Final

No Action Decision Document
Photo-Identified (PI) Site 21

Atlantic Fleet Weapons Training Area-Vieques
Former Vieques Naval Training Range
Vieques, Puerto Rico

Contract Task Order 0037

June 2014

Prepared for

Department of the Navy
Naval Facilities Engineering Command
Atlantic

Under the

NAVFAC CLEAN 1000 Program
Contract N62470-08-D-1000

Prepared by

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Virginia Beach, Virginia

Executive Summary

This Decision Document provides formal concurrence among the stakeholder agencies (United States Navy [Navy], United States Environmental Protection Agency [USEPA] Region 2, Puerto Rico Environmental Quality Board [PREQB], and United States Fish and Wildlife Service [USFWS]) that no action is necessary at Photo-Identified Site 21 (PI 21), located within the former Vieques Naval Training Range (VNTR), under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). **Figure ES-1** shows the geographic location of Vieques, including the former VNTR, in relation to mainland Puerto Rico and the surrounding islands. The location of PI 21 is shown in **Figure ES-2**.

The no action determination made for PI 21 is based on an understanding of historical site uses, potential contaminant sources, and potential CERCLA-related release mechanisms; site visit observations; and collection and evaluation of site-specific environmental media samples. **Table ES-1** summarizes the information upon which the no action determination has been made for PI 21. More detailed discussion is presented in Section 2 of this Decision Document.

NOTE: THIS SUMMARY IS PRESENTED IN ENGLISH AND SPANISH FOR THE CONVENIENCE OF THE READER. EVERY EFFORT HAS BEEN MADE FOR THE TRANSLATIONS TO BE AS ACCURATE AS REASONABLY POSSIBLE. HOWEVER, READERS SHOULD BE AWARE THAT THE ENGLISH VERSION OF THE TEXT IS THE OFFICIAL VERSION.

NOTA: ESTE RESUMEN SE PRESENTA EN INGLÉS Y EN ESPAÑOL PARA LA CONVENIENCIA DEL LECTOR. SE HA HECHO TODO LO POSIBLE PARA QUE LA TRADUCCIÓN SEA PRECISA EN LO MÁS RAZONABLEMENTE POSIBLE. SIN EMBARGO, LOS LECTORES DEBEN ESTAR AL TANTO QUE EL TEXTO EN INGLÉS ES LA VERSIÓN OFICIAL.

TABLE ES-1
Summary of Conclusions and Recommendations
No Action Decision Document
PI 21
Vieques, Puerto Rico

Site Name	Site Description	Site History	Potential Source(s)	Potential Release Mechanism(s)	Site-specific Data Collected	Results of 7-step Decision Analysis	Rationale for No Action/No Further Action Determination
PI 21	Historically identified as a potential gun position and/or amphibious landing area. However, further evaluation of the site, including site visits, indicates the site was likely used for rock quarrying purposes.	Site evaluated during an Environmental Baseline Survey (EBS), Preliminary Range Assessment (PRA), and Site Inspection (SI)	No evidence of use as gun postion or amphbious landing area found; no munitions and explosives of concern (MEC) identified. Potential sources of contamination identified as pipes observed protruding from an embankment and a suspected former vertical tank identified in an aerial photograph.	Spills or leaks to the ground surface from the pipes and/or vertical tank.	Three surface soil samples from the small area of discolored soil beneath the pipes; five co-located surface soil and subsurface soil samples at the suspected former tank location.	Data suggest potential source areas were sufficiently characterized	Data suggest the existing surface and subsurface soil constituent concentrations do not pose a potentially unacceptable risk to human or ecological receptors or leaching concern for groundwater.

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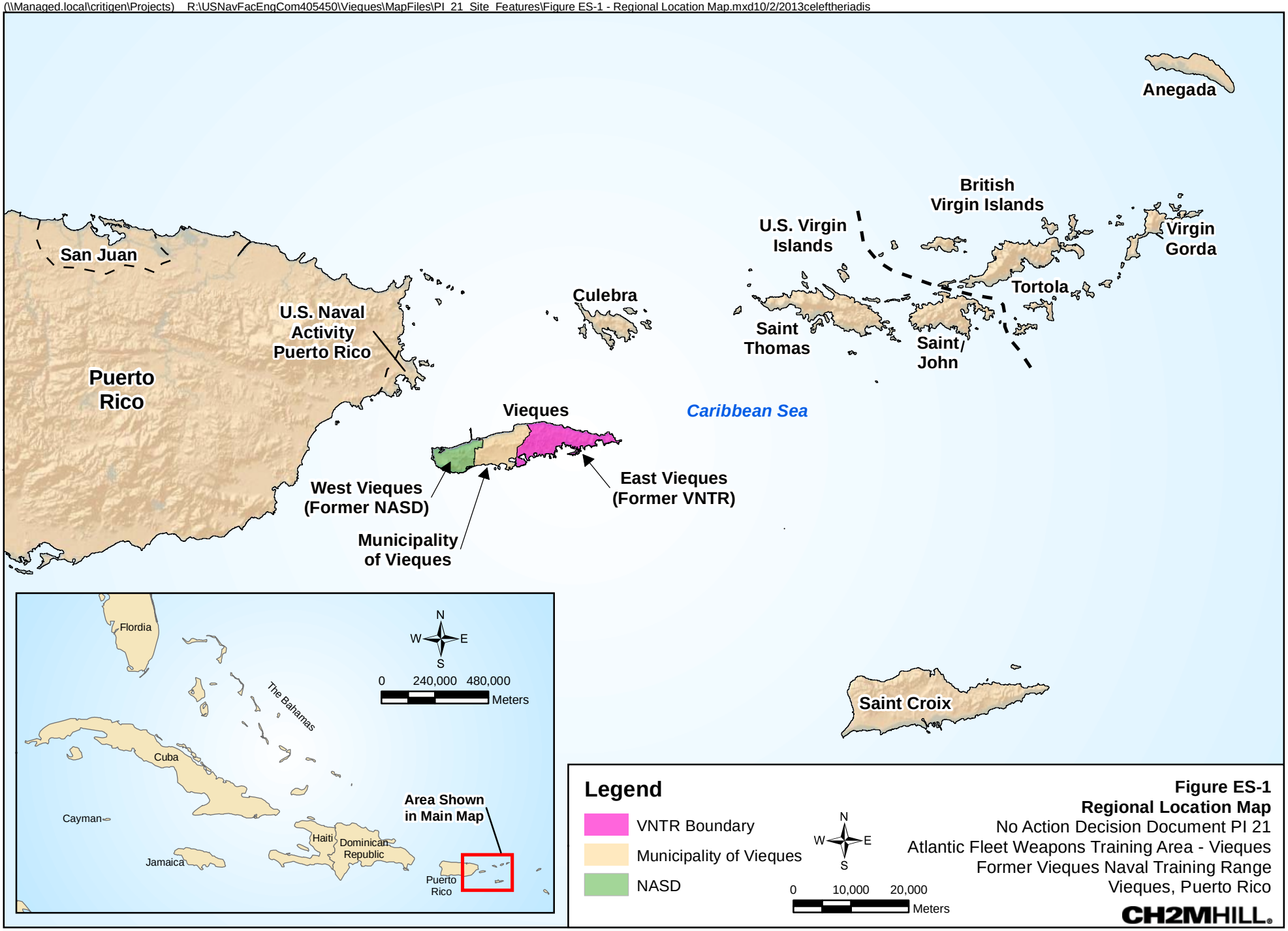

Figure ES-1
Regional Location Map
No Action Decision Document PI 21
Atlantic Fleet Weapons Training Area - Vieques
Former Vieques Naval Training Range
Vieques, Puerto Rico

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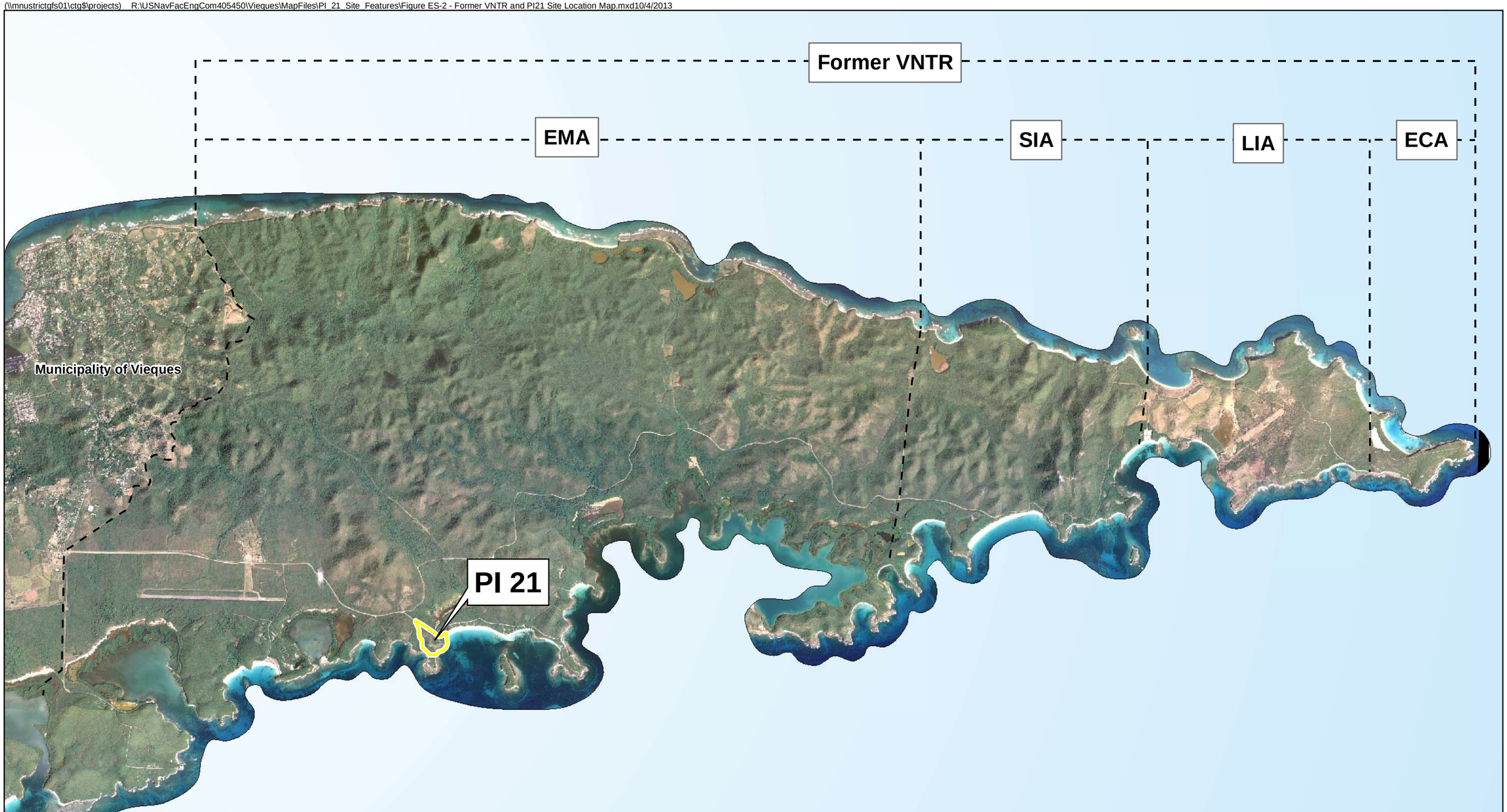
(\\mnustrictgfs01\ctg$\projects) R:\USNavFacEngCom405450\Vieques\MapFiles\PI_21_Site_Features\Figure ES-2 - Former VNTR and PI21 Site Location Map.mxd10/4/2013



Legend

PI 21

VNTR - Vieques Naval Training Range
EMA - Eastern Maneuver Area
SIA - Surface Impact Area
LIA - Live Impact Area
ECA - Eastern Conservation Area

N
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S

0 2,000 4,000 8,000
Feet

Figure ES-2
Former VNTR and PI 21 Location Map
No Action Decision Document PI 21
Atlantic Fleet Weapons Training Area - Vieques
Former Vieques Naval Training Range
Vieques, Puerto Rico

CH2MHILL

Resumen Ejecutivo

Este Documento de Decisión presenta el acuerdo formal entre las agencias interesadas (La Marina de los Estados Unidos [Navy, en inglés], la Agencia de Protección Ambiental de los Estados Unidos [USEPA, por sus siglas en inglés] Región 2, la Junta de Calidad Ambiental de Puerto Rico [PREQB, por sus siglas en inglés], y el Servicio de Pesca y Vida Silvestre de los Estados Unidos [USFWS, por sus siglas en inglés]) de que no es necesario se realice ninguna acción al Sitio Identificado con Fotografía 21 (PI 21), localizado en el antiguo Campo de Adiestramiento Naval de Vieques (VNTR, por sus siglas en inglés), bajo la Ley de Respuesta Ambiental, Compensación y Responsabilidad (CERCLA, por sus siglas en inglés). La **Figura ES-1** muestra la ubicación geográfica de Vieques, incluyendo el antiguo VNTR, en relación con la Isla de Puerto Rico y las islas que le rodean. La ubicación de PI 21 se muestra en la **Figura ES-2**.

La determinación de ninguna acción adicional para PI 21 se basa en el análisis de los usos históricos del sitio, las fuentes de contaminación potencial, los mecanismos potenciales de derrames relacionados a CERCLA; observaciones durante visitas al sitio; y la obtención y evaluación de muestras de medios ambientales específicos al sitio. La **Tabla ES-1** resume la información sobre la cual se acordó la determinación de ninguna acción para PI 21. Una discusión más detallada se presenta en la Sección 2 de este Documento de Decisión.

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TABLA ES-1

Resumen de Conclusiones y Recomendaciones

Documento de Decision de No Acción

PI 21

Vieques, Puerto Rico

Nombre del Sitio	Descripción del Sitio	Historia del Sitio	Fuente(s) Potencial(es)	Mecanismo(s) Potencial(es) de Escape	Datos Recolectados Específicos al Sitio	Resultados del Análisis de Decisión de 7 Pasos	Fundamentos para la Determinación de No Acción/No Acción Adicional
PI 21	Identificado históricamente como un área potencial de posicionamiento de rifles y/o desembarque de equipos anfibios.Sin embargo, una evaluación más detallada del sitio, incluyendo visitas al lugar, indica que el sitio posiblemente fue utilizado como una cantera.	El sitio fue evaluado durante un Monitoreo Ambiental Inicial (EBS, por sus siglas en inglés), Evaluación Preliminar del Campo de Tiro (PRA, por sus siglas en inglés), e Inspección del Sitio (SI, por sus siglas en inglés).	No se encontró evidencia de uso como área de posicionamiento de rifles y/o desembarque de equipos anfibios; no se identificaron municiones o explosivos de preocupación (MEC, por sus siglas en inglés). Se identificaron a través de fotografias aereas una tubería sobresaliendo de un montículo y lo que parecía un tanque vertical como fuentes de contaminación potenciales.	Derrames o fugas a la superficie del suelo de las tuberías y/o el tanque vertical.	Tres muestras de la superficie del suelo tomadas en el área pequeña de suelo descolorido debajo de la tubería; cinco muestras co-localizadas de la superficie del suelo y subsuelo en la área donde se creía se encontraba el tanque.	Los datos sugieren que las áreas de fuente potenciales han sido suficientemente caracterizadas.	Los datos sugieren que las concentraciones existentes en la superficie y debajo de la superficie del suelo no representan un riesgo potencial inaceptable a los humanos o receptores ecológicos o preocupación de lixiviación a las aguas subterráneas.

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1-1 Regional Location Map
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Acronyms and Abbreviations

CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CERCLIS	Comprehensive Environmental Response, Compensation and Liability Information System
CLEAN	Comprehensive Long-term Environmental Action—Navy
DAF	dilution attenuation factor
DDD	dichlorodiphenyldichloroethane
DDE	dichlorodiphenyldichloroethene
DDT	dichlorodiphenyltrichloroethane
DOI	Department of Interior
EBS	Environmental Baseline Survey
ECA	Eastern Conservation Area
ELCR	excess lifetime cancer risk
EMA	Eastern Maneuver Area
EPA	United States Environmental Protection Agency
ERI	Environmental Research Inc.
ERP	Environmental Restoration Program
ESV	ecological screening value
HI	Hazard Index
HQ	hazard quotient
LIA	Live Impact Area
MEC	munitions and explosives of concern
µg/kg	micrograms per kilogram
mg/kg	milligrams per kilogram
MS/MSD	matrix spike / matrix spike duplicate
MSL	mean sea level
NASD	Naval Ammunition Support Detachment
NAVFAC	Naval Facilities
NAVFACENGCOM	Naval Facilities Engineering Command
Navy	United States Navy
NPL	National Priorities List
PCB	polychlorinated biphenyl
PI	photo identified
PRA	Preliminary Range Assessment
PREQB	Puerto Rico Environmental Quality Board
QA/QC	quality assurance/quality control
RSL	Regional Screening Level
SAP	Sampling and analysis plan
SB	subsurface soil sample
SI	Site Investigation
SIA	Surface Impact Area
SOP	standard operating procedures
SS	surface soil sample
SSL	soil screening level

SVOC	semivolatile organic compound
TOC	total organic carbon
TPH	total petroleum hydrocarbon
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
US Navy	United States Department of the Navy
UTL	upper tolerance limits
VNTR	Vieques Naval Training Range
VOC	volatile organic compound

Declaration

The United States Department of the Navy (US Navy), in partnership with the United States Environmental Protection Agency (USEPA), Puerto Rico Environmental Quality Board (PREQB), and United States Fish and Wildlife Service (USFWS), has determined, based on the information contained within this Decision Document, that no further investigative activities are warranted and that no action is necessary to be protective of human health and the environment at Photo-Identified Site 21 (PI 21) – Potential Former Gun Position or Amphibious Landing Area.

Kevin Cloe, Navy Remedial Project Manager	6/17/14 Date
Daniel Rodriguez, USEPA Remedial Project Manager	6/17/2014 Date
Wilmarie Rivera, PREQB Remedial Project Manager	6/17/2014 Date
Susan Silander, USFWS Remedial Project Manager	6/17/2014 Date

SECTION 1

Introduction

This Decision Document provides formal concurrence among the stakeholder agencies (United States Navy [Navy], United States Environmental Protection Agency [USEPA] Region 2, the Commonwealth of Puerto Rico Environmental Quality Board [PREQB], and the United States Fish and Wildlife Service [USFWS]) that no action is necessary at Photo-Identified Site 21 (PI 21), located within the former Vieques Naval Training Range (VNTR), under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (**Figures 1-1 and 1-2**). The former VNTR is part of the Atlantic Fleet Weapons Training Area – Vieques, which was placed on the National Priorities List (NPL) on February 11, 2005 (Comprehensive Environmental Response, Compensation, and Liability Information System [CERCLIS] National Superfund database identification number: PRN000204694).

This No Action Decision Document was prepared under the Navy Comprehensive Long-Term Environmental Action (CLEAN) Contract N62470-08-D-1000, Contract Task Order 0037, for submittal to the Naval Facilities Engineering Command (NAVFAC) Atlantic Division, USEPA Region 2, PREQB, and USFWS. The Navy, USEPA, PREQB, and USFWS work jointly as the Vieques CERCLA Environmental Restoration Program (ERP) Technical Subcommittee.

Historical information suggested that PI 21 was potentially a former gun position and/or amphibious landing area. As a result, the site was investigated as part of an Environmental Baseline Survey (EBS) and a Preliminary Range Assessment (PRA). In addition, a recent review of historical aerial photographs and a site visit conducted by the ERP Technical Subcommittee in 2012 identified the presence of a vertical storage tank between 1959 and mid 1970s as a potential source of contamination, although there are no records of past releases at PI 21. Therefore, a Site Inspection (SI) was conducted in 2013 to determine if a CERCLA-related release occurred from the vertical tank.

The remainder of this Decision Document presents site-specific detail for PI 21, including pertinent historical information, followed by the rationale upon which the no action determination is based.

SECTION 2

Decision Summary

This section presents a summary of the pertinent historical information and rationale for the no action determination for PI 21.

