzene	541-73-1	0.23	0.41	0.82	Not Detected U
1,4-Dichlorobenzene	106-46-7	0.32	0.41	0.82	0.39 J
2-Butanone (Methyl Ethyl Ketone)	78-93-3	0.10	0.20	2.0	1.2 J
4-Methyl-2-pentanone	108-10-1	0.22	0.28	0.56	0.26 J
Acetone	67-64-1	0.22	0.39	1.6	13
Benzene	71-43-2	0.036	0.22	0.44	0.17 J
Bromodichloromethane	75-27-4	0.13	0.46	0.92	Not Detected U
Bromoform	75-25-2	0.16	0.71	1.4	Not Detected U
Bromomethane	74-83-9	0.13	0.42	0.53	Not Detected U
Carbon Disulfide	75-15-0	0.15	0.21	2.1	0.16 J
Carbon Tetrachloride	56-23-5	0.15	0.43	0.86	0.36 J
Chlorobenzene	108-90-7	0.052	0.32	0.63	Not Detected U
Chloroethane	75-00-3	0.090	0.18	1.8	Not Detected U



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:		SG7-4		Date/Time Analyzed:		9/8/11 02:39 PM	
Lab ID:		1109024-06A		Dilution Factor:		1.37	
Date/Time Collecte		8/31/11 12:14 PM		Instrument/File name:		msda.i / a090810	
Media:		6 Liter Summa Canister (SIM Certified)					
Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)		
Chloroform	67-66-3	0.10	0.33	0.67	0.24 J		
Chloromethane	74-87-3	0.085	0.23	0.28	0.19 J		
cis-1,2-Dichloroethene	156-59-2	0.14	0.27	0.54	Not Detected U		
cis-1,3-Dichloropropene	10061-01-5	0.060	0.31	0.62	Not Detected U		
Dibromochloromethane	124-48-1	0.074	0.58	1.2	Not Detected U		
Ethyl Benzene	100-41-4	0.14	0.30	0.59	0.39 J		
Freon 11	75-69-4	0.072	0.38	0.77	120		
Freon 113	76-13-1	0.14	0.52	1.0	0.35 J		
Freon 12	75-71-8	0.078	0.35	0.68	200		
m,p-Xylene	108-38-3	0.11	0.30	0.59	1.5		
Methyl tert-butyl ether	1634-04-4	0.045	0.25	0.49	Not Detected U		
Methylene Chloride	75-09-2	0.093	0.24	0.95	0.89 J		
o-Xylene	95-47-6	0.095	0.30	0.59	0.90		
Styrene	100-42-5	0.13	0.29	0.58	Not Detected U		
Tetrachloroethene	127-18-4	0.17	0.46	0.93	6.9		
Toluene	108-88-3	0.087	0.26	0.52	0.59		
trans-1,2-Dichloroethene	156-60-5	0.058	0.27	0.54	Not Detected U		
trans-1,3-Dichloropropene	10061-02-6	0.14	0.31	0.62	Not Detected U		
Vinyl Chloride	75-01-4	0.023	0.18	0.35	Not Detected U		

J = Estimated value.

U = The analyte was analyzed for, but not detected. The associated numerical value is at or below the MDL.



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	SG7-4	Date/Time Analyzed:	9/8/11 02:39 PM
Lab ID:	1109024-06A	Dilution Factor:	1.37
Date/Time Collecte	8/31/11 12:14 PM	Instrument/Filename:	msda.i / a090810
Media:	6 Liter Summa Canister (SIM Certified)		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	68-134	101
4-Bromofluorobenzene	460-00-4	83-115	97
Toluene-d8	2037-26-5	89-109	94



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

USCG Site 7

Client ID:	SG7-4	Date/Time Analyzed:	9/8/11 02:39 PM		
Lab ID:	1109024-06B	Dilution Factor:	1.37		
Date/Time Collecte	8/31/11 12:14 PM	Instrument/Filename:	msda.i / a090810sim		
Media:	6 Liter Summa Canister (SIM Certified)				

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,2,2-Tetrachloroethane	79-34-5	0.012	0.038	0.19	0.019 J
Trichloroethene	79-01-6	0.0049	0.029	0.15	0.076 J

J = Estimated value.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	78-132	103
4-Bromofluorobenzene	460-00-4	85-114	99
Toluene-d8	2037-26-5	92-107	95



EPA METHOD TO-15 GC/MS FULL SCAN
USCG Site 7

Client ID:	SG7-1	Date/Time Analyzed:	9/7/11 02:40 PM
Lab ID:	1109024-07A	Dilution Factor:	28.8
Date/Time Collecte	8/31/11 12:15 PM	Instrument/File name:	msd6.i / 6090713
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,1-Trichloroethane	71-55-6	8.5	31	78	Not Detected U
1,1,2,2-Tetrachloroethane	79-34-5	13	40	99	Not Detected U
1,1,2-Trichloroethane	79-00-5	14	31	78	Not Detected U
1,1-Dichloroethane	75-34-3	8.6	23	58	Not Detected U
1,1-Dichloroethene	75-35-4	22	23	57	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	58	170	430	Not Detected U
1,2-Dibromoethane (EDB)	106-93-4	18	44	110	Not Detected U
1,2-Dichlorobenzene	95-50-1	15	35	86	Not Detected U
1,2-Dichloroethane	107-06-2	7.5	23	58	7.7 J
1,2-Dichloropropane	78-87-5	18	27	66	Not Detected U
1,3-Dichlorobenzene	541-73-1	15	35	86	Not Detected U
1,4-Dichlorobenzene	106-46-7	17	35	86	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	7.5	34	170	Not Detected U
4-Methyl-2-pentanone	108-10-1	12	24	59	Not Detected U
Acetone	67-64-1	26	55	140	Not Detected U
Benzene	71-43-2	6.5	18	46	Not Detected U
Bromodichloromethane	75-27-4	12	38	96	Not Detected U
Bromoform	75-25-2	25	60	150	Not Detected U
Bromomethane	74-83-9	7.6	22	56	Not Detected U
Carbon Disulfide	75-15-0	8.7	18	180	15 J
Carbon Tetrachloride	56-23-5	14	36	91	Not Detected U
Chlorobenzene	108-90-7	6.0	26	66	Not Detected U



EPA METHOD TO-15 GC/MS FULL SCAN
USCG Site 7

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Chloroethane	75-00-3	28	61	150	Not Detected U
Chloroform	67-66-3	9.7	28	70	18 J
Chloromethane	74-87-3	34	48	120	Not Detected U
cis-1,2-Dichloroethene	156-59-2	17	23	57	Not Detected U
cis-1,3-Dichloropropene	10061-01-5	11	26	65	Not Detected U
Dibromochloromethane	124-48-1	16	49	120	Not Detected U
Ethyl Benzene	100-41-4	4.0	25	62	Not Detected U
Freon 11	75-69-4	4.3	32	81	66 J
Freon 113	76-13-1	28	44	110	Not Detected U
Freon 12	75-71-8	10	28	71	26000
m,p-Xylene	108-38-3	7.3	25	62	Not Detected U
Methyl tert-butyl ether	1634-04-4	7.8	21	52	Not Detected U
Methylene Chloride	75-09-2	5.7	20	50	Not Detected U
o-Xylene	95-47-6	7.6	25	62	Not Detected U
Styrene	100-42-5	7.1	24	61	Not Detected U
Tetrachloroethene	127-18-4	7.4	39	98	290
Toluene	108-88-3	4.6	22	54	Not Detected U
trans-1,2-Dichloroethene	156-60-5	19	23	57	Not Detected U
trans-1,3-Dichloropropene	10061-02-6	12	26	65	Not Detected U
Trichloroethene	79-01-6	12	31	77	20 J
Vinyl Chloride	75-01-4	4.1	15	37	Not Detected U



EPA METHOD TO-15 GC/MS FULL SCAN

USCG Site 7

Client ID:	SG7-1	Date/Time Analyzed:	9/7/11 02:40 PM
Lab ID:	1109024-07A	Dilution Factor:	28.8
Date/Time Collecte	8/31/11 12:15 PM	Instrument/Filename:	msd6.i / 6090713
Media:	6 Liter Summa Canister (SIM Certified)		

U = The analyte was analyzed for, but not detected. The associated numerical value is at or below the MDL.

J = Estimated value.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	72-138	121
4-Bromofluorobenzene	460-00-4	75-122	91
Toluene-d8	2037-26-5	87-114	103



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	SG7-3	Date/Time Analyzed:	9/8/11 03:15 PM
Lab ID:	1109024-08A	Dilution Factor:	1.49
Date/Time Collecte	8/31/11 12:27 PM	Instrument/Filename:	msda.i / a090811
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,1-Trichloroethane	71-55-6	0.18	0.41	0.81	0.74 J
1,1,2-Trichloroethane	79-00-5	0.15	0.41	0.81	Not Detected U
1,1-Dichloroethane	75-34-3	0.060	0.30	0.60	Not Detected U
1,1-Dichloroethene	75-35-4	0.098	0.30	0.59	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	1.1	1.3	5.5	Not Detected U
1,2-Dibromoethane (EDB)	106-93-4	0.098	0.57	1.1	Not Detected U
1,2-Dichlorobenzene	95-50-1	0.28	0.45	0.90	Not Detected U
1,2-Dichloroethane	107-06-2	0.086	0.30	0.60	Not Detected U
1,2-Dichloropropane	78-87-5	0.12	0.34	0.69	Not Detected U
1,3-Dichlorobenzene	541-73-1	0.25	0.45	0.90	Not Detected U
1,4-Dichlorobenzene	106-46-7	0.35	0.45	0.90	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	0.11	0.22	2.2	0.86 J
4-Methyl-2-pentanone	108-10-1	0.24	0.30	0.61	Not Detected U
Acetone	67-64-1	0.24	0.42	1.8	7.9
Benzene	71-43-2	0.039	0.24	0.48	0.21 J
Bromodichloromethane	75-27-4	0.14	0.50	1.0	Not Detected U
Bromoform	75-25-2	0.17	0.77	1.5	Not Detected U
Bromomethane	74-83-9	0.14	0.46	0.58	Not Detected U
Carbon Disulfide	75-15-0	0.16	0.23	2.3	2.9
Carbon Tetrachloride	56-23-5	0.16	0.47	0.94	0.59 J
Chlorobenzene	108-90-7	0.056	0.34	0.68	Not Detected U
Chloroethane	75-00-3	0.098	0.20	2.0	Not Detected U



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	SG7-3	Date/Time Analyzed:	9/8/11 03:15 PM
Lab ID:	1109024-08A	Dilution Factor:	1.49
Date/Time Collecte	8/31/11 12:27 PM	Instrument/File name:	msda.i / a090811
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Chloroform	67-66-3	0.11	0.36	0.73	0.38 J
Chloromethane	74-87-3	0.092	0.25	0.31	0.15 J
cis-1,2-Dichloroethene	156-59-2	0.15	0.30	0.59	Not Detected U
cis-1,3-Dichloropropene	10061-01-5	0.066	0.34	0.68	Not Detected U
Dibromochloromethane	124-48-1	0.080	0.63	1.3	Not Detected U
Ethyl Benzene	100-41-4	0.16	0.32	0.65	0.16 J
Freon 11	75-69-4	0.078	0.42	0.84	11
Freon 113	76-13-1	0.15	0.57	1.1	0.35 J
Freon 12	75-71-8	0.084	0.38	0.74	17
m,p-Xylene	108-38-3	0.12	0.32	0.65	0.43 J
Methyl tert-butyl ether	1634-04-4	0.049	0.27	0.54	Not Detected U
Methylene Chloride	75-09-2	0.10	0.26	1.0	0.63 J
o-Xylene	95-47-6	0.10	0.32	0.65	0.18 J
Styrene	100-42-5	0.14	0.32	0.63	Not Detected U
Tetrachloroethene	127-18-4	0.19	0.50	1.0	3.1
Toluene	108-88-3	0.094	0.28	0.56	0.57
trans-1,2-Dichloroethene	156-60-5	0.063	0.30	0.59	Not Detected U
trans-1,3-Dichloropropene	10061-02-6	0.15	0.34	0.68	Not Detected U
Vinyl Chloride	75-01-4	0.025	0.19	0.38	Not Detected U

J = Estimated value.

U = The analyte was analyzed for, but not detected. The associated numerical value is at or below the MDL.



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	SG7-3	Date/Time Analyzed:	9/8/11 03:15 PM
Lab ID:	1109024-08A	Dilution Factor:	1.49
Date/Time Collecte	8/31/11 12:27 PM	Instrument/Filename:	msda.i / a090811
Media:	6 Liter Summa Canister (SIM Certified)		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	68-134	98
4-Bromofluorobenzene	460-00-4	83-115	95
Toluene-d8	2037-26-5	89-109	93



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	SG7-3	Date/Time Analyzed:	9/8/11 03:15 PM
Lab ID:	1109024-08B	Dilution Factor:	1.49
Date/Time Collecte	8/31/11 12:27 PM	Instrument/Filename:	msda.i / a090811sim
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,2,2-Tetrachloroethane	79-34-5	0.013	0.041	0.20	Not Detected U
Trichloroethene	79-01-6	0.0054	0.032	0.16	0.17

U = The analyte was analyzed for, but not detected. The associated numerical value is at or below the MDL.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	78-132	98
4-Bromofluorobenzene	460-00-4	85-114	95
Toluene-d8	2037-26-5	92-107	94



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	DUP-01	Date/Time Analyzed:	9/8/11 04:33 PM
Lab ID:	1109024-09A	Dilution Factor:	1.29
Date/Time Collecte	8/31/11 12:00 AM	Instrument/File Name:	msda.i / a090813
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,1-Trichloroethane	71-55-6	0.15	0.35	0.70	Not Detected U
1,1,2-Trichloroethane	79-00-5	0.13	0.35	0.70	Not Detected U
1,1-Dichloroethane	75-34-3	0.052	0.26	0.52	Not Detected U
1,1-Dichloroethene	75-35-4	0.085	0.26	0.51	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	0.92	1.1	4.8	Not Detected U
1,2-Dibromoethane (EDB)	106-93-4	0.085	0.50	0.99	Not Detected U
1,2-Dichlorobenzene	95-50-1	0.24	0.39	0.78	Not Detected U
1,2-Dichloroethane	107-06-2	0.074	0.26	0.52	0.098 J
1,2-Dichloropropane	78-87-5	0.11	0.30	0.60	Not Detected U
1,3-Dichlorobenzene	541-73-1	0.22	0.39	0.78	Not Detected U
1,4-Dichlorobenzene	106-46-7	0.30	0.39	0.78	0.45 J
2-Butanone (Methyl Ethyl Ketone)	78-93-3	0.096	0.19	1.9	2.8
4-Methyl-2-pentanone	108-10-1	0.20	0.26	0.53	3.0
Acetone	67-64-1	0.21	0.37	1.5	42
Benzene	71-43-2	0.034	0.21	0.41	2.0
Bromodichloromethane	75-27-4	0.12	0.43	0.86	0.26 J
Bromoform	75-25-2	0.15	0.67	1.3	Not Detected U
Bromomethane	74-83-9	0.12	0.40	0.50	Not Detected U
Carbon Disulfide	75-15-0	0.14	0.20	2.0	0.32 J
Carbon Tetrachloride	56-23-5	0.14	0.40	0.81	0.50 J
Chlorobenzene	108-90-7	0.049	0.30	0.59	Not Detected U
Chloroethane	75-00-3	0.084	0.17	1.7	Not Detected U



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Chloroform	67-66-3	0.099	0.32	0.63	1.3
Chloromethane	74-87-3	0.080	0.21	0.27	1.4
cis-1,2-Dichloroethene	156-59-2	0.13	0.26	0.51	Not Detected U
cis-1,3-Dichloropropene	10061-01-5	0.057	0.29	0.58	Not Detected U
Dibromochloromethane	124-48-1	0.069	0.55	1.1	Not Detected U
Ethyl Benzene	100-41-4	0.14	0.28	0.56	2.4
Freon 11	75-69-4	0.068	0.36	0.72	7.6
Freon 113	76-13-1	0.13	0.49	0.99	0.69 J
Freon 12	75-71-8	0.073	0.33	0.64	3.4
m,p-Xylene	108-38-3	0.11	0.28	0.56	6.8
Methyl tert-butyl ether	1634-04-4	0.042	0.23	0.46	0.10 J
Methylene Chloride	75-09-2	0.087	0.22	0.90	1.5
o-Xylene	95-47-6	0.090	0.28	0.56	2.2
Styrene	100-42-5	0.12	0.27	0.55	0.23 J
Tetrachloroethene	127-18-4	0.16	0.44	0.88	0.42 J
Toluene	108-88-3	0.082	0.24	0.49	8.5
trans-1,2-Dichloroethene	156-60-5	0.054	0.26	0.51	Not Detected U
trans-1,3-Dichloropropene	10061-02-6	0.13	0.29	0.58	Not Detected U
Vinyl Chloride	75-01-4	0.022	0.16	0.33	Not Detected U

U = The analyte was analyzed for, but not detected. The associated numerical value is at or below the MDL.
J = Estimated value.



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	DUP-01	Date/Time Analyzed:	9/8/11 04:33 PM
Lab ID:	1109024-09A	Dilution Factor:	1.29
Date/Time Collecte	8/31/11 12:00 AM	Instrument/Filename:	msda.i / a090813
Media:	6 Liter Summa Canister (SIM Certified)		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	68-134	100
4-Bromofluorobenzene	460-00-4	83-115	98
Toluene-d8	2037-26-5	89-109	101



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	DUP-01	Date/Time Analyzed:	9/8/11 04:33 PM
Lab ID:	1109024-09B	Dilution Factor:	1.29
Date/Time Collecte	8/31/11 12:00 AM	Instrument/Filename:	msda.i / a090813sim
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,2,2-Tetrachloroethane	79-34-5	0.012	0.035	0.18	Not Detected U
Trichloroethene	79-01-6	0.0046	0.028	0.14	0.11 J

J = Estimated value.

U = The analyte was analyzed for, but not detected. The associated numerical value is at or below the MDL.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	78-132	103
4-Bromofluorobenzene	460-00-4	85-114	101
Toluene-d8	2037-26-5	92-107	102



EPA METHOD TO-15 GC/MS FULL SCAN
USCG Site 7

Client ID:	DUP-02 (MS/MSD)	Date/Time Analyzed:	9/7/11 02:06 PM
Lab ID:	1109024-10A	Dilution Factor:	28.4
Date/Time Collecte	8/31/11 12:00 AM	Instrument/File name:	msd6.i / 6090712
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,1-Trichloroethane	71-55-6	8.4	31	77	Not Detected U
1,1,2,2-Tetrachloroethane	79-34-5	13	39	97	Not Detected U
1,1,2-Trichloroethane	79-00-5	14	31	77	Not Detected U
1,1-Dichloroethane	75-34-3	8.5	23	57	Not Detected U
1,1-Dichloroethene	75-35-4	22	22	56	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	57	170	420	Not Detected U
1,2-Dibromoethane (EDB)	106-93-4	18	44	110	Not Detected U
1,2-Dichlorobenzene	95-50-1	14	34	85	Not Detected U
1,2-Dichloroethane	107-06-2	7.4	23	57	Not Detected U
1,2-Dichloropropane	78-87-5	18	26	66	Not Detected U
1,3-Dichlorobenzene	541-73-1	14	34	85	Not Detected U
1,4-Dichlorobenzene	106-46-7	17	34	85	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	7.4	34	170	Not Detected U
4-Methyl-2-pentanone	108-10-1	12	23	58	Not Detected U
Acetone	67-64-1	26	54	130	Not Detected U
Benzene	71-43-2	6.4	18	45	Not Detected U
Bromodichloromethane	75-27-4	12	38	95	Not Detected U
Bromoform	75-25-2	25	59	150	Not Detected U
Bromomethane	74-83-9	7.5	22	55	Not Detected U
Carbon Disulfide	75-15-0	8.6	18	180	Not Detected U
Carbon Tetrachloride	56-23-5	14	36	89	Not Detected U
Chlorobenzene	108-90-7	5.9	26	65	Not Detected U



EPA METHOD TO-15 GC/MS FULL SCAN
USCG Site 7

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Chloroethane	75-00-3	28	60	150	Not Detected U
Chloroform	67-66-3	9.6	28	69	22 J
Chloromethane	74-87-3	33	47	120	Not Detected U
cis-1,2-Dichloroethene	156-59-2	16	22	56	Not Detected U
cis-1,3-Dichloropropene	10061-01-5	11	26	64	Not Detected U
Dibromochloromethane	124-48-1	16	48	120	Not Detected U
Ethyl Benzene	100-41-4	4.0	25	62	Not Detected U
Freon 11	75-69-4	4.2	32	80	67 J
Freon 113	76-13-1	27	44	110	Not Detected U
Freon 12	75-71-8	10	28	70	24000
m,p-Xylene	108-38-3	7.2	25	62	Not Detected U
Methyl tert-butyl ether	1634-04-4	7.7	20	51	Not Detected U
Methylene Chloride	75-09-2	5.6	20	49	Not Detected U
o-Xylene	95-47-6	7.5	25	62	Not Detected U
Styrene	100-42-5	7.0	24	60	Not Detected U
Tetrachloroethene	127-18-4	7.4	38	96	280
Toluene	108-88-3	4.6	21	54	Not Detected U
trans-1,2-Dichloroethene	156-60-5	19	22	56	Not Detected U
trans-1,3-Dichloropropene	10061-02-6	12	26	64	Not Detected U
Trichloroethene	79-01-6	12	30	76	21 J
Vinyl Chloride	75-01-4	4.0	14	36	Not Detected U



EPA METHOD TO-15 GC/MS FULL SCAN

USCG Site 7

Client ID:	DUP-02 (MS/MSD)	Date/Time Analyzed:	9/7/11 02:06 PM
Lab ID:	1109024-10A	Dilution Factor:	28.4
Date/Time Collecte	8/31/11 12:00 AM	Instrument/Filename:	msd6.i / 6090712
Media:	6 Liter Summa Canister (SIM Certified)		

U = The analyte was analyzed for, but not detected. The associated numerical value is at or below the MDL.

J = Estimated value.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	72-138	114
4-Bromofluorobenzene	460-00-4	75-122	94
Toluene-d8	2037-26-5	87-114	104



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	Trip Blank	Date/Time Analyzed:	9/8/11 05:22 PM
Lab ID:	1109024-11A	Dilution Factor:	1.00
Date/Time Collecte	NA - Not Applicable	Instrument/Filename:	msda.i / a090814
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,1-Trichloroethane	71-55-6	0.12	0.27	0.54	Not Detected U
1,1,2-Trichloroethane	79-00-5	0.099	0.27	0.54	Not Detected U
1,1-Dichloroethane	75-34-3	0.040	0.20	0.40	Not Detected U
1,1-Dichloroethene	75-35-4	0.066	0.20	0.40	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	0.71	0.89	3.7	Not Detected U
1,2-Dibromoethane (EDB)	106-93-4	0.066	0.38	0.77	Not Detected U
1,2-Dichlorobenzene	95-50-1	0.18	0.30	0.60	Not Detected U
1,2-Dichloroethane	107-06-2	0.058	0.20	0.40	Not Detected U
1,2-Dichloropropane	78-87-5	0.083	0.23	0.46	Not Detected U
1,3-Dichlorobenzene	541-73-1	0.17	0.30	0.60	Not Detected U
1,4-Dichlorobenzene	106-46-7	0.23	0.30	0.60	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	0.074	0.15	1.5	Not Detected U
4-Methyl-2-pentanone	108-10-1	0.16	0.20	0.41	Not Detected U
Acetone	67-64-1	0.16	0.28	1.2	0.23 J
Benzene	71-43-2	0.026	0.16	0.32	0.026 J
Bromodichloromethane	75-27-4	0.094	0.34	0.67	Not Detected U
Bromoform	75-25-2	0.12	0.52	1.0	Not Detected U
Bromomethane	74-83-9	0.095	0.31	0.39	Not Detected U
Carbon Disulfide	75-15-0	0.11	0.16	1.6	Not Detected U
Carbon Tetrachloride	56-23-5	0.11	0.31	0.63	Not Detected U
Chlorobenzene	108-90-7	0.038	0.23	0.46	Not Detected U
Chloroethane	75-00-3	0.065	0.13	1.3	Not Detected U



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	Trip Blank	Date/Time Analyzed:	9/8/11 05:22 PM
Lab ID:	1109024-11A	Dilution Factor:	1.00
Date/Time Collecte	NA - Not Applicable	Instrument/Filename:	msda.i / a090814
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Chloroform	67-66-3	0.077	0.24	0.49	Not Detected U
Chloromethane	74-87-3	0.062	0.16	0.21	Not Detected U
cis-1,2-Dichloroethene	156-59-2	0.10	0.20	0.40	Not Detected U
cis-1,3-Dichloropropene	10061-01-5	0.044	0.23	0.45	Not Detected U
Dibromochloromethane	124-48-1	0.054	0.42	0.85	Not Detected U
Ethyl Benzene	100-41-4	0.10	0.22	0.43	Not Detected U
Freon 11	75-69-4	0.053	0.28	0.56	Not Detected U
Freon 113	76-13-1	0.10	0.38	0.77	Not Detected U
Freon 12	75-71-8	0.057	0.26	0.49	Not Detected U
m,p-Xylene	108-38-3	0.084	0.22	0.43	Not Detected U
Methyl tert-butyl ether	1634-04-4	0.033	0.18	0.36	Not Detected U
Methylene Chloride	75-09-2	0.068	0.17	0.69	0.32 J
o-Xylene	95-47-6	0.070	0.22	0.43	Not Detected U
Styrene	100-42-5	0.096	0.21	0.42	Not Detected U
Tetrachloroethene	127-18-4	0.13	0.34	0.68	Not Detected U
Toluene	108-88-3	0.063	0.19	0.38	Not Detected U
trans-1,2-Dichloroethene	156-60-5	0.042	0.20	0.40	Not Detected U
trans-1,3-Dichloropropene	10061-02-6	0.10	0.23	0.45	Not Detected U
Vinyl Chloride	75-01-4	0.017	0.13	0.26	Not Detected U

U = The analyte was analyzed for, but not detected. The associated numerical value is at or below the MDL.
J = Estimated value.



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	Trip Blank	Date/Time Analyzed:	9/8/11 05:22 PM
Lab ID:	1109024-11A	Dilution Factor:	1.00
Date/Time Collecte	NA - Not Applicable	Instrument/Filename:	msda.i / a090814
Media:	6 Liter Summa Canister (SIM Certified)		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	68-134	91
4-Bromofluorobenzene	460-00-4	83-115	100
Toluene-d8	2037-26-5	89-109	101



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

USCG Site 7

Client ID:	Trip Blank	Date/Time Analyzed:	9/8/11 05:22 PM
Lab ID:	1109024-11B	Dilution Factor:	1.00
Date/Time Collecte	NA - Not Applicable	Instrument/Filename:	msda.i / a090814sim
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,2,2-Tetrachloroethane	79-34-5	0.0090	0.028	0.14	Not Detected U
Trichloroethene	79-01-6	0.0036	0.022	0.11	0.020 J

J = Estimated value.

U = The analyte was analyzed for, but not detected. The associated numerical value is at or below the MDL.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	78-132	93
4-Bromofluorobenzene	460-00-4	85-114	100
Toluene-d8	2037-26-5	92-107	102

APPENDIX C

Support Documentation

**LABORATORY NARRATIVE
Modified TO-15 Full Scan/SIM
Tetra Tech EC, Inc.
Workorder# 1109024**

Eleven 6 Liter Summa Canister (SIM Certified) samples were received on September 01, 2011. The laboratory performed analysis via modified EPA Method TO-15 using GC/MS in the Full Scan and SIM acquisition modes. The method involves concentrating up to 1.0 liters of air. The concentrated aliquot is then flash vaporized and swept through a water management system to remove water vapor. Following dehumidification, the sample passes directly into the GC/MS for analysis.

This workorder was independently validated prior to submittal using 'USEPA National Functional Guidelines' as generally applied to the analysis of volatile organic compounds in air. A rules-based, logic driven, independent validation engine was employed to assess completeness, evaluate pass/fail of relevant project quality control requirements and verification of all quantified amounts.

Method modifications taken to run these samples are summarized in the table below. Specific project requirements may over-ride the ATL modifications.

<i>Requirement</i>	<i>TO-15</i>	<i>ATL Modifications</i>
ICAL %RSD acceptance criteria	</=30% RSD with 2 compounds allowed out to < 40% RSD	For Full Scan: 30% RSD with 4 compounds allowed out to < 40% RSD For SIM: Project specific; default criteria is </=30% RSD with 10% of compounds allowed out to < 40% RSD
Daily Calibration	+/- 30% Difference	For Full Scan: </= 30% Difference with four allowed out up to </=40%.; flag and narrate outliers For SIM: Project specific; default criteria is </= 30% Difference with 10% of compounds allowed out up to </=40%.; flag and narrate outliers
Blank and standards	Zero air	Nitrogen
Method Detection Limit	Follow 40CFR Pt.136 App. B	The MDL met all relevant requirements in Method TO-15 (statistical MDL less than the LOQ). The concentration of the spiked replicate may have exceeded 10X the calculated MDL in some cases

Receiving Notes

Despite the use of flow controllers for sample collection, the final canister vacuums for samples SG7-6, SG7-5, SG7-8, SG7-7, SG7-2 and DUP-01 were measured at ambient pressure in the field. These ambient pressure readings were confirmed by the laboratory upon sample receipt.

Analytical Notes

The results for samples SG7-6, SG7-5, SG7-5 Lab Duplicate, SG7-8, SG7-7, SG7-2, SG7-4, SG7-3, SG7-3 Lab Duplicate, DUP-01 and Trip Blank in this report were acquired from two separate data

files originating from the same analytical run. The two data files have the same base file name and are differentiated with a "sim" extension on the SIM data file.

As per project specific client request the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit. All The canisters used for this project have been certified to the Reporting Limit for the target analytes included in this workorder. Concentrations that are below the level at which the canister was certified may be false positives.

Samples SG7-1, DUP-02 (MS/MSD) and DUP-02 (MS/MSD) Lab Duplicate were transferred from SIM/Low Level analysis to full scan TO-15 due to high levels of target compounds.

Dilution was performed on samples SG7-1, DUP-02 (MS/MSD) and DUP-02 (MS/MSD) Lab Duplicate due to the presence of high level target species.

The Laboratory Control Spike Duplicate (LCSD) analyzed on September 08, 2011 did not meet in-house generated control limits for Freon 113 and 1,1-Dichloroethene.

Freon 12 exceeded the calibration range for sample DUP-02 (MS/MSD) Lab Duplicate.

Surrogate 4-Bromofluorobenzene did not meet in-house generated control limits in sample SG7-6 (01A/01B).

The %RSD for 1,1-Dichloroethene was outside the allowed limits for the initial calibration.

1,1,2,2-Tetrachloroethane and Bromomethane were manually integrated in the initial calibration.

Definition of Data Qualifying Flags

Eight qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit.

UJ- Non-detected compound associated with low bias in the CCV and/or LCS.

N - The identification is based on presumptive evidence.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

Table 1

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Extracted	Sample	Date Analyzed	Sample Extract	Sample Condition
					Holding Time (Days)		Holding Time (Days)	
SG7-6	1109024-01A	8/31/2011	9/ 1/2011	NA	2	9/ 2/2011	NA	Good
SG7-6	1109024-01B	8/31/2011	9/ 1/2011	NA	2	9/ 2/2011	NA	Good
SG7-5	1109024-02A	8/31/2011	9/ 1/2011	NA	2	9/ 2/2011	NA	Good
SG7-5 Lab Duplicate	1109024-02AA	8/31/2011	9/ 1/2011	NA	2	9/ 2/2011	NA	Good
SG7-5	1109024-02B	8/31/2011	9/ 1/2011	NA	2	9/ 2/2011	NA	Good
SG7-5 Lab Duplicate	1109024-02BB	8/31/2011	9/ 1/2011	NA	2	9/ 2/2011	NA	Good
SG7-8	1109024-03A	8/31/2011	9/ 1/2011	NA	2	9/ 2/2011	NA	Good
SG7-8	1109024-03B	8/31/2011	9/ 1/2011	NA	2	9/ 2/2011	NA	Good
SG7-7	1109024-04A	8/31/2011	9/ 1/2011	NA	8	9/ 8/2011	NA	Good
SG7-7	1109024-04B	8/31/2011	9/ 1/2011	NA	8	9/ 8/2011	NA	Good
SG7-2	1109024-05A	8/31/2011	9/ 1/2011	NA	8	9/ 8/2011	NA	Good
SG7-2	1109024-05B	8/31/2011	9/ 1/2011	NA	8	9/ 8/2011	NA	Good
SG7-4	1109024-06A	8/31/2011	9/ 1/2011	NA	8	9/ 8/2011	NA	Good
SG7-4	1109024-06B	8/31/2011	9/ 1/2011	NA	8	9/ 8/2011	NA	Good
SG7-1	1109024-07A	8/31/2011	9/ 1/2011	NA	7	9/ 7/2011	NA	Good
SG7-3	1109024-08A	8/31/2011	9/ 1/2011	NA	8	9/ 8/2011	NA	Good
SG7-3 Lab Duplicate	1109024-08AA	8/31/2011	9/ 1/2011	NA	8	9/ 8/2011	NA	Good
SG7-3	1109024-08B	8/31/2011	9/ 1/2011	NA	8	9/ 8/2011	NA	Good
SG7-3 Lab Duplicate	1109024-08BB	8/31/2011	9/ 1/2011	NA	8	9/ 8/2011	NA	Good
DUP-01	1109024-09A	8/31/2011	9/ 1/2011	NA	8	9/ 8/2011	NA	Good
DUP-01	1109024-09B	8/31/2011	9/ 1/2011	NA	8	9/ 8/2011	NA	Good
DUP-02 (MS/MSD)	1109024-10A	8/31/2011	9/ 1/2011	NA	7	9/ 7/2011	NA	Good
DUP-02 (MS/MSD) Lab D	1109024-10AA	8/31/2011	9/ 1/2011	NA	7	9/ 7/2011	NA	Good
Trip Blank	1109024-11A	NA	9/ 1/2011	NA	NA	9/ 8/2011	NA	Good
Trip Blank	1109024-11B	NA	9/ 1/2011	NA	NA	9/ 8/2011	NA	Good
Lab Blank	1109024-12A	NA	NA	NA	NA	9/ 2/2011	NA	Good
Lab Blank	1109024-12B	NA	NA	NA	NA	9/ 2/2011	NA	Good
Lab Blank	1109024-12C	NA	NA	NA	NA	9/ 8/2011	NA	Good
Lab Blank	1109024-12D	NA	NA	NA	NA	9/ 8/2011	NA	Good
Lab Blank	1109024-12E	NA	NA	NA	NA	9/ 7/2011	NA	Good
CCV	1109024-13A	NA	NA	NA	NA	9/ 2/2011	NA	Good
CCV	1109024-13B	NA	NA	NA	NA	9/ 2/2011	NA	Good

Table 1

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Extracted	Sample	Date Analyzed	Sample Extract	Sample Condition
					Holding Time (Days)		Holding Time (Days)	
CCV	1109024-13C	NA	NA	NA	NA	9/ 8/2011	NA	Good
CCV	1109024-13D	NA	NA	NA	NA	9/ 8/2011	NA	Good
CCV	1109024-13E	NA	NA	NA	NA	9/ 7/2011	NA	Good
LCS	1109024-14A	NA	NA	NA	NA	9/ 2/2011	NA	Good
LCSD	1109024-14AA	NA	NA	NA	NA	9/ 2/2011	NA	Good
LCS	1109024-14B	NA	NA	NA	NA	9/ 2/2011	NA	Good
LCSD	1109024-14BB	NA	NA	NA	NA	9/ 2/2011	NA	Good
LCS	1109024-14C	NA	NA	NA	NA	9/ 8/2011	NA	Good
LCSD	1109024-14CC	NA	NA	NA	NA	9/ 8/2011	NA	Good
LCS	1109024-14D	NA	NA	NA	NA	9/ 8/2011	NA	Good
LCSD	1109024-14DD	NA	NA	NA	NA	9/ 8/2011	NA	Good
LCS	1109024-14E	NA	NA	NA	NA	9/ 7/2011	NA	Good
LCSD	1109024-14EE	NA	NA	NA	NA	9/ 7/2011	NA	Good



CHAIN-OF-CUSTODY RECORD

Sample Transportation Notice

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180 BLUE RAVINE ROAD, SUITE B
FOLSOM, CA 95630-4719
(916) 985-1000 FAX (916) 985-1020

Page 1 of 2

Project Manager Mark Sladic
 Collected by: (Print and Sign) Dawn Markiewicz
 Company Tetra Tech Email Mark.Sladic@TetraTech.com
 Address 661 Anderson Dr city Pittsburgh State PA zip 15220
 Phone (412) 921-7134 Fax _____

Project Info:
 P.O. # _____
 Project # 112602841
 Project Name USCG Site 7

Turn Around Time:
 Normal
 Rush
specify
 Lab Use Only
 Pressurized by: _____
 Date: _____
 Pressurization Gas: _____
 No. _____
 File _____

Lab ID	Field Sample I.D. (Location)	Can #	Date of Collection	Time of Collection	Analyses Requested	Canister Pressure/Vacuum			
						Initial	Final	Receipt	Final (PSI)
<u>02AB</u>	<u>SG7-6</u>	<u>94943</u>	<u>8/31/11</u>	<u>1011/1149</u>	<u>TO-15</u>	<u>-30</u>	<u>-1.5</u>		
<u>03AB</u>	<u>SG7-5</u>	<u>3475</u>		<u>1017/1154</u>		<u>-30</u>	<u>-1.0</u>		
<u>03AB</u>	<u>SG7-8</u>	<u>12940</u>		<u>1031/1156</u>		<u>-29.5</u>	<u>0.0</u>		
<u>04AB</u>	<u>SG7-7</u>	<u>5716</u>		<u>1100/1203</u>		<u>-30</u>	<u>-1.0</u>		
<u>05AB</u>	<u>SG7-2</u>	<u>35166</u>		<u>1108/1208</u>		<u>-30</u>	<u>-2.0</u>		
<u>06AB</u>	<u>SG7-4</u>	<u>33916</u>		<u>1114/1214</u>		<u>-30</u>	<u>-3.5</u>		
<u>07AB</u>	<u>SG7-1</u>	<u>34724</u>		<u>1127/1215</u>		<u>-30</u>	<u>-2.5</u>		
<u>08AB</u>	<u>SG7-3</u>	<u>34223</u>		<u>1146/1227</u>		<u>-30</u>	<u>-4.5</u>		
<u>04AB</u>	<u>DUP-01</u>	<u>13843</u>				<u>-30</u>	<u>0.0</u>		
<u>10AB</u>	<u>DUP-02 (ms/msd)</u>	<u>424</u>	↓		↓	<u>-30</u>	<u>-2.5</u>		

Relinquished by: (signature) <u>Dawn Markiewicz</u> Date/Time <u>8/31/11 @ 1730</u>	Received by: (signature) <u>[Signature]</u> Date/Time <u>9.1.11 0900</u>	Notes:
Relinquished by: (signature) _____ Date/Time _____	Received by: (signature) _____ Date/Time _____	
Relinquished by: (signature) _____ Date/Time _____	Received by: (signature) _____ Date/Time _____	

Lab Use Only	Shipper Name <u>Tetra Tech</u>	Air Bill # _____	Temp (C) <u>M</u>	Condition <u>Good</u>	Custody Seals Intact? Yes No <u>(None)</u>	Work Order # <u>1109024</u>
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CHAIN-OF-CUSTODY RECORD

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180 BLUE RAVINE ROAD, SUITE B
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 (916) 985-1000 FAX (916) 985-1020

Project Manager Mark Sladic
 Collected by: (Print and Sign) Dawn Mackiewicz *Dawn Mackiewicz*
 Company Tetra Tech Email _____
 Address 661 Anderson Dr City Pittsburgh State PA Zip 15220
 Phone (412) 921-7134 Fax _____

Project Info: P.O. # _____ Project # <u>112602841</u> Project Name <u>USCG Site 7</u>	Turn Around Time: <input checked="" type="checkbox"/> Normal <input type="checkbox"/> Rush <small>specify</small>	Lab Use Only: Pressurized by: _____ Date: _____ Pressurization Gas: <u>N₂</u> <u>He</u>
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Lab I.D.	Field Sample I.D. (Location)	Can #	Date of Collection	Time of Collection	Analyses Requested	Canister Pressure/Vacuum			
						Initial	Final	Receipt	Final (psi)
<u>11AB</u>	<u>Trp Blank</u>	<u>34466</u>	<u>—</u>	<u>—</u>	<u>TO-15</u>	<u>—</u>	<u>—</u>		

Relinquished by: (signature) <u><i>Dawn Mackiewicz</i></u> Date/Time _____	Received by: (signature) <u><i>John</i></u> Date/Time <u>9-1-11 0900</u>	Notes:
Relinquished by: (signature) _____ Date/Time _____	Received by: (signature) _____ Date/Time _____	
Relinquished by: (signature) _____ Date/Time _____	Received by: (signature) _____ Date/Time _____	

Lab Use Only	Shipper Name <u>Tetra Tech</u>	Air Bill # _____	Temp (°C) <u>NT</u>	Condition <u>Good</u>	Custody Seals Intact? Yes No <u>None</u>	Work Order # <u>112602841</u>
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Laboratory and Field QC Blank Action Levels
SDG 1109024, Method TO-15
USG Baltimore, Maryland

PROJECT NO: 02841	SAMPLE ID	6110907ABLK			A110902ABLK			A110908ABLK			Trip Blank_20110831			
SDG: 1109024	LAB_ID	6110907ABLK			A110902ABLK			A110908ABLK			1109024-11A			
MEDIA: LAB QC	QC_TYPE	METHOD BLANK			METHOD BLANK			METHOD BLANK			TRIP BLANK			
PARAMETER	Maximum	Action Level	RESULT UG/M3	QUAL	QUAL CODE	RESULT	QUAL	QUAL CODE	RESULT	QUAL	QUAL CODE	RESULT	QUAL	QUAL CODE
1,1,1-TRICHLOROETHANE	0.34	1.7	0.34	J		0.54	U		0.54	U		0.54	U	
1,1,2,2-TETRACHLOROETHANE (SIM)	0.045	0.225	NA			0.033	J		0.045	J		ND		
1,1-DICHLOROETHANE	0.34	1.7	0.34	J		0.4	U		0.4	U		0.4	U	
1,2,4-TRICHLOROBENZENE	5.6	28	5.6	J		3.7	U		3.7	U		3.7	U	
1,2-DIBROMOETHANE	0.73	3.65	0.73	J		0.77	U		0.77	U		0.77	U	
1,2-DICHLOROBENZENE	1.1	5.5	1.1	J		0.6	U		0.6	U		0.6	U	
1,2-DICHLOROETHANE	0.49	2.45	0.49	J		0.4	U		0.4	U		0.4	U	
1,3-DICHLOROBENZENE	1.1	5.5	1.1	J		0.6	U		0.6	U		0.6	U	
1,4-DICHLOROBENZENE	1.4	7	1.4	J		0.6	U		0.6	U		0.6	U	
ACETONE	0.96	9.6	0.96	J		0.17	J		0.28	J		0.23	J	
BENZENE	0.03	0.15	1.6	U		0.03	J		0.32	U		0.026	J	
BROMODICHLOROMETHANE	0.54	2.7	0.54	J		0.67	U		0.67	U		0.67	U	
CARBON DISULFIDE	1	5	1	J		1.6	U		1.6	U		1.6	U	
CHLOROBENZENE	0.44	2.2	0.44	J		0.46	U		0.46	U		0.46	U	
CHLORODIBROMOMETHANE	0.58	2.9	0.58	J		0.85	U		0.85	U		0.85	U	
CHLOROFORM	0.51	2.55	0.51	J		0.49	U		0.49	U		0.49	U	
METHYLENE CHLORIDE	0.52	5.2	0.52	J		0.26	J		0.34	J		0.32	J	
TETRACHLOROETHENE	0.58	2.9	0.58	J		0.68	U		0.68	U		0.68	U	
TOLUENE	0.2	1	0.2	J		0.38	U		0.38	U		0.38	U	
TRANS-1,3-DICHLOROPROPENE	0.7	3.5	0.7	J		0.45	U		0.45	U		0.45	U	
TRICHLOROETHENE (SIM)	0.0094	0.047	1.1	J		0.0094	J		0.0077	J		ND		
TRICHLOROFLUOROMETHANE	0.49	2.45	0.49	J		0.56	U		0.56	U		0.56	U	



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	Lab Blank	Date/Time Analyzed:	9/2/11 01:07 PM
Lab ID:	1109024-12A	Dilution Factor:	1.00
Date/Time Collecte	NA - Not Applicable	Instrument/Filename:	msda.i / a090209a
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,1-Trichloroethane	71-55-6	0.12	0.27	0.54	Not Detected U
1,1,2-Trichloroethane	79-00-5	0.099	0.27	0.54	Not Detected U
1,1-Dichloroethane	75-34-3	0.040	0.20	0.40	Not Detected U
1,1-Dichloroethene	75-35-4	0.066	0.20	0.40	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	0.71	0.89	3.7	Not Detected U
1,2-Dibromoethane (EDB)	106-93-4	0.066	0.38	0.77	Not Detected U
1,2-Dichlorobenzene	95-50-1	0.18	0.30	0.60	Not Detected U
1,2-Dichloroethane	107-06-2	0.058	0.20	0.40	Not Detected U
1,2-Dichloropropane	78-87-5	0.083	0.23	0.46	Not Detected U
1,3-Dichlorobenzene	541-73-1	0.17	0.30	0.60	Not Detected U
1,4-Dichlorobenzene	106-46-7	0.23	0.30	0.60	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	0.074	0.15	1.5	Not Detected U
4-Methyl-2-pentanone	108-10-1	0.16	0.20	0.41	Not Detected U
Acetone	67-64-1	0.16	0.28	1.2	0.17 J
Benzene	71-43-2	0.026	0.16	0.32	0.030 J
Bromodichloromethane	75-27-4	0.094	0.34	0.67	Not Detected U
Bromoform	75-25-2	0.12	0.52	1.0	Not Detected U
Bromomethane	74-83-9	0.095	0.31	0.39	Not Detected U
Carbon Disulfide	75-15-0	0.11	0.16	1.6	Not Detected U
Carbon Tetrachloride	56-23-5	0.11	0.31	0.63	Not Detected U
Chlorobenzene	108-90-7	0.038	0.23	0.46	Not Detected U
Chloroethane	75-00-3	0.065	0.13	1.3	Not Detected U



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

USCG Site 7

Client ID:	Lab Blank	Date/Time Analyzed:	9/2/11 01:07 PM
Lab ID:	1109024-12A	Dilution Factor:	1.00
Date/Time Collecte	NA - Not Applicable	Instrument/Filename:	msda.i / a090209a
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Chloroform	67-66-3	0.077	0.24	0.49	Not Detected U
Chloromethane	74-87-3	0.062	0.16	0.21	Not Detected U
cis-1,2-Dichloroethene	156-59-2	0.10	0.20	0.40	Not Detected U
cis-1,3-Dichloropropene	10061-01-5	0.044	0.23	0.45	Not Detected U
Dibromochloromethane	124-48-1	0.054	0.42	0.85	Not Detected U
Ethyl Benzene	100-41-4	0.10	0.22	0.43	Not Detected U
Freon 11	75-69-4	0.053	0.28	0.56	Not Detected U
Freon 113	76-13-1	0.10	0.38	0.77	Not Detected U
Freon 12	75-71-8	0.057	0.26	0.49	Not Detected U
m,p-Xylene	108-38-3	0.084	0.22	0.43	Not Detected U
Methyl tert-butyl ether	1634-04-4	0.033	0.18	0.36	Not Detected U
Methylene Chloride	75-09-2	0.068	0.17	0.69	0.26 J
o-Xylene	95-47-6	0.070	0.22	0.43	Not Detected U
Styrene	100-42-5	0.096	0.21	0.42	Not Detected U
Tetrachloroethene	127-18-4	0.13	0.34	0.68	Not Detected U
Toluene	108-88-3	0.063	0.19	0.38	Not Detected U
trans-1,2-Dichloroethene	156-60-5	0.042	0.20	0.40	Not Detected U
trans-1,3-Dichloropropene	10061-02-6	0.10	0.23	0.45	Not Detected U
Vinyl Chloride	75-01-4	0.017	0.13	0.26	Not Detected U

U = The analyte was analyzed for, but not detected. The associated numerical value is at or below the MDL.

J = Estimated value.



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	Lab Blank	Date/Time Analyzed:	9/2/11 01:07 PM
Lab ID:	1109024-12B	Dilution Factor:	1.00
Date/Time Collecte	NA - Not Applicable	Instrument/Filename:	msda.i / a090209asim
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,2,2-Tetrachloroethane	79-34-5	0.0090	0.028	0.14	0.033 J
Trichloroethene	79-01-6	0.0036	0.022	0.11	0.0094 J

J = Estimated value.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	78-132	102
4-Bromofluorobenzene	460-00-4	85-114	100
Toluene-d8	2037-26-5	92-107	101



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	Lab Blank	Date/Time Analyzed:	9/8/11 11:42 AM
Lab ID:	1109024-12C	Dilution Factor:	1.00
Date/Time Collecte	NA - Not Applicable	Instrument/Filename:	msda.i / a090806a
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,1-Trichloroethane	71-55-6	0.12	0.27	0.54	Not Detected U
1,1,2-Trichloroethane	79-00-5	0.099	0.27	0.54	Not Detected U
1,1-Dichloroethane	75-34-3	0.040	0.20	0.40	Not Detected U
1,1-Dichloroethene	75-35-4	0.066	0.20	0.40	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	0.71	0.89	3.7	Not Detected U
1,2-Dibromoethane (EDB)	106-93-4	0.066	0.38	0.77	Not Detected U
1,2-Dichlorobenzene	95-50-1	0.18	0.30	0.60	Not Detected U
1,2-Dichloroethane	107-06-2	0.058	0.20	0.40	Not Detected U
1,2-Dichloropropane	78-87-5	0.083	0.23	0.46	Not Detected U
1,3-Dichlorobenzene	541-73-1	0.17	0.30	0.60	Not Detected U
1,4-Dichlorobenzene	106-46-7	0.23	0.30	0.60	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	0.074	0.15	1.5	Not Detected U
4-Methyl-2-pentanone	108-10-1	0.16	0.20	0.41	Not Detected U
Acetone	67-64-1	0.16	0.28	1.2	0.28 J
Benzene	71-43-2	0.026	0.16	0.32	Not Detected U
Bromodichloromethane	75-27-4	0.094	0.34	0.67	Not Detected U
Bromoform	75-25-2	0.12	0.52	1.0	Not Detected U
Bromomethane	74-83-9	0.095	0.31	0.39	Not Detected U
Carbon Disulfide	75-15-0	0.11	0.16	1.6	Not Detected U
Carbon Tetrachloride	56-23-5	0.11	0.31	0.63	Not Detected U
Chlorobenzene	108-90-7	0.038	0.23	0.46	Not Detected U
Chloroethane	75-00-3	0.065	0.13	1.3	Not Detected U



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
USCG Site 7

Client ID:	Lab Blank	Date/Time Analyzed:	9/8/11 11:42 AM
Lab ID:	1109024-12C	Dilution Factor:	1.00
Date/Time Collecte	NA - Not Applicable	Instrument/Filename:	msda.i / a090806a
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Chloroform	67-66-3	0.077	0.24	0.49	Not Detected U
Chloromethane	74-87-3	0.062	0.16	0.21	Not Detected U
cis-1,2-Dichloroethene	156-59-2	0.10	0.20	0.40	Not Detected U
cis-1,3-Dichloropropene	10061-01-5	0.044	0.23	0.45	Not Detected U
Dibromochloromethane	124-48-1	0.054	0.42	0.85	Not Detected U
Ethyl Benzene	100-41-4	0.10	0.22	0.43	Not Detected U
Freon 11	75-69-4	0.053	0.28	0.56	Not Detected U
Freon 113	76-13-1	0.10	0.38	0.77	Not Detected U
Freon 12	75-71-8	0.057	0.26	0.49	Not Detected U
m,p-Xylene	108-38-3	0.084	0.22	0.43	Not Detected U
Methyl tert-butyl ether	1634-04-4	0.033	0.18	0.36	Not Detected U
Methylene Chloride	75-09-2	0.068	0.17	0.69	0.34 J
o-Xylene	95-47-6	0.070	0.22	0.43	Not Detected U
Styrene	100-42-5	0.096	0.21	0.42	Not Detected U
Tetrachloroethene	127-18-4	0.13	0.34	0.68	Not Detected U
Toluene	108-88-3	0.063	0.19	0.38	Not Detected U
trans-1,2-Dichloroethene	156-60-5	0.042	0.20	0.40	Not Detected U
trans-1,3-Dichloropropene	10061-02-6	0.10	0.23	0.45	Not Detected U
Vinyl Chloride	75-01-4	0.017	0.13	0.26	Not Detected U

U = The analyte was analyzed for, but not detected. The associated numerical value is at or below the MDL.
J = Estimated value.



MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

USCG Site 7

Client ID:	Lab Blank	Date/Time Analyzed:	9/8/11 11:42 AM
Lab ID:	1109024-12D	Dilution Factor:	1.00
Date/Time Collecte	NA - Not Applicable	Instrument/Filename:	msda.i / a090806asim
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,2,2-Tetrachloroethane	79-34-5	0.0090	0.028	0.14	0.045 J
Trichloroethene	79-01-6	0.0036	0.022	0.11	0.0077 J

J = Estimated value.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	78-132	117
4-Bromofluorobenzene	460-00-4	85-114	99
Toluene-d8	2037-26-5	92-107	100



EPA METHOD TO-15 GC/MS FULL SCAN
USCG Site 7

Client ID:	Lab Blank	Date/Time Analyzed:	9/7/11 01:03 PM
Lab ID:	1109024-12E	Dilution Factor:	1.00
Date/Time Collecte	NA - Not Applicable	Instrument/Filename:	msd6.i / 6090710a
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,1-Trichloroethane	71-55-6	0.30	1.1	2.7	0.34 J
1,1,2,2-Tetrachloroethane	79-34-5	0.46	1.4	3.4	Not Detected U
1,1,2-Trichloroethane	79-00-5	0.48	1.1	2.7	Not Detected U
1,1-Dichloroethane	75-34-3	0.30	0.81	2.0	0.34 J
1,1-Dichloroethene	75-35-4	0.78	0.79	2.0	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	2.0	5.9	15	5.6 J
1,2-Dibromoethane (EDB)	106-93-4	0.62	1.5	3.8	0.73 J
1,2-Dichlorobenzene	95-50-1	0.51	1.2	3.0	1.1 J
1,2-Dichloroethane	107-06-2	0.26	0.81	2.0	0.49 J
1,2-Dichloropropane	78-87-5	0.64	0.92	2.3	Not Detected U
1,3-Dichlorobenzene	541-73-1	0.51	1.2	3.0	1.1 J
1,4-Dichlorobenzene	106-46-7	0.59	1.2	3.0	1.4 J
2-Butanone (Methyl Ethyl Ketone)	78-93-3	0.26	1.2	5.9	Not Detected U
4-Methyl-2-pentanone	108-10-1	0.41	0.82	2.0	Not Detected U
Acetone	67-64-1	0.91	1.9	4.8	0.96 J
Benzene	71-43-2	0.23	0.64	1.6	Not Detected U
Bromodichloromethane	75-27-4	0.42	1.3	3.4	0.54 J
Bromoform	75-25-2	0.88	2.1	5.2	Not Detected U
Bromomethane	74-83-9	0.26	0.78	1.9	Not Detected U
Carbon Disulfide	75-15-0	0.30	0.62	6.2	1.0 J
Carbon Tetrachloride	56-23-5	0.50	1.2	3.1	Not Detected U
Chlorobenzene	108-90-7	0.21	0.92	2.3	0.44 J



EPA METHOD TO-15 GC/MS FULL SCAN
USCG Site 7

Client ID:	Lab Blank	Date/Time Analyzed:	9/7/11 01:03 PM
Lab ID:	1109024-12E	Dilution Factor:	1.00
Date/Time Collecte	NA - Not Applicable	Instrument/Filename:	msd6.i / 6090710a
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Chloroethane	75-00-3	0.98	2.1	5.3	Not Detected U
Chloroform	67-66-3	0.34	0.98	2.4	0.51 J
Chloromethane	74-87-3	1.2	1.6	4.1	Not Detected U
cis-1,2-Dichloroethene	156-59-2	0.58	0.79	2.0	Not Detected U
cis-1,3-Dichloropropene	10061-01-5	0.38	0.91	2.3	Not Detected U
Dibromochloromethane	124-48-1	0.56	1.7	4.2	0.58 J
Ethyl Benzene	100-41-4	0.14	0.87	2.2	Not Detected U
Freon 11	75-69-4	0.15	1.1	2.8	0.49 J
Freon 113	76-13-1	0.96	1.5	3.8	Not Detected U
Freon 12	75-71-8	0.36	0.99	2.5	Not Detected U
m,p-Xylene	108-38-3	0.25	0.87	2.2	Not Detected U
Methyl tert-butyl ether	1634-04-4	0.27	0.72	1.8	Not Detected U
Methylene Chloride	75-09-2	0.20	0.69	1.7	0.52 J
o-Xylene	95-47-6	0.26	0.87	2.2	Not Detected U
Styrene	100-42-5	0.24	0.85	2.1	Not Detected U
Tetrachloroethene	127-18-4	0.26	1.4	3.4	0.58 J
Toluene	108-88-3	0.16	0.75	1.9	0.20 J
trans-1,2-Dichloroethene	156-60-5	0.67	0.79	2.0	Not Detected U
trans-1,3-Dichloropropene	10061-02-6	0.43	0.91	2.3	0.70 J
Trichloroethene	79-01-6	0.41	1.1	2.7	1.1 J
Vinyl Chloride	75-01-4	0.14	0.51	1.3	Not Detected U

LEVEL-IV VALIDATABLE

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

SURROGATE RECOVERY FORM

Lab Name: AIR TOXICS LIMITED.