2.1 Site Location

Vieques Island is approximately 7 miles southeast of the eastern tip of the main island of Puerto Rico (**Figure 1-1**). Vieques is the largest island in the Commonwealth of Puerto Rico, encompassing 33,088 acres. The Navy purchased large portions of Vieques in the early 1940s to conduct military training activities. Operations within the Former Naval Ammunition Support Detachment (NASD; western one-third of Vieques) consisted mainly of ammunition loading and storage, vehicle and facility maintenance, and some training. Operations within the Former VNTR (eastern half of Vieques) comprised various aspects of naval gunfire training, including air-to–ground ordnance delivery and amphibious landings, as well as housing the main base of operations for these activities at Camp Garcia. The former VNTR is over 14,000 acres and comprises the Eastern Maneuver Area (EMA), Surface Impact Area (SIA), Live Impact Area (LIA), and Eastern Conservation Area (ECA). PI 21 is located approximately one mile southeast of the western boundary of Former Camp Garcia and encompasses approximately 23 acres (**Figure 1-2**).

2.2 Site and Investigation History

The Navy ceased training exercises at the Former VNTR on April 30, 2003, in accordance with the Presidential Directive to the Secretary of Defense on January 30, 2000, when the land was transferred to the Department of Interior (DOI), to be managed by the USFWS as a National Wildlife Refuge. Although the DOI is directed to protect and conserve the transferred land as a wildlife refuge, the Navy retains the responsibility for conducting environmental investigations and clean-up of the property, as warranted.

Historical information suggested that the site was potentially used as a former gun position and/or amphibious landing area. However, subsequent review of historical aerial photographs and site visits suggest the site was likely used for rock quarrying purposes. **Figure 2-1** compiles the various activities and potential sources of contamination identified in historical aerial photographs. The 1964 aerial photograph indicates the potential presence of a vertical tank approximately 20 feet in diameter. A review of historical records did not indicate what material may have been stored in the tank, which may have been used for water storage based on the likely use of the site as a rock quarry (CH2M HILL, 2013).

Environmental investigations conducted at PI 21 included an EBS in 2002, a PRA in 2003, and an SI in 2013. A summary of each investigation is provided below.

2.2.1 Environmental Baseline Survey

An EBS was conducted in 2002 to disclose relevant information regarding the conditions of the Former VNTR prior to property transfer (NAVFAC, 2003a). Interviews conducted and records reviewed during the EBS indicated the possible existence of an artillery firing position. A site visit was conducted during which the remains of a small sheet metal structure, with pipes protruding from the embankment, were found and an area of discolored soil directly below the outfall of the pipes was observed. No other land disturbance activities were observed during the EBS.

Three surface soil samples were collected from a small area of discolored soil below the pipe outfall noted above (**Figure 2-1**). The samples were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), inorganics, herbicides, pesticides, polychlorinated biphenyl (PCBs), perchlorate, and total petroleum hydrocarbons (TPH). Evaluation of the analytical data is provided in Section 2.4.

2.2.2 Preliminary Range Assessment

Because PI 21 was originally identified as a potential gun firing position or amphibious landing area, in 2003 a PRA was conducted that included field reconnaissance, an archive records search, and aerial photographic analysis. The objective of the PRA was to identify past range operations and/or management practices that may have had the potential to result in adverse environmental impacts. The PRA did not identify the presence of munitions and explosives of concern (MEC) at PI 21 (NAVFAC, 2003b). In addition, no evidence was found to support that PI 21 was formerly used as a gun position, such as long-range artillery items that would be required for firing to the SIA and LIA from this area.

2.2.3 Site Inspection

In March 2012, representatives of the ERP Technical Subcommittee conducted a site visit to visually inspect the site, specifically within the areas of interest identified in historical aerial photographs (**Figure 2-1**). The pits containing discolored liquid were determined during the site visit to be just low-lying areas where surface water periodically collects and algae forms. Likewise, all other features (with the exception of the vertical tank location) were determined not to represent potential sources of CERCLA-related contamination warranting investigation. However, the Subcommittee determined that soil sampling at the location of the former vertical tank was warranted to determine if a CERCLA-related release occurred given that the contents of the tank were unknown.

The SI was conducted in 2013 during which five co-located surface soil and subsurface soil samples were collected at the former tank location (**Figure 2-1**). One sample location was in the center of the former tank and the remaining four were located 25 feet from the center of the former tank. Surface soil samples were collected from 0-1 foot and subsurface soil samples were collected from 1-1.5 or 1-2 feet based on refusal (**Appendix A**). All samples were analyzed for VOCs, SVOCs, pesticides, PCBs, inorganics, total organic carbon (TOC), pH, and grain size.

2.3 Conceptual Site Model

2.3.1 Physical Characteristics

The ground elevation at PI 21 ranges from approximately 50 feet above mean sea level (msl) in the central and western portion of the site to sea level at the Caribbean Sea in the east. There is generally a steep embankment from the upland to low-lying areas. Evidence of past quarrying activity is visible along the steep embankment. The soil overburden is generally thin, derived from the weathering of the marine derived sandstone, siltstone, and volcanic bedrock. There are no surface water bodies within PI 21. Because of its close proximity to the ocean, groundwater beneath the location of the former vertical tank (less than about 100 feet from the coast) would be brackish to saline.

2.3.2 Potential Contaminant Sources and Release/Transport Mechanisms

As noted previously, the primary source of potential contamination at the site is the former vertical tank. If releases occurred from the tank, they would likely have been from leaks or spills during fluid management. Once released, contaminants would enter the underlying or surrounding soil and potentially migrate vertically through the soil or laterally across the land surface with runoff.

The other potential source of contamination at the site is the former pipes identified during the EBS. The stained soil identified and sampled beneath the pipe outfalls suggests drips from the pipe were the release mechanism.

2.3.3 Future Land Use and Potential Receptors

The site is managed and protected as a wildlife refuge under the National Wildlife Refuge System Administration Act by the DOI's USFWS, Caribbean Division. Therefore, the most likely receptors for potential site-related contaminants are USFWS workers and trespassers that may be exposed to soil at the

site. While not likely due to the land use mandated by legislation, hypothetical residential receptors were also evaluated so that the site could be considered for unrestricted use.

No federally protected species or preferred habitats are present at the site. The habitat is dominated by low-growing, thick thorn scrub. The more common plant species in this habitat include acacia (*Acacia* sp.), mesquite (*Prosopis juliflora*), white leadtree (*Leucaena glauca*), box-briar (*Randia aculeata*), goatbush (*Castela erecta*), sage (*Lantana* sp.), and *Croton* sp. Some common birds include common ground dove (*Columba passerina*), zenaida dove (*Zenaida aurita*), Caribbean elaenia (*Elaenia martinica*), gray kingbird (*Tyrannus dominicensis*), bananaquit (*Coerba flaveola*), black-faced grassquit (*Tiaris bicolor*), yellow warbler (*Dendroica petechia*), greater Antillean grackle (*Quiscalis niger*), northern mockingbird (*Mimus polyglottos*), pearly-eyed thrasher (*Maragarops fuscatus*), and Antillean crested hummingbird (*Orthorynchus cristatus*). A few mammals can occur in this habitat including the small Indian mongoose (*Herpestes auropunctatus*) and foraging free-tailed bats (*Tadarida* spp.). There are no aquatic habitats within PI 21.

2.4 PI 7 Release Assessment Decision Analysis

Three surface soil samples were collected during the EBS in the area of discolored soil beneath pipes protruding from the embankment and five co-located surface soil and subsurface soil samples were collected during the SI at the suspected former tank location (**Figure 2-1**). These samples provide sufficient coverage of potential contaminant sources at PI 21 to determine if a CERCLA-related release occurred at the site. Chemical constituents detected in the soil samples at PI 21 are summarized in **Table 2-1** (surface soil) and **Table 2-2** (subsurface soil).

This subsection discusses the sample results in the context of the Data Evaluation Decision Tree (**Figure 2-2**).

Step 1: Is the site potentially CERCLA-eligible?

Historical information suggests the former vertical tank and the pipes of unknown origin/use existed at PI 21. Based on this information, the potential for the presence of CERCLA hazardous substances could not be confidently ruled out without sample collection, which was conducted during the 2002 EBS and 2013 SI. Therefore, the decision analysis proceeds to Step 2.

Step 2: Does the data quality evaluation indicate the dataset as a whole is available and useful for the intended purpose?

EBS (2002)

The results of laboratory quality assurance/quality control (QA/QC) samples were compared to limits specified by the analytical methodology and/or laboratory standard operating procedures (SOPs). At a minimum, these QA/QC samples included blanks, calibrations, and matrix spike/matrix spike duplicates (MS/MSDs). No QA/QC exceedances were noted. Therefore, these historical data are available for use as reported.

SI (2013)

The data quality evaluation of the SI is summarized in **Appendix B**. Based on the evaluation of the SI data, 99.6 percent of the data are usable for the intended purpose. The site-specific data set achieved the 95 percent project completeness goal as defined in the Sampling and Analysis Plan (SAP) (CH2M HILL, 2013).

Step 3: Were any inorganics above the background upper tolerance limit (UTL) detected or were any non-inorganics detected?

For the samples collected during the EBS (2002) and the SI (2013), the following non-inorganics and inorganics above the background upper tolerance limits (UTLs) were detected by sampling event and by medium:

EBS (2002) Surface Soil (samples PI21-1 through PI21-3)

- VOCs: Methylene chloride and toluene

- SVOCs: None detected
- Herbicides: None detected
- Pesticides: 4,4'-dichlorodiphenyldichloroethene (DDE)
- PCBs: None detected
- Explosives: None detected
- TPH: None detected
- Inorganics above background UTLs: Arsenic, lead, thallium, and zinc

SI (2013) Surface Soil (samples SS01 through SS05)

- VOCs: Acetone
- SVOCs: Benzaldehyde and benzo(b)fluoranthene
- Pesticides: 4,4'- dichlorodiphenyldichloroethane (DDD), 4,4'-DDE, 4,4'-dichlorodiphenyltrichloroethane (DDT)
- PCBs: None detected
- Inorganics above background UTLs: Arsenic, calcium, lead, sodium, and zinc

SI (2013) Subsurface Soil (samples SB01 through SB05)

- VOCs: None detected
- SVOCs: Benzaldehyde, benzo(b)fluoranthene, and butylbenzylphthalate
- Pesticides: 4,4'-DDD, 4,4'-DDE, and 4,4'-DDT
- PCBs: None detected
- Inorganics above background UTLs: Arsenic, beryllium, calcium, cyanide, lead, potassium, sodium, and zinc

Step 4: Are there any inorganic constituents above background or non-inorganic constituents that are potentially attributable to historic CERCLA-related releases at the site?

Three VOCs, acetone, methylene chloride, and toluene, were detected in soil samples at low concentrations; however, these constituents are common laboratory contaminants and are therefore not likely site related. However, because toluene is also a potential component of petroleum hydrocarbons, and because the types of liquids in the former tank and pipes are unknown, all three VOCs are retained for further evaluation in Step 5.

SVOCs detected in either surface or subsurface soil comprised benzaldehyde, benzo(b)fluoranthene, and butylbenzylphthalate. Benzaldehyde and butylbenzylphthalate can be associated with plastics and benze(b)fluoranthene is associated with petroleum hydrocarbons. Although it is possible these SVOCs are not associated with potential CERCLA-related releases at PI 21, they are retained for further evaluation in Step 5 as a conservative measure.

The pesticide 4,4'-DDE was detected in surface soil during the EBS with a maximum concentration of 17.1 μg/kg; 4,4'-DDD, 4,4'-DDE, and 4,4'-DDT were detected within both surface and subsurface soil during the SI with maximum concentrations of 0.68J, 1.2J, and 1.4 J μg/kg, respectively. All of the pesticide concentrations detected at PI 21 are within the range of pesticide concentrations detected at other sites across east Vieques and attributed to normal pesticide use (**Table 2-3** and **2-4**). This information, coupled with the history of the site, suggest the pesticides are present due to normal pesticide use, not a CERCLA–related release. Therefore, pesticides are not considered further in the decision analysis process.

Thallium was detected in surface soil above background in only the EBS samples. The thallium concentrations reported for samples collected during the EBS utilized a method that, although standard at

the time, tended to provide falsely elevated results. Thallium concentrations of approximately 1 mg/kg were detected in all soil samples collected across multiple sites during the EBS, including those collected from PI 21. Most thallium results for samples collected during the 2013 SI, which utilized a method not prone to false positives, were non-detect. Thallium was detected in only two subsurface soil samples at estimated concentrations almost two orders of magnitude below the 2002 EBS detections and almost an order of magnitude below the background value. This information suggests the thallium results from the EBS are artificially high and, therefore, are not considered further in the decision analysis process. Most other inorganic constituents detected above background could be attributable to a CERCLA-related release at PI 21. Therefore, detected inorganic constituents above background (other than thallium, calcium, potassium, and sodium) are further considered in the decision analysis process.

Step 5: Are there any exceedances (over that of background) of the most conservative screening values?

In this step of the decision analysis, the data for the CERCLA-related constituents identified in Step 4 are compared to the screening criteria and shown on the detection tables (**Tables 2-1 and 2-2**). Those constituents that exceed one or more criteria (and background for inorganics) are listed below.

Surface Soil

Methylene chloride: Two detections (EBS samples VNTR-PI21-3 and VNTR-PI21-3D) at concentrations (5.4 µg/kg for both detected samples and 5 µg/kg for both RLs) and non-detect reporting limits (5 to 19 µg/kg) above the Soil Screening Level (SSL) at a Dilution Attenuation Factor (DAF) of 1 (1.3 µg/kg).

Antimony: One detection (SI sample VEP21-SS04-0001) at a concentration (0.34 mg/kg) above the SSL at a DAF of 1 (0.27 mg/kg). In addition, although antimony was not detected in the 2002 EBS samples, the antimony reporting limits were above the SSL and the adjusted RSL. There is no background concentration for this constituent. Arsenic: Eight detections (EBS samples VNTR-PI21-1 and VNTR-PI21-3D and SI samples VEP21-SS01-0001, VEP21-SS01P-0001, VEP21-SS02-0001, VEP21-SS03-0001, VEP21-SS04-0001, and VEP21-SS05-0001) at concentrations (between 1.7 mg/kg and 4.1 mg/kg) above the adjusted residential Regional Screening Level (RSL) (0.61 mg/kg), the SSL at a DAF of 1 (0.29 mg/kg), and background UTL (1.6 mg/kg).

Benzo(b)fluoranthene: For the 2002 EBS data, the non-detect reporting limit (333 µg/kg) was above the SSL at a DAF of 1 (35 µg/kg) and the RSL (150 µg/kg) in all four samples.

Lead: Two detections (EBS samples VNTR-PI21-2 and VNTR-PI21-3D) at concentrations (15.6 mg/kg and 46.6 mg/kg) above the SSL at a DAF of 1 (14 mg/kg) and background UTL (5.4 mg/kg).

Silver: Although silver was not detected in the 2002 EBS samples, the silver reporting limits were above the SSL at a DAF of 1 and background.

Subsurface Soil

Antimony: One detection (sample VEP21-SB03-0102) at a concentration (0.81 mg/kg) above the SSL at a DAF of 1 (0.27 mg/kg). There is no background UTL for this constituent.

Arsenic: Five detections (samples VEP21-SB01-011H, VEP21-SB02-011H, VEP21-SB03-0102, VEP21-SB04-011H, and VEP21-SB05-011H) at concentrations (between 3.9 mg/kg and 5.6 mg/kg) above the adjusted residential RSL (0.61 mg/kg), the SSL at a DAF of 1 (0.29 mg/kg), and background UTL (1.6 mg/kg).

Lead: One detection (sample VEP21-SB03-0102) at a concentration (24.9 mg/kg) above the SSL at a DAF of 1 (14 mg/kg) and background UTL (3.34 mg/kg).

As shown above, there are exceedances of the most conservative screening values. Therefore, the decision analysis process continues to Step 6.

Step 6: Can more realistic evaluations of the data be performed, and if so, do they suggest contaminant levels warrant no further investigation or action?

Human Health Evaluation

As a conservative approach, risk estimates were made for a future residential scenario at PI 21. The suspected area of impact in PI 21 is less than 0.01 acre in size, whereas a typical residential lot may be approximately 0.75 acre. Additionally, no chemicals in soil were detected above background (for inorganics) and RSLs at concentrations exceeding 100 times the screening levels; therefore, no hot spots were identified. Because of the relatively small size of the site and the absence of discrete hot spots, all soil data were merged together and used collectively as a conservative representation of the site conditions for the residential evaluation.

Arsenic was the only constituent detected in surface or subsurface soil samples above the adjusted RSL and background UTL (**Table 2-5**). Arsenic was detected in 5 of 5 surface soil samples and 10 of 10 subsurface soil samples above the screening level (0.61 mg/kg). ProUCL version 4.1 was used to calculate the upper confidence limit (UCL) of the mean concentration that would be used as the exposure point concentration (EPC) in risk calculations; an EPC of 4.54 mg/kg was calculated based on total (surface and subsurface) soil data (see **Appendix C** for the ProUCL output). Based on the EPC, the hazard quotient (HQ) is 0.1 and excess lifetime cancer risk (ELCR) is 7×10^{-6}, which is within EPA's acceptable level and arsenic would not be identified as a risk driver.

Six additional constituents (aluminum, chromium, cobalt, iron, manganese, and vanadium) were detected in surface or subsurface soil above the adjusted RSLs but below background UTLs. Based on the historical source of potential releases identified at the site (see Section2.3.2) and the environmental conditions on Vieques (see Appendix R of the Final SI/ESI Report (CH2M HILL, 2010)), the form of chromium expected to be present at the site is Cr^{3+}, especially considering its detected concentrations are within background levels (**Table 2-5**). Based on maximum detected concentrations of cobalt, manganese, and vanadium, and the 95% UCL of aluminum, arsenic, chromium, and iron, the cumulative ELCR is 6×10^{-5} and the maximum target organ-specific hazard index (HI) is 0.7 (**Table 2-5**). Consequently, there is not a concern for potential cumulative effects from multiple constituents in site soil.

Although the non-detect reporting limits for antimony in the 2002 EBS samples exceeded the adjusted residential RSL (3.1 mg/kg), they did not exceed the residential RSL based on a HQ of 1. Since the target organs/critical effects for antimony (longevity, blood glucose, and cholesterol) are different than the target organs for site COPCs presented in Table 2-5, an unadjusted RSL based on a HQ of 1 is appropriate for evaluating antimony reporting limits. In addition, although the reporting limit for benzo(b)fluoranthene exceeded the residential RSL (150 µg/kg) based on a target ELCR of 1×10^{-6} in all four samples, it is within the USEPA's acceptable risk range and is associated with an ELCR less than 1×10^{-5}. Therefore, the elevated reporting limits for antimony and benzo(b)fluoranthene are not a concern from a human health risk standpoint.

Ecological Evaluation

No detected constituent exceeded both background and ecological screening values (ESVs) in surface soil. Two detected constituents (acetone and benzaldehyde) do not have ESVs. Acetone was detected in two of five surface soil samples at a maximum concentration of 25 µg/kg. ESVs for the other 35 VOCs with available values range from 6.8 µg/kg to 64,000 µg/kg, with a median of 1,280 µg/kg. The maximum concentration of acetone exceeded only 3 of the 35 VOC ESVs (all for chlorinated compounds) and is therefore unlikely to be ecologically significant. In addition, as discussed in Step 4, acetone is a common laboratory contaminant and not likely present in site soil.

Benzaldehyde was detected in three of five surface soil samples at a maximum concentration of 21 µg/kg. ESVs for the other 39 SVOCs (not including atrazine, a pesticide) with available values range from 380 µg/kg

to 40,000 µg/kg, with a median of 1,270 µg/kg. The maximum concentration of benzaldyhyde was less than all of these ESVs and is therefore unlikely to be ecologically significant.

Additional Comparisons

When evaluating the potential for contaminant migration from soils to groundwater, EPA's generic SSLs, applying a DAF of 1, were used as the most conservative approach. However, as a general rule, DAF values from 1 to 20* can be applied dependent upon site-specific data (e.g., size of site, depth to groundwater, etc.). In addition, in the absence of groundwater data, other information such as that listed below was used, as applicable, to evaluate the potential for groundwater impacts from soil contamination:

- general groundwater conditions
- similarity to background
- mobility of contaminant
- number of exceedances

** SSLs for DAF values of 1 and 20 are provided in Table 1 of Appendix A of the EPA Generic SSL guidance (USEPA, 2002). Estimated SSLs for DAF values in between 1 and 20 were used in this evaluation.*

As discussed previously, methylene chloride is not likely site-related. Further, although the detected concentrations exceeded the SSL at a DAF of 1, they do not exceed the SSL at a DAF of just over 4. A higher DAF is likely reasonable for this site since the potential areas of contamination are very small (i.e., several square feet). In addition, methylene chloride was detected in only 1 of the 14 soil samples collected at the site.