SDG No.: 1109024

	CLIENT SAMPLE NO.	SURROGATE % RECOVERY						TOTAL OUT
		1,2-Dichloroethane-d4	#	Toluene-d8	#	4-Bromofluorobenzene	#	
01	SG7-6	101		94		73	*	1
02	SG7-6	103		95		74	*	1
03	SG7-5	112		98		101		0
04	SG7-5 Lab Duplicate	112		98		104		0
05	SG7-5	112		98		100		0
06	SG7-5 Lab Duplicate	111		98		102		0
07	SG7-8	100		101		102		0
08	SG7-8	100		102		100		0
09	SG7-7	113		95		113		0
10	SG7-7	113		97		113		0
11	SG7-2	107		95		99		0
12	SG7-2	108		96		99		0
13	SG7-4	101		94		97		0
14	SG7-4	103		95		99		0
15	SG7-1	121		103		91		0
16	SG7-3	98		93		95		0
17	SG7-3 Lab Duplicate	96		93		96		0
18	SG7-3	98		94		95		0
19	SG7-3 Lab Duplicate	98		94		97		0
20	DUP-01	100		101		98		0
21	DUP-01	103		102		101		0
22	DUP-02 (MS/MSD)	114		104		94		0
23	DUP-02 (MS/MSD) Lab Duplicate	119		102		95		0
24	Trip Blank	91		101		100		0

Surrogate Recovery Limits
 1,2-Dichloroethane-d4 68 - 134
 Toluene-d8 89 - 109
 4-Bromofluorobenzene 83 - 115

* Designates values outside of QC limits

Air Toxics Ltd.

RECOVERY REPORT

Client Name: Client SDG: 08Sep2011
 Sample Matrix: GAS Fraction: VOA
 Lab Smp Id: LCS Client Smp ID: LCS
 Level: LOW Operator: jc
 Data Type: MS DATA SampleType: LCS
 SpikeList File: CONTROL.spk Quant Type: ISTD
 Sublist File: CONTROL.sub
 Method File: /chem/msda.i/08Sep2011.b/a1110818b.m/a11s0818a.m
 Misc Info: 10ppbv (50ppbv)

SPIKE COMPOUND	CONC ADDED PPBV	CONC RECOVERED PPBV	% RECOVERED	LIMITS
1 Dichlorodifluorome	10.000	9.705	97.05	60-144
3 Freon 114	10.000	9.928	99.28	59-141
4 Chloromethane	10.000	10.649	106.49	50-145
5 Vinyl Chloride	10.000	9.893	98.93	59-142
9 Chloroethane	10.000	8.712	87.12	51-158
12 1,1-Dichloroethene	10.000	6.307	63.07*	67-132
21 MTBE	10.000	10.795	107.95	64-133
22 trans-1,2-Dichloro	10.000	11.299	112.99	74-134
25 1,1-Dichloroethane	10.000	11.683	116.83	64-130
29 cis-1,2-Dichloroet	10.000	10.145	101.45	68-118
32 Chloroform	10.000	10.265	102.65	64-125
34 1,1,1-Trichloroeth	10.000	10.105	101.05	64-129
35 Carbon Tetrachlori	10.000	11.534	115.34	54-151
36 Benzene	10.000	9.964	99.64	59-123
38 1,2-Dichloroethane	10.000	11.341	113.41	60-146
41 Trichloroethene	10.000	9.653	96.53	64-115
48 Toluene	10.000	9.720	97.20	66-120
50 1,1,2-Trichloroeth	10.000	10.066	100.66	69-120
51 Tetrachloroethene	10.000	9.784	97.84	63-116
55 1,2-Dibromoethane	10.000	10.462	104.62	71-123
58 Ethyl Benzene	10.000	10.053	100.53	69-121
59 m,p-Xylene	10.000	9.940	99.40	66-126
61 o-Xylene	10.000	10.072	100.72	66-127
67 1,1,2,2-Tetrachlor	10.000	10.562	105.62	65-134

SURROGATE COMPOUND	CONC ADDED PPBV	CONC RECOVERED PPBV	% RECOVERED	LIMITS
\$ 37 1,2-Dichloroethane	10.000	10.841	108.41	78-132
\$ 47 Toluene-d8	10.000	10.118	101.18	92-107

Air Toxics Ltd.

RECOVERY REPORT

Client Name: Client SDG: 08Sep2011
 Sample Matrix: GAS Fraction: VOA
 Lab Smp Id: LCSD Client Smp ID: LCSD
 Level: LOW Operator: jc
 Data Type: MS DATA SampleType: LCSD
 SpikeList File: CONTROL.spk Quant Type: ISTD
 Sublist File: CONTROL.sub
 Method File: /chem/msda.i/08Sep2011.b/a1110818b.m/a11s0818a.m
 Misc Info: 10ppbv (50ppbv)

SPIKE COMPOUND	CONC ADDED PPBV	CONC RECOVERED PPBV	% RECOVERED	LIMITS
1 Dichlorodifluorome	10.000	9.246	92.46	60-144
3 Freon 114	10.000	9.864	98.64	59-141
4 Chloromethane	10.000	10.283	102.83	50-145
5 Vinyl Chloride	10.000	9.446	94.46	59-142
9 Chloroethane	10.000	8.522	85.22	51-158
12 1,1-Dichloroethene	10.000	5.190	51.90*	67-132
21 MTBE	10.000	10.360	103.60	64-133
22 trans-1,2-Dichloro	10.000	11.242	112.42	74-134
25 1,1-Dichloroethane	10.000	11.659	116.59	64-130
29 cis-1,2-Dichloroet	10.000	10.044	100.44	68-118
32 Chloroform	10.000	10.191	101.91	64-125
34 1,1,1-Trichloroeth	10.000	9.945	99.45	64-129
35 Carbon Tetrachlori	10.000	11.339	113.39	54-151
36 Benzene	10.000	10.018	100.18	59-123
38 1,2-Dichloroethane	10.000	11.743	117.43	60-146
41 Trichloroethene	10.000	9.712	97.13	64-115
48 Toluene	10.000	9.569	95.69	66-120
50 1,1,2-Trichloroeth	10.000	10.249	102.49	69-120
51 Tetrachloroethene	10.000	9.645	96.45	63-116
55 1,2-Dibromoethane	10.000	10.509	105.09	71-123
58 Ethyl Benzene	10.000	10.118	101.18	69-121
59 m,p-Xylene	10.000	10.170	101.71	66-126
61 o-Xylene	10.000	10.278	102.78	66-127
67 1,1,2,2-Tetrachlor	10.000	10.499	104.99	65-134

SURROGATE COMPOUND	CONC ADDED PPBV	CONC RECOVERED PPBV	% RECOVERED	LIMITS
\$ 37 1,2-Dichloroethane	10.000	10.337	103.37	78-132
\$ 47 Toluene-d8	10.000	10.068	100.68	92-107

Air Toxics Ltd.

RECOVERY REPORT

Client Name: Client SDG: 08Sep2011
 Sample Matrix: GAS Fraction: VOA
 Lab Smp Id: LCSD Client Smp ID: LCSD
 Level: LOW Operator: jc
 Data Type: MS DATA SampleType: LCSD
 SpikeList File: Control.spk Quant Type: ISTD
 Sublist File: CONTROL.sub
 Method File: /chem/msda.i/08Sep2011.b/a1110818b.m
 Misc Info: 10ppbv (50ppbv)

SPIKE COMPOUND	CONC ADDED PPBV	CONC RECOVERED PPBV	% RECOVERED	LIMITS
4 Dichlorodifluorome	10.000	9.256	92.56	58-147
2 Propylene	10.000	9.111	91.11	48-134
6 Freon 114	10.000	9.659	96.59	60-139
7 Chloromethane	10.000	9.973	99.73	45-152
10 Vinyl Chloride	10.000	9.430	94.30	56-145
11 1,3-Butadiene	10.000	10.344	103.44	55-138
12 Bromomethane	10.000	6.082	60.82	54-147
13 Chloroethane	10.000	7.674	76.74	56-152
16 Trichlorofluoromet	10.000	9.573	95.73	47-159
20 Ethanol	10.000	10.697	106.97	38-149
22 Freon 113	10.000	5.615	56.15*	58-133
23 1,1-Dichloroethene	10.000	5.208	52.08*	58-137
24 Acetone	10.000	11.073	110.73	57-132
26 Carbon Disulfide	10.000	12.576	125.76	73-163
27 2-Propanol	10.000	10.292	102.92	53-139
28 3-Chloroprene	10.000	14.878	148.78	57-158
33 Methylene Chloride	10.000	8.661	86.61	62-125
35 MTBE	10.000	10.107	101.07	59-129
36 trans-1,2-Dichloro	10.000	11.056	110.56	70-138
40 Hexane	10.000	9.980	99.80	58-126
42 1,1-Dichloroethane	10.000	11.195	111.95	60-131
44 Vinyl Acetate	10.000	8.791	87.91	63-132
47 cis-1,2-Dichloroet	10.000	9.747	97.47	60-127
48 2-Butanone	10.000	9.632	96.32	60-133
51 Tetrahydrofuran	10.000	11.698	116.98	54-134
53 Chloroform	10.000	10.088	100.88	62-128
55 Cyclohexane	10.000	9.544	95.44	62-125
56 1,1,1-Trichloroeth	10.000	9.756	97.56	60-130
57 Carbon Tetrachlori	10.000	9.810	98.10	54-140
59 2,2,4-Trimethylpen	10.000	11.162	111.63	50-138
60 Benzene	10.000	10.409	104.09	61-130
64 Heptane	10.000	11.001	110.01	56-136
63 1,2-Dichloroethane	10.000	11.321	113.21	55-142

SAMPLE RESULTS/SAMPLE RESULTS DUPLICATE

Lab Name: Air Toxics Ltd.

Lab File ID: 6090711.d & 6090712.d

Lab Sample ID: 10A & 10AA

Dilution: 14.2 & 28.4

Client Sample ID: &

Date Analyzed: 9/7/11 & 9/7/11

CAS Number	Compound	Original		Duplicate		RPD	Result Less Than 5X RL
		Amount	Flags	Amount	Flags		
71-55-6	1,1,1-Trichloroethane	ND	U	ND	U	0	
79-34-5	1,1,2,2-Tetrachloroethane	ND	U	ND	U	0	
79-00-5	1,1,2-Trichloroethane	ND	U	ND	U	0	
75-34-3	1,1-Dichloroethane	ND	U	ND	U	0	
75-35-4	1,1-Dichloroethene	ND	U	ND	U	0	
120-82-1	1,2,4-Trichlorobenzene	ND	U	ND	U	0	
106-93-4	1,2-Dibromoethane (EDB)	ND	U	ND	U	0	
95-50-1	1,2-Dichlorobenzene	ND	U	ND	U	0	
107-06-2	1,2-Dichloroethane	ND	U	1.106		-->200<--	Y
78-87-5	1,2-Dichloropropane	ND	U	ND	U	0	
541-73-1	1,3-Dichlorobenzene	ND	U	ND	U	0	
106-46-7	1,4-Dichlorobenzene	ND	U	ND	U	0	
78-93-3	2-Butanone (Methyl Ethyl Ketone)	ND	U	ND	U	0	
108-10-1	4-Methyl-2-pentanone	ND	U	ND	U	0	
67-64-1	Acetone	ND	U	ND	U	0	
71-43-2	Benzene	ND	U	ND	U	0	
75-27-4	Bromodichloromethane	ND	U	ND	U	0	
75-25-2	Bromoform	ND	U	ND	U	0	
74-83-9	Bromomethane	ND	U	ND	U	0	
75-15-0	Carbon Disulfide	ND	U	1.432		-->200<--	Y
56-23-5	Carbon Tetrachloride	ND	U	ND	U	0	
108-90-7	Chlorobenzene	ND	U	ND	U	0	
75-00-3	Chloroethane	ND	U	ND	U	0	
67-66-3	Chloroform	4.459		3.026		-->38<--	Y
74-87-3	Chloromethane	ND	U	ND	U	0	
156-59-2	cis-1,2-Dichloroethene	ND	U	ND	U	0	
10061-01-5	cis-1,3-Dichloropropene	ND	U	ND	U	0	
124-48-1	Dibromochloromethane	ND	U	ND	U	0	
100-41-4	Ethyl Benzene	ND	U	ND	U	0	
75-69-4	Freon 11	11.898		11.122		6.7	Y
76-13-1	Freon 113	ND	U	ND	U	0	
75-71-8	Freon 12	4757.5		4756		0.032	
108-38-3	m,p-Xylene	ND	U	ND	U	0	
1634-04-4	Methyl tert-butyl ether	ND	U	ND	U	0	
75-09-2	Methylene Chloride	ND	U	0.9151		-->200<--	Y
95-47-6	o-Xylene	ND	U	ND	U	0	
100-42-5	Styrene	ND	U	ND	U	0	
127-18-4	Tetrachloroethene	41.887		40.139		4.3	Y
108-88-3	Toluene	ND	U	ND	U	0	
156-60-5	trans-1,2-Dichloroethene	ND	U	ND	U	0	
10061-02-6	trans-1,3-Dichloropropene	ND	U	ND	U	0	
79-01-6	Trichloroethene	3.891		1.203		-->106<--	Y
75-01-4	Vinyl Chloride	ND	U	ND	U	0	

Note: The results appearing in the Amount columns are the raw, unrounded numbers acquired from the instrument.

Date : 08-SEP-2011 16:33

Client ID:

Instrument: msda.i

Sample Info: 250mL #13843

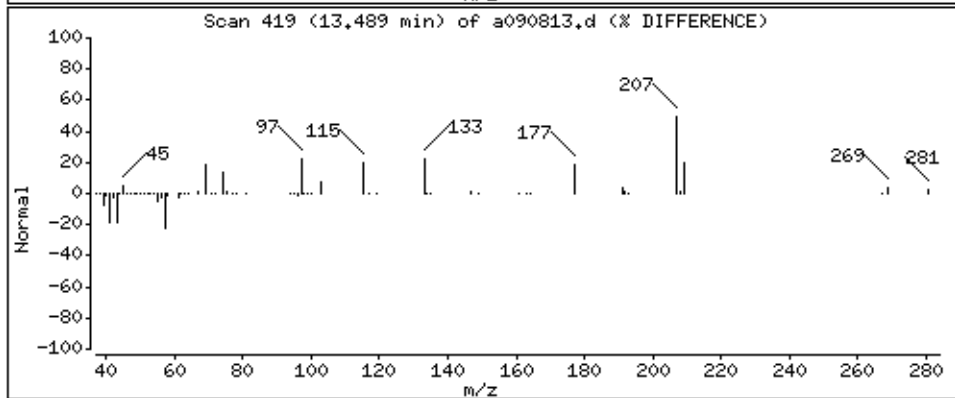
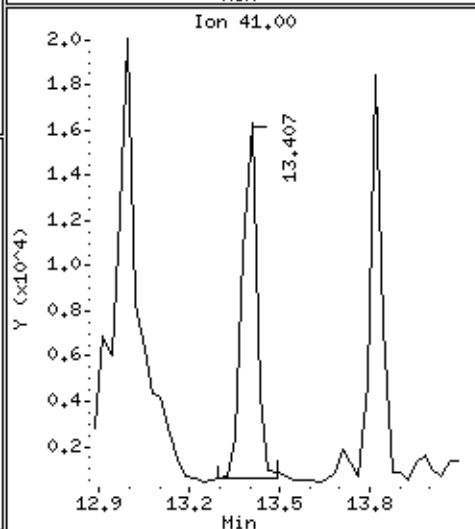
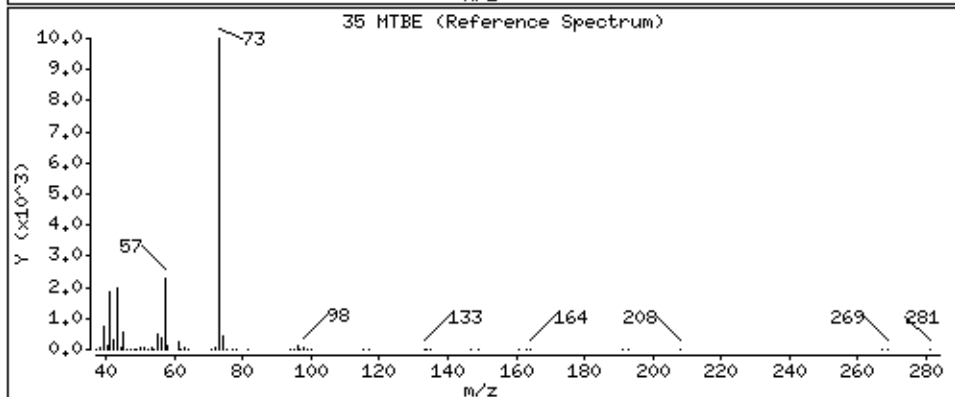
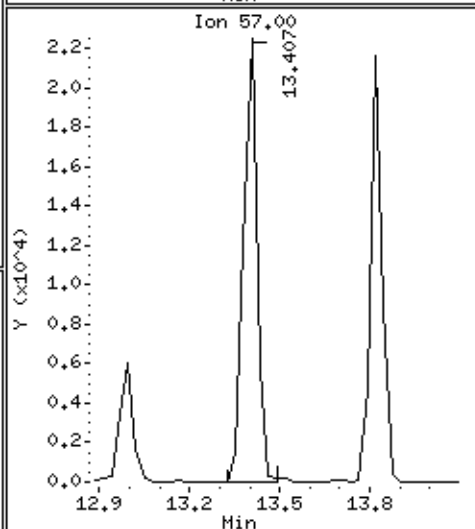
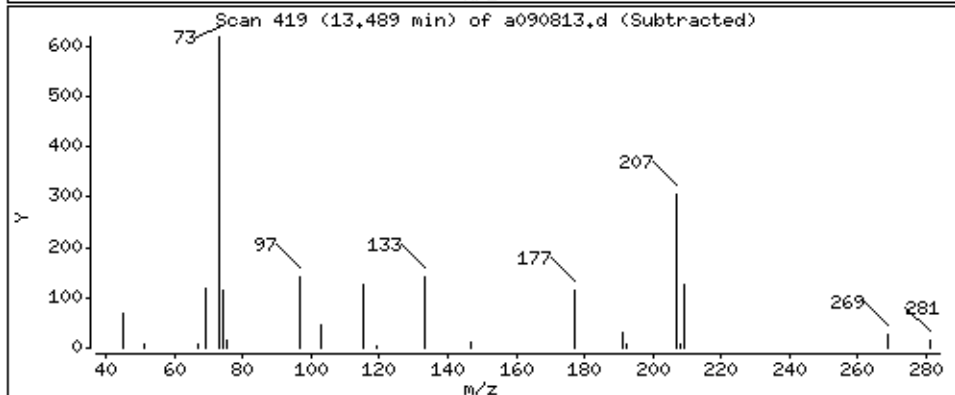
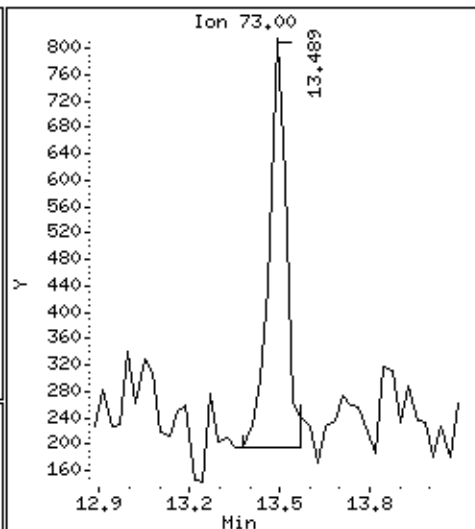
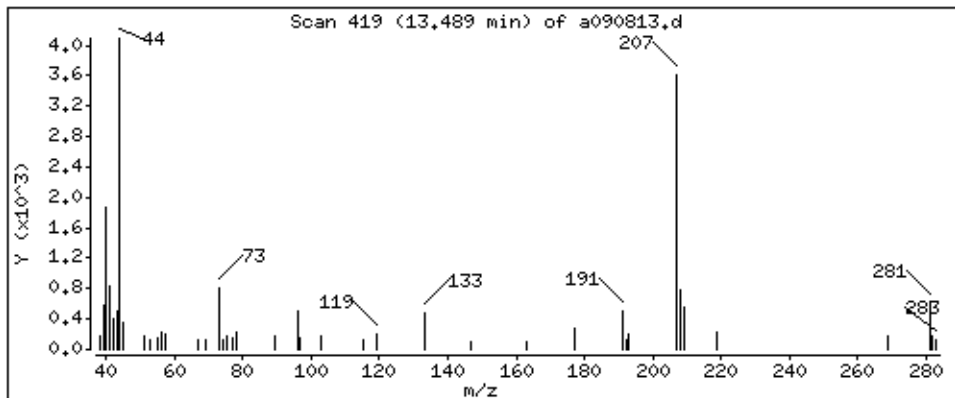
Operator: jc

Column phase: RTX-624

Column diameter: 0.32

35 MTBE

Concentration: 0.02940 PPBV



CONCENTRATIONS									
RT	EXP RT	(REL RT)	MASS	RESPONSE	ON-COL (PPBV)	FINAL (PPBV)	TARGET RANGE	RATIO	
==	=====	=====	=====	=====	=====	=====	=====	=====	
\$ 80 Toluene-d8 (continued)									
19.389	19.389	(1.154)	100	442610			37.58- 97.58	66.55	

\$ 100 Bromofluorobenzene									
						CAS #: 460-00-4			
23.068	23.068	(1.068)	174	316369	9.85098	9.851	80.00- 120.00	100.00	
23.042	23.042	(1.067)	95	462193			113.70- 173.70	146.09	
23.068	23.068	(1.068)	176	308187			65.96- 125.96	97.41	

4 Dichlorodifluoromethane/Fr12									
						CAS #: 75-71-8			
5.637	5.565	(0.366)	85	51552	0.53555	0.6909	80.00- 120.00	100.00	
5.637	5.565	(0.366)	87	15658			1.83- 61.83	30.37	

7 Chloromethane									
						CAS #: 74-87-3			
7.300	7.252	(0.474)	50	19343	0.54679	0.7054	80.00- 120.00	100.00	
7.300	7.252	(0.474)	52	6298			2.29- 62.29	32.56	

16 Trichlorofluoromethane/Fr11									
						CAS #: 75-69-4			
10.841	10.841	(0.704)	101	79772	1.04185	1.344	80.00- 120.00	100.00	
10.841	10.841	(0.704)	103	51943			34.23- 94.23	65.12	

22 Freon 113									
						CAS #: 76-13-1			
12.105	12.126	(0.786)	151	3595	0.06939	0.08952	80.00- 120.00	100.00(a)	
12.105	12.126	(0.786)	153	1685			33.66- 93.66	46.87	
12.105	12.105	(0.786)	101	4436			109.89- 169.89	123.39	

35 MTBE									
						CAS #: 1634-04-4			
13.489	13.490	(0.876)	73	2500	0.02279	0.02940	80.00- 120.00	100.00(a)	
13.407	13.490	(0.870)	57	69848			0.00- 55.70	2793.30	
13.407	13.490	(0.870)	41	53027			0.00- 55.35	2120.62	

60 Benzene									
						CAS #: 71-43-2			
16.248	16.249	(0.967)	78	61984	0.49378	0.6370	80.00- 120.00	100.00	
16.248	16.249	(0.967)	77	12859			0.00- 53.14	20.75	

63 1,2-Dichloroethane									
						CAS #: 107-06-2			
16.358	16.358	(0.974)	62	1120	0.01888	0.02436	80.00- 120.00	100.00(a)	
16.358	16.358	(0.974)	64	253			2.07- 62.07	22.65	

81 Toluene									
						CAS #: 108-88-3			
19.501	19.501	(1.161)	91	250130	1.74229	2.248	80.00- 120.00	100.00	
19.501	19.501	(1.161)	92	147226			30.18- 90.18	58.86	

84 Tetrachloroethene									
						CAS #: 127-18-4			
20.333	20.333	(0.942)	166	3169	0.04759	0.06139	80.00- 120.00	100.00(a)	
20.333	20.333	(0.942)	129	2881			48.84- 108.84	90.89	
20.333	20.333	(0.942)	131	2697			46.09- 106.09	85.11	

AMOUNTS									
RT	EXP RT	(REL RT)	MASS	RESPONSE	CAL-AMT (PPBV)	ON-COL (PPBV)	TARGET	RANGE	RATIO
==	=====	=====	=====	=====	=====	=====	=====	=====	=====
34 tert-butyl alcohol (continued)									
13.352	13.352	(0.867)	41	200936			0.00-	48.20	25.58
13.352	13.352	(0.867)	57	83182			0.00-	38.59	10.59

35 MTBE									
						CAS #: 1634-04-4			
13.490	13.490	(0.876)	73	1231602	10.0000	9.368	80.00-	120.00	100.00
13.490	13.490	(0.876)	57	319775			0.00-	55.70	25.96
13.490	13.490	(0.876)	41	318950			0.00-	55.35	25.90

36 trans-1,2-Dichloroethene									
						CAS #: 156-60-5			
13.544	13.544	(0.879)	98	249264	10.0000	8.543	80.00-	120.00	100.00
13.544	13.544	(0.879)	61	629054			212.41-	272.41	252.36
13.544	13.544	(0.879)	96	394115			128.28-	188.28	158.11

40 Hexane									
						CAS #: 110-54-3			
13.819	13.819	(0.897)	57	838521	10.0000	9.540	80.00-	120.00	100.00
13.819	13.819	(0.897)	43	569288			33.38-	93.38	67.89
13.819	13.819	(0.897)	86	130107			0.00-	46.43	15.52

41 Isopropyl ether									
						CAS #: 108-20-3			
14.176	14.176	(0.920)	45	1909237	10.0000	10.614	80.00-	120.00	100.00
14.176	14.176	(0.920)	87	411754			0.00-	54.93	21.57
14.176	14.176	(0.920)	59	204102			0.00-	41.38	10.69

42 1,1-Dichloroethane									
						CAS #: 75-34-3			
14.231	14.231	(0.924)	63	793202	10.0000	9.602	80.00-	120.00	100.00
14.231	14.231	(0.924)	65	253133			2.24-	62.24	31.91

44 Vinyl Acetate									
						CAS #: 108-05-4			
14.258	14.258	(0.926)	86	79925	10.0000	8.455	80.00-	120.00	100.00
14.258	14.258	(0.926)	42	98492			71.80-	131.80	123.23
14.258	14.258	(0.926)	43	1190177			1179.88-	1239.88	1489.12

46 Ethyl-tert-butyl ether									
						CAS #: 637-92-3			
14.671	14.671	(0.952)	59	1677002	10.0000	9.756	80.00-	120.00	100.00
14.671	14.671	(0.952)	87	605212			8.46-	68.46	36.09
14.671	14.671	(0.952)	41	320378			0.00-	47.65	19.10

47 cis-1,2-Dichloroethene									
						CAS #: 156-59-2			
15.044	15.044	(0.977)	98	277514	10.0000	8.540	80.00-	120.00	100.00
15.044	15.044	(0.977)	61	652619			191.49-	251.49	235.17
15.044	15.044	(0.977)	96	438762			128.10-	188.10	158.10

48 2-Butanone									
						CAS #: 78-93-3			
15.065	15.065	(0.978)	72	222488	10.0000	8.498	80.00-	120.00	100.00
15.065	15.065	(0.978)	43	1046150			298.82-	358.82	470.21

Air Toxics Ltd.

INITIAL CALIBRATION DATA

Start Cal Date : 18-AUG-2011 14:46
 End Cal Date : 31-AUG-2011 12:17
 Quant Method : ISTD
 Origin : Disabled
 Target Version : 3.50
 Integrator : HP RTE
 Method file : /chem/msda.i/31Aug2011.b/a1110818b.m
 Cal Date : 01-Sep-2011 08:57 croush
 Curve Type : Average

Compound	0.05000	0.10000	0.50000	2.000	5.000	10.000	---	RRF	% RSD
	Level 4	Level 5	Level 6	Level 7	Level 8	Level 9			
	20.000	40.000	2.500	1.500					
	Level 10	Level 11	Level 12	Level 13					
16 Trichlorofluoromethane/Fr11	5.26915 4.42186	7.46511 4.28140	6.64529 +++++	4.49047 +++++	4.71765	4.51621		5.22589	22.724
17 1-Pentene	+++++	+++++	+++++	+++++	+++++	+++++		+++++	+++++
18 Pentane	+++++	+++++	+++++	+++++	+++++	+++++		+++++	+++++
19 Diethyl Ether	+++++	+++++	+++++	+++++	+++++	+++++		+++++	+++++
20 Ethanol	+++++ 0.36084	+++++ 0.36226	+++++	+++++	+++++	0.36379		0.36230	0.408
21 Acrolein	+++++	+++++	+++++	+++++	+++++	+++++		+++++	+++++
22 Freon 113	3.33566 1.66679	5.02596 2.37124	4.24147 +++++	3.75328 +++++	4.02154	3.87057		3.53581	30.241 <-
23 1,1-Dichloroethene	+++++ 0.57646	2.23131 1.16555	1.69744 +++++	1.47431 +++++	1.55868	1.46503		1.45268	34.741 <-
24 Acetone	+++++ 1.20193	+++++ 1.16581	1.45776 +++++	1.40710 +++++	1.32824	1.24339		1.30071	8.965
25 Iodomethane	+++++	+++++	+++++	+++++	+++++	+++++		+++++	+++++

Air Toxics Ltd.

INITIAL CALIBRATION DATA

Start Cal Date : 18-AUG-2011 13:02
 End Cal Date : 18-AUG-2011 18:19
 Quant Method : ISTD
 Origin : Disabled
 Target Version : 3.50
 Integrator : HP RTE
 Method file : /chem/msda.i/18Aug2011.b/alls0818a.m
 Cal Date : 22-Aug-2011 10:11 croush
 Curve Type : Average

Compound	0.00300	0.01000	0.02000	0.05000	0.10000	0.50000	—	% RSD
	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	RRF	
	2.000	5.000	10.000	20.000				
	Level 7	Level 8	Level 9	Level 10				
27 Tetrahydrofuran	+++++	+++++	+++++	+++++	+++++	+++++		
	+++++	+++++	+++++	+++++			+++++	+++++
28 1-Hexene	+++++	+++++	+++++	+++++	+++++	+++++		
	+++++	+++++	+++++	+++++			+++++	+++++
29 cis-1,2-Dichloroethene	+++++	+++++	1.79977	1.68901	2.25324	1.93936		
	1.73007	1.85327	1.77852	1.71445			1.84471	9.968
30 2-Butanone	+++++	+++++	+++++	+++++	+++++	+++++		
	+++++	+++++	+++++	+++++			+++++	+++++
32 Chloroform	+++++	5.76800	5.58623	5.05849	7.19468	6.03318		
	5.33120	5.69520	5.47668	5.21855			5.70691	11.067
33 Cyclohexane	+++++	+++++	+++++	+++++	+++++	+++++		
	+++++	+++++	+++++	+++++			+++++	+++++
34 1,1,1-Trichloroethane	+++++	+++++	5.81663	5.53544	7.35028	6.36588		
	5.79097	6.06195	5.82284	5.59650			6.04256	9.758
35 Carbon Tetrachloride	+++++	1.46316	2.26275	2.87371	4.83359	4.94814		
	4.54431	4.88497	4.79424	4.66904			3.91932	34.250 <-
36 Benzene	+++++	+++++	+++++	1.99422	2.29761	1.88347		
	1.78616	1.82862	1.72559	1.64564			1.88019	11.442
38 1,2-Dichloroethane	+++++	0.76130	0.76690	0.74521	1.11339	0.92488		
	0.84969	0.93963	0.88116	0.82882			0.86789	13.345

APPENDIX B

LAND USE CONTROL DOCUMENTATION

SITE 7

**Land Use Control
Remedial Design
for
Site 7 – Former Burn Pit**

UNITED STATES COAST GUARD YARD

**HAWKINS POINT ROAD
BALTIMORE, MARYLAND**



**COAST GUARD CONTRACT NUMBER DTCG83-08-D-3CL109
TASK ORDER NUMBER HSCG83-09-R-3YD104**

August 2012

**LAND USE CONTROL
REMEDIAL DESIGN
FOR
SITE 7 – FORMER BURN PIT**

**UNITED STATES COAST GUARD YARD
HAWKINS POINT ROAD
BALTIMORE, MARYLAND**

**Submitted to:
United States Coast Guard Yard
Facilities Engineering, Building 4
2401 Hawkins Point Road
Baltimore, Maryland 21226-1797**

**Submitted by:
Tetra Tech NUS, Inc.
Foster Plaza 7
661 Andersen Drive
Pittsburgh, Pennsylvania 15220-2745**

**COAST GUARD CONTRACT NUMBER DTCG83-08-D-3CL109
TASK ORDER NUMBER HSCG83-09-R-3YD104**

AUGUST 2012

PREPARED UNDER THE DIRECTION OF:



**MARK SLADIC, P.E.
PROJECT MANAGER
TETRA TECH NUS, INC.
PITTSBURGH, PENNSYLVANIA**

APPROVED FOR SUBMITTAL BY:



**ROGER A. CLARK, Ph.D.
PROGRAM MANAGER
TETRA TECH NUS, INC.
PITTSBURGH, PENNSYLVANIA**

United States Coast Guard Baltimore YARD Land Use Control Remedial Design Former Burn Pit (Site 7)

1. Purpose

The purpose of this Land Use Control Remedial Design (LUC RD) for the Former Burn Pit (Site 7) is to provide information on how the remedy selected in the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Record of Decision (ROD) for this facility will be implemented, maintained and enforced should any breach of the remedy occur. The ROD, which was jointly signed by the United States Coast Guard (USCG) and the United States Environmental Protection Agency (USEPA) in consultation with the Maryland Department of the Environment (MDE), requires the implementation of certain Land Use Controls (LUCs) to restrict development and to prevent future human exposure to the surficial aquifer and contaminated soils beneath parts of Buildings 30 and 37 at Site 7. Also during the implementation of the ROD, additional contaminated soil was found to extend under portions of Buildings 35 and 36 and the pad for the electrical transformer station located immediately adjacent to Building 35. Therefore this LUC RD will also include the remaining contaminated soils under these areas. These controls will prevent exposure to contaminated groundwater and soils which could present unacceptable human health risks.

2. Description of the Former Burn Pit (Site 7)

The USCG Baltimore Yard (YARD) is located on Hawkins Point Road, approximately 6 miles southeast of downtown Baltimore and 6 miles west of the Chesapeake Bay. Most of the facility lies within Anne Arundel County, with the exception of the northernmost portion, which is within the Baltimore City limits (Figure 1). The YARD encompasses approximately 113 acres and is situated in a heavily industrialized area with a manganese ore processor to the east, the Baltimore City landfill to the north, and a trucking company to the west. Curtis Creek forms the southern boundary of the YARD. Arundel Cove, a tributary to Curtis Creek, divides the YARD into two distinct areas. The YARD and associated industries are situated on the western side of the cove, and a residential and recreational area is located to the east. Figure 2 is an aerial photograph of the Facility, which shows the location of Site 7, and Figure 3 is a map which shows the details of Site 7.

The USEPA identification number for the YARD is MD4690307844. Site 7 is located in the northwestern section of the YARD along the facility's northern property boundary and parallel to the CSX Railroad property. The land encompassing Site 7 was originally developed in the early 1940s when the west bulkhead was installed and a natural slough was backfilled with sediments dredged from Curtis Creek.

Site 7 is slightly less than 3 acres in size. A portion of the site was used for the disposal and intermittent incineration of liquids, solid waste, oil, batteries, and scrap metal from the late 1940s through 1963. Currently, Buildings 30, 35, 36 and 37, an electrical transformer station, storage sheds, a maintenance canopy, roads, walkways, a basketball court, and a manicured lawn, and patio area are present at the site. Several underground utilities, including electric, water, fiber optic lines and storm drains are present at the site.

To address the potential risk posed by the soil at Site 7, a Remedial Action was performed in accordance with the ROD issued on September 30, 2009, primarily around Buildings 30 and 37 which included the excavation, followed by in-situ treatment, and off-site disposal of 9,636 cubic yards of surface and subsurface soil containing metals, volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs) and polynuclear aromatic hydrocarbons (PAHs). The components of the remedial action, including installation and maintenance of erosion and sediment controls, waste characterization, removal verification sampling, equipment decontamination, and site restoration were completed in accordance with the Remedial Action Work Plan prepared for the project (USCG, 2009a).

To address the contamination left under Buildings 30, 35 (including the pad for the electrical transformer station), 36 and 37, LUCs will be implemented to prohibit excavation and development within the footprints of these buildings.

3. Land Use Controls

The LUCs for Site 7 are:

- Prohibit excavation and development within the footprints of Buildings 30, 35, 36, and 37 and the pad for the electrical transformer station.
- Prohibit all uses of groundwater from the surficial aquifer underlying Site 7 (including but not limited to, human consumption, irrigation, heating/cooling purposes, and industrial processes) unless prior written approval is obtained from the USCG, USEPA, and MDE.

4. Land Use Control Performance Objectives

The following are the Performance Objectives for the LUC remedy to be implemented at Site 7 as stated in the ROD:

Restrict land use, specifically prohibiting excavation and development within the footprints of Buildings 30, 35, 36, and 37 and the pad for the electrical transformer station (Figure 4), to eliminate or reduce the potential for unacceptable human health risks as a result of exposure to contaminated soil that was not removed during the Remedial Action.

Prohibit all uses of groundwater from the surficial aquifer underlying Site 7 (including, but not limited to human consumption, irrigation, heating/cooling purposes, and industrial processes) unless prior written approval is obtained from the USCG (in the event of a transfer of the property), USEPA, and MDE.

Maintain the integrity of any existing or future monitoring or remediation system(s) unless prior written approval for modifications is obtained from the USCG (in the event of a transfer of the property), USEPA, and MDE.

Annually inspect the site to confirm compliance with LUC objectives, and prepare and submit an annual compliance certification to USEPA and MDE. Notify USEPA and MDE prior to any property conveyance. Because hazardous substances remain on site in excess of levels that allow for unlimited use and unrestricted exposure, an initial review will also be conducted within 5 years after the initiation of the LUCs, and every 5 years thereafter, to ensure that the remedy continues to provide adequate protection of human health and the environment. The LUC Compliance Certificate form and Site Inspection Checklist are provided as [Attachment 1](#).

The LUCs will be maintained within the boundaries designated on Figure 4 until contaminants present in the soil and groundwater at the site are at or below levels that allow for unlimited use and unrestricted exposure, and/or to preserve the integrity of the selected remedy. Implementation of LUCs through the Base Land Use Plan will be conducted by the review of all proposed YARD construction projects against restrictions in the Land Use Plan.

5. Remedy Implementation Actions

a. Responsibilities with respect to future LUC inspection, reporting, and enforcement:

The following actions shall be undertaken by the USCG in accordance with the ROD to ensure that the above-described LUC Performance Objectives are met and maintained:

- 1. LUC Information Dissemination:** Within 30 days of receiving USEPA and MDE approval of this LUC RD, the USCG shall provide a copy of the same including all attached Appendices illustrating the boundaries of the facility and Designated Restricted Areas where LUCs will apply, to Anne Arundel County for its information. [Figure 4](#) shows the approximate boundaries of the restricted areas. (Refer to the Remedial Action Completion Report, for the exact limits of excavation.) A survey will be conducted by a certified Maryland Surveyor to verify the boundaries. The survey report with global positioning system (GPS) coordinates of the restricted areas will be provided as an

Addendum to this Report once the survey has been completed. The USCG will also place a copy of this document in the Administrative Record (currently located at 2401 Hawkins Point Road, Baltimore, Maryland 21226) for the YARD.

- 2. Site Inspections and Monitoring:** While the USCG retains ownership of the YARD, the USCG will perform annual on-site physical inspections and monitoring of Site 7 to confirm continued compliance with all LUCs in order to achieve the LUC Performance Objectives. The monitoring results will be included in a separate report or as a section of another environmental report, if appropriate, and provided to the USEPA and MDE. The annual monitoring reports will be used in preparation of the Five Year Review to evaluate the effectiveness of the remedy.

The annual monitoring report, submitted to the regulatory agencies by the USCG, will evaluate the status of the ICs and how any IC deficiencies or inconsistent uses have been addressed. In the event of a transfer, the annual evaluation will address whether the use restrictions and controls referenced above were communicated in the deed(s), whether the owners and state and local agencies were notified of the use restrictions and controls affecting the property, and whether use of the property has conformed with such restrictions and controls.

Should the USCG convey the YARD to another party, the USCG shall either continue to perform such annual inspections or shall ensure that the new owner(s) of the facility performs such inspections. The need to continue to perform annual site inspections will be re-evaluated every 5 years. The Site Inspection Checklist is provided as [Attachment 1](#).

- 3. LUC Compliance Certifications:** While the USCG retains ownership of the YARD, the USCG shall provide USEPA and MDE with annual LUC Compliance Certifications. These certifications will be submitted no later than 1 March of the year following the year of inspection. Should any deficiency(ies) be found, the USCG will provide to USEPA and MDE along with the Certificate, a separate written explanation indicating the specific deficiency(ies) found and what efforts or measures have been or will be taken to correct those deficiencies. Should the USCG convey the YARD to another party, the USCG shall either continue to provide such certifications, or shall ensure that the new owner(s) of the facility provides the same. The need to continue to provide such certifications on an annual basis will be re-evaluated every 5 years. A LUC Compliance Certificate form is included as [Attachment 1](#).

4. **CERCLA Five-Year Reviews:** The USCG shall conduct Five-Year Reviews of the Site 7 remedy as required by CERCLA and the National Contingency Plan (NCP), because hazardous substance contamination above levels allowing for unrestricted use of the property will remain on site. Should, in the course of undertaking any Five-Year Review, the USCG encounter any LUC deficiency, within three (3) business days of such finding the USCG will notify USEPA and MDE of the deficiency(ies) found and what efforts or measures have been or will be taken by the USCG and/or new owner to correct the deficiency(ies).

5. **Notification should site activities interfere with LUC effectiveness:** Should the USCG discover any activity on the property inconsistent with the Site 7 LUC performance objectives or use restrictions, or any other activity that may interfere with the effectiveness of the LUCs, the USCG shall address such activity as soon as practicable, but in no case will the process be initiated later than ten (10) days after the USCG becomes aware of the breach; and the USCG shall notify USEPA and MDE within three (3) business days of such discovery. Consistent with paragraph 6 below, the USCG will then work with USEPA, MDE and the new owner(s) of the property in the case of a transfer, if applicable, to correct the problem(s) discovered. The USCG will notify USEPA and MDE regarding how the USCG has addressed or will address the breach within ten (10) days of sending USEPA and MDE notification of the breach. This reporting requirement does not preclude the USCG from taking immediate action pursuant to its CERCLA authorities to prevent or address any perceived risk(s) to human health or the environment.

6. **LUC Enforcement:** Should any breach of the LUCs occur, the USCG will work with USEPA and MDE to ensure that appropriate actions are taken to curtail any nonconforming land use. These actions may range from informal resolutions with any new owner or any violator, to the institution of judicial action under the authority of State property law or CERCLA. Alternatively, should the circumstances warrant such, the USCG will exercise its response authorities under CERCLA, then seek cost recovery after the fact from the person(s) or entity(ies) who violated a given LUC. Should the USCG become aware that any future owner or user of the property has violated any institutional control requirement over which a local agency may have independent jurisdiction; the USCG will also notify these agencies of such violation(s) and work cooperatively with them to re-achieve owner/user compliance with the LUC(s).

7. **Notification of intended change in land use:** The USCG will notify and seek prior concurrence from USEPA and MDE at least 45 days in advance of: proposals for changes in land use that would be inconsistent with use restrictions and exposure assumptions described in the ROD; any anticipated action that may disrupt LUC effectiveness; or, any action that may alter or negate the need for LUCs. The USCG shall not modify or terminate LUCs, implementation actions, or modify land use without approval by USEPA and MDE.

8. **Termination of LUCs:** When the USCG determines, with USEPA and MDE concurrence, that one or more of the LUCs described in this document are no longer needed for protection of human health or the environment, the USCG (or General Services Administration (GSA) shall provide to the then current owner of the property, an appropriate release for recordation with the deed pertaining to the site and will also timely advise Anne Arundel County of that action. USCG will obtain USEPA and MDE concurrence prior to modifying or terminating LUC objectives or required LUC implementation actions.

9. **Notification regarding transfers of property:** The USCG will provide notice to USEPA and MDE at least six (6) months prior to any transfer or sale of real property subject to LUCs so that USEPA and MDE can be involved in discussions to ensure that appropriate provisions are included in the transfer terms or conveyance documents to maintain effective LUCs. If it is not possible for the USCG to notify USEPA and MDE at least six (6) months prior to any transfer or sale, then the USCG will notify USEPA and MDE as soon as possible but no later than 60 days prior to the transfer or sale of any property subject to LUCs. In addition to the land transfer notice and discussion provisions above, the USCG further agrees to provide USEPA and MDE with similar notice, within the same time frames, as to federal-to-federal transfer of property. The USCG shall provide a copy of the executed deed or transfer assembly to USEPA and MDE.

- a. Deed Restrictions: Each transfer of fee title from the United States will include a CERCLA 120(h)(3) covenant which will have a description of the residual contamination on the property and the environmental use restrictions, expressly prohibiting activities inconsistent with the performance measure goals and objectives.

The environmental restrictions are included in a section of the CERCLA 120(h) (3) covenant that the United States is required to include in the deed for any property that has had hazardous substances stored for one year or more, known

to have been released or disposed of on the property. Each deed will also contain a reservation of access to the property for the USCG, USEPA, and MDE, and their respective officials, agents, employees, contractors, and subcontractors for purposes consistent with the USCG Installation Restoration Program (IRP) or the Federal Facility Agreement (FFA). The deed will contain appropriate provisions to ensure that the restrictions continue to run with the land and are enforceable by the USCG.

10. LUC enforcement: All proposed projects at the YARD are reviewed by the Environmental Engineer, Environmental Protection Specialist, and the Chief of the Facilities, Engineering Department. These three reviewers or their assigns, will enforce the LUC that prohibits excavation and development within the footprints of Buildings 30, 35 (including the electrical transformer pad), 36 and 37. In addition, signs will be installed in the vicinity of these buildings which will require contacting the Environmental Branch at the YARD before disturbing the soil within the footprints of these buildings or surrounding areas. Implementation of LUCs through the Base Land Use Plan will be conducted by the review of all proposed YARD construction projects against restrictions in the Land Use Plan.

b. **Responsibilities of any new property owner with respect to LUC inspection, reporting, and enforcement:** It is the USCG's intent, should it convey the YARD to another party, to have that party perform the following LUC maintenance-related tasks:

1. **LUC Compliance Certifications:** The new owner shall provide USEPA, MDE and the USCG with annual LUC Compliance Certifications. These certifications will be based upon annual physical inspections of the property and will be submitted no later than 1 March of the year following the year of inspection. Should any deficiency(ies) be found during the annual inspection, the owner will provide to USEPA, MDE and the USCG along with the Certificate, a separate written explanation indicating the specific deficiency(ies) found and what efforts or measures have or will be taken to correct those deficiencies. The need to continue to provide such certifications on an annual basis will be re-evaluated every 5 years. An LUC Compliance Certificate form is included in [Attachment 1](#).

2. **Notification of intended change in land use:** The new owner shall provide advance notice to the USEPA, MDE and the USCG of its desire to use the property for anything other than industrial or restricted commercial uses. Such notice shall include a description of its plans for undertaking any environmental investigation and/or cleanup

activities necessary to permit such a change in land usage. Grantee on behalf of itself, its lessees, licensees, successors and assigns shall ensure that such activities will not conflict with, or adversely affect, any ongoing remedial systems or future investigative or remedial activities to be undertaken by the USCG on the Property.

The USCG acknowledges that the USCG will remain responsible for implementing, inspecting, reporting on, monitoring, and enforcing the LUCs described in the CERCLA ROD for Site 7 dated March 2009. Although as discussed above, the USCG may later transfer these procedural tasks to another party by contract, property transfer agreement, or through other means, the USCG shall retain responsibility for remedy integrity. Should any breach of the LUCs occur, the USCG will ensure that appropriate actions are taken to reestablish the protectiveness of the remedy, curtail any nonconforming land use, and may initiate legal action to either compel action by a third party(ies) and/or recover the USCG's costs for remedying any discovered LUC violation(s).

- c. **Points of Contact:** The following Points of Contact and addresses shall be utilized in order to provide the required Annual LUC Certifications and all other notices required by this LUC RD:

Facilities Engineer

United States Coast Guard Yard

2401 Hawkins Point Road

Baltimore, MD 21226

(410) 636-4097

USEPA Region III

Superfund Program

1650 Arch Street

Mail Code 3HS11

Philadelphia, PA 19103-2029

(215) 814-2077

Maryland Department of the Environment

Federal Facilities Division

1800 Washington Blvd., Suite 645

Baltimore, MD 21230

(410) 537-3398

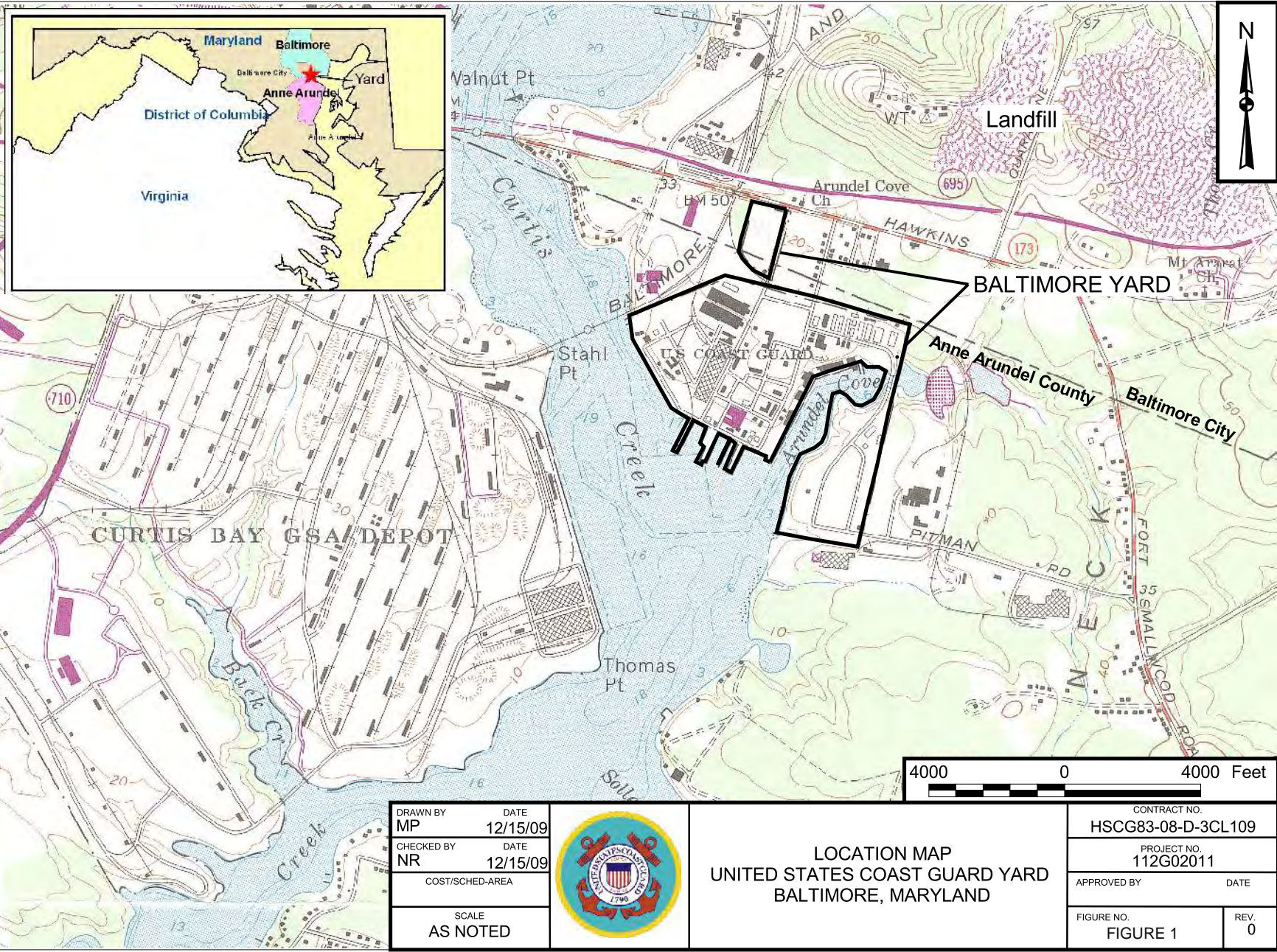
References

USCG, 2009a. Remedial Action Work Plan, United States Coast Guard Yard, Hawkins Point Road, Baltimore, Maryland, Consultant's report prepared by Tetra Tech NUS, Inc. Pittsburgh, Pennsylvania for the U.S. Coast Guard, Baltimore, Maryland. March.

USCG, 2009b. Record of Decision, United States Coast Guard Yard, Hawkins Point Road, Baltimore, Maryland, Consultant's report prepared by Tetra Tech NUS, Inc. Pittsburgh, Pennsylvania for the U.S. Coast Guard, Baltimore, Maryland. September.

FIGURES

k:\project\baltimore_yard\coast_guard_12 15 09.apr (Curtis Bay Site Layout)



DRAWN BY MP	DATE 12/15/09
CHECKED BY NR	DATE 12/15/09
COST/SCHED-AREA	
SCALE AS NOTED	



LOCATION MAP
UNITED STATES COAST GUARD YARD
BALTIMORE, MARYLAND

CONTRACT NO. HSCG83-08-D-3CL109	
PROJECT NO. 112G02011	
APPROVED BY	DATE
FIGURE NO. FIGURE 1	REV. 0



IDENTIFIED OPERABLE UNITS

SITE 1 SITE 8
 SITE 4 SITE 9
 SITE 7

IDENTIFIED AREAS OF CONCERN

SITE 5 SITE 6
 SITE 11 SITE 13

LEGEND	
40B	BUILDING NUMBER
[Blue Box]	YARD BOUNDARY

NOTE: Highlighted areas only illustrate site locations and may not depict areal extent of investigations.