Although the non-detect reporting limit for benzo(b)fluoranthene in the 2002 EBS samples were above the SSL at a DAF of 1, it is unlikely the constituent was present at the location of the samples because no SVOCs were detected at this location.

Antimony was detected in only two soil samples (one surface and one subsurface) above the SSL at a DAF of 1. However, it was not detected above the SSL at DAFs of between 2 and 3. Further, although antimony does not have a background value, its low detections at PI 21 (i.e., maximum of 0.34 mg/kg) are comparable to antimony detections elsewhere on Vieques that were not attributed to a CERCLA-related release (i.e., 0.02 mg/kg, as shown in Table 2-6). Therefore, the presence of antimony is likely due to natural conditions.

Although a number of arsenic concentrations detected above SSL at PI 21 (between 1.7 and 5.6 mg/kg) exceeded the background UTL of 1.6 mg/kg, arsenic concentrations up to 5 mg/kg were detected during the east Vieques background study (CH2M HILL, 2007). Although concentrations above 1.6 mg/kg were considered outliers for the purposes of establishing a background UTL, those concentrations may very well be representative of true background arsenic concentrations. In addition, the general absence of other indicators of a release at the site provides another line of evidence that the arsenic concentrations detected are attributable to background.

Lead was detected in only three soil samples above the SSL at a DAF of 1 and background UTL. However, none of the concentrations exceeds the SSL at DAFs between just over 1 and just over 3. As noted above, a higher DAF is likely reasonable for this site since the potential areas of contamination are very small (i.e., several square feet).

Although silver was not detected in the 2002 EBS samples, the reporting limits were just above the SSL at a DAF of 1; however, the reporting limits are less than the SSL at a DAF of 2.

In addition to the above information, it is important to note that the samples collected at PI 21 are located in close proximity to the ocean, where groundwater is expected to be shallow and influenced by seawater intrusion making its use as a potable source unlikely without treatment.

Step 7: Does the historic information and/or spatial distribution of data indicate the potential source area was sufficiently sampled?

Evaluation of historical information, observations made during inter-agency site visits, and inter-agency discussions determined that the former piping adjacent to a small area of stained soil and a vertical tank observable in historical aerial photographs represented the only potential sources of potential CERCLA-related releases warranting investigation. The area of stained soil was investigated during the EBS (2002) and the suspected former vertical tank location was investigated during the SI (2013). Based on this information, the spatial distribution of the samples collected at PI 21 and the resulting data indicate the potential source areas were sufficiently sampled.

2.5 Conclusions and No Action Determination

The decision analysis process described above indicates that, based on the EBS and SI data, the existing surface and subsurface soil constituent concentrations do not pose a potentially unacceptable risk to human or ecological receptors or leaching concern for groundwater. Therefore, no action is warranted for PI 21.

TABLE 2-1
PI 21 Surface Soil Detection and Exceedance Results
No Action Decision Document
PI 21
Vieques, Puerto Rico

Sample ID	Vieques East KV SS Background	RSL Residential Soil Adjusted[1]	SSL[2]	Vieques ESV Soil	VNTR-PI21-1	VNTR-PI21-2	VNTR-PI21-3	VNTR-PI21-3D	VEP21-SS01-0001	VEP21-SS01A-0001	VEP21-SS01AP-0001	VEP21-SS01P-0001	VEP21-SS02-0001	VEP21-SS02A-0001	VEP21-SS03-0001	VEP21-SS03A-0001	VEP21-SS04-0001	VEP21-SS04A-0001	VEP21-SS05-0001	VEP21-SS05A-0001
Sample Date					12/12/2002	12/12/2002	12/12/2002	12/12/2002	4/11/2013	4/23/2013	4/23/2013	4/11/2013	4/11/2013	4/23/2013	4/11/2013	4/23/2013	4/11/2013	4/23/2013	4/11/2013	4/23/2013
Chemical Name																				
Volatile Organic Compounds (UG/KG)																				
Acetone	-	6,100,000	2,400	-	10 U	10 U	10 U	10 U	NS	14 UJ	12 J	NS	NS	25 J	NS	14 UJ	NS	19 UJ	NS	18 UJ
Methylene chloride	-	36,000	1.3	1,250	5 U	5 U	5.4	5.4	NS	14 UJ	18 UJ	NS	NS	18 UJ	NS	14 UJ	NS	19 UJ	NS	18 UJ
Toluene	-	500,000	690	40,000	5 U	13.2	6.9	5 U	NS	2.8 UJ	3.5 UJ	NS	NS	3.5 UJ	NS	2.8 UJ	NS	3.8 UJ	NS	3.5 UJ
Semivolatile Organic Compounds (UG/KG)																				
Benzaldehyde	-	780,000	330	-	NS	NS	NS	NS	9.2 J	NS	NS	27 U	21 J	NS	11 J	NS	26 U	NS	27 U	NS
Benzo(b)fluoranthene	-	150	35	HMW PAH	333 U	333 U	333 U	333 U	5.1 J	NS	NS	5.6 J	5.2 J	NS	8 J	NS	5.4 J	NS	5.4 J	NS
HMW PAH	-	-	-	18,000	1,499 U	1,499 U	1,499 U	1,499 U	454	NS	NS	454	454	NS	457	NS	438	NS	439	NS
Pesticide/Polychlorinated Biphenyls (UG/KG)																				
4,4'-DDD	-	2,000	6.4	583	3.3 U	3.3 U	3.3 U	3.3 U	0.35 UJ	NS	NS	0.36 UJ	0.36 UJ	NS	0.13 J	NS	0.26 J	NS	0.34 U	NS
4,4'-DDE	-	1,400	46	114	3.3 U	3.3 U	17.1	14	0.28 J	NS	NS	0.36 UJ	0.36 UJ	NS	0.52 J	NS	0.79 J	NS	0.34 U	NS
4,4'-DDT	-	1,700	67	100	3.3 U	3.3 U	3.3 U	3.3 U	0.3 J	NS	NS	0.37 NJ	0.36 UJ	NS	0.54 J	NS	0.92 J	NS	0.28 J	NS
Herbicides (UG/KG)																				
No detections	-	-	-	-	ND	ND	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Total Metals (MG/KG)																				
Aluminum	35,000	7,700	23,000	pH < 5.5	NS	NS	NS	NS	18,600	NS	NS	20,700	20,400	NS	19,600	NS	20,500	NS	18,400	NS
Antimony	-	3.1	0.27	78	5 U	5.09 U	4.55 U	5.88 U	0.13 J	NS	NS	0.13 J	0.12 J	NS	0.19 J	NS	0.34 J	NS	0.11 J	NS
Arsenic	1.6	0.61	0.29	18	**1.7**	1.2	1.5	**2.2**	**3.3**	NS	NS	**4.1**	**3.3**	NS	**3.6**	NS	**3.2**	NS	**4.1**	NS
Barium	212	1,500	82	330	44.4	37.1	29.4	37.6	49	NS	NS	49.7	43.2	NS	49.6	NS	54.5	NS	44	NS
Beryllium	0.27	16	3.2	40	0.417 U	0.424 U	0.379 U	0.49 U	0.19	NS	NS	0.23	0.2	NS	0.21	NS	0.22	NS	0.19	NS
Cadmium	2.2	7	0.38	32	0.43	0.57	0.68	0.9	0.06 J	NS	NS	0.06 J	0.05 J	NS	0.08 J	NS	0.11	NS	0.05 J	NS
Calcium	8,840	-	-	-	NS	NS	NS	NS	**14,700**	NS	NS	**15,000**	**14,900**	NS	**19,700**	NS	**21,700**	NS	**13,900**	NS
Chromium	72	0.29	180,000	64	10.4	13.3	12.9	21.4	10.4	NS	NS	14	14.4	NS	13.1	NS	14.7	NS	10.6	NS
Cobalt	26	2.3	0.21	13	8.7	10.1	9.8	14	13.7	NS	NS	15.4	14.6	NS	13.6	NS	14	NS	13.2	NS
Copper	94	310	46	70	28.2	31.4	29.2	61.1	31.1	NS	NS	39	42.2	NS	44.7	NS	45.8	NS	44.4	NS
Cyanide	0.33	2.2	2	15.8	1 U	1 U	1 U	1 U	0.4 U	NS	NS	0.4 U	0.48 U	NS	0.4 U	NS	0.4 U	NS	0.28 J	NS
Iron	43,200	5,500	270	5 < pH > 8	NS	NS	NS	NS	31,300	NS	NS	34,300	32,900	NS	32,700	NS	31,100	NS	29,700	NS
Lead	5.4	400	14	120	**6.5**	**15.6**	**9.9**	**46.6**	3.7	NS	NS	4.1	3.5	NS	**5.8**	NS	**7.7**	NS	4.4	NS
Magnesium	22,200	-	-	-	NS	NS	NS	NS	12,300	NS	NS	12,600	11,800	NS	12,600	NS	11,500	NS	11,300	NS
Manganese	1,630	180	21	220	NS	NS	NS	NS	731	NS	NS	693	657	NS	630	NS	566	NS	617	NS
Mercury	0.057	2.3	0.1	0.10	0.069 U	0.0952 U	0.08 U	0.087 U	0.006 J	NS	NS	0.009 J	0.008 J	NS	0.007 J	NS	0.01 J	NS	0.02 J	NS
Nickel	41	150	20	38	4.8	5.5	6.3	8.6	6.1	NS	NS	7.7	8.5	NS	7.1	NS	7.8	NS	6.4	NS
Potassium	5,270	-	-	-	NS	NS	NS	NS	1,870	NS	NS	1,850	2,080	NS	1,600	NS	1,440	NS	2,130	NS
Silver	0.22	39	0.6	560	0.833 U	0.848 U	0.758 U	0.98 U	0.02 J	NS	NS	0.02 J	0.02 J	NS	0.02 J	NS	0.02 J	NS	0.01 J	NS
Sodium	1,590	-	-	-	NS	NS	NS	NS	963 J	NS	NS	1,100 J	1,430 J	NS	1,500 J	NS	**2,700 J**	NS	622 J	NS
Thallium	0.13	0.078	0.14	1	**1.3**	**1.0**	**1.2**	**1.3**	0.034 U	NS	NS	0.036 U	0.038 U	NS	0.034 U	NS	0.04 U	NS	0.035 U	NS
Vanadium	144	39	63	130	54.4	54.5	57.9	69.1	87.6	NS	NS	109	103	NS	92	NS	85.9	NS	86.4	NS
Zinc	32	2,300	290	120	28	**33.3**	31.8	**41.4**	**37.9**	NS	NS	**35.6**	**35.6**	NS	**43.4**	NS	**42.3**	NS	**37.9**	NS
Total Petroleum Hydrocarbons (MG/KG)																				
No detections	-	-	-	-	ND	ND	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Wet Chemistry																				
pH (pH units)	-	-	-	-	NS	NS	NS	NS	7.9	NS	NS	NS	8.8	NS	7.4	NS	8.6	NS	7.7	NS
Total organic carbon (TOC) (MG/KG)	-	-	-	-	NS	NS	NS	NS	7,900	NS	NS	NS	12,000	NS	20,000	NS	7,200	NS	23,000	NS

Bold text indicates exceedance of background.

Exceeds Background UTL (when applicable) and SSL

Exceeds Background UTL (when applicable), Adjusted RSL for Residential Soil and SSL

Exceeds Background UTL (when applicable), Adjusted RSL for Residential Soil, ECO and SSL

Notes:
[1] Adjusted Regional Screening Levels (RSLs) (USEPA, May 2013)
[2] Soil Screening Level (SSL) for Protection of Groundwater, DAF=1; SSL is risk based where no MCL based value exists (USEPA, May 2013)
J - Estimated result
ND - Not detected
NJ - Qualitative identification questionable due to poor resolution. Presumptively present at approximate quantity

NS - Not sampled
U - Non-detect
UJ - Non-detect, quantitation limit may be inaccurate
MG/KG - Milligrams per kilogram
UG/KG - Micrograms per kilogram
Kv-Sandstone, Siltstone, Conglomerate, Lava, Tuff, and Tuffaceous Breccia. Largely Deposited in Marine Environment. Extensive Deep Weathering. Some Limestone
SS - surface soil
RSL - residential screening level
ESV - ecological screening value

TABLE 2-2
PI 21 Subsurface Soil Detection and Exceedance Results
No Action Decision Document
PI 21
Vieques, Puerto Rico

Sample ID	Vieques East KV SB Background	RSL Residential Soil Adjusted[1]	SSL[2]	VEP21-SB01-011H	VEP21-SB01A-011H	VEP21-SB02-011H	VEP21-SB02A-011H	VEP21-SB03-0102	VEP21-SB03A-011H	VEP21-SB04-011H	VEP21-SB04A-011H	VEP21-SB05-011H	VEP21-SB05A-011H
Sample Date				4/11/2013	4/23/2013	4/11/2013	4/23/2013	4/11/2013	4/23/2013	4/11/2013	4/23/2013	4/11/2013	4/23/2013
Chemical Name													
Volatile Organic Compounds (UG/KG)													
No Detections	-	-	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Semivolatile Organic Compounds (UG/KG)													
Benzaldehyde	-	780,000	330	50	NS	26 U	NS	28 U	NS	24 U	NS	11 J	NS
Benzo(b)fluoranthene	-	150	35	5.1 J	NS	10 U	NS	6.3 J	NS	9.6 U	NS	5.1 J	NS
Butylbenzylphthalate	-	260,000	200	4.8 J	NS	6.4 J	NS	55 U	NS	48 UJ	NS	7.9 J	NS
Pesticide/Polychlorinated Biphenyls (UG/KG)													
4,4'-DDD	-	2,000	6.4	0.3 J	NS	0.06 J	NS	0.68 J	NS	0.18 J	NS	0.35 UJ	NS
4,4'-DDE	-	1,400	46	0.57 J	NS	0.35 U	NS	0.69 J	NS	1.2 J	NS	0.35 J	NS
4,4'-DDT	-	1,700	67	0.52 J	NS	0.19 J	NS	1.4 J	NS	1.3 J	NS	1.4 NJ	NS
Total Metals (MG/KG)													
Aluminum	35,000	7,700	23,000	21,000	NS	19,100	NS	25,800	NS	19,500	NS	20,300	NS
Antimony	-	3.1	0.27	0.14 J	NS	0.14 J	NS	0.81 J	NS	0.26 J	NS	0.1 J	NS
Arsenic	1.6	0.61	0.29	**4.2**	NS	**4**	NS	**5.6**	NS	**5.1**	NS	**3.9**	NS
Barium	212	1,500	82	76.4	NS	44	NS	64.1	NS	80.6	NS	45.8	NS
Beryllium	0.27	16	3.2	0.21	NS	0.22	NS	**0.28**	NS	0.24	NS	0.2	NS
Cadmium	2.24	7	0.38	0.07 J	NS	0.04 J	NS	0.41	NS	0.07 J	NS	0.05 J	NS
Calcium	8,840	-	-	**14,100**	NS	**19,500**	NS	**18,500**	NS	**12,300**	NS	**12,800**	NS
Chromium	72	0.29	180,000	16.3	NS	12	NS	21.8	NS	12.1	NS	13.9	NS
Cobalt	25.5	2.3	0.21	15.4	NS	13.4	NS	16.4	NS	14.8	NS	14.7	NS
Copper	94.2	310	46	36	NS	33.2	NS	46	NS	39.6	NS	39.3	NS
Cyanide	0.89	2.2	2	**1.4**	NS	0.44 U	NS	0.4 U	NS	0.4 U	NS	0.4 U	NS
Iron	43,200	5,500	270	32,900	NS	32,700	NS	38,300	NS	33,200	NS	34,400	NS
Lead	3.34	400	14	**5.9**	NS	**4**	NS	**24.9**	NS	**5**	NS	**4.5**	NS
Magnesium	22,200	-	-	12,400	NS	12,100	NS	14,500	NS	12,900	NS	12,800	NS
Manganese	1,630	180	21	756	NS	674	NS	754	NS	667	NS	744	NS
Mercury	0.057	2.3	0.1	0.006 J	NS	0.017 U	NS	0.009 J	NS	0.018 U	NS	0.007 J	NS
Nickel	41	150	20	7.8	NS	5.8	NS	8.7	NS	7.1	NS	7.2	NS
Potassium	2,000	-	-	**2,280**	NS	**2,370**	NS	1,970	NS	1,010	NS	1,980	NS
Selenium	0.51	39	0.26	0.25 U	NS	0.26 U	NS	0.33 J	NS	0.24 U	NS	0.28 U	NS
Silver	0.22	39	0.6	0.02 J	NS	0.02 J	NS	0.03 J	NS	0.02 J	NS	0.02 J	NS
Sodium	2,250	-	-	1,460 J	NS	1,320 J	NS	**3,450 J**	NS	**2,830 J**	NS	947 J	NS
Thallium	0.13	0.078	0.14	0.04 J	NS	0.035 U	NS	0.04 J	NS	0.032 U	NS	0.037 U	NS
Vanadium	144	39	63	97.1	NS	82.2	NS	100	NS	83.3	NS	96.5	NS
Zinc	32	2,300	290	**40**	NS	**38.4**	NS	**67.3**	NS	**39.2**	NS	**43.6**	NS
Wet Chemistry													
pH (pH units)	-	-	-	7.2	NS	8.7	NS	7.9	NS	8.3	NS	8.2	NS
Total organic carbon (TOC) (MG/KG)	-	-	-	11,000	NS	13,000	NS	8,300	NS	8,600	NS	22,000	NS

Bold text indicates exceedance of background.

Exceeds Background UTL (when applicable) and SSL

Exceeds Background UTL (when applicable), Adjusted RSL for Residential Soil and SSL

Notes:

[1] Adjusted Regional Screening Levels (RSLs) (USEPA, May 2013)

[2] Soil Screening Level (SSL) for Protection of Groundwater, DAF=1; SSL is risk based where no MCL based value exists (USEPA, May 2013)

J - Estimated result

ND - Not detected

NJ - Qualitative identification questionable due to poor resolution. Presumptively present at approximate quantity

NS - Not sampled

U - Non-detect

UJ - Non-detect, quantitation limit may be inaccurate

MG/KG - Milligrams per kilogram

UG/KG - Micrograms per kilogram

Kv-Sandstone, Siltstone, Conglomerate, Lava, Tuff, and Tuffaceous Breccia. Largely Deposited in Marine Environment. Extensive Deep Weathering. Some Limestone

SB - subsurface soil

RSL - residential screening level

TABLE 2-3
East Vieques Surface Soil Pesticide Detections
No Action Decision Document
PI 21
Vieques, Puerto Rico

Site ID	**Maximum**			SWMU 2	SWMU 2	SWMU 2	SWMU 2	SWMU 2	SWMU 2	SWMU 2	SWMU 2	
Station ID	**Concentration**	**Lowest**	**Highest**	CGW2SS01	CGW2SS02	CGW2SS03	CGW2SS04	CGW2SS05	CGW2SS06	CGW2SS07	CGW2SS08	
Sample ID	**Detected in surface soil**	**Detected**	**Detected**	CGW2SS01-R01	CGW2SS02-R01	CGW2SS03-R01	CGW2SS04-R01	CGW2SS05-R01	CGW2SS06-R01	CGW2SS07-R01	CGW2FD01P-R01	CGW2SS08-R01
Sample Date	**at the PI 21 Site**	**Concentration**	**Concentration**	01/21/04	01/21/04	01/21/04	01/21/04	01/21/04	01/21/04	01/21/04	01/21/04	01/21/04
Chemical Name												
Pesticides (UG/KG)												
4,4'-DDD	0.26 J	0.16 J	26 J	3.7 U	3.9 U	3.9 U	3.7 U	3.7 U	3.8 U	3.9 U	3.9 U	3.9 U
4,4'-DDE	17.1	0.08 J	1,200	3.7 U	3.9 U	0.40 J	0.28 J	0.73 J	3.8 U	0.16 J	3.9 U	3.9 U
4,4'-DDT	0.92 J	0.30 J	990	3.7 U	3.9 U	3.9 U	3.7 U	3.7 U	3.8 U	3.9 U	3.9 U	3.9 U
beta-BHC	ND	ND	ND	1.9 U	2.0 U	2.0 U	1.9 U	1.9 U	2.0 U	2.0 U	2.0 U	2.0 U
Chlordane	ND	14	14	4.7 U	4.9 U	4.9 U	4.7 U	4.7 U	4.8 U	5.0 U	5.0 U	5.0 U
delta-BHC	ND	0.73 J	0.84 J	1.9 U	2.0 U	2.0 U	1.9 U	1.9 U	2.0 U	2.0 U	2.0 U	2.0 U
Dieldrin	ND	0.37 J	0.74 J	3.7 U	3.9 U	3.9 U	3.7 U	3.7 U	3.8 U	3.9 U	3.9 U	3.9 U
Endosulfan I	ND	0.44 J	0.44 J	1.9 U	2.0 U	2.0 U	1.9 U	1.9 U	2.0 U	2.0 U	2.0 U	2.0 U
Endrin	ND	112	112	3.7 U	3.9 U	3.9 U	3.7 U	3.7 U	3.8 U	3.9 U	3.9 U	3.9 U
Endrin ketone	ND	1.3 J	1.3 J	3.7 U	3.9 U	3.9 U	3.7 U	3.7 U	3.8 U	3.9 U	3.9 U	3.9 U
gamma-Chlordane	ND	0.52 J	1.3 J	1.9 U	2.0 U	2.0 U	1.9 U	1.9 U	2.0 U	2.0 U	2.0 U	2.0 U
Heptachlor	ND	0.76 J	0.76 J	1.9 U	2.0 U	2.0 U	1.9 U	1.9 U	2.0 U	2.0 U	2.0 U	2.0 U

Notes:

Shading indicates detections
NA - Not Analyzed
J - Analyte present, value may or may not be accurate or precise
R - Unreliable Result
U - The material was analyzed for, but not detected
UJ - Analyte not detected, quantitation limit may be inaccurate
UG/KG - Micrograms per kilogram

TABLE 2-3
East Vieques Surface Soil Pesticide Detections
No Action Decision Document
PI 21
Vieques, Puerto Rico

Site ID	**Maximum**			SWMU 2	SWMU 2	SWMU 2	SWMU 2	SWMU 4	SWMU 4	SWMU 4	SWMU 4
Station ID	**Concentration**	**Lowest**	**Highest**	CGW2SS09	CGW2SS10	CGW2SS11	CGW2SS12	CGSWMU4SS001	CGSWMU4SS002	CGSWMU4SS003	CGSWMU4SS004
Sample ID	**Detected in surface soil**	**Detected**	**Detected**	CGW2SS09-R01	CGW2SS10-R01	CGW2SS11-R01	CGW2SS12-R01	NDD021	NDD022	NDD023	NDD024
Sample Date	**at the PI 21 Site**	**Concentration**	**Concentration**	01/21/04	01/21/04	01/21/04	01/21/04	06/13/00	06/13/00	06/13/00	06/13/00
Chemical Name											
Pesticides (UG/KG)											
4,4'-DDD	0.26 J	0.16 J	26 J	3.4 U	3.4 U	3.5 U	3.4 U	3.4 UJ	34 UJ	3.7 UJ	36 UJ
4,4'-DDE	17.1	0.08 J	1,200	0.59 J	0.50 J	0.13 J	0.080 J	1.1 J	17 UJ	4.3 J	18 UJ
4,4'-DDT	0.92 J	0.30 J	990	3.4 U	3.4 U	3.5 U	3.4 U	1.2 J	34 UJ	2.2 J	36 UJ
beta-BHC	ND	ND	ND	1.8 U	1.8 U	1.8 U	1.8 U	1.7 UJ	17 UJ	1.9 UJ	18 UJ
Chlordane	ND	14	14	4.4 U	4.4 U	4.5 U	4.4 U	15 UJ	150 UJ	16 UJ	159 UJ
delta-BHC	ND	0.73 J	0.84 J	1.8 U	1.8 U	1.8 U	1.8 U	1.7 UJ	17 UJ	1.9 UJ	18 UJ
Dieldrin	ND	0.37 J	0.74 J	3.4 U	3.4 U	3.5 U	3.4 U	1.7 UJ	17 UJ	1.9 UJ	18 UJ
Endosulfan I	ND	0.44 J	0.44 J	1.8 U	1.8 U	1.8 U	1.8 U	343 UJ	3,400 UJ	372 UJ	3,620 UJ
Endrin	ND	112	112	3.4 U	3.4 U	3.5 U	3.4 U	3.4 UJ	34 UJ	3.7 UJ	36 UJ
Endrin ketone	ND	1.3 J	1.3 J	3.4 U	3.4 U	3.5 U	3.4 U	NA	NA	NA	NA
gamma-Chlordane	ND	0.52 J	1.3 J	1.8 U	1.8 U	1.8 U	1.8 U	NA	NA	NA	NA
Heptachlor	ND	0.76 J	0.76 J	1.8 U	1.8 U	1.8 U	1.8 U	1.7 UJ	17 UJ	1.9 UJ	18 UJ

Notes:

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UG/KG - Micrograms per kilogram

TABLE 2-3
East Vieques Surface Soil Pesticide Detections
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Site ID	**Maximum**			SWMU 4	SWMU 4	SWMU 4	SWMU 4	SWMU 4	SWMU 4	SWMU 4	SWMU 4	
Station ID	**Concentration**	**Lowest**	**Highest**	CGSWMU4SS005	CGSWMU4SS006	CGSWMU4SS007	CGSWMU4SS008	CGSWMU4SS009	CGSWMU4SS010	CGSWMU4SS011	CGSWMU4SS012	
Sample ID	**Detected in surface soil**	**Detected**	**Detected**	NDD025	NDD026	NDD027	NDD028	NDD029	NDD030	NDD031	NDD032	NDD033FD1
Sample Date	**at the PI 21 Site**	**Concentration**	**Concentration**	06/13/00	06/13/00	06/13/00	06/13/00	06/13/00	06/13/00	06/13/00	06/13/00	06/13/00
Chemical Name												
Pesticides (UG/KG)												
4,4'-DDD	0.26 J	0.16 J	26 J	32 UJ	3.6 UJ	3.2 UJ	3.0 UJ	3.2 UJ	3.8 UJ	3.9 UJ	3.8 UJ	3.9 UJ
4,4'-DDE	17.1	0.08 J	1,200	16 UJ	1.8 UJ	2.3 J	3.2 J	4.5 J	3.8 J	1.9 UJ	1.9 UJ	2.0 UJ
4,4'-DDT	0.92 J	0.30 J	990	4.1 J	4.3 J	0.59 J	1.8 J	3.4 J	0.66 J	3.9 UJ	3.8 UJ	3.9 UJ
beta-BHC	ND	ND	ND	16 UJ	1.8 UJ	1.6 UJ	1.5 UJ	1.6 UJ	1.9 UJ	1.9 UJ	1.9 UJ	2.0 UJ
Chlordane	ND	14	14	142 UJ	16 UJ	14 UJ	13 UJ	14 UJ	17 UJ	17 UJ	17 UJ	17 UJ
delta-BHC	ND	0.73 J	0.84 J	16 UJ	1.8 UJ	1.6 UJ	1.5 UJ	1.6 UJ	1.9 UJ	1.9 UJ	1.9 UJ	2.0 UJ
Dieldrin	ND	0.37 J	0.74 J	16 UJ	1.8 UJ	1.6 UJ	1.5 UJ	1.6 UJ	1.9 UJ	1.9 UJ	1.9 UJ	2.0 UJ
Endosulfan I	ND	0.44 J	0.44 J	3,230 UJ	356 UJ	320 UJ	297 UJ	322 UJ	378 UJ	387 UJ	379 UJ	393 UJ
Endrin	ND	112	112	32 UJ	3.6 UJ	3.2 UJ	3.0 UJ	3.2 UJ	3.8 UJ	3.9 UJ	3.8 UJ	3.9 UJ
Endrin ketone	ND	1.3 J	1.3 J	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane	ND	0.52 J	1.3 J	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor	ND	0.76 J	0.76 J	16 UJ	1.8 UJ	1.6 UJ	1.5 UJ	1.6 UJ	1.9 UJ	1.9 UJ	1.9 UJ	2.0 UJ

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UG/KG - Micrograms per kilogram

TABLE 2-3
East Vieques Surface Soil Pesticide Detections
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Site ID	**Maximum**			SWMU 5	SWMU 5	SWMU 5	SWMU 5	SWMU 6/7	SWMU 6/7	SWMU 6/7	SWMU 6/7
Station ID	**Concentration**	**Lowest**	**Highest**	CGW5SS01	CGW5SS02	CGW5SS03	CGW5SS04	CGSWMU6/7SS001	CGSWMU6/7SS002	CGSWMU6/7SS003	CGSWMU6/7SS004
Sample ID	**Detected in surface soil**	**Detected**	**Detected**	CGW5SS01-R01	CGW5SS02-R01	CGW5SS03-R01	CGW5SS04-R01	NDD034	NDD035	NDD036	NDD037
Sample Date	**at the PI 21 Site**	**Concentration**	**Concentration**	01/19/04	01/19/04	01/19/04	01/19/04	06/13/00	06/13/00	06/13/00	06/13/00
Chemical Name											
Pesticides (UG/KG)											
4,4'-DDD	0.26 J	0.16 J	26 J	3.5 U	3.6 U	3.6 U	3.6 U	3.2 U	3.2 U	3.4 U	3.9 U
4,4'-DDE	17.1	0.08 J	1,200	3.5 U	3.6 U	3.6 U	3.6 U	98	22	136	3.3
4,4'-DDT	0.92 J	0.30 J	990	3.5 U	3.6 U	3.6 U	3.6 U	24	7.5	146	0.81 J
beta-BHC	ND	ND	ND	1.8 U	1.9 U	1.8 U	1.8 U	1.6 U	1.6 U	1.7 U	2.0 U
Chlordane	ND	14	14	4.4 U	4.6 U	4.5 U	4.5 U	14 U	14 U	15 U	17 U
delta-BHC	ND	0.73 J	0.84 J	1.8 U	1.9 U	1.8 U	1.8 U	1.6 UJ	1.6 UJ	1.7 UJ	2.0 UJ
Dieldrin	ND	0.37 J	0.74 J	3.5 U	3.6 U	3.6 U	3.6 U	1.6 U	1.6 U	1.7 U	2.0 U
Endosulfan I	ND	0.44 J	0.44 J	1.8 UJ	1.9 UJ	1.8 UJ	1.8 UJ	319 U	324 U	344 U	391 U
Endrin	ND	112	112	3.5 UJ	3.6 UJ	3.6 UJ	3.6 UJ	3.2 U	3.2 U	3.4 U	3.9 U
Endrin ketone	ND	1.3 J	1.3 J	3.5 U	3.6 U	3.6 U	3.6 U	NA	NA	NA	NA
gamma-Chlordane	ND	0.52 J	1.3 J	1.8 U	1.9 U	1.8 U	1.8 U	NA	NA	NA	NA
Heptachlor	ND	0.76 J	0.76 J	1.8 U	1.9 U	1.8 U	1.8 U	1.6 U	1.6 U	1.7 U	2.0 U

Notes:

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UG/KG - Micrograms per kilogram

TABLE 2-3
East Vieques Surface Soil Pesticide Detections
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Site ID	**Maximum**			SWMU 6/7	SWMU 6/7		SWMU 6/7	SWMU 6/7	SWMU 6/7	SWMU 6/7	SWMU 8	
Station ID	**Concentration**	**Lowest**	**Highest**	CGSWMU6/7SS005	CGSWMU6/7SS006		CGSWMU6/7SS007	CGSWMU6/7SS008	CGSWMU6/7SS009	CGSWMU6/7SS010	CGW8SS01	
Sample ID	**Detected in surface soil**	**Detected**	**Detected**	NDD038	NDD039	NDD043FD1	NDD058	NDD040	NDD041	NDD042	CGW8FD01P-R01	CGW8SS01-R01
Sample Date	**at the PI 21 Site**	**Concentration**	**Concentration**	06/13/00	06/13/00	06/13/00	06/13/00	06/13/00	06/13/00	06/13/00	01/19/04	01/19/04
Chemical Name												
Pesticides (UG/KG)												
4,4'-DDD	0.26 J	0.16 J	26 J	3.3 U	3.8 UJ	6.6 J	3.2 U	3.8 U	3.1 U	26 J	3.6 U	3.6 U
4,4'-DDE	17.1	0.08 J	1,200	5.7	6.1 J	31 J	8.2	3.2	22	3.5	3.6 U	3.6 U
4,4'-DDT	0.92 J	0.30 J	990	4.8	3.2 J	54 J	4.8 J	3.8 U	3.1	3.1 U	3.6 U	3.6 U
beta-BHC	ND	ND	ND	1.6 U	1.9 U	1.9 U	1.6 U	1.9 U	1.6 U	1.6 U	1.8 U	1.9 U
Chlordane	ND	14	14	14 U	17 U	17 U	14 U	17 U	14 U	14	4.6 U	4.6 U
delta-BHC	ND	0.73 J	0.84 J	1.6 UJ	0.84 J	1.9 UJ	1.6 UJ	1.9 UJ	1.6 UJ	1.6 UJ	1.8 UJ	1.9 UJ
Dieldrin	ND	0.37 J	0.74 J	1.6 U	1.9 U	1.9 U	1.6 U	1.9 U	1.6 U	1.6 U	3.6 U	3.6 U
Endosulfan I	ND	0.44 J	0.44 J	329 U	380 U	382 U	318 U	384 U	313 U	312 U	1.8 UJ	1.9 UJ
Endrin	ND	112	112	3.3 U	3.8 U	3.8 U	3.2 U	3.8 U	3.1 U	3.1 U	3.6 U	3.6 U
Endrin ketone	ND	1.3 J	1.3 J	NA	NA	NA	NA	NA	NA	NA	3.6 U	3.6 U
gamma-Chlordane	ND	0.52 J	1.3 J	NA	NA	NA	NA	NA	NA	NA	1.8 U	1.9 U
Heptachlor	ND	0.76 J	0.76 J	1.6 U	1.9 U	1.9 U	1.6 U	1.9 U	1.6 U	0.76 J	1.8 U	1.9 U

Notes:

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TABLE 2-3
East Vieques Surface Soil Pesticide Detections
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Site ID	**Maximum**			SWMU 8	SWMU 8	SWMU 8	SWMU 8	SWMU 10	SWMU 10	SWMU 10	SWMU 10	SWMU 10
Station ID	**Concentration**	**Lowest**	**Highest**	CGW8SS02	CGW8SS03	CGW8SS04	CGW8SS05	CGW10SS05	CGW10SS06	CGW10SS07	CGW10SS08	CGW10SS09
Sample ID	**Detected in surface soil**	**Detected**	**Detected**	CGW8SS02-R01	CGW8SS03-R01	CGW8SS04-R01	CGW8SS05-R01	CGW10SS05-R01	CGW10SS06-R01	CGW10SS07-R01	CGW10SS08-R01	CGW10SS09-R01
Sample Date	**at the PI 21 Site**	**Concentration**	**Concentration**	01/19/04	01/19/04	01/19/04	01/19/04	01/22/04	01/20/04	01/20/04	01/22/04	01/20/04
Chemical Name												
Pesticides (UG/KG)												
4,4'-DDD	0.26 J	0.16 J	26 J	4.0 U	3.5 U	3.4 U	3.4 U	0.26 J	0.19 J	3.9 U	0.30 J	11 J
4,4'-DDE	17.1	0.08 J	1,200	4.0 U	3.5 U	3.4 U	3.4 U	110 J	74 J	28 J	47 J	120 J
4,4'-DDT	0.92 J	0.30 J	990	0.46 J	0.31 J	3.4 U	3.4 U	0.92 J	0.97 J	3.9 U	4.0 U	3.8 U
beta-BHC	ND	ND	ND	2.0 U	1.8 U	1.8 U	1.8 U	1.9 U	2.0 U	2.0 U	2.1 U	1.9 U
Chlordane	ND	14	14	5.0 U	4.5 U	4.3 U	4.4 U	4.7 U	5.1 U	5.0 U	5.1 U	4.8 U
delta-BHC	ND	0.73 J	0.84 J	2.0 UJ	1.8 UJ	1.8 UJ	1.8 UJ	1.9 U	2.0 UJ	2.0 UJ	2.1 U	1.9 UJ
Dieldrin	ND	0.37 J	0.74 J	4.0 U	3.5 U	3.4 U	3.4 U	3.7 U	4.0 U	3.9 U	4.0 U	0.37 J
Endosulfan I	ND	0.44 J	0.44 J	2.0 UJ	1.8 UJ	1.8 UJ	1.8 UJ	1.9 U	2.0 U	2.0 U	2.1 U	1.9 U
Endrin	ND	112	112	4.0 U	3.5 U	3.4 U	3.4 U	3.7 U	4.0 U	3.9 U	4.0 U	3.8 U
Endrin ketone	ND	1.3 J	1.3 J	4.0 U	3.5 U	3.4 U	3.4 U	3.7 U	4.0 U	3.9 U	4.0 U	3.8 U
gamma-Chlordane	ND	0.52 J	1.3 J	2.0 U	1.8 U	1.8 U	1.8 U	1.9 U	2.0 U	2.0 U	2.1 U	1.9 U
Heptachlor	ND	0.76 J	0.76 J	2.0 U	1.8 U	1.8 U	1.8 U	1.9 U	2.0 U	2.0 U	2.1 U	1.9 U

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TABLE 2-3
East Vieques Surface Soil Pesticide Detections
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Site ID	**Maximum**			SWMU 10	SWMU 10	SWMU 10	SWMU 10	SWMU 10	SWMU 10	SWMU 10	SWMU 10
Station ID	**Concentration**	**Lowest**	**Highest**	CGW10SS10	CGW10SS11	CGW10SS12		CGW10SS13	CGW10SS14	CGW10SS15	CGW10SS16
Sample ID	**Detected in surface soil**	**Detected**	**Detected**	CGW10SS10-R01	CGW10SS11-R01	CGW10FD01P-R01	CGW10SS12-R01	CGW10SS13-R01	CGW10SS14-R01	CGW10SS15-R01	CGW10SS16-R01
Sample Date	**at the PI 21 Site**	**Concentration**	**Concentration**	01/20/04	01/20/04	01/20/04	01/20/04	01/20/04	01/20/04	01/20/04	01/22/04
Chemical Name											
Pesticides (UG/KG)											
4,4'-DDD	0.26 J	0.16 J	26 J	0.44 J	0.50 J	0.56 J	0.60 J	3.8 U	3.8 U	0.23 J	3.8 U
4,4'-DDE	17.1	0.08 J	1,200	70 J	100 J	20 J	40 J	5.8 J	12 J	17 J	4.8 J
4,4'-DDT	0.92 J	0.30 J	990	4.0 U	3.7 U	3.6 U	3.6 U	3.8 U	3.8 U	3.8 U	0.30 J
beta-BHC	ND	ND	ND	2.1 U	1.9 U	1.9 U	1.8 U	1.9 U	2.0 U	2.0 U	2.0 U
Chlordane	ND	14	14	5.1 U	4.8 U	4.6 U	4.6 U	4.8 U	4.9 U	4.8 U	4.9 U
delta-BHC	ND	0.73 J	0.84 J	2.1 UJ	1.9 UJ	1.9 UJ	1.8 UJ	1.9 UJ	2.0 UJ	2.0 UJ	2.0 U
Dieldrin	ND	0.37 J	0.74 J	4.0 U	3.7 U	3.6 U	0.74 J	3.8 U	3.8 U	3.8 U	3.8 U
Endosulfan I	ND	0.44 J	0.44 J	2.1 U	1.9 U	1.9 U	1.8 U	1.9 U	2.0 U	2.0 U	2.0 U
Endrin	ND	112	112	4.0 U	3.7 U	3.6 U	3.6 U	3.8 U	3.8 U	3.8 U	3.8 U
Endrin ketone	ND	1.3 J	1.3 J	4.0 U	3.7 U	3.6 U	3.6 U	3.8 U	3.8 U	3.8 U	3.8 U
gamma-Chlordane	ND	0.52 J	1.3 J	2.1 U	1.9 U	1.9 U	1.8 U	1.9 U	2.0 U	2.0 U	2.0 U
Heptachlor	ND	0.76 J	0.76 J	2.1 U	1.9 U	1.9 U	1.8 U	1.9 U	2.0 U	2.0 U	2.0 U

Notes:

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UJ - Analyte not detected, quantitation limit may be inaccurate
UG/KG - Micrograms per kilogram