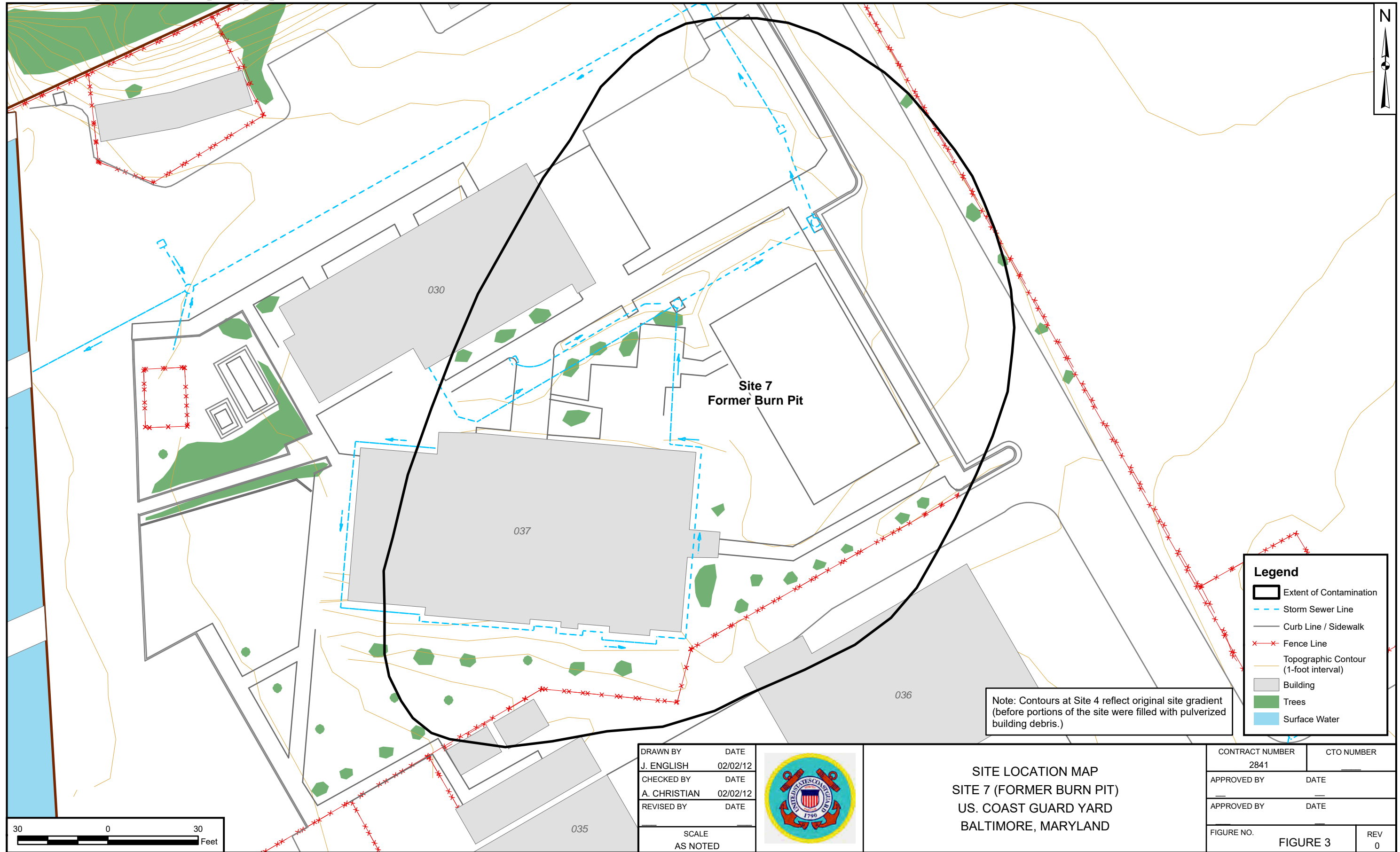
DRAWN BY	JF	5/1/08
CHECKED BY	FK	5/1/08
COST SCHEDULE AREA		
SCALE		
NOT TO SCALE		



**FACILITY MAP
 WITH CERCLA SITES**

**UNITED STATES COAST GUARD YARD
 BALTIMORE, MARYLAND**

CONTRACT NUMBER		DTCG83-02-D-3CL374
PROJECT NO.		112G00797
APPROVED BY	RAC	5/1/08
FIGURE	FIGURE 2	REV 0



Site 7
Former Burn Pit

Note: Contours at Site 4 reflect original site gradient (before portions of the site were filled with pulverized building debris.)

Legend

- Extent of Contamination
- Storm Sewer Line
- Curb Line / Sidewalk
- Fence Line
- Topographic Contour (1-foot interval)
- Building
- Trees
- Surface Water



DRAWN BY	DATE
J. ENGLISH	02/02/12
CHECKED BY	DATE
A. CHRISTIAN	02/02/12
REVISED BY	DATE
SCALE AS NOTED	

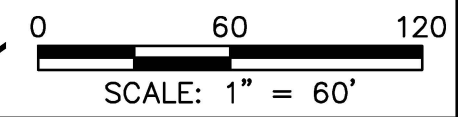


SITE LOCATION MAP
SITE 7 (FORMER BURN PIT)
US. COAST GUARD YARD
BALTIMORE, MARYLAND

CONTRACT NUMBER	CTO NUMBER
2841	
APPROVED BY	DATE
APPROVED BY	DATE
FIGURE NO.	REV
FIGURE 3	0



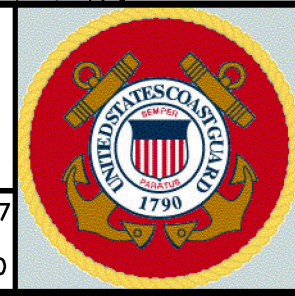
- LEGEND**
- EXISTING INDEX CONTOUR
 - - - EXISTING INTERMEDIATE CONTOUR
 - EXISTING BUILDING
 - - - EXISTING FENCE
 - EXISTING RAILROAD TRACKS
 - EXISTING TREELINE
 - SOIL DESIGNATED RESTRICTED AREAS
 - CONTAMINATED SOIL EXISTS BELOW UTILITY LINES; EXCAVATED TO APPROXIMATELY 2 FT
 - GROUNDWATER DESIGNATED RESTRICTED AREAS
- NOTES:**
1. REFER TO REMEDIAL ACTION COMPLETION REPORT FOR THE EXACT LIMIT OF EXCAVATION.
 2. PROHIBIT ALL USES OF GROUNDWATER FROM THE SURFICIAL AQUIFER UNDERLYING SITE 7.




TETRA TECH

WWW.TETRATECH.COM

661 ANDERSEN DRIVE – FOSTER PLAZA 7
PITTSBURGH, PA 15220
T: (412) 921-7090 | F: (412) 921-4040



U.S. COAST GUARD BALTIMORE YARD
BALTIMORE, MARYLAND

**SITE 7 – FORMER BURN PIT
DESIGNATED RESTRICTED AREAS
LAND USE CONTROL REMEDIAL DESIGN**

SCALE: 1" = 60'

DATE:	2/21/11
PROJECT NO.:	112G02011
DESIGNED BY:	RL
DRAWN BY:	BH
CHECKED BY:	RL
SHEET:	1 OF 1
COPYRIGHT TETRA TECH INC.	
FIGURE 4	

Site Inspection Checklist

SITE INSPECTION CHECKLIST

I. SITE INFORMATION																	
Site name: Site 7 – Former Burn Pit Area	Date of inspection:																
Location and Region:	EPA ID:																
Agency, office, or company leading the five-year review:	Weather/temperature:																
Remedy Includes: (Check all that apply) <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <div style="width: 45%;"> <input type="checkbox"/> Groundwater Monitoring <input type="checkbox"/> Access controls <input type="checkbox"/> Other _____ </div> <div style="width: 45%;"> <input type="checkbox"/> Institutional Controls </div> </div>																	
Attachments: <input type="checkbox"/> Inspection team roster attached <input type="checkbox"/> Site map attached																	
II. INTERVIEWS (Check all that apply)																	
1. O&M site manager _____ <table style="width: 100%; margin-top: 5px;"> <thead> <tr> <th style="width: 60%; text-align: center;">Name</th> <th style="width: 20%; text-align: center;">Title</th> <th style="width: 20%; text-align: center;">Date</th> </tr> </thead> <tbody> <tr> <td colspan="3">Interviewed <input type="checkbox"/> at site <input type="checkbox"/> at office <input type="checkbox"/> by phone Phone no. _____</td> </tr> <tr> <td colspan="3">Problems, suggestions; <input type="checkbox"/> Report attached _____</td> </tr> </tbody> </table>		Name	Title	Date	Interviewed <input type="checkbox"/> at site <input type="checkbox"/> at office <input type="checkbox"/> by phone Phone no. _____			Problems, suggestions; <input type="checkbox"/> Report attached _____									
Name	Title	Date															
Interviewed <input type="checkbox"/> at site <input type="checkbox"/> at office <input type="checkbox"/> by phone Phone no. _____																	
Problems, suggestions; <input type="checkbox"/> Report attached _____																	
2. O&M staff _____ <table style="width: 100%; margin-top: 5px;"> <thead> <tr> <th style="width: 60%; text-align: center;">Name</th> <th style="width: 20%; text-align: center;">Title</th> <th style="width: 20%; text-align: center;">Date</th> </tr> </thead> <tbody> <tr> <td colspan="3">Interviewed <input type="checkbox"/> at site <input type="checkbox"/> at office <input type="checkbox"/> by phone Phone no. _____</td> </tr> <tr> <td colspan="3">Problems, suggestions; <input type="checkbox"/> Report attached _____</td> </tr> </tbody> </table>		Name	Title	Date	Interviewed <input type="checkbox"/> at site <input type="checkbox"/> at office <input type="checkbox"/> by phone Phone no. _____			Problems, suggestions; <input type="checkbox"/> Report attached _____									
Name	Title	Date															
Interviewed <input type="checkbox"/> at site <input type="checkbox"/> at office <input type="checkbox"/> by phone Phone no. _____																	
Problems, suggestions; <input type="checkbox"/> Report attached _____																	
3. Local regulatory authorities and response agencies (i.e., State and Tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices, etc.) Fill in all that apply. <p>Agency _____</p> <p>Contact _____</p> <table style="width: 100%; margin-top: 5px;"> <thead> <tr> <th style="width: 30%; text-align: center;">Name</th> <th style="width: 20%; text-align: center;">Title</th> <th style="width: 20%; text-align: center;">Date</th> <th style="width: 30%; text-align: center;">Phone no.</th> </tr> </thead> <tbody> <tr> <td colspan="4">Problems; suggestions; <input type="checkbox"/> Report attached _____</td> </tr> </tbody> </table> <hr/> <p>Agency _____</p> <p>Contact _____</p> <table style="width: 100%; margin-top: 5px;"> <thead> <tr> <th style="width: 30%; text-align: center;">Name</th> <th style="width: 20%; text-align: center;">Title</th> <th style="width: 20%; text-align: center;">Date</th> <th style="width: 30%; text-align: center;">Phone no.</th> </tr> </thead> <tbody> <tr> <td colspan="4">Problems; suggestions; <input type="checkbox"/> Report attached _____</td> </tr> </tbody> </table>		Name	Title	Date	Phone no.	Problems; suggestions; <input type="checkbox"/> Report attached _____				Name	Title	Date	Phone no.	Problems; suggestions; <input type="checkbox"/> Report attached _____			
Name	Title	Date	Phone no.														
Problems; suggestions; <input type="checkbox"/> Report attached _____																	
Name	Title	Date	Phone no.														
Problems; suggestions; <input type="checkbox"/> Report attached _____																	

SITE INSPECTION CHECKLIST

3. Local regulatory authorities and response agencies (Continued) Agency _____ Contact _____ <table style="width: 100%; border: none;"> <tr> <td style="width: 33%; text-align: center;">Name</td> <td style="width: 33%; text-align: center;">Title</td> <td style="width: 15%; text-align: center;">Date</td> <td style="width: 19%; text-align: center;">Phone no.</td> </tr> </table> Problems; suggestions; <input type="checkbox"/> Report attached _____ _____ _____				Name	Title	Date	Phone no.								
Name	Title	Date	Phone no.												
4. Other interviews (optional) <input type="checkbox"/> Report attached. _____ _____ _____															
III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)															
1. O&M Documents <table style="width: 100%; border: none;"> <tr> <td><input type="checkbox"/> O&M manual</td> <td><input type="checkbox"/> Readily available</td> <td><input type="checkbox"/> Up to date</td> <td><input type="checkbox"/> N/A</td> </tr> <tr> <td><input type="checkbox"/> As-built drawings</td> <td><input type="checkbox"/> Readily available</td> <td><input type="checkbox"/> Up to date</td> <td><input type="checkbox"/> N/A</td> </tr> <tr> <td><input type="checkbox"/> Maintenance logs</td> <td><input type="checkbox"/> Readily available</td> <td><input type="checkbox"/> Up to date</td> <td><input type="checkbox"/> N/A</td> </tr> </table> Remarks _____ _____ _____				<input type="checkbox"/> O&M manual	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input type="checkbox"/> N/A	<input type="checkbox"/> As-built drawings	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input type="checkbox"/> N/A	<input type="checkbox"/> Maintenance logs	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input type="checkbox"/> N/A
<input type="checkbox"/> O&M manual	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input type="checkbox"/> N/A												
<input type="checkbox"/> As-built drawings	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input type="checkbox"/> N/A												
<input type="checkbox"/> Maintenance logs	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input type="checkbox"/> N/A												
IV. INSTITUTIONAL CONTROLS															
		<input type="checkbox"/> Applicable	<input type="checkbox"/> N/A												
A. Institutional Controls (ICs)															
1. Implementation and enforcement Site conditions imply ICs not properly implemented <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A Site conditions imply ICs not being fully enforced <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A Type of monitoring (<i>e.g.</i> , self-reporting, drive by) _____ Frequency _____ Responsible party/agency _____ Contact _____ <table style="width: 100%; border: none;"> <tr> <td style="width: 33%; text-align: center;">Name</td> <td style="width: 33%; text-align: center;">Title</td> <td style="width: 15%; text-align: center;">Date</td> <td style="width: 19%; text-align: center;">Phone no.</td> </tr> </table> Reporting is up to date <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A Reports are verified by the lead agency <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A Specific requirements in deed or decision documents have been met <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A Violations have been reported <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A Other problems or suggestions: <input type="checkbox"/> Report attached _____ _____				Name	Title	Date	Phone no.								
Name	Title	Date	Phone no.												
2. Adequacy <input type="checkbox"/> ICs are adequate <input type="checkbox"/> ICs are inadequate <input type="checkbox"/> N/A Remarks _____ _____ _____															

SITE INSPECTION CHECKLIST

B. General			
1.	Vandalism/trespassing	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> No vandalism evident
Remarks _____			

2.	Land use changes on site	<input type="checkbox"/> N/A	
Remarks _____			

3.	Land use changes off site	<input type="checkbox"/> N/A	
Remarks _____			

V. GENERAL SITE CONDITIONS			
A. Roads <input type="checkbox"/> Applicable <input type="checkbox"/> N/A			
1.	Roads damaged	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Roads adequate <input type="checkbox"/> N/A
Remarks _____			

B. Other Site Conditions			
Remarks _____			

1.	Monitoring Wells (within surface area)		
	<input type="checkbox"/> Properly secured/locked	<input type="checkbox"/> Functioning	<input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition
	<input type="checkbox"/> Evidence of leakage at penetration	<input type="checkbox"/> Needs Maintenance	<input type="checkbox"/> N/A
Remarks _____			

2.	Buildings 30 and 37 (Shower/floor drains and pipe/conduit penetrations through the concrete slab)		
	<input type="checkbox"/> Caulk/concrete seals around pipe/conduit penetrations through concrete slab appear to be complete and intact		
	<input type="checkbox"/> Floor drains are charged with enough water to prevent infiltration of sewer odors and other potential subsurface gases/vapors		
	<input type="checkbox"/> Good condition	<input type="checkbox"/> Needs Maintenance	<input type="checkbox"/> N/A
Remarks _____			

VI. INSPECTOR QUESTIONS			
1.	Are there any signs that excavation has occurred at the site?		<input type="checkbox"/> No <input type="checkbox"/> Yes
	If yes, has inspector verified that dig permit process is in place?		<input type="checkbox"/> No <input type="checkbox"/> Yes
Remarks _____			

2.	Has any interior air sampling occurred within past year?		<input type="checkbox"/> No <input type="checkbox"/> Yes
Remarks _____			

SITE INSPECTION CHECKLIST

3. **Has any sub-slab soil/soil-gas sampling occurred within past year?** No Yes

Remarks _____

VII. OVERALL OBSERVATIONS

A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).

B. Adequacy of O&M

Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.

C. Early Indicators of Potential Remedy Problems

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs, that suggest that the protectiveness of the remedy may be compromised in the future.

D. Opportunities for Optimization

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

Land Use Control Compliance Certificate

Annual LUC Compliance Certificate
Site 7 – Former Burn Pit Area
 United States Coast Guard Baltimore Yard
 USEPA I.D. No. MD4690307844

Property Owner: _____

Property Address: _____

Is evaluation for all or a portion of the (Site Name) property? _____

If evaluating only a portion of the site, attach a figure identifying the portion being evaluated.

This evaluation covers the period from **1 January** _____ **through 31 December** _____. Form shall be submitted by **1 March** of the year following the reporting period.

Certification Checklist

	In Compliance	Non-Compliance	See Comment
1) Parcel not being use for prohibited uses.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2) No soil/sediment disturbance or invasive activities (unless previously approved by USEPA and MDE).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3) No groundwater being used for human consumption or other purposes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4) No tampering or damage to any monitoring wells.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5) Caulk/concrete seals around pipe/conduit penetrations through the concrete slab in Buildings 30 and 37 appear to be complete and intact.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6) Floor drains in Buildings 30 and 37 are charged with enough water to prevent infiltration of sewer odors and other potential subsurface gases/vapors.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

I, the undersigned, hereby certify that I am an authorized representative of the above named property owner and that the above described Land Use Controls have been complied with for the period noted. Alternately, any known deficiencies and owner's completed or planned actions to address such deficiencies are described in the attached Explanation of Deficiency(ies).

 Printed Name/Signature

 Date

 Printed Name/Signature of Inspector

 Date of Inspection

Mail completed form(s) to:

U.S. Environmental Protection Agency
 Region III
 1650 Arch Street
 Mail Code 3HS11
 Philadelphia, PA 19103-2029
 (215) 814-2077

Maryland Department of the Environment
 Federal Facilities Division
 1800 Washington Blvd., Suite 645
 Baltimore, MD 21230
 (410) 537-3398

Commanding Officer
 United States Coast Guard
 Yard
 2401 Hawkins Point Road
 Baltimore, MD 21226
 (410) 636-7238

**Annual LUC Compliance Certificate
Site 7 – Former Burn Pit Area
United States Coast Guard Baltimore Yard
USEPA I.D. No. MD4690307844**

Property Owner: US COAST GUARD

Property Address: 2401 Hawkins Point Road, Baltimore, MD 21226


Is evaluation for all or a portion of the (Site Name) property? All of Site 7
If evaluating only a portion of the site, attach a figure identifying the portion being evaluated.

This evaluation covers the period from **1 January 2016 through 31 December 2016**. Form shall be submitted by **1 March** of the year following the reporting period.

Certification Checklist

	In Compliance	Non-Compliance	See Comment
1) Parcel not being use for prohibited uses.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2) No soil/sediment disturbance or invasive activities (unless previously approved by USEPA and MDE).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3) No groundwater being used for human consumption or other purposes.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4) No tampering or damage to any monitoring wells.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5) Caulk/concrete seals around pipe/conduit penetrations through the concrete slab in Buildings 30 and 37 appear to be complete and intact.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6) Floor drains in Buildings 30 and 37 are charged with enough water to prevent infiltration of sewer odors and other potential subsurface gases/vapors.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

I, the undersigned, hereby certify that I am an authorized representative of the above named property owner and that the above described Land Use Controls have been complied with for the period noted. Alternately, any known deficiencies and owner's completed or planned actions to address such deficiencies are described in the attached Explanation of Deficiency(ies).


Philip Constantino, LT
 Printed Name/Signature

23 MAY 17
 Date

Robert A. DeMarco 
 Printed Name/Signature of Inspector

May 18, 2017
 Date of Inspection

Mail completed form(s) to:

U.S. Environmental Protection Agency
 Region III
 1650 Arch Street
 Mail Code 3HS11
 Philadelphia, PA 19103-2029
 (215) 814-2077

Maryland Department of the Environment
 Federal Facilities Division
 1800 Washington Blvd., Suite 645
 Baltimore, MD 21230
 (410) 537-3398

Commanding Officer
 United States Coast Guard
 Yard
 2401 Hawkins Point Road
 Baltimore, MD 21226
 (410) 636-7238

Annual LUC Compliance Certificate
Site 7 – Former Burn Pit Area
 United States Coast Guard Baltimore Yard
 USEPA I.D. No. MD4690307844

Property Owner: US COAST GUARD

Property Address: 2401 Hawkins Point Road, Baltimore, MD 21226

Is evaluation for all or a portion of the (Site Name) property? All of Site 7
 If evaluating only a portion of the site, attach a figure identifying the portion being evaluated.

2017 D.J. *2017 D.J.*

This evaluation covers the period from **1 January 2016** through **31 December 2016**. Form shall be submitted by **1 March** of the year following the reporting period.

Certification Checklist

	In Compliance	Non-Compliance	See Comment
1) Parcel not being use for prohibited uses.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2) No soil/sediment disturbance or invasive activities (unless previously approved by USEPA and MDE).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3) No groundwater being used for human consumption or other purposes.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4) No tampering or damage to any monitoring wells.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5) Caulk/concrete seals around pipe/conduit penetrations through the concrete slab in Buildings 30 and 37 appear to be complete and intact.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6) Floor drains in Buildings 30 and 37 are charged with enough water to prevent infiltration of sewer odors and other potential subsurface gases/vapors.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

I, the undersigned, hereby certify that I am an authorized representative of the above named property owner and that the above described Land Use Controls have been complied with for the period noted. Alternately, any known deficiencies and owner's completed or planned actions to address such deficiencies are described in the attached Explanation of Deficiency(ies).

Derrick E. Josey

Digitally signed by JOSEY DERRICK E 1516290679
 DN: c=US, o=U.S. Government, ou=DoD, ou=PEL
 email=JOSEY DERRICK E 1516290679
 Reason: I am the author of the document
 Date: 2018.02.23 17:00:20 -0500'

Printed Name/Signature

02/23/2018

Date

Derrick E. Josey

Printed Name/Signature of Inspector

February 23, 2018

Date of Inspection

Mail completed form(s) to:

U.S. Environmental Protection Agency
 Region III
 1650 Arch Street
 Mail Code 3HS11
 Philadelphia, PA 19103-2029
 (215) 814-2077

Maryland Department of the Environment
 Federal Facilities Division
 1800 Washington Blvd., Suite 645
 Baltimore, MD 21230
 (410) 537-3398

Commanding Officer
 United States Coast Guard
 Yard
 2401 Hawkins Point Road
 Baltimore, MD 21226
 (410) 636-7238

GW07-XX of the Inspection Log Sheet Denotes the wells found in Site 7

Project Site Name:	<u>USCG Baltimore</u>	Well ID:	<u>GW04-04</u>
Project No.:	<u>112G08457-02</u>	Sampling Round:	<u>9</u>
Date of Inspection:	<u>12/19/2017</u>	Sampled By:	<u>S. Cameron</u>

PHOTOGRAPHS:



INSPECTION DETAILS:

- 1) Lid missing and manhole filled with sand and gravel.
- 2) Bolts have broken off in both dogears
- 3) No cracks observed in concrete pad

SUGGESTED REPAIRS:

- 1) Remove material from manhole to expose 3" of PVC
- 2) Drill through and remove bolts
- 3) Retap threads

Signature(s):





INSPECTION LOG SHEET

Project Site Name:	<u>USCG Baltimore</u>	Well ID:	<u>GW07-01</u>
Project No.:	<u>112G08457-02</u>	Sampling Round:	<u>9</u>
Date of Inspection:	<u>12/19/2017</u>	Sampled By:	<u>S. Cameron</u>

PHOTOGRAPHS:

NO PHOTOS WERE TAKEN OF GW07-01.

INSPECTION DETAILS:

- 1) Bolts have broken off in both of the two dogears
- 2) Concrete pad and lid in good working condition

SUGGESTED REPAIRS:

- 1) Drill through and remove bolts
- 2) Retap threads

Signature(s):

Project Site Name:	<u>USCG Baltimore</u>	Well ID:	<u>GW07-07</u>
Project No.:	<u>112G08457-02</u>	Sampling Round:	<u>9</u>
Date of Inspection:	<u>12/19/2017</u>	Sampled By:	<u>S. Cameron</u>

PHOTOGRAPHS:



INSPECTION DETAILS:

- 1) Bolts have broken off in both of the dogears
- 2) Concrete pad and lid in good working condition

SUGGESTED REPAIRS:

- 1) Drill through and remove bolts
- 2) Retap threads

Signature(s):



Project Site Name:	<u>USCG Baltimore</u>	Well ID:	<u>GW07-08</u>
Project No.:	<u>112G08457-02</u>	Sampling Round:	<u>9</u>
Date of Inspection:	<u>12/19/2017</u>	Sampled By:	<u>S. Cameron</u>

PHOTOGRAPHS:



INSPECTION DETAILS:

- 1) Both dogears have broken off of the protective casing
- 2) Concrete pad is cracked
- 3) The bottom of the manhole is flush with the top of PVC.

SUGGESTED REPAIRS:

- 1) Break up and remove concrete pad and protective casing
- 2) Remove material from manhole to expose 3" of PVC
- 3) Install new concrete pad and protective casing

Signature(s):



Project Site Name:	USCG Baltimore	Well ID:	GW07-09
Project No.:	112G08457-02	Sampling Round:	9
Date of Inspection:	12/19/2017	Sampled By:	S. Cameron

PHOTOGRAPHS:



INSPECTION DETAILS:

- 1) Bolts have broken off in both dogears
- 2) Concrete pad and lid in good working condition
- 3) The bottom of the manhole is 0.5" below the top of PVC.

SUGGESTED REPAIRS:

- 1) Break up and remove concrete pad and protective casing
- 2) Remove material from manhole to expose 3" of PVC
- 3) Install new concrete pad and protective casing

Signature(s):



Project Site Name:	<u>USCG Baltimore</u>	Well ID:	<u>GW07-10</u>
Project No.:	<u>112G08457-02</u>	Sampling Round:	<u>9</u>
Date of Inspection:	<u>12/19/2017</u>	Sampled By:	<u>S. Cameron</u>

PHOTOGRAPHS:



INSPECTION DETAILS:

- 1) Both dogears have broken off of the protective casing
- 2) Concrete pad and lid in good working condition
- 3) Bentonite swelling to several inches below top of PVC

SUGGESTED REPAIRS:

- 1) Break up and remove concrete pad and protective casing
- 2) Remove material from manhole to expose 3" of PVC
- 3) Install new concrete pad and protective casing

Signature(s):





Project Site Name:	<u>USCG Baltimore</u>	Well ID:	<u>GW07-11</u>
Project No.:	<u>112G08457-02</u>	Sampling Round:	<u>9</u>
Date of Inspection:	<u>12/19/2017</u>	Sampled By:	<u>S. Cameron</u>

PHOTOGRAPHS:



INSPECTION DETAILS:

- 1) Two of three dogears have broken off of the protective casing
- 2) Concrete pad and lid in good working condition
- 3) Intact dogear requires retapping

SUGGESTED REPAIRS:

- 1) Break up and remove concrete pad and protective casing
- 2) Remove material in manhole to expose 3" of PVC
- 3) Install new concrete pad and protective casing

Signature(s):

Project Site Name:	<u>USCG Baltimore</u>	Well ID:	<u>GW07-12</u>
Project No.:	<u>112G08457-02</u>	Sampling Round:	<u>9</u>
Date of Inspection:	<u>12/19/2017</u>	Sampled By:	<u>S. Cameron</u>

PHOTOGRAPHS:



INSPECTION DETAILS:

- 1) Dogears require retapping
- 2) Concrete pad and lid in good working condition

SUGGESTED REPAIRS:

- 1) Retap threads

Signature(s):



Project Site Name:	<u>USCG Baltimore</u>	Well ID:	<u>GW07-13</u>
Project No.:	<u>112G08457-02</u>	Sampling Round:	<u>9</u>
Date of Inspection:	<u>12/19/2017</u>	Sampled By:	<u>S. Cameron</u>

PHOTOGRAPHS:



INSPECTION DETAILS:

- 1) Dogears require retapping
- 2) Concrete pad and lid in good working condition

SUGGESTED REPAIRS:

- 1) Retap threads

Signature(s):

A handwritten signature in black ink, appearing to read "S. Cameron".