TABLE 2-3
East Vieques Surface Soil Pesticide Detections
No Action Decision Document
PI 21
Vieques, Puerto Rico

Site ID	**Maximum**			SWMU 10	SWMU 10	SWMU 10	SWMU 10	SWMU 12	SWMU 12
Station ID	**Concentration**	**Lowest**	**Highest**	CGW10SS17	CGW10SS18	CGW10SS19	CGW10SS20	CGW12SS01	CGW12SS02
Sample ID	**Detected in surface soil**	**Detected**	**Detected**	CGW10SS17-R01	CGW10SS18-R01	CGW10SS19-R01	CGW10SS20-R01	CGW12SS01-R01	CGW12SS02-R01
Sample Date	**at the PI 21 Site**	**Concentration**	**Concentration**	01/22/04	01/22/04	01/20/04	01/22/04	01/19/04	01/19/04
Chemical Name									
Pesticides (UG/KG)									
4,4'-DDD	0.26 J	0.16 J	26 J	10 J	0.16 J	0.54 J	0.33 J	3.5 U	3.5 U
4,4'-DDE	17.1	0.08 J	1,200	73 J	19 J	66 J	20 J	3.5 U	3.5 U
4,4'-DDT	0.92 J	0.30 J	990	84	0.39 J	3.8 U	0.44 J	3.5 U	3.5 U
beta-BHC	ND	ND	ND	1.9 U	2.0 U	2.0 U	1.9 U	1.8 U	1.8 U
Chlordane	ND	14	14	4.8 U	5.0 U	4.9 U	4.8 U	4.5 U	4.5 U
delta-BHC	ND	0.73 J	0.84 J	1.9 U	2.0 U	2.0 UJ	1.9 U	1.8 U	1.8 U
Dieldrin	ND	0.37 J	0.74 J	3.8 U	3.9 U	3.8 U	3.7 U	3.5 U	3.5 U
Endosulfan I	ND	0.44 J	0.44 J	1.9 U	NA	2.0 U	1.9 U	1.8 UJ	1.8 UJ
Endrin	ND	112	112	3.8 U	3.9 U	3.8 U	3.7 U	3.5 UJ	3.5 UJ
Endrin ketone	ND	1.3 J	1.3 J	3.8 U	3.9 U	3.8 U	3.7 U	3.5 U	3.5 U
gamma-Chlordane	ND	0.52 J	1.3 J	1.9 U	2.0 U	2.0 U	1.9 U	1.8 U	1.8 U
Heptachlor	ND	0.76 J	0.76 J	1.9 U	2.0 U	2.0 U	1.9 U	1.8 U	1.8 U

Notes:

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U - The material was analyzed for, but not detected
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UG/KG - Micrograms per kilogram

TABLE 2-3
East Vieques Surface Soil Pesticide Detections
No Action Decision Document
PI 21
Vieques, Puerto Rico

Site ID	**Maximum**			SWMU 12		SWMU 12	SWMU 12	AOC G	AOC G	AOC G	AOC G
Station ID	**Concentration**	**Lowest**	**Highest**	CGW12SS03		CGW12SS04	CGW12SS05	CGAGSS01	CGAGSS02	CGAGSS03	CGAGSS04
Sample ID	**Detected in surface soil**	**Detected**	**Detected**	CGW12FD01P-R01	CGW12SS03-R01	CGW12SS04-R01	CGW12SS05-R01	CGAGSS01-R01	CGAGSS02-R01	CGAGSS03-R01	CGAGSS04-R01
Sample Date	**at the PI 21 Site**	**Concentration**	**Concentration**	01/19/04	01/19/04	01/19/04	01/19/04	01/22/04	01/22/04	01/22/04	01/22/04
Chemical Name											
Pesticides (UG/KG)											
4,4'-DDD	0.26 J	0.16 J	26 J	3.4 U	3.5 U	3.5 U	3.5 U	0.17 J	0.31 J	0.33 J	0.93 J
4,4'-DDE	17.1	0.080 J	1,200	3.4 U	3.5 U	3.5 U	3.5 U	13 J	5.8 J	9.2 J	31 J
4,4'-DDT	0.92 J	0.30 J	990	3.4 U	3.5 U	3.5 U	3.5 U	2.4 J	1.4 J	1.4 J	2.0 J
beta-BHC	ND	1.9 J	1.9 J	1.7 U	1.8 U	1.8 U	1.8 U	1.9 U	1.9 U	2.1 U	2.0 U
Chlordane	ND	14	14	4.3 U	4.4 U	4.4 U	4.4 U	4.6 U	4.7 U	5.1 U	4.8 U
delta-BHC	ND	0.41 J	0.84 J	1.7 U	1.8 U	1.8 U	1.8 U	1.9 U	1.9 U	2.1 U	2.0 U
Dieldrin	ND	0.37 J	0.74 J	3.4 U	3.5 U	3.5 U	3.5 U	3.6 U	3.7 U	4.0 U	3.8 U
Endosulfan I	ND	0.44 J	0.44 J	1.7 UJ	1.8 UJ	1.8 UJ	1.8 UJ	1.9 U	1.9 U	2.1 U	2.0 U
Endrin	ND	112	112	3.4 UJ	3.5 UJ	3.5 UJ	3.5 UJ	3.6 U	3.7 U	4.0 U	3.8 U
Endrin ketone	ND	1.3 J	1.3 J	3.4 U	3.5 U	3.5 U	3.5 U	3.6 U	3.7 U	4.0 U	3.8 U
gamma-Chlordane	ND	0.52 J	1.9 J	1.7 U	1.8 U	1.8 U	1.8 U	1.9 U	1.9 U	2.1 U	2.0 U
Heptachlor	ND	0.76 J	0.76 J	1.7 U	1.8 U	1.8 U	1.8 U	1.9 U	1.9 U	2.1 U	2.0 U

Notes:
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UG/KG - Micrograms per kilogram

TABLE 2-3
East Vieques Surface Soil Pesticide Detections
No Action Decision Document
PI 21
Vieques, Puerto Rico

Site ID	**Maximum**			AOC G		AOC F	AOC F	AOC F	AOC F	AOC F		PI 4
Station ID	**Concentration**	**Lowest**	**Highest**	CGAGSS05		CGAOCFSS001	CGAOCFSS002	CGAOCFSS003	CGAOCFSS004	CGAOCFSS005		EPI04-SO01
Sample ID	**Detected in surface soil**	**Detected**	**Detected**	CGAGSS05-R01	CGAGSSFD01P-R01	NDD044	NDD045	NDD046	NDD047	NDD048	NDD049FD1	PI04-SS01-000
Sample Date	**at the PI 21 Site**	**Concentration**	**Concentration**	01/22/04	01/22/04	06/14/00	06/14/00	06/14/00	06/14/00	06/14/00	06/14/00	01/26/06
Chemical Name												
Pesticides (UG/KG)												
4,4'-DDD	0.26 J	0.16 J	26 J	0.72 J	0.56 J	3.6 UJ	3.1 UJ	4.2 UJ	3.5 UJ	3.9 UJ	3.4 UJ	3.7 U
4,4'-DDE	17.1	0.080 J	1,200	12 J	15 J	1.8 UJ	1.5 UJ	2.1 UJ	1.7 UJ	2.0 UJ	1.7 UJ	3.8
4,4'-DDT	0.92 J	0.30 J	990	1.2 J	0.96 J	3.6 UJ	3.1 UJ	4.2 UJ	3.5 UJ	3.9 UJ	3.4 UJ	1.4 J
beta-BHC	ND	1.9 J	1.9 J	2.0 U	2.0 U	1.8 UJ	1.5 UJ	2.1 UJ	1.7 UJ	2.0 UJ	1.7 UJ	1.9 U
Chlordane	ND	14	14	4.9 U	4.9 U	16 UJ	14 UJ	18 UJ	15 UJ	17 UJ	15 UJ	NA
delta-BHC	ND	0.41 J	0.84 J	2.0 U	2.0 U	1.8 UJ	1.5 UJ	2.1 UJ	1.7 UJ	2.0 UJ	0.73 J	1.9 U
Dieldrin	ND	0.37 J	0.74 J	3.9 U	3.8 U	1.8 UJ	1.5 UJ	2.1 UJ	1.7 UJ	2.0 UJ	1.7 UJ	3.7 U
Endosulfan I	ND	0.44 J	0.44 J	2.0 U	2.0 U	362 UJ	307 UJ	420 UJ	346 UJ	395 UJ	339 UJ	1.9 U
Endrin	ND	112	112	3.9 U	3.8 U	3.6 UJ	3.1 UJ	4.2 UJ	3.5 UJ	3.9 UJ	3.4 UJ	3.7 U
Endrin ketone	ND	1.3 J	1.3 J	3.9 U	3.8 U	NA	NA	NA	NA	NA	NA	3.7 U
gamma-Chlordane	ND	0.52 J	1.9 J	2.0 U	2.0 U	NA	NA	NA	NA	NA	NA	0.69 J
Heptachlor	ND	0.76 J	0.76 J	2.0 U	2.0 U	1.8 UJ	1.5 UJ	2.1 UJ	1.7 UJ	2.0 UJ	1.7 UJ	1.9 U

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UG/KG - Micrograms per kilogram

TABLE 2-3
East Vieques Surface Soil Pesticide Detections
No Action Decision Document
PI 21
Vieques, Puerto Rico

Site ID	**Maximum**			PI 4	PI 4	PI 4	PI 4		PI 4	PI 4	PI 4	
Station ID	**Concentration**	**Lowest**	**Highest**	EPI04-SO02	EPI04-SO03	EPI04-SO04	EPI04-SO05		EPI04-SO06	EPI04-SO07	EPI04-SO08	
Sample ID	**Detected in surface soil**	**Detected**	**Detected**	EPI04-SS02-0001	EPI04-SS03-0001	EPI04-SS04-0001	EPI04-SS05-0001	EPI04-SS05P-000	EPI04-SS06-0001	EPI04-SS07-0001	EPI04-SS08-0001	EPI04-SS08P-0001
Sample Date	**at the PI 21 Site**	**Concentration**	**Concentration**	01/26/06	01/26/06	01/26/06	01/26/06	01/26/06	01/26/06	01/25/06	01/25/06	01/25/06
Chemical Name												
Pesticides (UG/KG)												
4,4'-DDD	0.26 J	0.16 J	26 J	3.6 U	3.5 U	3.5 U	3.5 U	3.5 U	2.1 J	3.1 J	3.5 U	3.5 U
4,4'-DDE	17.1	0.080 J	1,200	2.2 J	12	1.2 J	2.7 J	4.7	620	36	29	27
4,4'-DDT	0.92 J	0.30 J	990	3.6 U	3.1 J	3.5 U	1.4 J	27	100	7.8	3.1 J	5.3
beta-BHC	ND	1.9 J	1.9 J	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	3.7 U	1.9 U	1.8 U	1.8 U
Chlordane	ND	14	14	NA	NA	NA	NA	NA	NA	NA	NA	NA
delta-BHC	ND	0.41 J	0.84 J	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	0.75 J	1.9 U	1.8 U	1.8 U
Dieldrin	ND	0.37 J	0.74 J	3.6 U	3.5 U	3.5 U	3.5 U	3.5 U	7.3 U	3.7 U	3.5 U	3.5 U
Endosulfan I	ND	0.44 J	0.44 J	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	3.7 U	1.9 U	1.8 U	1.8 U
Endrin	ND	112	112	3.6 U	3.5 U	3.5 U	3.5 U	3.5 U	7.3 U	3.7 U	3.5 U	3.5 U
Endrin ketone	ND	1.3 J	1.3 J	3.6 U	3.5 U	3.5 U	3.5 U	3.5 U	7.3 U	3.7 U	3.5 U	3.5 U
gamma-Chlordane	ND	0.52 J	1.9 J	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.0 J	1.9 U	1.8 U	1.8 U
Heptachlor	ND	0.76 J	0.76 J	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	3.7 U	1.9 U	1.8 U	1.8 U

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TABLE 2-3
East Vieques Surface Soil Pesticide Detections
No Action Decision Document
PI 21
Vieques, Puerto Rico

Site ID	**Maximum**			PI 4	PI 4	PI 4	PI 4	PI 4	PI 6	PI 6
Station ID	**Concentration**	**Lowest**	**Highest**	EPI04-SO09	EPI04-SO10	EPI04-SO11	EPI04-SO12	EPI04-SO13	VNTR-PI6-1	VNTR-PI6-2
Sample ID	**Detected in surface soil**	**Detected**	**Detected**	EPI04-SS09-0001	EPI04-SS10-0001	EPI04-SS11-0001	EPI04-SS12-0001	EPI04-SS13-0001	VNTR-PI6-1	VNTR-PI6-2
Sample Date	**at the PI 21 Site**	**Concentration**	**Concentration**	01/24/06	01/24/06	01/25/06	01/24/06	01/25/06	12/12/02	12/12/2002
Chemical Name										
Pesticides (UG/KG)										
4,4'-DDD	0.26 J	0.16 J	26 J	3.7 U	3.6 U	3.6 U	3.6 U	3.7 U	3.3 U	3.3 U
4,4'-DDE	17.1	0.080 J	1,200	9.1	84	26	180	5.9	3.3 U	5.9
4,4'-DDT	0.92 J	0.30 J	990	1.4 J	2.8 J	3.6	22	3.7 U	3.3 U	3.3 U
beta-BHC	ND	1.9 J	1.9 J	1.9 U	1.8 U	1.8 U	1.8 U	1.9 U	1.7 U	1.7 U
Chlordane	ND	14	14	NA	NA	NA	NA	NA	17 U	17 U
delta-BHC	ND	0.41 J	0.84 J	1.9 U	1.8 U	1.8 U	1.8 U	1.9 U	1.7 U	1.7 U
Dieldrin	ND	0.37 J	0.74 J	3.7 U	3.6 U	3.6 U	3.6 U	3.7 U	3.3 U	3.3 U
Endosulfan I	ND	0.44 J	0.44 J	1.9 U	0.44 J	1.8 U	1.8 U	1.9 U	1.7 U	1.7 U
Endrin	ND	112	112	3.7 U	3.6 U	3.6 U	3.6 U	3.7 U	3.3 U	3.3 U
Endrin ketone	ND	1.3 J	1.3 J	3.7 U	3.6 U	3.6 U	3.6 U	3.7 U	NA	NA
gamma-Chlordane	ND	0.52 J	1.9 J	0.79 J	1.8 U	1.8 U	1.8 U	0.57 J	NA	NA
Heptachlor	ND	0.76 J	0.76 J	1.9 U	1.8 U	1.8 U	1.8 U	1.9 U	1.7 U	1.7 U

Notes:
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UG/KG - Micrograms per kilogram

TABLE 2-3
East Vieques Surface Soil Pesticide Detections
No Action Decision Document
PI 21
Vieques, Puerto Rico

Site ID	**Maximum**			PI 6		PI 6	PI 6	PI 6	PI 8	PI 8
Station ID	**Concentration**	**Lowest**	**Highest**	VNTR-PI6-3		VEP6-SO04	VEP6-SO05	VEP6-SO06	VNTR-PI8-1	VNTR-PI8-2
Sample ID	**Detected in surface soil**	**Detected**	**Detected**	VNTR-PI6-3	VNTR-PI6-3D	/EP6-SS04-0H-0309	VEP6-SS05-01-0309	VEP6-SS06-01-0309	VNTR-PI8-1	VNTR-PI8-2
Sample Date	**at the PI 21 Site**	**Concentration**	**Concentration**	12/12/2002	12/12/2002	03/05/09	03/11/09	03/11/09	12/12/02	12/12/02
Chemical Name										
Pesticides (UG/KG)										
4,4'-DDD	0.26 J	0.16 J	26 J	3.3 U	3.3 U	NA	NA	NA	66 U	33 U
4,4'-DDE	17.1	0.080 J	1,200	6.9	7.3	NA	NA	NA	363	634
4,4'-DDT	0.92 J	0.30 J	990	3.3 U	3.3 U	NA	NA	NA	411	772
beta-BHC	ND	1.9 J	1.9 J	1.7 U	1.7 U	NA	NA	NA	34 U	17 U
Chlordane	ND	14	14	17 U	17 U	NA	NA	NA	334 U	167 U
delta-BHC	ND	0.41 J	0.84 J	1.7 U	1.7 U	NA	NA	NA	34 U	17 U
Dieldrin	ND	0.37 J	0.74 J	3.3 U	3.3 U	NA	NA	NA	66 U	33 U
Endosulfan I	ND	0.44 J	0.44 J	1.7 U	1.7 U	NA	NA	NA	34 U	17 U
Endrin	ND	112	112	3.3 U	3.3 U	NA	NA	NA	66 U	112
Endrin ketone	ND	1.3 J	1.3 J			NA	NA	NA	NA	NA
gamma-Chlordane	ND	0.52 J	1.9 J			NA	NA	NA	NA	NA
Heptachlor	ND	0.76 J	0.76 J	1.7 U	3.3 U	NA	NA	NA	34 U	17 U

Notes:
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UG/KG - Micrograms per kilogram

TABLE 2-3
East Vieques Surface Soil Pesticide Detections
No Action Decision Document
PI 21
Vieques, Puerto Rico

Site ID	**Maximum**			PI 8		PI 8	PI 8	PI 8	PI 8	
Station ID	**Concentration**	**Lowest**	**Highest**	VNTR-PI8-3		VNTR-PI8-4	VEP8-SO05	VEP8-SO06	VEP8-SO07	
Sample ID	**Detected in surface soil**	**Detected**	**Detected**	VNTR-PI8-3	VNTR-PI8-3D	VNTR-PI8-4	VEP8-SS05-01-020	VEP8-SS06-01-0209	VEP8-SS07-01-0209	VEP8-SS07P-01-0209
Sample Date	**at the PI 21 Site**	**Concentration**	**Concentration**	12/12/02	12/12/02	12/12/02	02/19/09	02/19/09	02/20/09	02/20/09
Chemical Name										
Pesticides (UG/KG)										
4,4'-DDD	0.26 J	0.16 J	26 J	17 U	17 U	17 U	NA	NA	NA	NA
4,4'-DDE	17.1	0.080 J	1,200	159	62	147	NA	NA	NA	NA
4,4'-DDT	0.92 J	0.30 J	990	59	59	57	NA	NA	NA	NA
beta-BHC	ND	1.9 J	1.9 J	8.5 U	8.5 U	8.5 U	NA	NA	NA	NA
Chlordane	ND	14	14	84 U	84 U	84 U	NA	NA	NA	NA
delta-BHC	ND	0.41 J	0.84 J	8.5 U	8.5 U	8.5 U	NA	NA	NA	NA
Dieldrin	ND	0.37 J	0.74 J	17 U	17 U	17 U	NA	NA	NA	NA
Endosulfan I	ND	0.44 J	0.44 J	8.5 U	8.5 U	8.5 U	NA	NA	NA	NA
Endrin	ND	112	112	17 U	17 U	17 U	NA	NA	NA	NA
Endrin ketone	ND	1.3 J	1.3 J	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane	ND	0.52 J	1.9 J	NA	NA	NA	NA	NA	NA	NA
Heptachlor	ND	0.76 J	0.76 J	8.5 U	8.5 U	8.5 U	NA	NA	NA	NA

Notes:
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UJ - Analyte not detected, quantitation limit may be inaccurate
UG/KG - Micrograms per kilogram

TABLE 2-3
East Vieques Surface Soil Pesticide Detections
No Action Decision Document
PI 21
Vieques, Puerto Rico

Site ID	**Maximum**			PI 8	PI 8	PI 8	PI 10	PI 10		PI 10
Station ID	**Concentration**	**Lowest**	**Highest**	VEP8-SO08	VEP8-SO09	VEP8-SO14	VNTR-PI10-1	VNTR-PI10-2		VNTR-PI10-3
Sample ID	**Detected in surface soil**	**Detected**	**Detected**	VEP8-SS08-01-0209	VEP8-SS09-01-0209	VEP8-SS14-01-0209	VNTR-PI10-1	VNTR-PI10-2	VNTR-PI10-2D	VNTR-PI10-3
Sample Date	**at the PI 21 Site**	**Concentration**	**Concentration**	02/19/09	02/20/09	02/23/09	12/12/02	12/12/02	12/12/02	12/12/02
Chemical Name										
Pesticides (UG/KG)										
4,4'-DDD	0.26 J	0.16 J	26 J	NA	NA	NA	3.3 U	3.3 U	3.3 U	3.3 U
4,4'-DDE	17.1	0.080 J	1,200	NA	NA	NA	3.3 U	3.3 U	3.3 U	3.3 U
4,4'-DDT	0.92 J	0.30 J	990	NA	NA	NA	3.3 U	3.3 U	3.3 U	3.3 U
beta-BHC	ND	1.9 J	1.9 J	NA	NA	NA	1.7 U	1.7 U	1.7 U	1.7 U
Chlordane	ND	14	14	NA	NA	NA	17 U	17 U	17 U	17 U
delta-BHC	ND	0.41 J	0.84 J	NA	NA	NA	1.7 U	1.7 U	1.7 U	1.7 U
Dieldrin	ND	0.37 J	0.74 J	NA	NA	NA	3.3 U	3.3 U	3.3 U	3.3 U
Endosulfan I	ND	0.44 J	0.44 J	NA	NA	NA	1.7 U	1.7 U	1.7 U	1.7 U
Endrin	ND	112	112	NA	NA	NA	3.3 U	3.3 U	3.3 U	3.3 U
Endrin ketone	ND	1.3 J	1.3 J	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane	ND	0.52 J	1.9 J	NA	NA	NA	NA	NA	NA	NA
Heptachlor	ND	0.76 J	0.76 J	NA	NA	NA	1.7 U	1.7 U	1.7 U	1.7 U

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UJ - Analyte not detected, quantitation limit may be inaccurate
UG/KG - Micrograms per kilogram

TABLE 2-3
East Vieques Surface Soil Pesticide Detections
No Action Decision Document
PI 21
Vieques, Puerto Rico

Site ID	**Maximum**			PAOC I	PAOC I	PAOC I		PAOC I	PAOC I	PAOC J	PAOC J
Station ID	**Concentration**	**Lowest**	**Highest**	VEPI-SO01	VEPI-SO02	VEPI-SO03		VEPI-SO04	VEPI-SO05	EPAJ-SO01	EPAJ-SO02
Sample ID	**Detected in surface soil**	**Detected**	**Detected**	VEPI-SS01-01-0209	VEPI-SS02-01-0209	VEPI-SS03-01-0209	VEPI-SS03P-01-0209	VEPI-SS04-01-0209	VEPI-SS05-01-0209	EPAJ-SS01-0001	EPAJ-SS02-0001
Sample Date	**at the PI 21 Site**	**Concentration**	**Concentration**	02/24/09	02/24/09	02/24/09	02/24/09	02/24/09	02/24/09	03/02/06	03/01/06
Chemical Name											
Pesticides (UG/KG)											
4,4'-DDD	0.26 J	0.16 J	26 J	NA	NA	NA	NA	NA	NA	2.0 J	3.6 U
4,4'-DDE	17.1	0.080 J	1,200	NA	NA	NA	NA	NA	NA	92	51
4,4'-DDT	0.92 J	0.30 J	990	NA	NA	NA	NA	NA	NA	28	8.5
beta-BHC	ND	1.9 J	1.9 J	NA	NA	NA	NA	NA	NA	1.8 U	1.9 U
Chlordane	ND	14	14	NA	NA	NA	NA	NA	NA	NA	NA
delta-BHC	ND	0.41 J	0.84 J	NA	NA	NA	NA	NA	NA	1.8 U	1.9 U
Dieldrin	ND	0.37 J	0.74 J	NA	NA	NA	NA	NA	NA	3.6 U	3.6 U
Endosulfan I	ND	0.44 J	0.44 J	NA	NA	NA	NA	NA	NA	1.8 U	1.9 U
Endrin	ND	112	112	NA	NA	NA	NA	NA	NA	3.6 U	3.6 U
Endrin ketone	ND	1.3 J	1.3 J	NA	NA	NA	NA	NA	NA	3.6 U	3.6 U
gamma-Chlordane	ND	0.52 J	1.9 J	NA	NA	NA	NA	NA	NA	1.8 U	1.9 U
Heptachlor	ND	0.76 J	0.76 J	NA	NA	NA	NA	NA	NA	1.8 U	1.9 U

Notes:
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R - Unreliable Result
U - The material was analyzed for, but not detected
UJ - Analyte not detected, quantitation limit may be inaccurate
UG/KG - Micrograms per kilogram

TABLE 2-3
East Vieques Surface Soil Pesticide Detections
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PI 21
Vieques, Puerto Rico

Site ID	**Maximum**			PAOC J	PAOC J	PAOC J		PAOC J	PAOC K	PAOC K	PAOC K
Station ID	**Concentration**	**Lowest**	**Highest**	EPAJ-SO03	EPAJ-SO04	EPAJ-SO05		EPAJ-SO06	EPAK-SO01	EPAK-SO02	EPAK-SO03
Sample ID	**Detected in surface soil**	**Detected**	**Detected**	EPAJ-SS03-0001	EPAJ-SS04-0001	EPAJ-SS05-0001	EPAJ-SS05P-0001	EPAJ-SS06-0001	EPAK-SS01-0001	EPAK-SS02-0001	EPAK-SS03-0001
Sample Date	**at the PI 21 Site**	**Concentration**	**Concentration**	03/01/06	03/01/06	03/02/06	03/02/06	03/01/06	03/01/06	02/28/06	03/02/06
Chemical Name											
Pesticides (UG/KG)											
4,4'-DDD	0.26 J	0.16 J	26 J	4.0	6.8 J	3.5 U	3.6 U	3.8 U	3.8 U	3.9 U	3.5 U
4,4'-DDE	17.1	0.080 J	1,200	420	1,200	49	3.0 J	1.2 J	25	3.3 J	110
4,4'-DDT	0.92 J	0.30 J	990	46	990	11	21	1.7 J	8.7	3.9 U	27
beta-BHC	ND	1.9 J	1.9 J	1.8 U	8.9 U	1.8 U	1.9 U	1.9 U	2.0 U	2.0 U	1.8 U
Chlordane	ND	14	14	NA	NA	NA	NA	NA	NA	NA	NA
delta-BHC	ND	0.41 J	0.84 J	1.8 U	8.9 U	1.8 U	1.9 U	1.9 U	2.0 U	2.0 U	1.8 U
Dieldrin	ND	0.37 J	0.74 J	3.4 U	17 U	3.5 U	3.6 U	3.8 U	3.8 U	3.9 U	3.5 U
Endosulfan I	ND	0.44 J	0.44 J	1.8 U	8.9 U	1.8 U	1.9 U	1.9 U	2.0 U	2.0 U	1.8 U
Endrin	ND	112	112	3.4 U	17 U	3.5 U	3.6 U	3.8 U	3.8 U	3.9 U	3.5 U
Endrin ketone	ND	1.3 J	1.3 J	3.4 U	17 U	3.5 U	3.6 U	3.8 U	3.8 U	3.9 U	3.5 U
gamma-Chlordane	ND	0.52 J	1.9 J	1.8 U	8.9 U	1.8 U	1.9 U	1.9 U	2.0 U	2.0 U	1.8 U
Heptachlor	ND	0.76 J	0.76 J	1.8 U	8.9 U	1.8 U	1.9 U	1.9 U	2.0 U	2.0 U	1.8 U

Notes:
Shading indicates detections
NA - Not Analyzed
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R - Unreliable Result
U - The material was analyzed for, but not detected
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UG/KG - Micrograms per kilogram

TABLE 2-3
East Vieques Surface Soil Pesticide Detections
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PI 21
Vieques, Puerto Rico

Site ID	**Maximum**			PAOC K		PAOC K	PAOC S		PAOC S	PAOC S
Station ID	**Concentration**	**Lowest**	**Highest**	EPAK-SO04		EPAK-SO05	EPAS-SO01		EPAS-SO02	EPAS-SO03
Sample ID	**Detected in surface soil**	**Detected**	**Detected**	EPAK-SS04-0001	EPAK-SS04P-0001	EPAK-SS05-0001	EPAS-SS01-0001	EPAS-SS01P-0001	EPAS-SS02-0001	EPAS-SS03-0001
Sample Date	**at the PI 21 Site**	**Concentration**	**Concentration**	02/28/06	02/28/06	02/28/06	02/02/06	02/02/06	02/02/06	02/02/06
Chemical Name										
Pesticides (UG/KG)										
4,4'-DDD	0.26 J	0.16 J	26 J	6.1 J	7.9	3.4 U	7.9	4.6	1.8 J	3.4 U
4,4'-DDE	17.1	0.080 J	1,200	1,200	830	50	550	650	270	330
4,4'-DDT	0.92 J	0.30 J	990	490	320	16	110	100	70	15
beta-BHC	ND	1.9 J	1.9 J	8.8 U	1.8 U	1.8 U	1.9 U	1.8 U	1.9 U	1.8 U
Chlordane	ND	14	14	NA	NA	NA	NA	NA	NA	NA
delta-BHC	ND	0.41 J	0.84 J	8.8 U	1.8 U	1.8 U	1.9 U	1.8 U	1.9 U	1.8 U
Dieldrin	ND	0.37 J	0.74 J	17 U	3.4 U	3.4 U	3.8 U	3.6 U	3.7 U	3.4 U
Endosulfan I	ND	0.44 J	0.44 J	8.8 U	1.8 U	1.8 U	1.9 U	1.8 U	1.9 U	1.8 U
Endrin	ND	112	112	17 U	3.4 U	3.4 U	3.8 U	3.6 U	3.7 U	3.4 U
Endrin ketone	ND	1.3 J	1.3 J	17 U	3.4 U	3.4 U	3.8 U	3.6 U	3.7 U	3.4 U
gamma-Chlordane	ND	0.52 J	1.9 J	8.8 U	1.3 J	1.8 U	1.9 U	1.8 U	1.9 U	1.8 U
Heptachlor	ND	0.76 J	0.76 J	8.8 U	1.8 U	1.8 U	1.9 U	1.8 U	1.9 U	1.8 U

Notes:
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UG/KG - Micrograms per kilogram

TABLE 2-3
East Vieques Surface Soil Pesticide Detections
No Action Decision Document
PI 21
Vieques, Puerto Rico

Site ID	**Maximum**			PAOC S	PAOC S	PAOC U	PAOC U	PAOC U	PAOC U	
Station ID	**Concentration**	**Lowest**	**Highest**	EPAS-SO04	EPAS-SO05	EPAU-SO01	EPAU-SO02	EPAU-SO03	EPAU-SO04	
Sample ID	**Detected in surface soil**	**Detected**	**Detected**	EPAS-SS04-0001	EPAS-SS05-0001	EPAU-SS01-0001	EPAU-SS02-0001	EPAU-SS03-0001	EPAU-SS04-0001	EPAU-SS04P-0001
Sample Date	**at the PI 21 Site**	**Concentration**	**Concentration**	02/02/06	02/02/06	03/01/06	03/03/06	03/03/06	03/03/06	03/03/06
Chemical Name										
Pesticides (UG/KG)										
4,4'-DDD	0.26 J	0.16 J	26 J	3.8 U	6.9	3.6 U	3.4 U	3.6 U	3.5 U	3.5 U
4,4'-DDE	17.1	0.080 J	1,200	17	580	23	54	82	4.5 J	4.7
4,4'-DDT	0.92 J	0.30 J	990	5.4	270	31	8.0	10	1.7 J	2.1 J
beta-BHC	ND	1.9 J	1.9 J	2.0 U	1.9 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
Chlordane	ND	14	14	NA	NA	NA	NA	NA	NA	NA
delta-BHC	ND	0.41 J	0.84 J	2.0 U	1.9 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
Dieldrin	ND	0.37 J	0.74 J	3.8 U	3.6 U	3.6 U	3.4 U	3.6 U	3.5 U	3.5 U
Endosulfan I	ND	0.44 J	0.44 J	2.0 U	1.9 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
Endrin	ND	112	112	3.8 U	3.6 U	3.6 U	3.4 U	3.6 U	3.5 U	3.5 U
Endrin ketone	ND	1.3 J	1.3 J	3.8 U	3.6 U	3.6 U	3.4 U	3.6 U	3.5 U	3.5 U
gamma-Chlordane	ND	0.52 J	1.9 J	2.0 U	1.9 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
Heptachlor	ND	0.76 J	0.76 J	2.0 U	1.9 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U

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UG/KG - Micrograms per kilogram

TABLE 2-3
East Vieques Surface Soil Pesticide Detections
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Vieques, Puerto Rico

Site ID	**Maximum**			PAOC U	PAOC U	PAOC U	PAOC U	PAOC U	PAOC X	PAOC X
Station ID	**Concentration**	**Lowest**	**Highest**	EPAU-SO05	EPAU-SO06	EPAU-SO07	EPAU-SO08	EPAU-SO09	VNTR-X-1	VNTR-X-2
Sample ID	**Detected in surface soil**	**Detected**	**Detected**	EPAU-SS05-0001	EPAU-SS06-0001	EPAU-SS07-0001	EPAU-SS08-0001	EPAU-SS09-0001	VNTR-X-1	VNTR-X-2
Sample Date	**at the PI 21 Site**	**Concentration**	**Concentration**	03/03/06	03/03/06	03/03/06	03/01/06	03/03/06	12/12/02	12/12/02
Chemical Name										
Pesticides (UG/KG)										
4,4'-DDD	0.26 J	0.16 J	26 J	3.5 U	3.5 U	3.5 U	3.4 U	3.8 U	14	3.3 U
4,4'-DDE	17.1	0.080 J	1,200	51	3.5 U	53	37	3.8 U	19	8.3
4,4'-DDT	0.92 J	0.30 J	990	3.7	3.5 U	18	2.9 J	3.8 U	38	3.3 U
beta-BHC	ND	1.9 J	1.9 J	1.8 U	1.8 U	1.8 U	1.8 U	3.2 R	1.7 U	1.7 U
Chlordane	ND	14	14	NA	NA	NA	NA	NA	17 U	17 U
delta-BHC	ND	0.41 J	0.84 J	1.8 U	1.8 U	1.8 U	1.8 U	1.9 U	1.7 U	1.7 U
Dieldrin	ND	0.37 J	0.74 J	3.5 U	3.5 U	3.5 U	3.4 U	3.8 U	3.3 U	3.3 U
Endosulfan I	ND	0.44 J	0.44 J	1.8 U	1.8 U	1.8 U	1.8 U	1.9 U	1.7 U	1.7 U
Endrin	ND	112	112	3.5 U	3.5 U	3.5 U	3.4 U	3.8 U	3.3 U	3.3 U
Endrin ketone	ND	1.3 J	1.3 J	3.5 U	3.5 U	3.5 U	1.3 J	3.8 U	NA	NA
gamma-Chlordane	ND	0.52 J	1.9 J	1.8 U	1.8 U	0.52 J	1.8 U	1.9 U	NA	NA
Heptachlor	ND	0.76 J	0.76 J	1.8 U	1.8 U	1.8 U	1.8 U	1.9 U	1.7 U	1.7 U

Notes:
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U - The material was analyzed for, but not detected
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UG/KG - Micrograms per kilogram

TABLE 2-3
East Vieques Surface Soil Pesticide Detections
No Action Decision Document
PI 21
Vieques, Puerto Rico

Site ID	**Maximum**			PAOC X	PAOC X
Station ID	**Concentration**	**Lowest**	**Highest**	VNTR-X-3	VNTR-X-4
Sample ID	**Detected in surface soil**	**Detected**	**Detected**	VNTR-X-3	VNTR-X-4
Sample Date	**at the PI 21 Site**	**Concentration**	**Concentration**	12/12/02	12/12/02
Chemical Name					
Pesticides (UG/KG)					
4,4'-DDD	0.26 J	0.16 J	26 J	33 U	5.5
4,4'-DDE	17.1	0.080 J	1,200	310	45
4,4'-DDT	0.92 J	0.30 J	990	76	8.0
beta-BHC	ND	1.9 J	1.9 J	17 U	1.7 U
Chlordane	ND	14	14	167 U	17 U
delta-BHC	ND	0.41 J	0.84 J	17 U	1.7 U
Dieldrin	ND	0.37 J	0.74 J	33 U	3.3 U
Endosulfan I	ND	0.44 J	0.44 J	17 U	1.7 U
Endrin	ND	112	112	33 U	3.3 U
Endrin ketone	ND	1.3 J	1.3 J	NA	NA
gamma-Chlordane	ND	0.52 J	1.9 J	NA	NA
Heptachlor	ND	0.76 J	0.76 J	17 U	1.7 U

Notes:
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J - Analyte present, value may or may not be accurate or precise
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U - The material was analyzed for, but not detected
UJ - Analyte not detected, quantitation limit may be inaccurate
UG/KG - Micrograms per kilogram

TABLE 2-4
East Vieques Subsurface Soil Pesticide Detections
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PI 21
Vieques, Puerto Rico

Site ID	**Maximum**			SWMU 2	SWMU 2	SWMU 4		SWMU 10	SWMU 10	SWMU 10	SWMU 10
Station ID	**Concentration**	**Lowest**	**Highest**	CGW2SB01	CGW2SB02	CGW4SB01		CGW10SB05	CGW10SB06	CGW10SB07	CGW10SB08
Sample ID	**Detected in subsurface**	**Detected**	**Detected**	CGW2SB01-R01-10	CGW2SB02-R01-5	CGW4FD01P-R01-5	CGW4SB01-R01-5	CGW10SB05-R01-5	CGW10SB06-R01-5	CGW10SB07-R01-5	CGW10SB08-R01-5
Sample Date	**soil at the PI 21 Site**	**Concentration**	**Concentration**	01/21/04	01/22/04	01/21/04	01/21/04	01/22/04	01/20/04	01/20/04	01/22/04
Chemical Name											
Pesticides (UG/KG)											
4,4'-DDD	0.68 J	0.89 J	44	NA	NA	NA	NA	44 U	3.8 U	3.9 U	3.9 UJ
4,4'-DDE	1.2 J	0.076 J	540	NA	NA	NA	NA	140 J	2.9 J	12 J	6.1 J
4,4'-DDT	1.4 J	0.31 J	950	NA	NA	NA	NA	44 U	3.8 U	3.9 U	3.9 UJ
beta-BHC	ND	0.77 J	2.2 JN	NA	NA	NA	NA	22 U	2.0 U	2.0 U	2.0 UJ
Endrin aldehyde	ND	1.5 J	1.5 J	NA	NA	NA	NA	44 U	3.8 U	3.9 U	3.9 UJ
Endrin ketone	ND	0.82 J	0.82 J	NA	NA	NA	NA	44 U	3.8 U	3.9 U	3.9 UJ
gamma-Chlordane	ND	0.45 J	1.1 J	NA	NA	NA	NA	22 U	2.0 U	2.0 U	2.0 UJ
Methoxychlor	ND	11 J	11 J	NA	NA	NA	NA	220 U	20 U	20 U	20 UJ

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JN - Analyte present at approximate quantity
R - Unreliable Result
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UG/KG - Micrograms per kilogram

TABLE 2-4
East Vieques Subsurface Soil Pesticide Detections
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PI 21
Vieques, Puerto Rico

Site ID	**Maximum**			SWMU 10	SWMU 10	SWMU 10	SWMU 10	SWMU 10	SWMU 10	SWMU 10
Station ID	**Concentration**	**Lowest**	**Highest**	CGW10SB09	CGW10SB10	CGW10SB11	CGW10SB12	CGW10SB13	CGW10SB14	CGW10SB15
Sample ID	**Detected in subsurface**	**Detected**	**Detected**	CGW10SB09-R01-5	CGW10SB10-R01-5	CGW10SB11-R01-5	CGW10SB12-R01-5	CGW10SB13-R01-5	CGW10SB14-R01-5	CGW10SB15-R01-5
Sample Date	**soil at the PI 21 Site**	**Concentration**	**Concentration**	01/20/04	01/20/04	01/20/04	01/20/04	01/20/04	01/20/04	01/20/04
Chemical Name										
Pesticides (UG/KG)										
4,4'-DDD	0.68 J	0.89 J	44	3.8 U	3.8 U	3.7 U	3.8 U	4.0 U	3.6 U	3.7 U
4,4'-DDE	1.2 J	0.076 J	540	13 J	18 J	2.4 J	9.4 J	0.076 J	2.0 J	1.4 J
4,4'-DDT	1.4 J	0.31 J	950	3.8 U	3.8 U	3.7 U	3.8 U	4.0 U	3.6 U	3.7 U
beta-BHC	ND	0.77 J	2.2 JN	1.9 U	2.0 U	1.9 U	2.0 U	2.0 U	1.9 U	1.9 U
Endrin aldehyde	ND	1.5 J	1.5 J	3.8 U	3.8 U	3.7 U	3.8 U	4.0 U	3.6 U	3.7 U
Endrin ketone	ND	0.82 J	0.82 J	3.8 U	3.8 UJ	3.7 U	3.8 U	4.0 U	3.6 U	3.7 U
gamma-Chlordane	ND	0.45 J	1.1 J	1.9 U	2.0 U	1.9 U	2.0 U	2.0 U	1.9 U	1.9 U
Methoxychlor	ND	11 J	11 J	19 U	20 U	19 U	20 U	20 U	19 U	19 U