Project Site Name:	<u>USCG Baltimore</u>	Well ID:	<u>GW08-02</u>
Project No.:	<u>112G08457-02</u>	Sampling Round:	<u>9</u>
Date of Inspection:	<u>12/19/2017</u>	Sampled By:	<u>S. Cameron</u>

PHOTOGRAPHS:



INSPECTION DETAILS:

- 1) Dogears require retapping
- 2) Concrete pad and lid in good working condition
- 3) Bentonite swelling to 1/2 inch below top of PVC

SUGGESTED REPAIRS:

- 1) Retap threads
- 2) Remove material from manhole to expose 3" of PVC

Signature(s):





INSPECTION LOG SHEET

Project Site Name:	<u>USCG Baltimore</u>	Well ID:	<u>GW09-03</u>
Project No.:	<u>112G08457-02</u>	Sampling Round:	<u>9</u>
Date of Inspection:	<u>12/19/2017</u>	Sampled By:	<u>S. Cameron</u>

PHOTOGRAPHS:



INSPECTION DETAILS:

- 1) Dogears require retapping
- 2) Concrete pad and lid in good working condition
- 3) One 9/16 stainless steel bolt needs replaced

SUGGESTED REPAIRS:

- 1) Retap threads
- 2) Replace bolt

Signature(s):



INSPECTION LOG SHEET

Project Site Name:	<u>USCG Baltimore</u>	Well ID:	<u>GW09-04</u>
Project No.:	<u>112G08457-02</u>	Sampling Round:	<u>9</u>
Date of Inspection:	<u>12/19/2017</u>	Sampled By:	<u>S. Cameron</u>

PHOTOGRAPHS:

NO PHOTOS WERE TAKEN OF GW09-04.

INSPECTION DETAILS:

- 1) One of three dogears has broken off of protective casing
- 2) Concrete pad and lid in good working condition
- 3) Intact dogears require retapping

SUGGESTED REPAIRS:

- 1) Retap threads

Note: Two functional dogears typically suffice to secure lid

Signature(s):

Project Site Name:	<u>USCG Baltimore</u>	Well ID:	<u>GW09-05</u>
Project No.:	<u>112G08457-02</u>	Sampling Round:	<u>9</u>
Date of Inspection:	<u>12/19/2017</u>	Sampled By:	<u>S. Cameron</u>

PHOTOGRAPHS:



INSPECTION DETAILS:

- 1) One of three dogears has broken off of protective casing
- 2) Concrete pad and lid in good working condition
- 3) Intact dogears require retapping

SUGGESTED REPAIRS:

- 1) Retap threads

Note: Two functional dogears typically suffice to secure lid

Signature(s):



SITE 9

**Land Use Control
Remedial Design
for
Site 9 – Reported Bilge Spoils Area**

UNITED STATES COAST GUARD

**HAWKINS POINT ROAD
BALTIMORE, MARYLAND**



COAST GUARD CONTRACT NUMBER DTCG83-08-D-3CL109

COAST GUARD TASK ORDER NUMBER HSCG83-10-J-3YD213

SEPTEMBER 2013

**LAND USE CONTROL REMEDIAL DESIGN
FOR
SITE 9 – REPORTED BILGE SPOILS AREA**

**UNITED STATES COAST GUARD YARD
HAWKINS POINT ROAD
BALTIMORE, MARYLAND**

**Submitted to:
United States Coast Guard Yard
Facilities Engineering, Building 4
2401 Hawkins Point Road
Baltimore, Maryland 21226-1797**

**Submitted by:
Tetra Tech, Inc.
661 Andersen Drive
Pittsburgh, PA 15220-2745**

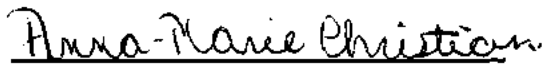
COAST GUARD CONTRACT NUMBER DTCG83-08-D-3CL109

COAST GUARD TASK ORDER NUMBER HSCG83-10-J-3YD213

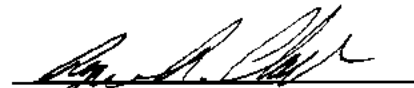
TETRA TECH TASK ORDER NUMBER 112G02841- MISC CERCLA

SEPTEMBER 2013

PREPARED UNDER THE DIRECTION OF:


**ANNA-MARIE CHRISTIAN
PROJECT MANAGER
TETRA TECH NUS, INC.
PITTSBURGH, PENNSYLVANIA**

APPROVED FOR SUBMITTAL BY:


**ROGER A. CLARK, Ph.D.
PROGRAM MANAGER
TETRA TECH NUS, INC.
PITTSBURGH, PENNSYLVANIA**

United States Coast Guard Baltimore YARD Land Use Control Remedial Design Reported Bilge Spoils Area (Site 9)

1. Purpose

This Land Use Control Remedial Design (LUC RD) for the Reported Bilge Spoils Area (Site 9) is to provide information on how the remedy selected in the **Comprehensive Environmental Response, Compensation, and Liability Act** (CERCLA) Record of Decision (ROD) for this facility will be implemented, maintained, and enforced should any breach of the remedy occur. The ROD, which was jointly signed by the United States Coast Guard (USCG) and the United States Environmental Protection Agency (USEPA), in consultation with the Maryland Department of the Environment (MDE), stipulates the implementation of certain Land Use Controls (LUCs) to restrict development and prevent future human exposure to contaminated soils beneath parts of Buildings 25 and 26 and Waesche Avenue at Site 9. These controls will preclude unacceptable human health risks from exposure to contaminated soils containing carcinogenic PAHs [benzo(a)pyrene equivalents], dioxins/furans (2,3,7,8-TCDD TEQs), arsenic, copper, iron, and lead concentrations exceeding screening criteria until concentrations of hazardous substances, pollutants or contaminants allow for unlimited use and unrestricted exposure to soil.

2. Description of the Reported Bilge Spoils Area (Site 9)

The USCG Baltimore Yard (YARD) is located on Hawkins Point Road, approximately 6 miles southeast of downtown Baltimore and 6 miles west of the Chesapeake Bay. Most of the facility lies within Anne Arundel County, with the exception of the northernmost portion, which is within Baltimore City limits (Figure 1). The YARD was established in 1899 as a USCG training academy and boat repair facility. The YARD encompasses approximately 113 acres and is situated in a heavily industrialized area with a manganese ore processor to the east, the Baltimore City landfill to the north, and a trucking company to the west. Curtis Creek forms the southern boundary of the YARD. Arundel Cove, a tributary to Curtis Creek, divides the YARD into two distinct areas. The YARD and associated industries are situated on the western side of the cove, and a residential and recreational area is located east of the cove. Figure 2 is a facility map, and Figure 3 shows the location of Site 9.

The USEPA identification number for the YARD is MD4690307844. Site 9 encompasses approximately 2 acres of Lot 23 located in the northeastern section of the YARD. Site 9 is located in one of the oldest sections of the facility; however, no historical information is known about the site before the early 1940s. During the early 1940s, a sheet-pile bulkhead was constructed, extending the shoreline a maximum of 130 feet into Arundel Cove.

According to a 1943 YARD facility map and discussions with facility personnel, Site 9 was used for the storage and painting of buoys. From at least the 1940s through the 1950s, and possibly into the 1960s, Site 9 consisted of an all-purpose storage and work area used as a dump, scrap metal yard, and possible bilge spoils dumping area. The southern and eastern parts of Lot 23 may have received incinerator ash from the former incinerator (Site 8) and ash from the former burn pit (Site 7). Bilge spoils, reportedly discharged to the site, consisted of water that occasionally had an oily sheen likely produced from the application of heavy grease to a boat's bilge interior as a rust inhibitor. Since the 1970s, the site has been used for vehicle parking and short-term storage of small boats and trailers. Site 9 is relatively flat and covered with a patchwork of alternating gravel-base and asphalt pavement.

To address the potential risk posed by soil at Site 9, a removal action was performed which included the excavation, on-site treatment, and off-site disposal of approximately 15,000 cubic yards of surface and subsurface soil containing metals, dioxins/furans, and polynuclear aromatic hydrocarbons (PAHs), along with the gravel base and asphalt pavement above the contaminated soil. Additionally, the existing bulkhead wall along the southern edge of Site 9 was replaced with a new bulkhead wall, and various marine piers and structures in the area of the former marine railway were either demolished, stored, or recycled. The components of the removal action, including installation and maintenance of erosion and sediment controls, waste characterization, verification sampling, equipment decontamination, and site restoration were completed in accordance with the Remedial Action Work Plan prepared for the project.

3. Land Use Control Performance Objective

The following is the Performance Objective for the LUC remedy to be implemented at Site 9:

- Restrict land use to industrial use only, and prohibit excavation and development within the footprints of Buildings 25 and 26 and a portion of Waesche Avenue east of Site 9 (Figure 4), to eliminate or reduce the potential for unacceptable human health risks from exposure to contaminated soil.

The LUCs will be maintained until site conditions allow for unrestricted use and unrestricted exposure to subsurface soil and/or to preserve the integrity of the selected remedy.

4. Remedy Implementation Actions

a. **Responsibilities with respect to future LUC inspection, reporting, and enforcement:**

The following actions shall be undertaken by the USCG, in accordance with the ROD, to ensure that the above-described LUC Performance Objective is met and maintained:

1. **LUC Information Dissemination:** Within 30 days of receiving USEPA and MDE approval of this LUC RD, the USCG shall provide a copy of the LUC RD, including all attached appendices illustrating the boundaries of the facility and Designated Restricted Areas where LUCs will apply, to the Environmental Health Director of Anne Arundel County Department of Health for its information. [Figure 4](#) shows the approximate boundaries of the restricted areas. A ground survey will be conducted by a certified Maryland Surveyor to verify the boundaries. The surveyed global positioning system (GPS) coordinates of the restricted areas are provided on [Figure 4](#). The USCG will also place a copy of this document in the Administrative Record (currently located at 2401 Hawkins Point Road, Baltimore, Maryland 21226) for the YARD.
2. **Site Inspections:** The USCG will perform annual on-site physical inspections of Site 9 to confirm continued compliance with the LUC Performance Objective. Although the USCG may later transfer these procedural responsibilities to another party by contract, property transfer agreement, or through other means, the USCG shall retain ultimate responsibility for remedy integrity. Should the USCG convey the YARD to another party, the USCG shall either continue to perform such annual inspections or shall ensure that the new owner(s) of the facility performs such inspections. The need to continue to perform annual site inspections will be re-evaluated every 5 years as part of the Five Year Review Process. Annual inspections shall be required until subsurface soils beneath Buildings 25 and 26 and the portion of Waesche Avenue east of Site 9 allow for unlimited use and unrestricted exposure. The Site Inspection Checklist is provided as [Attachment 1](#).
3. **LUC Compliance Certifications:** The USCG shall provide USEPA and MDE with annual LUC Compliance Certifications. These certifications will be submitted no later than 1 March of the year following the year of inspection. Should any deficiency(ies) be found, the USCG will provide to USEPA and MDE, along with the Certificate, a separate written explanation indicating the specific deficiency(ies) found and what efforts or measures have or will be taken to correct those deficiencies. Should the USCG convey the YARD to another party, the USCG shall either continue to provide such certifications, or shall ensure that the new owner(s) of the facility provide the same. The need to continue to provide such certifications on an annual basis will be re-evaluated every 5 years. A LUC Compliance Certification Form is included as [Attachment 2](#).

4. **CERCLA Five-Year Reviews:** The USCG shall conduct Five-Year Reviews of the Site 9 remedy as required by CERCLA and the National Contingency Plan (NCP), because hazardous substance contamination above levels allowing for unrestricted use of the property will remain on site. Should, in the course of undertaking any Five-Year Review, the USCG encounter any LUC deficiency, within three (3) business days of such finding the USCG will notify USEPA and MDE of the deficiency(ies) found and of what efforts or measures have or will be taken by the USCG and/or the current owner to correct the deficiency(ies).

5. **Notification should site activities interfere with LUC effectiveness:** Should the USCG discover any activity on the property inconsistent with the Site 9 LUC performance objectives, the USCG shall notify USEPA and MDE within three (3) business days of such discovery. Consistent with paragraph 6 below, the USCG will then work with USEPA, MDE, and the current owner(s) of the property to correct the problem(s) discovered. This reporting requirement does not preclude the USCG from taking immediate action pursuant to its CERCLA authorities to prevent or address any perceived risk(s) to human health or the environment.

6. **LUC Enforcement:** Should any breach of the LUCs occur the USCG will work with USEPA and MDE to ensure that appropriate actions are taken to curtail any nonconforming land use. These actions may range from informal resolutions with any owner or any violator, to the institution of judicial action under the auspices of State property law or CERCLA. Alternatively, should the circumstances warrant such, the USCG will exercise its response authorities under CERCLA, then seek cost recovery after the fact from the person(s) or entity(ies) who violated a given LUC. Should the USCG become aware that any future owner or user of the property has violated any institutional control requirement over which a local agency may have independent jurisdiction, the USCG will also notify these agencies of such violation(s) and work cooperatively with them to re-achieve owner/user compliance with the LUC(s).

7. **Notification of intended change in land use:** The USCG will notify USEPA and MDE at least 45 days in advance of: proposals for changes in land use that would be inconsistent with use restrictions and exposure assumptions described in the ROD; any anticipated action that may disrupt LUC effectiveness; or any action that may alter or negate the need for LUCs. The USCG will notify USEPA and MDE 6 months in advance of any anticipated transfer of real property subject to LUCs out of USCG custody and control. If

6 months advance notice is not reasonably possible, as much advance notice will be given as is reasonably possible, but not less than 60 days.

8. **Termination of LUCs:** When the USCG determines, with USEPA and MDE concurrence, that one or more of the LUCs described in this document are no longer needed for protection of human health or the environment, the USCG (or GSA) shall provide to the then current owner of the property an appropriate release for recordation with the deed pertaining to the site and will also timely advise Anne Arundel County of that action. USCG will obtain USEPA and MDE concurrence prior to modifying or terminating LUC objectives or required LUC implementation actions.

9. **Notification regarding transfers of property:** The USCG will provide notice to USEPA and MDE at least six (6) months prior to any transfer or sale of real property subject to LUCs so that USEPA and MDE can be involved in discussions to ensure that appropriate provisions are included in the transfer terms or conveyance documents to maintain effective LUCs. If it is not possible for the USCG to notify USEPA and MDE at least six (6) months prior to any transfer or sale, then the USCG will notify USEPA and MDE as soon as possible but no later than 60 days prior to the transfer or sale of any property subject to LUCs. In addition to the land transfer notice and discussion provisions above, the USCG further agrees to provide USEPA and MDE with similar notice, within the same time frames, as to federal-to-federal transfer of property. The USCG shall provide a copy of the executed deed or transfer assembly to USEPA and MDE.

- a. Deed Restrictions: Each transfer of fee title from the United States will include a CERCLA 120(h)(3) covenant which will have a description of the residual contamination on the property and the environmental use restrictions, expressly prohibiting activities inconsistent with the performance measure goals and objectives.

The environmental restrictions are included in a section of the CERCLA 120(h)(3) covenant that the United States is required to include in the deed for any property that has had hazardous substances stored for one year or more, known to have been released or disposed of on the property. Each deed will also contain a reservation of access to the property for the USCG, USEPA, and MDE, and their respective officials, agents, employees, contractors, and subcontractors for purposes consistent with the USCG Installation Restoration Program (IRP) or the Federal Facility Agreement (FFA). The deed will contain appropriate

provisions to ensure that the land use restrictions continue to run with the land and are enforceable by the USCG.

10. **LUC enforcement:** All proposed projects at the YARD are reviewed by the Environmental Engineer, Environmental Protection Specialist, and the Chief of the Facilities, Engineering Department. These three reviewers or their assigns will enforce the LUC that prohibits excavation and development within the footprints of Buildings 25 and 26 and a portion of Waesche Avenue east of Site 9. In addition, signs will be installed in the vicinity of these buildings which will require contacting the Environmental Branch at the YARD before disturbing the soil within the footprints of these buildings or surrounding areas. Implementation of LUCs through the Base Land Use Plan will be conducted by the review of all proposed YARD construction projects against restrictions in the Land Use Plan.

b. Responsibilities of any new property owner with respect to LUC inspection, reporting, and enforcement: It is the USCG's intent, should it convey the YARD to another party, to have that party perform the following LUC maintenance related tasks:

1. **LUC Compliance Certifications:** The new owner shall provide USEPA, MDE, and the USCG with annual LUC Compliance Certifications. These certifications will be based upon annual physical inspections of the property and will be submitted no later than 1 March of the year following the year of inspection. Should any deficiency(ies) be found during the annual inspection, the owner will provide to USEPA, MDE, and the USCG, along with the Certificate, a separate written explanation indicating the specific deficiency(ies) found and what efforts or measures have or will be taken to correct those deficiencies. The need to continue to provide such certifications on an annual basis will be re-evaluated every 5 years. A LUC Compliance Certification Form is included in [Attachment 2](#).
2. **Notification of intended change in land use:** The new owner shall provide advance notice to the USEPA, MDE, and the USCG of its desire to use the property for anything other than industrial or restricted commercial uses. Such notice shall include a description of its plans for undertaking any environmental investigation and/or cleanup activities necessary to permit such a change in land usage. Grantee on behalf of itself, its lessees, licensees, successors, and assigns ensures that such activities will not conflict with, or adversely affect any ongoing remedial systems or future investigative or remedial

activities to be undertaken by the USCG on the Property.

The USCG acknowledges that the USCG will remain responsible for implementing, inspecting, reporting, monitoring, and enforcing the LUCs described in the CERCLA ROD for Site 9 dated June 7, 2013. Although as discussed above, the USCG may later transfer these procedural tasks to another party by contract, property transfer agreement, or through other means, the USCG shall retain responsibility for remedy integrity. Should any breach of the LUCs occur, the USCG will ensure that appropriate actions are taken to reestablish its protectiveness and curtail any nonconforming land use and may initiate legal action to either compel action by a third party(ies) and/or recover the USCG's costs for remedying any discovered LUC violation(s).

- c. **Points of Contact:** The following Points of Contact and addresses shall be utilized in order to provide the required Annual LUC Certifications and all other notices required by this LUC RD:

Commanding Officer

United States Coast Guard Yard

2401 Hawkins Point Road

Baltimore, MD 21226

(410) 636-4097

USEPA Region III

Superfund Program

1650 Arch Street

Mail Code 3HS11

Philadelphia, PA 19103-2029

(215) 814-2077

Maryland Department of the Environment

Federal Facilities Division

1800 Washington Blvd., Suite 645

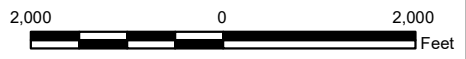
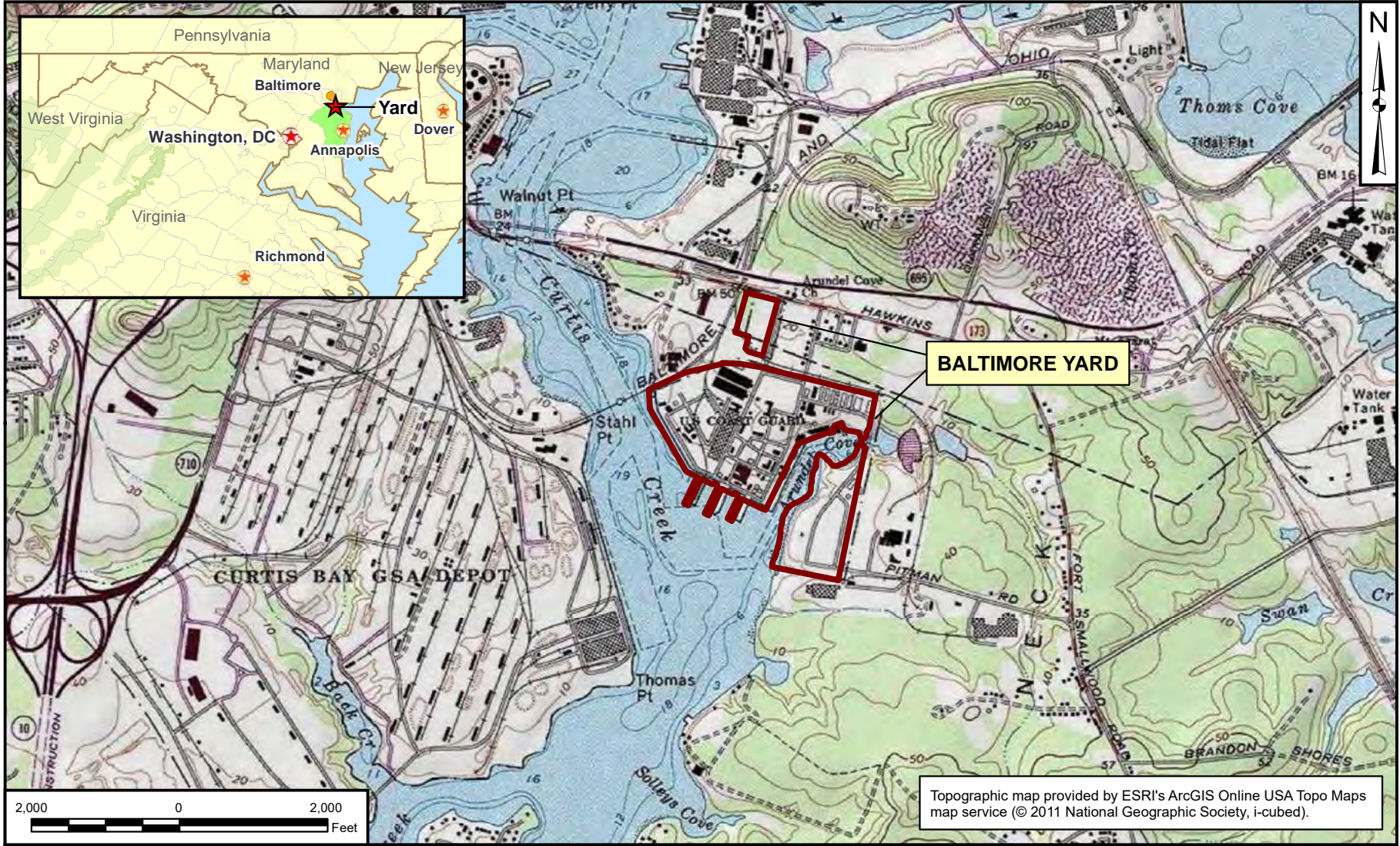
Baltimore, MD 21230

(410) 537-3398

References

USCG, 2013. Record of Decision for Site 9, Reported Bilge Spoils Area, United States Coast Guard, Curtis Bay Coast Guard Yard, Hawkins Point Road, Baltimore, Maryland.

FIGURES



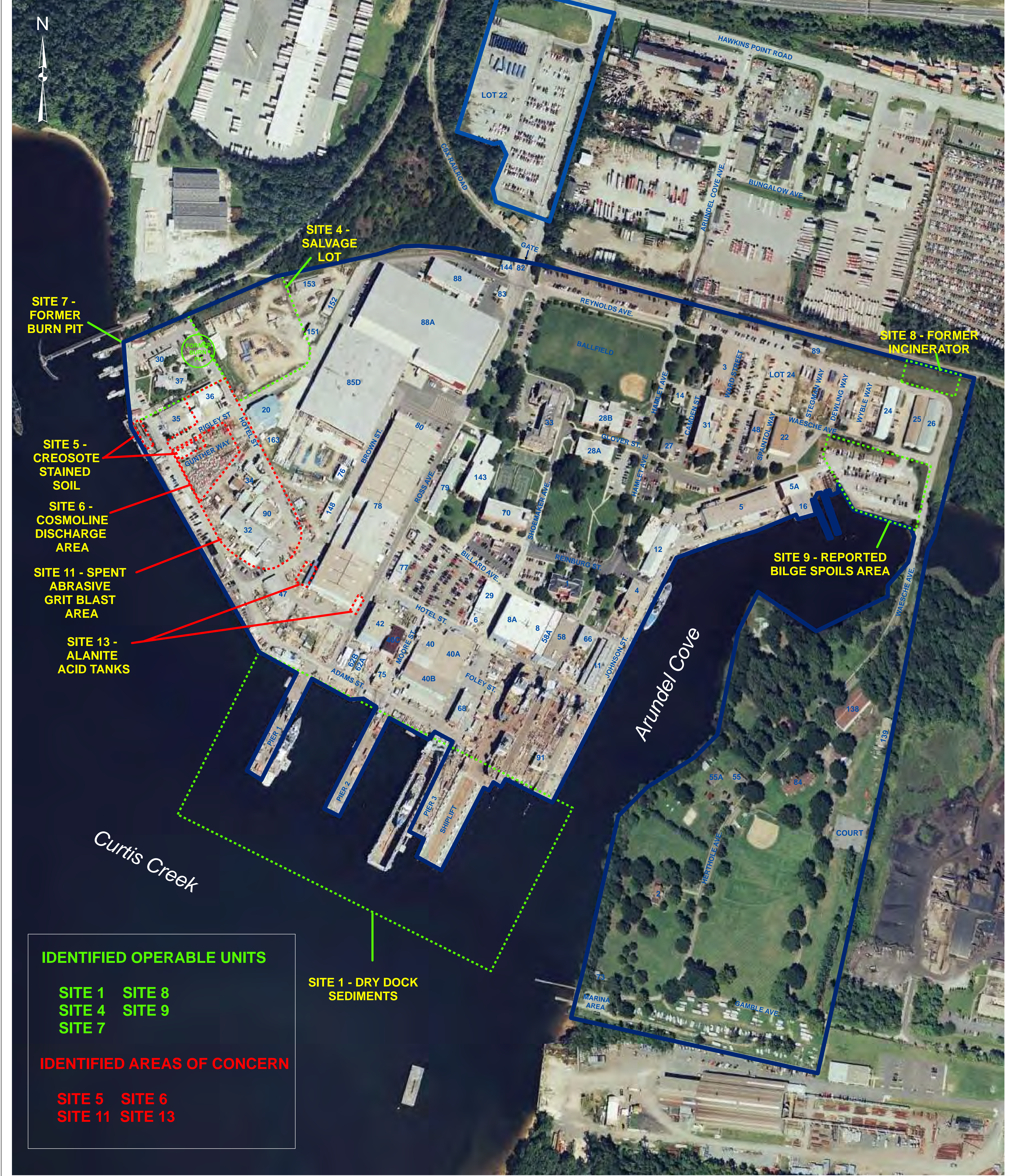
Topographic map provided by ESRI's ArcGIS Online USA Topo Maps map service (© 2011 National Geographic Society, i-cubed).

DRAWN BY	DATE
J. ENGLISH	07/17/13
CHECKED BY	DATE
A. CHRISTIAN	07/18/13
REVISED BY	DATE
SCALE AS NOTED	



LOCATION MAP
U.S. COAST GUARD YARD
BALTIMORE, MARYLAND

CONTRACT NUMBER	TO NUMBER
DTCG83-08-D-3CL109	
APPROVED BY	DATE
APPROVED BY	DATE
FIGURE NO.	REV
FIGURE 1	0



- SITE 4 - SALVAGE LOT**
- SITE 7 - FORMER BURN PIT**
- SITE 8 - FORMER INCINERATOR**
- SITE 5 - CREOSOTE STAINED SOIL**
- SITE 6 - COSMOLINE DISCHARGE AREA**
- SITE 11 - SPENT ABRASIVE GRIT BLAST AREA**
- SITE 13 - ALANITE ACID TANKS**
- SITE 9 - REPORTED BILGE SPOILS AREA**

IDENTIFIED OPERABLE UNITS

SITE 1 SITE 8
 SITE 4 SITE 9
 SITE 7

IDENTIFIED AREAS OF CONCERN

SITE 5 SITE 6
 SITE 11 SITE 13

SITE 1 - DRY DOCK SEDIMENTS

LEGEND	
40B	BUILDING NUMBER
	YARD BOUNDARY

NOTE: Highlighted areas only illustrate site locations and may not depict areal extent of investigations.