Notes:
Shading indicates detections
NA - Not Analyzed
J - Analyte present, value may or may not be accurate or precise
JN - Analyte present at approximate quantity
R - Unreliable Result
U - The material was analyzed for, but not detected
UJ - Analyte not detected, quantitation limit may be inaccurate
UG/KG - Micrograms per kilogram

TABLE 2-4
East Vieques Subsurface Soil Pesticide Detections
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PI 21
Vieques, Puerto Rico

Site ID	**Maximum**			SWMU 10		SWMU 10	SWMU 10	SWMU 10	SWMU 10		PI 4
Station ID	**Concentration**	**Lowest**	**Highest**	CGW10SB16		CGW10SB17	CGW10SB18	CGW10SB19	CGW10SB20		EPI04-SO01
Sample ID	**Detected in subsurface**	**Detected**	**Detected**	CGW10FD02P-R01	CGW10SB16-R01-5	CGW10SB17-R01-5	CGW10SB18-R01-5	CGW10SB19-R01-5	CGW10FD04P-R01	CGW10SB20-R01-5	EPI04-SB01-0406
Sample Date	**soil at the PI 21 Site**	**Concentration**	**Concentration**	01/22/04	01/22/04	01/22/04	01/22/04	01/20/04	01/22/04	01/22/04	01/26/06
Chemical Name											
Pesticides (UG/KG)											
4,4'-DDD	0.68 J	0.89 J	44	4.0 U	41 U	3.8 U	3.7 U	3.7 U	3.8 UJ	3.8 U	3.5 U
4,4'-DDE	1.2 J	0.076 J	540	0.21 J	2.5 J	4.6 J	4.5 J	2.2 J	1.5 J	0.87 J	3.5 U
4,4'-DDT	1.4 J	0.31 J	950	4.0 U	41 U	0.31 J	3.7 U	3.7 U	3.8 UJ	3.8 U	3.5 U
beta-BHC	ND	0.77 J	2.2 JN	2.0 U	21 U	1.9 U	1.9 U	1.9 U	1.9 UJ	2.0 U	1.8 U
Endrin aldehyde	ND	1.5 J	1.5 J	4.0 U	41 U	3.8 U	3.7 U	3.7 U	3.8 UJ	3.8 U	3.5 U
Endrin ketone	ND	0.82 J	0.82 J	4.0 U	41 U	3.8 U	3.7 U	3.7 U	3.8 UJ	3.8 U	3.5 U
gamma-Chlordane	ND	0.45 J	1.1 J	2.0 U	21 U	1.9 U	1.9 U	1.9 U	1.9 UJ	2.0 U	0.49 J
Methoxychlor	ND	11 J	11 J	20 U	210 U	19 U	19 U	19 U	19 UJ	20 U	18 U

Notes:

Shading indicates detections
NA - Not Analyzed
J - Analyte present, value may or may not be accurate or precise
JN - Analyte present at approximate quantity
R - Unreliable Result
U - The material was analyzed for, but not detected
UJ - Analyte not detected, quantitation limit may be inaccurate
UG/KG - Micrograms per kilogram

TABLE 2-4
East Vieques Subsurface Soil Pesticide Detections
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PI 21
Vieques, Puerto Rico

Site ID	**Maximum**			PI 4	PI 4	PI 4	PI 4	PI 4	PI 4	PI 4	
Station ID	**Concentration**	**Lowest**	**Highest**	EPI04-SO02	EPI04-SO03	EPI04-SO04	EPI04-SO05	EPI04-SO06	EPI04-SO07	EPI04-SO08	
Sample ID	**Detected in subsurface**	**Detected**	**Detected**	EPI04-SB02-0406	EPI04-SB03-0406	EPI04-SB04-0406	EPI04-SB05-0406	EPI04-SB06-0406	EPI04-SB07-0406	EPI04-SB08-0406	EPI04-SB08P-0406
Sample Date	**soil at the PI 21 Site**	**Concentration**	**Concentration**	01/26/06	01/26/06	01/26/06	01/26/06	01/26/06	01/25/06	01/25/06	01/25/06
Chemical Name											
Pesticides (UG/KG)											
4,4'-DDD	0.68 J	0.89 J	44	3.4 U	3.5 U	3.8 U	3.5 U	3.7 U	1.2 J	3.5 U	3.5 U
4,4'-DDE	1.2 J	0.076 J	540	3.4 U	1.5 J	3.8 U	3.5 U	2.7 J	1.1 J	71	47
4,4'-DDT	1.4 J	0.31 J	950	3.4 U	3.5 U	3.8 U	3.5 U	2.2 J	3.7 U	8.5	11
beta-BHC	ND	0.77 J	2.2 JN	1.8 U	1.8 U	2.0 U	1.8 U	1.9 U	1.9 U	1.8 U	1.8 U
Endrin aldehyde	ND	1.5 J	1.5 J	3.4 U	3.5 U	3.8 U	3.5 U	3.7 U	3.7 U	1.5 J	3.5 U
Endrin ketone	ND	0.82 J	0.82 J	3.4 U	3.5 U	3.8 U	3.5 U	3.7 U	3.7 U	3.5 U	3.5 U
gamma-Chlordane	ND	0.45 J	1.1 J	0.45 J	1.8 U	2.0 U	0.65 J	0.50 J	0.48 J	1.8 U	1.8 U
Methoxychlor	ND	11 J	11 J	18 U	18 U	20 U	18 U	19 U	19 U	18 U	18 U

Notes:

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NA - Not Analyzed
J - Analyte present, value may or may not be accurate or precise
JN - Analyte present at approximate quantity
R - Unreliable Result
U - The material was analyzed for, but not detected
UJ - Analyte not detected, quantitation limit may be inaccurate
UG/KG - Micrograms per kilogram

TABLE 2-4
East Vieques Subsurface Soil Pesticide Detections
No Action Decision Document
PI 21
Vieques, Puerto Rico

Site ID	**Maximum**			PI 4	PI 4	PI 4	PI 4	PI 4	PI 6		PI 6
Station ID	**Concentration**	**Lowest**	**Highest**	EPI04-SO09	EPI04-SO10	EPI04-SO11	EPI04-SO12	EPI04-SO13	VEP6-SO05		VEP6-SO06
Sample ID	**Detected in subsurface**	**Detected**	**Detected**	EPI04-SB09-0406	EPI04-SB10-0406	EPI04-SB11-0406	EPI04-SB12-0406	EPI04-SB13-0406	VEP6-SB05-46-0309	VEP6-SB05P-46-0309	VEP6-SB06-46-0309
Sample Date	**soil at the PI 21 Site**	**Concentration**	**Concentration**	01/24/06	01/24/06	01/25/06	01/24/06	01/25/06	03/11/09	03/11/09	03/11/09
Chemical Name											
Pesticides (UG/KG)											
4,4'-DDD	0.68 J	0.89 J	44	0.89 J	3.6 U	3.8 U	3.5 U	3.8 U	NA	NA	NA
4,4'-DDE	1.2 J	0.076 J	540	44	50	0.79 J	220	3.8 U	NA	NA	NA
4,4'-DDT	1.4 J	0.31 J	950	56	1.9 J	3.8 U	6.1	3.8 U	NA	NA	NA
beta-BHC	ND	0.77 J	2.2 JN	1.8 U	1.8 U	1.9 U	1.8 U	2.0 U	NA	NA	NA
Endrin aldehyde	ND	1.5 J	1.5 J	3.5 U	3.6 U	3.8 U	3.5 U	3.8 U	NA	NA	NA
Endrin ketone	ND	0.82 J	0.82 J	3.5 U	3.6 U	3.8 U	3.5 U	3.8 U	NA	NA	NA
gamma-Chlordane	ND	0.45 J	1.1 J	1.8 U	1.1 J	1.9 U	1.8 U	2.0 U	NA	NA	NA
Methoxychlor	ND	11 J	11 J	18 U	18 U	19 U	18 U	20 U	NA	NA	NA

Notes:
Shading indicates detections
NA - Not Analyzed
J - Analyte present, value may or may not be accurate or precise
JN - Analyte present at approximate quantity
R - Unreliable Result
U - The material was analyzed for, but not detected
UJ - Analyte not detected, quantitation limit may be inaccurate
UG/KG - Micrograms per kilogram

TABLE 2-4
East Vieques Subsurface Soil Pesticide Detections
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Site ID	**Maximum**			PI 8	PI 8	PI 8	PI 8	PI 8	PAOC I	PAOC I	PAOC I
Station ID	**Concentration**	**Lowest**	**Highest**	VEP8-SO05	VEP8-SO06	VEP8-SO07	VEP8-SO08	VEP8-SO14	VEPI-SO01	VEPI-SO02	VEPI-SO03
Sample ID	**Detected in subsurface**	**Detected**	**Detected**	VEP8-SB05-46-0209	VEP8-SB06-46-0209	VEP8-SB07-46-0209	VEP8-SB08-46-0209	VEP8-SB14-46-0209	VEPI-SB01-46-0209	VEPI-SB02-46-0209	VEPI-SB03-46-0209
Sample Date	**soil at the PI 21 Site**	**Concentration**	**Concentration**	02/19/09	02/19/09	02/20/09	02/19/09	02/23/09	02/24/09	02/24/09	02/24/09
Chemical Name											
Pesticides (UG/KG)											
4,4'-DDD	0.68 J	0.89 J	44	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDE	1.2 J	0.076 J	540	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT	1.4 J	0.31 J	950	NA	NA	NA	NA	NA	NA	NA	NA
beta-BHC	ND	0.77 J	2.2 JN	NA	NA	NA	NA	NA	NA	NA	NA
Endrin aldehyde	ND	1.5 J	1.5 J	NA	NA	NA	NA	NA	NA	NA	NA
Endrin ketone	ND	0.82 J	0.82 J	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane	ND	0.45 J	1.1 J	NA	NA	NA	NA	NA	NA	NA	NA
Methoxychlor	ND	11 J	11 J	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
Shading indicates detections
NA - Not Analyzed
J - Analyte present, value may or may not be accurate or precise
JN - Analyte present at approximate quantity
R - Unreliable Result
U - The material was analyzed for, but not detected
UJ - Analyte not detected, quantitation limit may be inaccurate
UG/KG - Micrograms per kilogram

TABLE 2-4
East Vieques Subsurface Soil Pesticide Detections
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PI 21
Vieques, Puerto Rico

Site ID	**Maximum**			PAOC I	PAOC I	PAOC J	PAOC J	PAOC J	PAOC J	PAOC J		PAOC J
Station ID	**Concentration**	**Lowest**	**Highest**	VEPI-SO04	VEPI-SO05	EPAJ-SO01	EPAJ-SO02	EPAJ-SO03	EPAJ-SO04	EPAJ-SO05		EPAJ-SO06
Sample ID	**Detected in subsurface**	**Detected**	**Detected**	VEPI-SB04-46-0209	VEPI-SB05-46-0209	EPAJ-SB01-0405	EPAJ-SB02-0406	EPAJ-SB03-0406	EPAJ-SB04-0406	EPAJ-SB05-0406	EPAJ-SB05P-0406	EPAJ-SB06-0406
Sample Date	**soil at the PI 21 Site**	**Concentration**	**Concentration**	02/24/09	02/24/09	03/02/06	03/01/06	03/01/06	03/02/06	03/02/06	03/02/06	03/01/06
Chemical Name												
Pesticides (UG/KG)												
4,4'-DDD	0.68 J	0.89 J	44	NA	NA	3.4 U	3.7 U	3.5 U	3.7 U	3.7 U	3.7 U	3.4 U
4,4'-DDE	1.2 J	0.076 J	540	NA	NA	3.1 J	3.7 U	2.1 J	48	2.5 J	3.1 J	1.3 J
4,4'-DDT	1.4 J	0.31 J	950	NA	NA	1.7 J	3.7 U	3.5 U	27	1.3 J	1.3 J	27
beta-BHC	ND	0.77 J	2.2 JN	NA	NA	1.8 U	1.9 U	1.8 U	1.9 U	1.9 U	2.2 JN	1.8 U
Endrin aldehyde	ND	1.5 J	1.5 J	NA	NA	3.4 U	3.7 U	3.5 U	3.7 U	3.7 U	3.7 U	3.4 U
Endrin ketone	ND	0.82 J	0.82 J	NA	NA	3.4 U	3.7 U	3.5 U	3.7 U	3.7 U	3.7 U	3.4 U
gamma-Chlordane	ND	0.45 J	1.1 J	NA	NA	1.8 U	1.9 U	1.8 U	1.9 U	1.9 U	1.9 U	1.8 U
Methoxychlor	ND	11 J	11 J	NA	NA	18 U	19 U	18 U	19 U	19 U	19 U	18 U

Notes:

Shading indicates detections
NA - Not Analyzed
J - Analyte present, value may or may not be accurate or precise
JN - Analyte present at approximate quantity
R - Unreliable Result
U - The material was analyzed for, but not detected
UJ - Analyte not detected, quantitation limit may be inaccurate
UG/KG - Micrograms per kilogram

TABLE 2-4
East Vieques Subsurface Soil Pesticide Detections
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Site ID	**Maximum**			PAOC K	PAOC K	PAOC K	PAOC K	PAOC K	PAOC S	PAOC S	PAOC S	
Station ID	**Concentration**	**Lowest**	**Highest**	EPAK-SO01	EPAK-SO02	EPAK-SO03	EPAK-SO04	EPAK-SO05	EPAS-SO01	EPAS-SO02	EPAS-SO03	
Sample ID	**Detected in subsurface**	**Detected**	**Detected**	EPAK-SB01-0406	EPAK-SB02-0406	EPAK-SB03-0406	EPAK-SB04-0406	EPAK-SB05-0406	EPAS-SB01-0406	EPAS-SB02-0406	EPAS-SB03-0406	EPAS-SB03P-0406
Sample Date	**soil at the PI 21 Site**	**Concentration**	**Concentration**	03/01/06	02/28/06	03/02/06	03/08/06	02/28/06	02/02/06	02/02/06	02/02/06	02/02/06
Chemical Name												
Pesticides (UG/KG)												
4,4'-DDD	0.68 J	0.89 J	44	3.8 U	3.6 U	3.3 U	44	4.3 U	3.9 U	3.5 U	3.8 U	3.8 U
4,4'-DDE	1.2 J	0.076 J	540	0.89 J	3.6 U	21	540	4.6	35	29	3.8 U	3.8 U
4,4'-DDT	1.4 J	0.31 J	950	3.8 U	3.6 U	7.5	950	4.3 U	6.7	13	3.8 U	3.8 U
beta-BHC	ND	0.77 J	2.2 JN	2.0 U	1.9 U	1.7 U	1.8 U	2.2 U	2.0 U	1.8 U	2.0 U	2.0 U
Endrin aldehyde	ND	1.5 J	1.5 J	3.8 U	3.6 U	3.3 U	3.6 U	4.3 U	3.9 U	3.5 U	3.8 U	3.8 U
Endrin ketone	ND	0.82 J	0.82 J	3.8 U	3.6 U	0.82 J	3.6 U	4.3 U	3.9 U	3.5 U	3.8 U	3.8 U
gamma-Chlordane	ND	0.45 J	1.1 J	2.0 U	1.9 U	1.7 U	0.76 J	2.2 U	2.0 U	1.8 U	2.0 U	2.0 U
Methoxychlor	ND	11 J	11 J	20 U	19 U	17 U	18 U	22 U	20 U	18 U	20 U	20 U

Notes:
Shading indicates detections
NA - Not Analyzed
J - Analyte present, value may or may not be accurate or precise
JN - Analyte present at approximate quantity
R - Unreliable Result
U - The material was analyzed for, but not detected
UJ - Analyte not detected, quantitation limit may be inaccurate
UG/KG - Micrograms per kilogram

TABLE 2-4
East Vieques Subsurface Soil Pesticide Detections
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Site ID	**Maximum**			PAOC S	PAOC S	PAOC U	PAOC U	PAOC U	PAOC U	PAOC U	PAOC U	PAOC U
Station ID	**Concentration**	**Lowest**	**Highest**	EPAS-SO04	EPAS-SO05	EPAU-SO01	EPAU-SO02	EPAU-SO03	EPAU-SO04	EPAU-SO05	EPAU-SO06	EPAU-SO07
Sample ID	**Detected in subsurface**	**Detected**	**Detected**	EPAS-SB04-0406	EPAS-SB05-0406	EPAU-SB01-0406	EPAU-SB02-0406	EPAU-SB03-0406	EPAU-SB04-0406	EPAU-SB05-0406	EPAU-SB06-0406	EPAU-SB07-0406
Sample Date	**soil at the PI 21 Site**	**Concentration**	**Concentration**	02/02/06	02/02/06	03/01/06	03/03/06	03/03/06	03/03/06	03/03/06	03/03/06	03/03/06
Chemical Name												
Pesticides (UG/KG)												
4,4'-DDD	0.68 J	0.89 J	44	3.8 U	3.6 U	3.6 U	3.5 U	3.5 U	3.5 U	3.5 U	3.8 U	3.5 U
4,4'-DDE	1.2 J	0.076 J	540	3.8 U	2.8 J	3.6 U	3.5 U	3.5 U	3.5 U	3.5 U	3.8 U	3.5 U
4,4'-DDT	1.4 J	0.31 J	950	3.8 U	1.8 J	3.6 U	3.5 U	3.5 U	3.5 U	3.5 U	3.8 U	3.5 U
beta-BHC	ND	0.77 J	2.2 JN	1.9 U	1.9 U	1.8 U	0.77 J	1.8 U	1.8 U	1.8 U	2.0 U	1.8 U
Endrin aldehyde	ND	1.5 J	1.5 J	3.8 U	3.6 U	3.6 U	3.5 U	3.5 U	3.5 U	3.5 U	3.8 U	3.5 U
Endrin ketone	ND	0.82 J	0.82 J	3.8 U	3.6 U	3.6 U	3.5 U	3.5 U	3.5 U	3.5 U	3.8 U	3.5 U
gamma-Chlordane	ND	0.45 J	1.1 J	1.9 U	1.9 U	1.8 U	1.8 U	2.3 R	1.8 U	1.8 U	2.0 U	1.8 U
Methoxychlor	ND	11 J	11 J	19 U	11 J	18 U	18 U	18 U	18 U	18 U	20 U	18 U

Notes:

Shading indicates detections
NA - Not Analyzed
J - Analyte present, value may or may not be accurate or precise
JN - Analyte present at approximate quantity
R - Unreliable Result
U - The material was analyzed for, but not detected
UJ - Analyte not detected, quantitation limit may be inaccurate
UG/KG - Micrograms per kilogram

TABLE 2-4
East Vieques Subsurface Soil Pesticide Detections
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Site ID	**Maximum**			PAOC U	PAOC U	
Station ID	**Concentration**	**Lowest**	**Highest**	EPAU-SO08	EPAU-SO09	
Sample ID	**Detected in subsurface**	**Detected**	**Detected**	EPAU-SB08-0406	EPAU-SB09-0406	EPAU-SB09P-0406
Sample Date	**soil at the PI 21 Site**	**Concentration**	**Concentration**	03/01/06	03/03/06	03/03/06
Chemical Name						
Pesticides (UG/KG)						
4,4'-DDD	0.68 J	0.89 J	44	3.4 U	3.5 U	3.5 U
4,4'-DDE	1.2 J	0.076 J	540	3.4 U	3.5 U	3.5 U
4,4'-DDT	1.4 J	0.31 J	950	3.4 U	3.5 U	3.5 U
beta-BHC	ND	0.77 J	2.2 JN	1.8 U	1.8 U	1.8 U
Endrin aldehyde	ND	1.5 J	1.5 J	3.4 U	3.5 U	3.5 U
Endrin ketone	ND	0.82 J	0.82 J	3.4 U	3.5 U	3.5 U
gamma-Chlordane	ND	0.45 J	1.1 J	1.8 U	1.8 U	1.8 U
Methoxychlor	ND	11 J	11 J	18 U	18 U	18 U