DRAWN BY	JF	5/1/08
CHECKED BY	FK	5/1/08
COST SCHEDULE AREA		
SCALE		
	NOT TO SCALE	



**FACILITY MAP
 WITH CERCLA SITES**

**UNITED STATES COAST GUARD YARD
 BALTIMORE, MARYLAND**

CONTRACT NUMBER DTCC83-08-D-3CL109	
PROJECT NO. 112G02841	
APPROVED BY RAC	7/1/13
FIGURE Figure 2	REV 0

Aerial photograph provided by ESRI's ArcGIS Online World Imagery map service (© 2011 ESRI and its data suppliers).



Legend

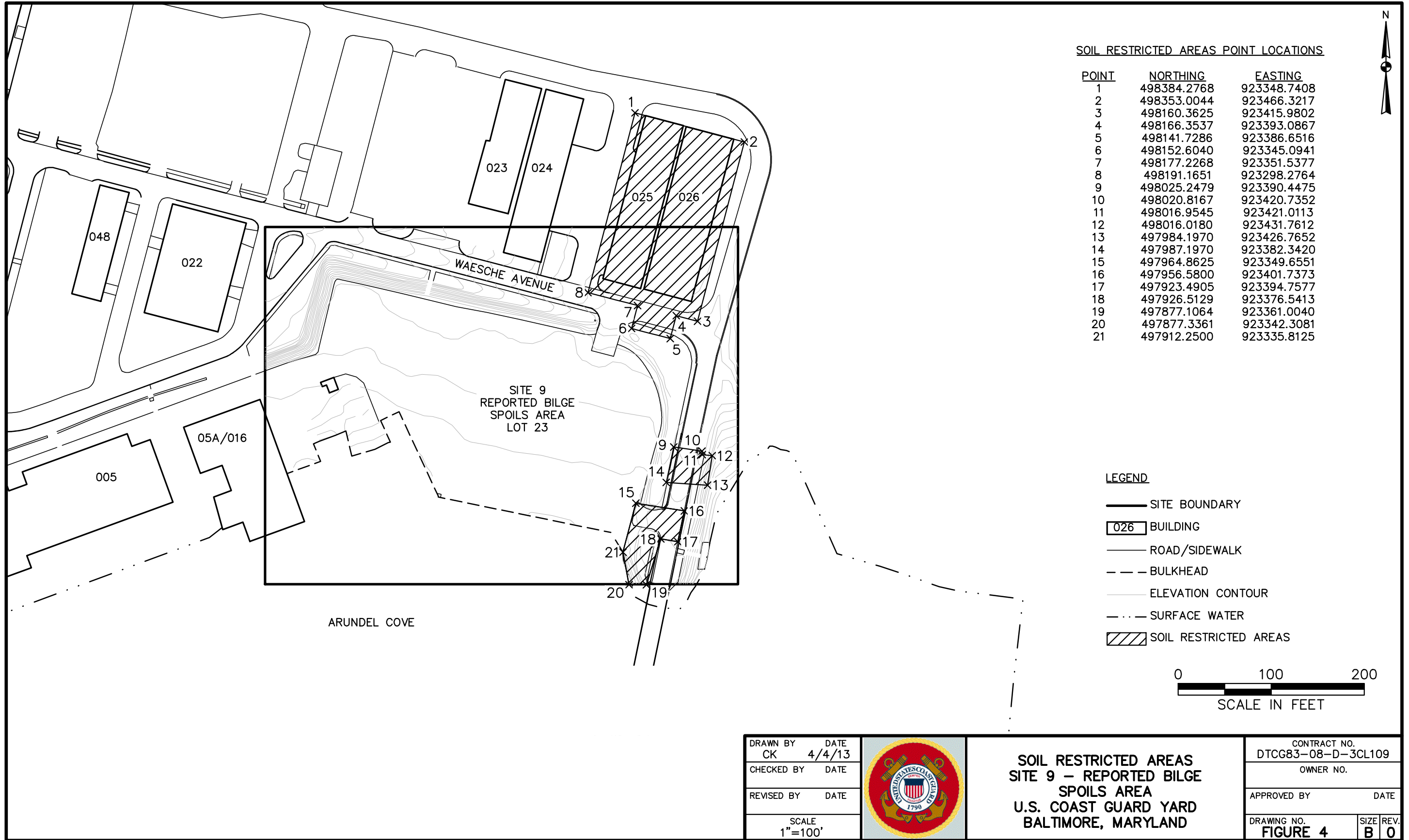
- Site 9 Boundary
- Facility Boundary

DRAWN BY	DATE
J. ENGLISH	07/17/13
CHECKED BY	DATE
A. CHRISTIAN	07/18/13
REVISED BY	DATE
SCALE AS NOTED	



SITE LAYOUT
SITE 9 - REPORTED BILGE SPOILS AREA
U.S. COAST GUARD YARD
BALTIMORE, MARYLAND

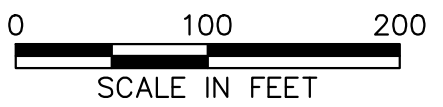
CONTRACT NUMBER	TO NUMBER
DTCG83-08-D-3CL109	
APPROVED BY	DATE
APPROVED BY	DATE
FIGURE NO.	REV
FIGURE 3	0



SOIL RESTRICTED AREAS POINT LOCATIONS

POINT	NORTHING	EASTING
1	498384.2768	923348.7408
2	498353.0044	923466.3217
3	498160.3625	923415.9802
4	498166.3537	923393.0867
5	498141.7286	923386.6516
6	498152.6040	923345.0941
7	498177.2268	923351.5377
8	498191.1651	923298.2764
9	498025.2479	923390.4475
10	498020.8167	923420.7352
11	498016.9545	923421.0113
12	498016.0180	923431.7612
13	497984.1970	923426.7652
14	497987.1970	923382.3420
15	497964.8625	923349.6551
16	497956.5800	923401.7373
17	497923.4905	923394.7577
18	497926.5129	923376.5413
19	497877.1064	923361.0040
20	497877.3361	923342.3081
21	497912.2500	923335.8125

- LEGEND**
- SITE BOUNDARY
 - 026 BUILDING
 - ROAD/SIDEWALK
 - - - BULKHEAD
 - ELEVATION CONTOUR
 - - - SURFACE WATER
 - /// SOIL RESTRICTED AREAS



DRAWN BY CK	DATE 4/4/13
CHECKED BY	DATE
REVISED BY	DATE
SCALE 1"=100'	



**SOIL RESTRICTED AREAS
SITE 9 – REPORTED BILGE
SPOILS AREA
U.S. COAST GUARD YARD
BALTIMORE, MARYLAND**

CONTRACT NO. DTCG83-08-D-3CL109	
OWNER NO.	
APPROVED BY	DATE
DRAWING NO. FIGURE 4	SIZE REV. B 0

ATTACHMENTS

ATTACHMENT 1
SITE INSPECTION CHECKLIST

SITE INSPECTION CHECKLIST

I. SITE INFORMATION																					
Site name: Site 9 – Reported Bilge Spoils Area	Date of inspection:																				
Location and Region:	EPA ID:																				
Agency, office, or company leading the five-year review:	Weather/temperature:																				
Remedy Includes: (Check all that apply) <input type="checkbox"/> Groundwater Monitoring <input type="checkbox"/> Institutional Controls <input type="checkbox"/> Access controls <input type="checkbox"/> Other _____																					
Attachments: <input type="checkbox"/> Inspection team roster attached <input type="checkbox"/> Site map attached																					
II. INTERVIEWS (Check all that apply)																					
1. O&M site manager _____ <table style="width: 100%; border: none; margin-top: 5px;"> <thead> <tr> <th style="width: 60%;"></th> <th style="width: 20%; text-align: center;">Name</th> <th style="width: 15%; text-align: center;">Title</th> <th style="width: 5%; text-align: center;">Date</th> </tr> </thead> <tbody> <tr> <td>Interviewed <input type="checkbox"/> at site <input type="checkbox"/> at office <input type="checkbox"/> by phone</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Phone no. _____</td> <td></td> <td></td> <td></td> </tr> <tr> <td colspan="4">Problems, suggestions; <input type="checkbox"/> Report attached _____</td> </tr> </tbody> </table>			Name	Title	Date	Interviewed <input type="checkbox"/> at site <input type="checkbox"/> at office <input type="checkbox"/> by phone				Phone no. _____				Problems, suggestions; <input type="checkbox"/> Report attached _____							
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Phone no. _____																					
Problems, suggestions; <input type="checkbox"/> Report attached _____																					
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Interviewed <input type="checkbox"/> at site <input type="checkbox"/> at office <input type="checkbox"/> by phone																					
Phone no. _____																					
Problems, suggestions; <input type="checkbox"/> Report attached _____																					
3. Local regulatory authorities and response agencies (i.e., State and Tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices, etc.) Fill in all that apply. Agency _____ Contact _____ <table style="width: 100%; border: none; margin-top: 5px;"> <thead> <tr> <th style="width: 30%;"></th> <th style="width: 20%; text-align: center;">Name</th> <th style="width: 20%; text-align: center;">Title</th> <th style="width: 15%; text-align: center;">Date</th> <th style="width: 15%; text-align: center;">Phone no.</th> </tr> </thead> <tbody> <tr> <td>Problems; suggestions; <input type="checkbox"/> Report attached</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> Agency _____ Contact _____ <table style="width: 100%; border: none; margin-top: 5px;"> <thead> <tr> <th style="width: 30%;"></th> <th style="width: 20%; text-align: center;">Name</th> <th style="width: 20%; text-align: center;">Title</th> <th style="width: 15%; text-align: center;">Date</th> <th style="width: 15%; text-align: center;">Phone no.</th> </tr> </thead> <tbody> <tr> <td>Problems; suggestions; <input type="checkbox"/> Report attached</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>			Name	Title	Date	Phone no.	Problems; suggestions; <input type="checkbox"/> Report attached						Name	Title	Date	Phone no.	Problems; suggestions; <input type="checkbox"/> Report attached				
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Problems; suggestions; <input type="checkbox"/> Report attached																					
	Name	Title	Date	Phone no.																	
Problems; suggestions; <input type="checkbox"/> Report attached																					

SITE INSPECTION CHECKLIST

3. Local regulatory authorities and response agencies (Continued)

Agency _____

Contact _____

Name

Title

Date

Phone no.

Problems; suggestions; Report attached _____

4. Other interviews (optional) Report attached.

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)

1. O&M Documents

O&M manual

Readily available

Up to date

N/A

As-built drawings

Readily available

Up to date

N/A

Maintenance logs

Readily available

Up to date

N/A

Remarks _____

IV. INSTITUTIONAL CONTROLS

Applicable

N/A

A. Institutional Controls (ICs)

1. Implementation and enforcement

Site conditions imply ICs not properly implemented

Yes

No

N/A

Site conditions imply ICs not being fully enforced

Yes

No

N/A

Type of monitoring (e.g., self-reporting, drive by) _____

Frequency _____

Responsible party/agency _____

Contact _____

Name

Title

Date

Phone no.

Reporting is up to date

Yes

No

N/A

Reports are verified by the lead agency

Yes

No

N/A

Specific requirements in deed or decision documents have been met

Yes

No

N/A

Violations have been reported

Yes

No

N/A

Other problems or suggestions:

Report attached

2. Adequacy

ICs are adequate

ICs are inadequate

N/A

Remarks _____

SITE INSPECTION CHECKLIST

B. General			
1. Vandalism/trespassing	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> No vandalism evident	
Remarks _____			
2. Land use changes on site	<input type="checkbox"/> N/A		
Remarks _____			
3. Land use changes off site	<input type="checkbox"/> N/A		
Remarks _____			
V. GENERAL SITE CONDITIONS			
A. Roads <input type="checkbox"/> Applicable <input type="checkbox"/> N/A			
1. Roads damaged	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Roads adequate	<input type="checkbox"/> N/A
Remarks _____			
B. Other Site Conditions			
Remarks _____			
1. Monitoring Wells (within surface area)			
<input type="checkbox"/> Properly secured/locked <input type="checkbox"/> Functioning <input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition			
<input type="checkbox"/> Evidence of leakage at penetration <input type="checkbox"/> Needs Maintenance <input type="checkbox"/> N/A			
Remarks _____			
VI. OVERALL OBSERVATIONS			
A. Implementation of the Remedy			
Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).			

B. Adequacy of O&M			
Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.			

SITE INSPECTION CHECKLIST

C. Early Indicators of Potential Remedy Problems

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs, that suggest that the protectiveness of the remedy may be compromised in the future.

D. Opportunities for Optimization

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

ATTACHMENT 2
LUC COMPLIANCE CERTIFICATION FORM

Annual LUC Compliance Certificate
Site 9 – Reported Bilge Spoils Area
 United States Coast Guard Baltimore Yard
 USEPA I.D. No. MD4690307844

Property Owner: _____

Property Address: _____

Is evaluation for all or a portion of the (Site Name) property? _____

If evaluating only a portion of the site, attach a figure identifying the portion being evaluated.

This evaluation covers the period from **1 January** _____ **through 31 December** _____. Form shall be submitted by **1 March** of the year following the reporting period.

Certification Checklist

	In Compliance	Non-Compliance	See Comment
1) Parcel not being use for prohibited uses.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2) No soil/sediment disturbance or invasive activities (unless previously approved by USEPA and MDE).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3) No groundwater being used for human consumption or other purposes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4) No tampering or damage to any monitoring wells.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

I, the undersigned, hereby certify that I am an authorized representative of the above named property owner and that the above described Land Use Controls have been complied with for the period noted. Alternately, any known deficiencies and owner's completed or planned actions to address such deficiencies are described in the attached Explanation of Deficiency(ies).

 Printed Name/Signature

 Date

 Printed Name/Signature of Inspector

 Date of Inspection

Mail completed form(s) to:

U.S. Environmental Protection Agency
 Region III
 1650 Arch Street
 Mail Code 3HS11
 Philadelphia, PA 19103-2029
 (215) 814-2077

Maryland Department of the Environment
 Federal Facilities Division
 1800 Washington Blvd., Suite 645
 Baltimore, MD 21230
 (410) 537-3398

Commanding Officer
 United States Coast Guard
 Yard
 2401 Hawkins Point Road
 Baltimore, MD 21226
 (410) 636-4097

Annual LUC Compliance Certificate
Site 9 – Reported Bilge Spoils Area
United States Coast Guard Baltimore Yard
USEPA I.D. No. MD4690307844

Property Owner: US COAST GUARD

Property Address: 2401 Hawkins Point Road, Baltimore, MD 21226

Is evaluation for all or a portion of the (Site Name) property? All of Site 9

If evaluating only a portion of the site, attach a figure identifying the portion being evaluated.

This evaluation covers the period from **1 January 2016 through 31 December 2016**. Form shall be submitted by **1 March** of the year following the reporting period.

Certification Checklist

	In Compliance	Non-Compliance	See Comment
1) Parcel not being use for prohibited uses.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2) No soil/sediment disturbance or invasive activities (unless previously approved by USEPA and MDE).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3) No groundwater being used for human consumption or other purposes.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4) No tampering or damage to any monitoring wells.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

I, the undersigned, hereby certify that I am an authorized representative of the above named property owner and that the above described Land Use Controls have been complied with for the period noted. Alternately, any known deficiencies and owner's completed or planned actions to address such deficiencies are described in the attached Explanation of Deficiency(ies).


Philip Constantino, LT
 Printed Name/Signature

23 MAY 17
 Date


Robert A. DeMarco
 Printed Name/Signature of Inspector

MAY 18, 2017
 Date of Inspection

Mail completed form(s) to:

U.S. Environmental Protection Agency
 Region III
 1650 Arch Street
 Mail Code 3HS11
 Philadelphia, PA 19103-2029
 (215) 814-2077

Maryland Department of the Environment
 Federal Facilities Division
 1800 Washington Blvd., Suite 645
 Baltimore, MD 21230
 (410) 537-3398

Commanding Officer
 United States Coast Guard
 Yard
 2401 Hawkins Point Road
 Baltimore, MD 21226
 (410) 636-7238

Annual LUC Compliance Certificate
Site 9 – Reported Bilge Spoils Area
 United States Coast Guard Baltimore Yard
 USEPA I.D. No. MD4690307844

Property Owner: US COAST GUARD

Property Address: 2401 Hawkins Point Road, Baltimore, MD 21226

Is evaluation for all or a portion of the (Site Name) property? All of Site 9
 If evaluating only a portion of the site, attach a figure identifying the portion being evaluated.

This evaluation covers the period from 1 January 2017 through 31 December 2017. Form shall be submitted by **1 March** of the year following the reporting period.

Certification Checklist

	In Compliance	Non-Compliance	See Comment
1) Parcel not being use for prohibited uses.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2) No soil/sediment disturbance or invasive activities (unless previously approved by USEPA and MDE).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3) No groundwater being used for human consumption or other purposes.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4) No tampering or damage to any monitoring wells.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

I, the undersigned, hereby certify that I am an authorized representative of the above named property owner and that the above described Land Use Controls have been complied with for the period noted. Alternately, any known deficiencies and owner's completed or planned actions to address such deficiencies are described in the attached Explanation of Deficiency(s).

Derrick E. Josey

Digitally signed by JOSEY DERRICK E. 1536290679
 DN: c=US, o=U.S. Government, ou=DoD, ou=PRC,
 ou=USCG, cn=JOSEY DERRICK E. 1536290679
 Reason: I am the author of this document
 Date: 2018.02.23 16:04:06 -0500

Printed Name/Signature

2/23/2018

Date

Derrick E. Josey

Printed Name/Signature of Inspector

February 23, 2018

Date of Inspection

Mail completed form(s) to:

U.S. Environmental Protection Agency
 Region III
 1650 Arch Street
 Mail Code 3HS11
 Philadelphia, PA 19103-2029
 (215) 814-2077

Maryland Department of the Environment
 Federal Facilities Division
 1800 Washington Blvd., Suite 645
 Baltimore, MD 21230
 (410) 537-3398

Commanding Officer
 United States Coast Guard
 Yard
 2401 Hawkins Point Road
 Baltimore, MD 21226
 (410) 636-7238

GW09-XX of the Inspection Log Sheet Denotes the wells found in Site 9



Project Site Name:	<u>USCG Baltimore</u>	Well ID:	<u>GW04-04</u>
Project No.:	<u>112G08457-02</u>	Sampling Round:	<u>9</u>
Date of Inspection:	<u>12/19/2017</u>	Sampled By:	<u>S. Cameron</u>

PHOTOGRAPHS:



INSPECTION DETAILS:

- 1) Lid missing and manhole filled with sand and gravel.
- 2) Bolts have broken off in both dogears
- 3) No cracks observed in concrete pad

SUGGESTED REPAIRS:

- 1) Remove material from manhole to expose 3" of PVC
- 2) Drill through and remove bolts
- 3) Retap threads

Signature(s):



INSPECTION LOG SHEET

Project Site Name:	<u>USCG Baltimore</u>	Well ID:	<u>GW07-01</u>
Project No.:	<u>112G08457-02</u>	Sampling Round:	<u>9</u>
Date of Inspection:	<u>12/19/2017</u>	Sampled By:	<u>S. Cameron</u>

PHOTOGRAPHS:

NO PHOTOS WERE TAKEN OF GW07-01.

INSPECTION DETAILS:

- 1) Bolts have broken off in both of the two dogears
- 2) Concrete pad and lid in good working condition

SUGGESTED REPAIRS:

- 1) Drill through and remove bolts
- 2) Retap threads

Signature(s):



Project Site Name:	<u>USCG Baltimore</u>	Well ID:	<u>GW07-07</u>
Project No.:	<u>112G08457-02</u>	Sampling Round:	<u>9</u>
Date of Inspection:	<u>12/19/2017</u>	Sampled By:	<u>S. Cameron</u>

PHOTOGRAPHS:



INSPECTION DETAILS:

- 1) Bolts have broken off in both of the dogears
- 2) Concrete pad and lid in good working condition

SUGGESTED REPAIRS:

- 1) Drill through and remove bolts
- 2) Retap threads

Signature(s):



Project Site Name:	<u>USCG Baltimore</u>	Well ID:	<u>GW07-08</u>
Project No.:	<u>112G08457-02</u>	Sampling Round:	<u>9</u>
Date of Inspection:	<u>12/19/2017</u>	Sampled By:	<u>S. Cameron</u>

PHOTOGRAPHS:



INSPECTION DETAILS:

- 1) Both dogears have broken off of the protective casing
- 2) Concrete pad is cracked
- 3) The bottom of the manhole is flush with the top of PVC.

SUGGESTED REPAIRS:

- 1) Break up and remove concrete pad and protective casing
- 2) Remove material from manhole to expose 3" of PVC
- 3) Install new concrete pad and protective casing

Signature(s):



Project Site Name:	<u>USCG Baltimore</u>	Well ID:	<u>GW07-09</u>
Project No.:	<u>112G08457-02</u>	Sampling Round:	<u>9</u>
Date of Inspection:	<u>12/19/2017</u>	Sampled By:	<u>S. Cameron</u>

PHOTOGRAPHS:



INSPECTION DETAILS:

- 1) Bolts have broken off in both dogears
- 2) Concrete pad and lid in good working condition
- 3) The bottom of the manhole is 0.5" below the top of PVC.

SUGGESTED REPAIRS:

- 1) Break up and remove concrete pad and protective casing
- 2) Remove material from manhole to expose 3" of PVC
- 3) Install new concrete pad and protective casing

Signature(s):



Project Site Name:	<u>USCG Baltimore</u>	Well ID:	<u>GW07-10</u>
Project No.:	<u>112G08457-02</u>	Sampling Round:	<u>9</u>
Date of Inspection:	<u>12/19/2017</u>	Sampled By:	<u>S. Cameron</u>

PHOTOGRAPHS:



INSPECTION DETAILS:

- 1) Both dogears have broken off of the protective casing
- 2) Concrete pad and lid in good working condition
- 3) Bentonite swelling to several inches below top of PVC

SUGGESTED REPAIRS:

- 1) Break up and remove concrete pad and protective casing
- 2) Remove material from manhole to expose 3" of PVC
- 3) Install new concrete pad and protective casing

Signature(s):



Project Site Name:	<u>USCG Baltimore</u>	Well ID:	<u>GW07-11</u>
Project No.:	<u>112G08457-02</u>	Sampling Round:	<u>9</u>
Date of Inspection:	<u>12/19/2017</u>	Sampled By:	<u>S. Cameron</u>

PHOTOGRAPHS:



INSPECTION DETAILS:

- 1) Two of three dogears have broken off of the protective casing
- 2) Concrete pad and lid in good working condition
- 3) Intact dogear requires retapping

SUGGESTED REPAIRS:

- 1) Break up and remove concrete pad and protective casing
- 2) Remove material in manhole to expose 3" of PVC
- 3) Install new concrete pad and protective casing

Signature(s):



Project Site Name:	<u>USCG Baltimore</u>	Well ID:	<u>GW07-12</u>
Project No.:	<u>112G08457-02</u>	Sampling Round:	<u>9</u>
Date of Inspection:	<u>12/19/2017</u>	Sampled By:	<u>S. Cameron</u>

PHOTOGRAPHS:



INSPECTION DETAILS:

- 1) Dogears require retapping
- 2) Concrete pad and lid in good working condition

SUGGESTED REPAIRS:

- 1) Retap threads

Signature(s):

Project Site Name:	<u>USCG Baltimore</u>	Well ID:	<u>GW07-13</u>
Project No.:	<u>112G08457-02</u>	Sampling Round:	<u>9</u>
Date of Inspection:	<u>12/19/2017</u>	Sampled By:	<u>S. Cameron</u>

PHOTOGRAPHS:



INSPECTION DETAILS:

- 1) Dogears require retapping
- 2) Concrete pad and lid in good working condition

SUGGESTED REPAIRS:

- 1) Retap threads

Signature(s):

A handwritten signature in black ink, appearing to read "S. Cameron".



INSPECTION LOG SHEET

Project Site Name:	<u>USCG Baltimore</u>	Well ID:	<u>GW08-02</u>
Project No.:	<u>112G08457-02</u>	Sampling Round:	<u>9</u>
Date of Inspection:	<u>12/19/2017</u>	Sampled By:	<u>S. Cameron</u>

PHOTOGRAPHS:



INSPECTION DETAILS:

- 1) Dogears require retapping
- 2) Concrete pad and lid in good working condition
- 3) Bentonite swelling to 1/2 inch below top of PVC

SUGGESTED REPAIRS:

- 1) Retap threads
- 2) Remove material from manhole to expose 3" of PVC

Signature(s):



INSPECTION LOG SHEET

Project Site Name:	<u>USCG Baltimore</u>	Well ID:	<u>GW09-03</u>
Project No.:	<u>112G08457-02</u>	Sampling Round:	<u>9</u>
Date of Inspection:	<u>12/19/2017</u>	Sampled By:	<u>S. Cameron</u>

PHOTOGRAPHS:



INSPECTION DETAILS:

- 1) Dogears require retapping
- 2) Concrete pad and lid in good working condition
- 3) One 9/16 stainless steel bolt needs replaced

SUGGESTED REPAIRS:

- 1) Retap threads
- 2) Replace bolt

Signature(s):



Project Site Name:	<u>USCG Baltimore</u>	Well ID:	<u>GW09-04</u>
Project No.:	<u>112G08457-02</u>	Sampling Round:	<u>9</u>
Date of Inspection:	<u>12/19/2017</u>	Sampled By:	<u>S. Cameron</u>

PHOTOGRAPHS:

NO PHOTOS WERE TAKEN OF GW09-04.

INSPECTION DETAILS:

- 1) One of three dogears has broken off of protective casing
- 2) Concrete pad and lid in good working condition
- 3) Intact dogears require retapping

SUGGESTED REPAIRS:

- 1) Retap threads

Note: Two functional dogears typically suffice to secure lid

Signature(s):



Project Site Name:	<u>USCG Baltimore</u>	Well ID:	<u>GW09-05</u>
Project No.:	<u>112G08457-02</u>	Sampling Round:	<u>9</u>
Date of Inspection:	<u>12/19/2017</u>	Sampled By:	<u>S. Cameron</u>

PHOTOGRAPHS:



INSPECTION DETAILS:

- 1) One of three dogears has broken off of protective casing
- 2) Concrete pad and lid in good working condition
- 3) Intact dogears require retapping

SUGGESTED REPAIRS:

- 1) Retap threads

Note: Two functional dogears typically suffice to secure lid

Signature(s):

APPENDIX C

PHOTOGRAPHS

WARNING

**DIGGING ON STATION
CURTIS BAY GROUNDS
IS PROHIBITED
WITHOUT CLEARANCE
FROM FACILITIES,
ENVIRONMENTAL
BRANCH AT 3111
FROM ANY YARD PHONE**

BLDG
25

WARNING
DIGGING WITHIN 100'
OF BUILDING 25
IS PROHIBITED
WITHOUT CLEARANCE
FROM FACILITIES,
ENVIRONMENTAL BRANCH
AT X3111
FROM ANY YARD PHONE



BLDG
26

WARNING
DIGGING WITHIN 100'
OF BUILDING 26
IS PROHIBITED
WITHOUT CLEARANCE
FROM FACILITIES,
ENVIRONMENTAL BRANCH
AT X3111
FROM ANY YARD PHONE

WARNING

**DIGGING WITHIN 100'
OF BUILDING 26
IS PROHIBITED
WITHOUT CLEARANCE
FROM FACILITIES,
ENVIRONMENTAL BRANCH
AT X3111
FROM ANY YARD PHONE**

**LOAD
LIMIT
36
TONS**

**SPEED
LIMIT
15**

WARNING
DIGGING WITHIN 100'
OF LOT 23 GROUNDS
IS PROHIBITED
WITHOUT CLEARANCE
FROM FACILITIES,
ENVIRONMENTAL BRANCH
AT X3111
FROM ANY YARD PHONE

APPENDIX D

FIVE-YEAR REVIEW SITE INSPECTION CHECKLISTS

SITE 7

SITE INSPECTION CHECKLIST

I. SITE INFORMATION	
Site name: Site 7 – Former Burn Pit Area	Date of inspection: August 29, 2018
Location and Region: Baltimore, MD / Region 3	EPA ID: MD4690307844
Agency, office, or company leading the five-year review: Tetra Tech	Weather/temperature: Few clouds, 85 degrees, humid
Remedy Includes: (Check all that apply) <div style="display: flex; justify-content: space-between; margin-top: 5px;"> <div style="width: 45%;"> <input checked="" type="checkbox"/> Groundwater Monitoring <input type="checkbox"/> Access controls <input type="checkbox"/> Other _____ </div> <div style="width: 45%;"> <input checked="" type="checkbox"/> Institutional Controls </div> </div>	
Attachments: <input type="checkbox"/> Inspection team roster attached <input type="checkbox"/> Site map attached	
II. INTERVIEWS (Check all that apply)	
1. O&M site manager <u>Derrick Josey</u> <u>Environmental Engineer</u> <u>August 29, 2018</u>	
Name	Title
Date	
Interviewed <input type="checkbox"/> at site <input checked="" type="checkbox"/> at office <input type="checkbox"/> by phone Phone no. <u>410.336.8637</u>	
Problems, suggestions; <input type="checkbox"/> Report attached _____	
2. O&M staff _____	
Name	Title
Date	
Interviewed <input type="checkbox"/> at site <input type="checkbox"/> at office <input type="checkbox"/> by phone Phone no. _____	
Problems, suggestions; <input type="checkbox"/> Report attached _____	
3. Local regulatory authorities and response agencies (i.e., State and Tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices, etc.) Fill in all that apply.	
Agency <u>US Environmental Protection Agency</u>	
Contact <u>Lisa Cunningham</u> <u>Project Manager</u> <u>215.814.3363</u> <u>cunningham.lisa@epa.gov</u>	
Name	Title
Date	Phone no.
Problems; suggestions; <input type="checkbox"/> Report attached _____	
Agency <u>Maryland Department of the Environment</u>	
Contact <u>Kim Lemaster</u> <u>Project Manager</u> <u>410.437.3394</u> <u>kim.lemaster@maryland.gov</u>	
Name	Title
Date	Phone no.
Problems; suggestions; <input type="checkbox"/> Report attached _____	

SITE INSPECTION CHECKLIST

3. Local regulatory authorities and response agencies (Continued)

Agency _____

Contact _____

Name	Title	Date	Phone no.
------	-------	------	-----------

Problems; suggestions; Report attached _____

4. Other interviews (optional) Report attached.

LCDR John Adams, Facility Engineer _____

Cory Golden, Skookum Contract Services _____

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)

1. O&M Documents

- | | | | |
|--|--|-------------------------------------|---|
| <input type="checkbox"/> O&M manual | <input type="checkbox"/> Readily available | <input type="checkbox"/> Up to date | <input checked="" type="checkbox"/> N/A |
| <input type="checkbox"/> As-built drawings | <input type="checkbox"/> Readily available | <input type="checkbox"/> Up to date | <input checked="" type="checkbox"/> N/A |
| <input type="checkbox"/> Maintenance logs | <input type="checkbox"/> Readily available | <input type="checkbox"/> Up to date | <input checked="" type="checkbox"/> N/A |

Remarks There is no O&M required by the remedy implemented at Site 7. The Site 7 Land Use Control Remedial Design Report was readily available for reference. _____

IV. INSTITUTIONAL CONTROLS Applicable N/A

SITE INSPECTION CHECKLIST

A. Institutional Controls (ICs)				
1. Implementation and enforcement				
Site conditions imply ICs not properly implemented	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A	
Site conditions imply ICs not being fully enforced	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A	
Type of monitoring (e.g., self-reporting, drive by) Self-reporting _____				
Responsible party/agency USCG _____				
Contact	Derrick Josey	Environmental Engineer	August 29, 2018	410.636.7070
	Name	Title	Date	Phone no.
Reporting is up to date			<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No <input type="checkbox"/> N/A
Reports are verified by the lead agency			<input type="checkbox"/> Yes	<input type="checkbox"/> No <input type="checkbox"/> N/A
Specific requirements in deed or decision documents have been met			<input type="checkbox"/> Yes	<input type="checkbox"/> No <input type="checkbox"/> N/A
Violations have been reported			<input type="checkbox"/> Yes	<input type="checkbox"/> No <input type="checkbox"/> N/A
Other problems or suggestions:	<input type="checkbox"/> Report attached			
2. Adequacy				
	<input checked="" type="checkbox"/> ICs are adequate	<input type="checkbox"/> ICs are inadequate	<input type="checkbox"/> N/A	
Remarks Site use continues as industrial/commercial, in support of USCG operations. Signs are in place prohibiting excavation without prior clearance by Facilities Management, Environmental Section. _____				
B. General				
1. Vandalism/trespassing				
	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> No vandalism evident		
Remarks _____				
2. Land use changes on site				
	<input checked="" type="checkbox"/> N/A			
Remarks _____				
3. Land use changes off site				
	<input checked="" type="checkbox"/> N/A			
Remarks _____				
V. GENERAL SITE CONDITIONS				
A. Roads				
	<input type="checkbox"/> Applicable	<input type="checkbox"/> N/A		
1. Roads damaged				
	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> Roads adequate	<input type="checkbox"/> N/A	
Remarks Roads are adequate but there are some areas where asphalt is broken or has been removed. Areas of asphalt removal are along the bulkhead wall. Excavations were done to temporarily repair bulkhead. Contaminated soil was not discovered in excavated areas. New bulkhead wall is being planned immediately adjacent waterside of the existing bulkhead. New bulkhead wall installation will not require excavation, wall tie backs will be driven from waterside. _____				
B. Other Site Conditions				
Remarks _____				

SITE INSPECTION CHECKLIST

1. **Monitoring Wells** (within surface area)

Properly secured/locked
 Functioning
 Routinely sampled
 Good condition
 Evidence of leakage at penetration
 Needs Maintenance
 N/A

Remarks Monitoring well sampling conducted December 2017. All well covers appeared to be in good condition. All wells inspected December 2017. Any necessary repairs were made during winter 2018. Well Report attached. _____

2. **Buildings 30 and 37 (Shower/floor drains and pipe/conduit penetrations through the concrete slab)**

Caulk/concrete seals around pipe/conduit penetrations through concrete slab appear to be complete and intact
 Floor drains are charged with enough water to prevent infiltration of sewer odors and other potential subsurface gases/vapors
 Good condition
 Needs Maintenance
 N/A

Remarks Was unable to inspect sleeping quarters or kitchen/meeting room in Building 37. _____

VI. INSPECTOR QUESTIONS

1. **Are there any signs that excavation has occurred at the site?**
 No
 Yes
 If yes, has inspector verified that dig permit process is in place?
 No
 Yes

Remarks Explanation of dig permit process is detailed in interview of Yard Facility Manager /Environmental Engineer. _____

2. **Has any interior air sampling occurred within past year?**
 No
 Yes

Remarks _____

3. **Has any sub-slab soil/soil-gas sampling occurred within past year?**
 No
 Yes

Remarks _____

VII. OVERALL OBSERVATIONS

SITE INSPECTION CHECKLIST

A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed.

Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emissions (etc.)).

Asphalt pavement covers much of Site 7, Pavement installed In 2011 is in good condition. Some older asphalt is failing in locations. One area covered by pavers to permit infiltration, pavers in good condition Basketball court and sidewalks cover a fair portion of Site 7 and are in good condition. Remaining area covered by soil/grass or stone, no signs of active erosion. Silt fence present in one area (north property boundary). Observed several signs posted around Site 9 which state Facilities must be contacted prior to any digging in the area. One sign had come loose from the building and was on the ground but replaced while I was on-site.

B. Adequacy of O&M

Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.

N/A

C. Early Indicators of Potential Remedy Problems

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs, which suggest that the protectiveness of the remedy may be compromised in the future.

N/A

D. Opportunities for Optimization

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

SITE 9

SITE INSPECTION CHECKLIST

I. SITE INFORMATION							
Site name: Site 9 – Reported Bilge Spoils Area	Date of inspection: August 29, 2018						
Location and Region: Baltimore, MD / Region 3	EPA ID: MD4690307844						
Agency, office, or company leading the five-year review: Tetra Tech	Weather/temperature: Few clouds, 84 degrees, humid.						
Remedy Includes: (Check all that apply) <table style="width: 100%; margin-top: 5px;"> <tr> <td style="width: 50%;"><input type="checkbox"/> Groundwater Monitoring</td> <td style="width: 50%;"><input checked="" type="checkbox"/> Institutional Controls</td> </tr> <tr> <td><input type="checkbox"/> Access controls</td> <td></td> </tr> <tr> <td colspan="2"><input type="checkbox"/> Other _____</td> </tr> </table>		<input type="checkbox"/> Groundwater Monitoring	<input checked="" type="checkbox"/> Institutional Controls	<input type="checkbox"/> Access controls		<input type="checkbox"/> Other _____	
<input type="checkbox"/> Groundwater Monitoring	<input checked="" type="checkbox"/> Institutional Controls						
<input type="checkbox"/> Access controls							
<input type="checkbox"/> Other _____							
Attachments: <input type="checkbox"/> Inspection team roster attached <input type="checkbox"/> Site map attached							
II. INTERVIEWS (Check all that apply)							
1. O&M site manager <u>Derrick Josey</u> <u>Environmental Engineer</u> <u>August 29, 2018</u>							
Name	Title						
Date							
Interviewed <input type="checkbox"/> at site <input checked="" type="checkbox"/> at office <input type="checkbox"/> by phone Phone no. <u>410.336.8637</u>							
Problems, suggestions; <input type="checkbox"/> Report attached _____							
2. O&M staff N/A _____							
Name	Title						
Date							
Interviewed <input type="checkbox"/> at site <input type="checkbox"/> at office <input type="checkbox"/> by phone Phone no. _____							
Problems, suggestions; <input type="checkbox"/> Report attached _____							
3. Local regulatory authorities and response agencies (i.e., State and Tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices, etc.) Fill in all that apply.							
Agency <u>US Environmental Protection Agency</u>							
Contact <u>Lisa Cunningham</u>	<u>Project Manager</u> <u>215.814.3363</u> <u>cunningham.lisa@epa.gov</u>						
Name	Title						
Date	Phone no.						
Problems; suggestions; <input type="checkbox"/> Report attached _____							
Agency <u>Maryland Department of the Environment</u>							
Contact <u>Kim Lemaster</u>	<u>Project Manager</u> <u>410.437.3394</u> <u>kim.lemaster@maryland.gov</u>						
Name	Title						
Date	Phone no.						
Problems; suggestions; <input type="checkbox"/> Report attached _____							

SITE INSPECTION CHECKLIST

3. Local regulatory authorities and response agencies (Continued)

Agency _____

Contact _____

Name	Title	Date	Phone no.
------	-------	------	-----------

Problems; suggestions; Report attached _____

4. Other interviews (optional) Report attached.

LCDR John Adams, Facility Engineer _____

Cory Golden, Skookum Contracting Services _____

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)

1. O&M Documents

- | | | | |
|--|--|-------------------------------------|---|
| <input type="checkbox"/> O&M manual | <input type="checkbox"/> Readily available | <input type="checkbox"/> Up to date | <input checked="" type="checkbox"/> N/A |
| <input type="checkbox"/> As-built drawings | <input type="checkbox"/> Readily available | <input type="checkbox"/> Up to date | <input checked="" type="checkbox"/> N/A |
| <input type="checkbox"/> Maintenance logs | <input type="checkbox"/> Readily available | <input type="checkbox"/> Up to date | <input checked="" type="checkbox"/> N/A |

Remarks There is no O&M required by the remedy implemented at Site 9. The Land Use Control Remedial Design Report for Site 9 was readily available for reference. _____

IV. INSTITUTIONAL CONTROLS

Applicable

N/A

SITE INSPECTION CHECKLIST

A. Institutional Controls (ICs)				
1. Implementation and enforcement				
Site conditions imply ICs not properly implemented	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> N/A	
Site conditions imply ICs not being fully enforced	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> N/A	
Type of monitoring (e.g., self-reporting, drive by) Self-reporting _____				
Responsible party/agency USCG _____				
Contact	Derrick Josey	Environmental Engineer	August 29, 2018	410.636.7070
	Name	Title	Date	Phone no.
Reporting is up to date	<input checked="" type="checkbox"/> Yes		<input type="checkbox"/> No	<input type="checkbox"/> N/A
Reports are verified by the lead agency	<input type="checkbox"/> Yes		<input type="checkbox"/> No	<input type="checkbox"/> N/A
Specific requirements in deed or decision documents have been met	<input type="checkbox"/> Yes		<input type="checkbox"/> No	<input type="checkbox"/> N/A
Violations have been reported	<input type="checkbox"/> Yes		<input type="checkbox"/> No	<input type="checkbox"/> N/A
Other problems or suggestions:	<input type="checkbox"/> Report attached			
<hr/>				
2. Adequacy				
	<input checked="" type="checkbox"/> ICs are adequate	<input type="checkbox"/> ICs are inadequate	<input type="checkbox"/> N/A	
Remarks Site use continues as industrial/commercial, in support of USCG operations. Primary portion of Site 9 (Lot 23) is a parking lot and equipment storage area. Signs are in place prohibiting excavation without prior clearance by Facilities Management, Environmental (see attached photo). _____				
<hr/>				
B. General				
1. Vandalism/trespassing				
	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> No vandalism evident		
Remarks _____				
<hr/>				
2. Land use changes on site				
	<input checked="" type="checkbox"/> N/A			
Remarks _____				
<hr/>				
3. Land use changes off site				
	<input checked="" type="checkbox"/> N/A			
Remarks _____				
<hr/>				
V. GENERAL SITE CONDITIONS				
A. Roads				
	<input type="checkbox"/> Applicable	<input type="checkbox"/> N/A		
1. Roads damaged				
	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Roads adequate	<input type="checkbox"/> N/A	
Remarks _____				
<hr/>				

SITE INSPECTION CHECKLIST

B. Other Site Conditions	<p>Remarks Observed a steel plate on roadway, cone on top of plate. Questioning revealed storm drain grate under plate is damaged. Repairs scheduled. Repairs will not necessitate excavation.</p> <p>Area in center of Lot 23 is coned off. Questioning revealed that there is a water line leak under the coned area. Excavation will take place to repair leak. CG Yard Environmental Engineer detailed excavation procedure and handling of excavated material. Excavated material will be sampled to determine the proper disposal or reuse of the material. _____</p> <p>_____</p> <p>_____</p>
1. Monitoring Wells (within surface area)	<p> <input checked="" type="checkbox"/> Properly secured/locked <input type="checkbox"/> Functioning <input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition <input type="checkbox"/> Evidence of leakage at penetration <input type="checkbox"/> Needs Maintenance <input type="checkbox"/> N/A </p> <p>Remarks Monitoring well sampling conducted December 2017. All well covers appeared to be in good condition. All wells inspected December 2017. Any necessary repairs were made during winter 2018. Well Report attached. _____</p> <p>_____</p>
VI. INSPECTOR QUESTIONS	
1. Are there any signs that excavation has occurred at the site?	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes If yes, has inspector verified that dig permit process is in place? <input type="checkbox"/> No <input type="checkbox"/> Yes
Remarks _____	_____
VII. OVERALL OBSERVATIONS	
A. Implementation of the Remedy	<p>Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).</p> <p><u>Asphalt pavement (Lot 23) covers much of Site 9, pavement in good condition. Some areas covered by pavers to permit infiltration, pavers in good condition. Remaining area covered by soil/grass or stone, no signs of significant erosion. Observed several signs posted around Site 9 which state Facilities must be contacted prior to any digging in the area.</u></p> <p>_____</p> <p>_____</p>
B. Adequacy of O&M	<p>Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.</p> <p><u>N/A</u></p> <p>_____</p> <p>_____</p>

SITE INSPECTION CHECKLIST

C. Early Indicators of Potential Remedy Problems

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs, which suggest that the protectiveness of the remedy may be compromised in the future.

N/A

D. Opportunities for Optimization

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

APPENDIX E

SITE 7 LONG-TERM GROUNDWATER MONITORING ANALYTICAL DATA

APPENDIX E
SUMMARY OF ANALYTICAL RESULTS FOR GROUNDWATER
DECEMBER 2011 - OCTOBER 2018
SITE 7 FORMER BURN PIT
USCG BALTIMORE YARD, MARYLAND
PAGE 1 OF 4

		DISSOLVED METALS				TOTAL METALS				MISCELLANEOUS	PAHS	VOLATILES
		ANTIMONY	ARSENIC	BARIUM	VANADIUM	ANTIMONY	ARSENIC	BARIUM	VANADIUM	ALKALINITY	2-METHYLNAPHTHALENE	BENZENE
		UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	MG/L	UG/L	UG/L
Groundwater Cleanup Goal		6	10	2000	63	6	10	2000	63	NA	27	5
GW04-04 ⁽¹⁾	12/10/2011	--	--	5 U	--	--	--	5 U	--	--	--	--
	03/22/2012	--	--	5 U	--	--	--	5 U	--	--	--	--
	06/27/2012	--	--	7.72 J	--	--	--	12.3 J	--	--	--	--
	09/04/2012	--	--	--	--	--	--	5 U	--	--	--	--
	12/04/2012	--	--	--	--	--	--	22	--	--	--	--
GW07-01	12/10/2011	--	--	40.1	5 U	--	--	41.4	6.47 J	125 L	--	--
	03/20/2012	--	--	27	5 U	--	--	28.5	5 U	105 K	--	--
	06/26/2012	--	--	58.5 J	16.9 B	--	--	59 J	16.3 B	--	--	--
	09/06/2012	--	--	--	--	--	--	53.7	5.46 J	--	--	--
	12/04/2012	--	--	--	--	--	--	44.1	5 U	--	--	--
	06/05/2013	--	--	--	--	--	--	36.8	5 U	--	--	--
	02/21/2014	--	--	--	--	--	--	27.8	5.95 J	--	--	--
	01/27/2015	--	--	--	--	--	--	29.2	7.36 U	--	--	--
	10/03/2016	--	--	--	--	--	--	39	5 U	--	--	--
	12/19/2017	--	--	--	--	--	--	37.3	5.58 J	--	--	--
10/09/2018	--	--	--	--	--	--	43 J	9.9 U	--	--	--	
GW07-07	12/13/2011	19	--	164	23.9	18.9	--	174	27	1070 L	8.87	1.76
	03/21/2012	13.2	--	129	15.1	10.8	--	145	15.6	1340 K	0.941	1.83
	06/28/2012	1 U	--	218	5.87 J	1 U	--	225	5.46 J	--	8.04 J	1.48
	06/28/2012	Average	1 U	211.5	5.65	1 U	--	222	7.47	--	10.07	1.465
	06/28/2012	Duplicate	1 U	205	5.43 J	1 U	--	219	9.48 J	--	12.1 J	1.45
	09/06/2012	--	--	--	--	2.2	--	214	5 U	--	2.52	1.2
	12/06/2012	--	--	--	--	14.6	--	194	18.8	--	6.89	1.71
	06/05/2013	--	--	--	--	9.2	--	185	30.1	--	0.0516 J	1.71
	02/22/2014	--	--	--	--	0.5 U	--	152	5 U	--	8.32	1.4 J
	01/29/2015	--	--	--	--	0.5 U	--	196	5 U	--	9.18	1.7
	11/02/2016	--	--	--	--	0.578 J	--	201	5 U	--	0.0568 J	1.38
	12/20/2017	--	--	--	--	50 U	--	192	5 U	--	7.88	1.48 J
	10/09/2018	--	--	--	--	7.5 U	--	190 J	8.4 U	--	7	1.2

APPENDIX E
SUMMARY OF ANALYTICAL RESULTS FOR GROUNDWATER
DECEMBER 2011 - OCTOBER 2018
SITE 7 FORMER BURN PIT
USCG BALTIMORE YARD, MARYLAND
PAGE 3 OF 4

			DISSOLVED METALS				TOTAL METALS				MISCELLANEOUS	PAHS	VOLATILES
			ANTIMONY	ARSENIC	BARIUM	VANADIUM	ANTIMONY	ARSENIC	BARIUM	VANADIUM	ALKALINITY	2-METHYLNAPHTHALENE	BENZENE
			UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	MG/L	UG/L	UG/L
Groundwater Cleanup Goal			6	10	2000	63	6	10	2000	63	NA	27	5
GW07-11	12/11/2011		0.5 U	3.9	146	5 U	0.5 J	3.77	146	5 U	499 L	0.051 U	0.125 U
	12/11/2011	Average	0.5 U	3.835	147.5	5 U	0.5	3.965	145.5	5 U	501	0.0514 U	0.125 U
	12/11/2011	Duplicate	0.5 U	3.77	149	5 U	0.5 J	4.16	145	5 U	503 L	0.0518 U	0.125 U
	03/21/2012		0.5 U	2.76	166	9.29 J	0.5 U	2.9	163	8.93 J	570 K	0.0532 U	0.125 U
	06/27/2012		0.5 U	2.51 J	177 J	25.8 B	0.5 U	2.54 J	185 J	25.3 B	--	0.0521 U	0.125 U
	06/27/2012	Average	0.5 U	2.425	177 J	25.8 B	0.5 U	2.435	185 J	25.3 B	--	0.0521 U	0.125 U
	06/27/2012	Duplicate	--	2.34 J	--	--	--	2.33 J	--	--	--	--	--
	09/05/2012		--	--	--	--	0.5 U	3.02	176	5 U	--	0.051 U	0.125 U
	12/05/2012		--	--	--	--	0.5 U	2.42	169	5 U	--	0.0521 U	0.125 U
	06/05/2013		--	--	--	--	0.5 U	2.67	196	11	--	0.051 U	0.125 U
	02/23/2014		--	--	--	--	0.5 U	1.52	139	5 U	--	0.05 U	0.125 U
	01/28/2015		--	--	--	--	0.5 U	1.79	178	5 U	--	0.051 U	0.125 U
	01/28/2015	Average	--	--	--	--	0.5 U	1.755	177.5	5.365 U	--	0.0524 U	0.125 U
	01/28/2015	Duplicate	--	--	--	--	0.5 U	1.72	177	5.73 U	--	0.0538 U	0.125 U
	10/03/2016		--	--	--	--	1.23	5.39	133	5 U	--	0.051 U	0.125 U
	12/20/2017		--	--	--	--	50 U	5 U	144	5 U	--	2.43 UJ	0.125 U
	12/20/2017	Average	--	--	--	--	50 U	5 U	143.5	5 U	--	2.39 U	0.125 U
	12/20/2017	Duplicate	--	--	--	--	50 U	5 U	143	5 U	--	2.35 U	0.125 U
10/09/2018		--	--	--	--	7.5 U	4.1 U	380	5.6 U	--	0.11 U	0.13 U	
GW07-12	12/12/2011		0.5 U	0.98 J	164	5 U	0.5 U	1.26	74	5 U	139 L	0.051 U	0.125 U
	03/21/2012		0.5 U	1.87	369	5 U	0.5 U	1.71	405	5 U	111 K	0.051 U	0.125 U
	06/28/2012		1 U	7.42	367	5 U	1 U	7.32	357	5 U	--	0.0526 U	0.125 U
	09/05/2012		--	--	--	--	0.5 U	2.79	342	5 U	--	0.05 U	0.125 U
	12/06/2012		--	--	--	--	0.5 U	3.47	289	5 U	--	0.0521 U	0.125 U
	06/06/2013		--	--	--	--	0.5 U	9.38	343	5 U	--	0.05 U	0.125 U
	02/22/2014		--	--	--	--	0.5 U	13.5	290	27 U	--	0.05 U	0.125 U
	02/22/2014	Average	--	--	--	--	0.5 U	13.5	296	25.65 U	--	0.05 U	0.125 U
	02/22/2014	Duplicate	--	--	--	--	0.5 U	13.5	302	24.3 U	--	0.05 U	0.125 U
	01/28/2015		--	--	--	--	0.5 U	13.1	416	61.7 U	--	0.0543 U	0.125 U
	11/02/2016		--	--	--	--	0.5 U	33.8	449	5 U	--	0.0575 U	0.125 U
	11/02/2016	Average	--	--	--	--	0.5 U	29.7	440.5	5 U	--	0.05565 U	0.125 U
	11/02/2016	Duplicate	--	--	--	--	0.5 U	25.6	432	5 U	--	0.0538 U	0.125 U
	12/20/2017		--	--	--	--	50 U	10.4	433	5 U	--	2.4 UJ	0.125 U
	10/09/2018		--	--	--	--	7.5 U	13 J	440	13 U	--	0.11 U	0.13 U

APPENDIX E
SUMMARY OF ANALYTICAL RESULTS FOR GROUNDWATER
DECEMBER 2011 - OCTOBER 2018
SITE 7 FORMER BURN PIT
USCG BALTIMORE YARD, MARYLAND
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		DISSOLVED METALS				TOTAL METALS				MISCELLANEOUS	PAHs	VOLATILES	
		ANTIMONY	ARSENIC	BARIUM	VANADIUM	ANTIMONY	ARSENIC	BARIUM	VANADIUM	ALKALINITY	2-METHYLNAPHTHALENE	BENZENE	
		UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	MG/L	UG/L	UG/L	
Groundwater Cleanup Goal		6	10	2000	63	6	10	2000	63	NA	27	5	
GW07-13	12/12/2011	0.5 U	6.21	2960	5 U	0.5 U	6.93	3150	5 U	208 L	0.051 U	0.125 U	
	03/21/2012	2.5 U	6.62	4690	6.13 J	2.5 U	5.24	4710	8.32 J	222 K	0.051 U	0.125 U	
	03/21/2012	Average	2.5 U	5.775	4725	6.535	2.5 U	5.005	4715	7.505	226	0.051 U	0.125 U
	03/21/2012	Duplicate	2.5 U	4.93 J	4760	6.94 J	2.5 U	4.77 J	4720	6.69 J	230 K	0.051 U	0.125 U
	06/27/2012		5 U	8.25 J	4660 J	21.1 B	5 U	6.61 J	4670 J	20.9 B	--	0.0521 U	0.125 U
	09/05/2012		--	--	--	--	0.5 U	32.5	1190	5 U	--	0.051 U	0.125 U
	09/05/2012	Average	--	--	--	--	0.5 U	32.65	1175	5 U	--	0.051 U	0.125 U
	09/05/2012	Duplicate	--	--	--	--	0.5 U	32.8	1160	5 U	--	0.051 U	0.125 U
	12/05/2012		--	--	--	--	0.5 U	4.8 J	3330	5 U	--	0.0526 U	0.125 U
	12/05/2012	Average	--	--	--	--	0.5 U	5.02	3325	5 U	--	0.0532 U	0.125 U
	12/05/2012	Duplicate	--	--	--	--	0.5 U	5.24	3320	5 U	--	0.0538 U	0.125 U
	06/05/2013		--	--	--	--	0.5 U	12.1	3000	10.5	--	0.051 U	0.125 U
	06/05/2013	Average	--	--	--	--	0.5 U	12	2965	11.1	--	0.051 U	0.125 U
	06/05/2013	Duplicate	--	--	--	--	0.5 U	11.9	2930	11.7	--	0.051 U	0.125 U
	02/21/2014		--	--	--	--	0.5 U	13.5	1030	5 U	--	0.05 U	0.125 U
	01/28/2015		--	--	--	--	0.5 U	4.06	4680	17.8 U	--	0.0521 U	0.308 J
	09/27/2016		--	--	--	--	0.5 U	9.83	5220	5 U	--	0.0526 U	0.273 J
	12/20/2017		--	--	--	--	50 U	10.8	4130	5 U	--	2.36 U	0.125 U
10/09/2018		--	--	--	--	7.5 U	14 J	3000	6.7 U	--	0.11 U	0.13 U	

1 Sampling at these wells were discontinued because metals concentrations in both wells were less than the Maryland and site-specific groundwater standards, and benzene and 2-methylnaphthalene were not detected at GW07-10 in six consecutive rounds.

Black shading = exceedance of Groundwater Cleanup Goal

Bold = Positive detection

UG/L - micrograms per liter

MG/L - milligrams per liter

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

J = Estimated value

B = Laboratory Blank Contamination

L = Low for USEPA due to quality control noncompliance

K = High for USEPA due to quality control noncompliance