Notes:

Shading indicates detections
NA - Not Analyzed
J - Analyte present, value may or may not be accurate or precise
JN - Analyte present at approximate quantity
R - Unreliable Result
U - The material was analyzed for, but not detected
UJ - Analyte not detected, quantitation limit may be inaccurate
UG/KG - Micrograms per kilogram

TABLE 2-5
HHRA Constituent of Potential Concern Summary - Residential Land Use
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PI 21
Vieques, Puerto Rico

Site: PI 21
Media: Surface Soil and Total Soil

Data Summary							Background Comparison		Screening Level (SL) Comparison						Exposure Point Concentrations (EPC)				Risk Estimates		
Exposure Point	CAS Number	Chemical (1)	Minimum Concentration Qualifier	Maximum Concentration Qualifier	Location of Maximum Concentration	Detection Frequency	Background Value (2)	Max Exceeds Background	Carcinogenic RSL ELCR=1.0E-6 (3)	Noncarcinogenic RSL HQ=1 (3)	Final Adjusted RSL (4)	Basis	Frequency of RSL Exceedance (5)	Max Exceeds 100X Adjusted RSL (5)	EPC	Statistic	Basis	Note	Target Organ	ELCR (9)	HQ (9)
Surface Soil	7429-90-5	Aluminum	18400	20700	VEP21-SS01P-0001	5 / 5	35000	No	--	77000	7700	nc	5 / 5	No	--	--	--	(8)	--	--	--
(0-1 foot)	7440-38-2	Arsenic	3.2	4.1	VEP21-SS01P-0001; VEP21-SS05-0001	5 / 5	1.6	Yes	0.61	34	0.61	ca	5 / 5	No	--	--	--	(8)	--	--	--
	7440-47-3	Chromium	10.6	14.7	VEP21-SS04-0001	5 / 5	72	No	0.29	230	0.29	ca	5 / 5	No	--	--	--	(8)	--	--	--
	7440-48-4	Cobalt	13.2	15.4	VEP21-SS01P-0001	5 / 5	26	No	370	23	2.3	nc	5 / 5	No	15.4	Max	(6)	(8)	Thyroid	4E-08	0.7
	7439-89-6	Iron	29700	34300	VEP21-SS01P-0001	5 / 5	43200	No	--	55000	5500	nc	5 / 5	No	--	--	--	(8)	--	--	--
	7439-96-5	Manganese	566	731	VEP21-SS01-0001	5 / 5	1630	No	--	1800	180	nc	5 / 5	No	731	Max	(6)	(8)	Nervous System	--	0.4
	7440-62-2	Vanadium	85.9	109	VEP21-SS01P-0001	5 / 5	144	No	--	390	39	nc	5 / 5	No	109	Max	(6)	(8)	Hair	--	0.3
Total Soil	7429-90-5	Aluminum	18400	25800	VEP21-SB03-0102	10 / 10	35000	No	--	77000	7700	nc	10 / 10	No	21774	95% Modified-t	(7)	(8)	Nervous System	--	0.3
(0-2 feet)	7440-38-2	Arsenic	3.2	5.6	VEP21-SB03-0102	10 / 10	1.6	Yes	0.61	34	0.61	ca	10 / 10	No	4.54	95% Student's-t	(7)	(8)	Skin, Vascular	7E-06	0.1
	7440-47-3	Chromium	10.6	21.8	VEP21-SB03-0102	10 / 10	72	No	0.29	230	0.29	ca	10 / 10	No	16.08	95% Student's-t	(7)	(8)	NOE	6E-05	0.07
	7440-48-4	Cobalt	13.2	16.4	VEP21-SB03-0102	10 / 10	25.5	No	370	23	2.3	nc	10 / 10	No	--	--	--	(8)	--	--	--
	7439-89-6	Iron	29700	38300	VEP21-SB03-0102	10 / 10	43200	No	--	55000	5500	nc	10 / 10	No	34530	95% Student's-t	(7)	(8)	GI System	--	0.6
	7439-96-5	Manganese	566	756	VEP21-SB01-011H	10 / 10	1630	No	--	1800	180	nc	10 / 10	No	--	--	--	(8)	--	--	--
	7440-62-2	Vanadium	82.2	109	VEP21-SS01P-0001	10 / 10	144	No	--	390	39	nc	10 / 10	No	--	--	--	(8)	--	--	--

All units in mg/kg.

(1) Chemicals with a maximum detected concentration (MaxDet) greater than adjusted residential RSL (ELCR = $1x10^{6}$ and HQ=0.1) are presented on the table.
(2) Background value is Vieques East KV.
(3) RSL (May 2013) for residential soil, based on an ELCR of 1x10-6 and HQ of 1.
(4) The final RSL: the lower of carcinogenic RSL based on ELCR of $1x10^{-6}$ and noncarcinogenic RSL adjusted using HQ=0.1.
(5) The final RSL is used as the SL.
(6) The MaxDet was used as the EPC because there were less than 8 samples.
(7) The UCL was used as the EPC and was calculated using EPA's ProUCL Software, Version 4.1.01 (July 2011).
(8) When a chemical was detected both in surface soil and total soil, the higher EPC in the two media was used for the risk calculation.
(9) Noncarcinogenic HQ and ELCR are estimated using the ratio of RSL and EPC.
- HQ = EPC / Noncarcinogenic RSL (based on HQ=1.0)
- ELCR = EPC x $1x10^{-6}$ / Carcinogenic RSL (based on ELCR=$1x10^{-6}$)

The SL for 'Chromium (VI)' was used as the SL for Chromium.
The SL for 'Vanadium and Compounds' was used as the SL for Vanadium.

ELCR = excess lifetime cancer risk
EPC = exposure point concentration
HI = hazard index
HQ = hazard quotient
mg/kg = milligram per kilogram
RSL = Regional Screening Level
RSL Basis: ca = Carcinogenic; nc = Noncarcinogenic
SL = screening level
Target Organ: NOE = no observed effect; GI=gastrointestinal
UCL = upper confidence limit

PI 21 Cumulative Risk	ELCR	Max HI *
Soil	6E-05	0.7
*HI is based on thyroid.		

TABLE 2-6
East Vieques Surface Soil Antimony Detections
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Site ID	**Maximum**			AOC-G						AOC G		
Station ID	**Concentration**	**Lowest**	**Highest**	CGAGSS01	CGAGSS02	CGAGSS03	CGAGSS04	CGAGSS05		VEAG-SO06	VEAG-SO07	
Sample ID	**Detected in surface soil**	**Detected**	**Detected**	CGAGSS01-R01	CGAGSS02-R01	CGAGSS03-R01	CGAGSS04-R01	CGAGSS05-R01	CGAGSSFD01P-R01	VEAG-SS06-01-0209	VEAG-SS07-01-0209	VEAG-SS07P-01-0209
Sample Date	**at the PI 21 Site**	**Concentration**	**Concentration**	01/22/04	01/22/04	01/22/04	01/22/04	01/22/04	01/22/04	02/25/09	02/25/09	02/25/09
Chemical Name												
Total Metals (MG/KG)												
Antimony	0.34 J	0.02 J	4.7 J	0.36 J	0.114 J	0.289 J	0.289 J	0.254 J	0.371 J	0.14 J	0.11 J	0.16 J

Notes:

Shading indicates detections

J - Analyte present, value may or may not be accurate or precise

MG/KG - Milligrams per kilogram

TABLE 2-6
East Vieques Surface Soil Antimony Detections
No Action Decision Document
PI 21
Vieques, Puerto Rico

Site ID	**Maximum**			SWMU 4				SWMU 6/7			
Station ID	**Concentration**	**Lowest**	**Highest**	CGSWMU4SS001	CGSWMU4SS002	CGSWMU4SS003	CGSWMU4SS004	CGSWMU6/7SS004	CGSWMU6/7SS008	CGSWMU6/7SS009	CGSWMU6/7SS010
Sample ID	**Detected in surface soil**	**Detected**	**Detected**	NDD021	NDD022	NDD023	NDD024	NDD037	NDD040	NDD041	NDD042
Sample Date	**at the PI 21 Site**	**Concentration**	**Concentration**	06/13/00	06/13/00	06/13/00	06/13/00	06/13/00	06/13/00	06/13/00	06/13/00
Chemical Name											
Total Metals (MG/KG)											
Antimony	0.34 J	0.02 J	4.7 J	0.83 J	0.81 J	0.68 J	0.95 J	0.68 J	0.74 J	1.1 J	0.54 J

Notes:

Shading indicates detections

J - Analyte present, value may or may not be accurate or precise

MG/KG - Milligrams per kilogram

TABLE 2-6
East Vieques Surface Soil Antimony Detections
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Site ID	**Maximum**			SWMU 6/7					
Station ID	**Concentration**	**Lowest**	**Highest**	VEW6/7-SO11	VEW6/7-SO12		VEW6/7-SO14	VEW6/7-SO15	VEW6/7-SO16
Sample ID	**Detected in surface soil**	**Detected**	**Detected**	VEW6/7-SS11-01-0209	VEW6/7-SS12-01-0209	VEW6/7-SS12P-01-0209	VEW6/7-SS14-01-0209	VEW6/7-SS15-01-0209	VEW6/7-SS16-01-0209
Sample Date	**at the PI 21 Site**	**Concentration**	**Concentration**	02/24/09	02/24/09	02/24/09	02/27/09	02/27/09	02/27/09
Chemical Name									
Total Metals (MG/KG)									
Antimony	0.34 J	0.02 J	4.7 J	0.27 J	0.35 J	1.8 J	0.4 J	0.34 J	0.45 J

Notes:

Shading indicates detections

J - Analyte present, value may or may not be accurate or precise

MG/KG - Milligrams per kilogram

TABLE 2-6
East Vieques Surface Soil Antimony Detections
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Site ID	**Maximum**			SWMU 10								
Station ID	**Concentration**	**Lowest**	**Highest**	CGW10SS05	CGW10SS06	CGW10SS07	CGW10SS08	CGW10SS09	CGW10SS10	CGW10SS11	CGW10SS12	
Sample ID	**Detected in surface soil**	**Detected**	**Detected**	CGW10SS05-R01	CGW10SS06-R01	CGW10SS07-R01	CGW10SS08-R01	CGW10SS09-R01	CGW10SS10-R01	CGW10SS11-R01	CGW10FD01P-R01	CGW10SS12-R01
Sample Date	**at the PI 21 Site**	**Concentration**	**Concentration**	01/22/04	01/20/04	01/20/04	01/22/04	01/20/04	01/20/04	01/20/04	01/20/04	01/20/04
Chemical Name												
Total Metals (MG/KG)												
Antimony	0.34 J	0.02 J	4.7 J	0.437 J	0.946 J	0.834 J	0.354 J	0.899 J	1.2 J	1 J	0.892 J	0.781 J

Notes:

Shading indicates detections

J - Analyte present, value may or may not be accurate or precise

MG/KG - Milligrams per kilogram

TABLE 2-6
East Vieques Surface Soil Antimony Detections
No Action Decision Document
PI 21
Vieques, Puerto Rico

Site ID	**Maximum**			SWMU 10							
Station ID	**Concentration**	**Lowest**	**Highest**	CGW10SS13	CGW10SS14	CGW10SS15	CGW10SS16	CGW10SS17	CGW10SS18	CGW10SS19	CGW10SS20
Sample ID	**Detected in surface soil**	**Detected**	**Detected**	CGW10SS13-R01	CGW10SS14-R01	CGW10SS15-R01	CGW10SS16-R01	CGW10SS17-R01	CGW10SS18-R01	CGW10SS19-R01	CGW10SS20-R01
Sample Date	**at the PI 21 Site**	**Concentration**	**Concentration**	01/20/04	01/20/04	01/20/04	01/22/04	01/22/04	01/22/04	01/20/04	01/22/04
Chemical Name											
Total Metals (MG/KG)											
Antimony	0.34 J	0.02 J	4.7 J	0.469 J	0.593 J	0.729 J	0.253 J	0.488 J	0.508 J	0.756 J	0.647 J

Notes:

Shading indicates detections

J - Analyte present, value may or may not be accurate or precise

MG/KG - Milligrams per kilogram

TABLE 2-6

East Vieques Surface Soil Antimony Detections

No Action Decision Document

PI 21

Vieques, Puerto Rico

Site ID	**Maximum**			SWMU 12						SWMU 2		
Station ID	**Concentration**	**Lowest**	**Highest**	CGW12SS01	CGW12SS02	CGW12SS03		CGW12SS04	CGW12SS05	CGW2SS01	CGW2SS02	CGW2SS03
Sample ID	**Detected in surface soil**	**Detected**	**Detected**	CGW12SS01-R01	CGW12SS02-R01	CGW12FD01P-R01	CGW12SS03-R01	CGW12SS04-R01	CGW12SS05-R01	CGW2SS01-R01	CGW2SS02-R01	CGW2SS03-R01
Sample Date	**at the PI 21 Site**	**Concentration**	**Concentration**	01/19/04	01/19/04	01/19/04	01/19/04	01/19/04	01/19/04	01/21/04	01/21/04	01/21/04
Chemical Name												
Total Metals (MG/KG)												
Antimony	0.34 J	0.02 J	4.7 J	0.532 J	0.425 J	0.378 J	0.39 J	0.375 J	1.01 J	0.64 J	0.582 J	0.147 J

Notes:

Shading indicates detections

J - Analyte present, value may or may not be accurate or precise

MG/KG - Milligrams per kilogram

TABLE 2-6

East Vieques Surface Soil Antimony Detections

No Action Decision Document

PI 21

Vieques, Puerto Rico

Site ID	**Maximum**			SWMU 2							
Station ID	**Concentration**	**Lowest**	**Highest**	CGW2SS04	CGW2SS05	CGW2SS06	CGW2SS07	CGW2SS09	CGW2SS10	CGW2SS11	CGW2SS12
Sample ID	**Detected in surface soil**	**Detected**	**Detected**	CGW2SS04-R01	CGW2SS05-R01	CGW2SS06-R01	CGW2SS07-R01	CGW2SS09-R01	CGW2SS10-R01	CGW2SS11-R01	CGW2SS12-R01
Sample Date	**at the PI 21 Site**	**Concentration**	**Concentration**	01/21/04	01/21/04	01/21/04	01/21/04	01/21/04	01/21/04	01/21/04	01/21/04
Chemical Name											
Total Metals (MG/KG)											
Antimony	0.34 J	0.02 J	4.7 J	0.289 J	0.219 J	0.211 J	0.458 J	0.705 J	0.675 J	0.48 J	0.653 J

Notes:

Shading indicates detections

J - Analyte present, value may or may not be accurate or precise

MG/KG - Milligrams per kilogram

TABLE 2-6
East Vieques Surface Soil Antimony Detections
No Action Decision Document
PI 21
Vieques, Puerto Rico

Site ID	**Maximum**			SWMU 5				SWMU 8					
Station ID	**Concentration**	**Lowest**	**Highest**	CGW5SS01	CGW5SS02	CGW5SS03	CGW5SS04	CGW8SS01		CGW8SS02	CGW8SS03	CGW8SS04	CGW8SS05
Sample ID	**Detected in surface soil**	**Detected**	**Detected**	CGW5SS01-R01	CGW5SS02-R01	CGW5SS03-R01	CGW5SS04-R01	CGW8FD01P-R01	CGW8SS01-R01	CGW8SS02-R01	CGW8SS03-R01	CGW8SS04-R01	CGW8SS05-R01
Sample Date	**at the PI 21 Site**	**Concentration**	**Concentration**	01/19/04	01/19/04	01/19/04	01/19/04	01/19/04	01/19/04	01/19/04	01/19/04	01/19/04	01/19/04
Chemical Name													
Total Metals (MG/KG)													
Antimony	0.34 J	0.02 J	4.7 J	1.04 J	1.36 J	0.904 J	1.34 J	1.11 J	0.715 J	1.65 J	1.3 J	0.97 J	1.09 J

Notes:

Shading indicates detections

J - Analyte present, value may or may not be accurate or precise

MG/KG - Milligrams per kilogram

TABLE 2-6
East Vieques Surface Soil Antimony Detections
No Action Decision Document
PI 21
Vieques, Puerto Rico

Site ID	**Maximum**			PAOC J						PAOC K		
Station ID	**Concentration**	**Lowest**	**Highest**	EPAJ-SO01	EPAJ-SO02	EPAJ-SO03	EPAJ-SO04	EPAJ-SO05		EPAK-SO01	EPAK-SO02	EPAK-SO03
Sample ID	**Detected in surface soil**	**Detected**	**Detected**	EPAJ-SS01-0001	EPAJ-SS02-0001	EPAJ-SS03-0001	EPAJ-SS04-0001	EPAJ-SS05-0001	EPAJ-SS05P-0001	EPAK-SS01-0001	EPAK-SS02-0001	EPAK-SS03-0001
Sample Date	**at the PI 21 Site**	**Concentration**	**Concentration**	03/02/06	03/01/06	03/01/06	03/01/06	03/02/06	03/02/06	03/01/06	02/28/06	03/02/06
Chemical Name												
Total Metals (MG/KG)												
Antimony	0.34 J	0.02 J	4.7 J	0.27 J	0.43 J	0.33 J	0.53 J	0.65 J	0.43 J	0.83 J	0.74 J	0.91 J

Notes:

Shading indicates detections

J - Analyte present, value may or may not be accurate or precise

MG/KG - Milligrams per kilogram

TABLE 2-6
East Vieques Surface Soil Antimony Detections
No Action Decision Document
PI 21
Vieques, Puerto Rico

Site ID	**Maximum**			PAOC K			PAOC L				
Station ID	**Concentration**	**Lowest**	**Highest**	EPAK-SO04		EPAK-SO05	EPAL-SO01		EPAL-SO02	EPAL-SO03	EPAL-SO04
Sample ID	**Detected in surface soil**	**Detected**	**Detected**	EPAK-SS04-0001	EPAK-SS04P-0001	EPAK-SS05-0001	EPAL-SS01-0002	EPAL-SS01P-0002	EPAL-SS02-0001	EPAL-SS03-0002	EPAL-SS04-0001
Sample Date	**at the PI 21 Site**	**Concentration**	**Concentration**	02/28/06	02/28/06	02/28/06	02/27/06	02/27/06	03/08/06	02/27/06	03/08/06
Chemical Name											
Total Metals (MG/KG)											
Antimony	0.34 J	0.02 J	4.7 J	1.2 J	1.2 J	0.78 J	0.7 J	0.69 J	0.76 J	0.58 J	0.81 J

Notes:

Shading indicates detections

J - Analyte present, value may or may not be accurate or precise

MG/KG - Milligrams per kilogram

TABLE 2-6

East Vieques Surface Soil Antimony Detections

No Action Decision Document

PI 21

Vieques, Puerto Rico

Site ID	**Maximum**			PAOC N				
Station ID	**Concentration**	**Lowest**	**Highest**	EPAN-SO01	EPAN-SO02	EPAN-SO03	EPAN-SO04	
Sample ID	**Detected in surface soil**	**Detected**	**Detected**	EPAN-SS01-0001	EPAN-SS02-0001	EPAN-SS03-0001	EPAN-SS04-0001	EPAN-SS04P-0001
Sample Date	**at the PI 21 Site**	**Concentration**	**Concentration**	02/01/06	02/01/06	02/01/06	02/01/06	02/01/06
Chemical Name								
Total Metals (MG/KG)								
Antimony	0.34 J	0.02 J	4.7 J	0.72 J	0.69 J	0.59 J	0.97 J	0.65 J

Notes:

Shading indicates detections

J - Analyte present, value may or may not be accurate or precise

MG/KG - Milligrams per kilogram

TABLE 2-6
East Vieques Surface Soil Antimony Detections
No Action Decision Document
PI 21
Vieques, Puerto Rico

Site ID	**Maximum**			PAOC S						PAOC U		
Station ID	**Concentration**	**Lowest**	**Highest**	EPAS-SO01		EPAS-SO02	EPAS-SO03	EPAS-SO04	EPAS-SO05	EPAU-SO01	EPAU-SO02	EPAU-SO03
Sample ID	**Detected in surface soil**	**Detected**	**Detected**	EPAS-SS01-0001	EPAS-SS01P-0001	EPAS-SS02-0001	EPAS-SS03-0001	EPAS-SS04-0001	EPAS-SS05-0001	EPAU-SS01-0001	EPAU-SS02-0001	EPAU-SS03-0001
Sample Date	**at the PI 21 Site**	**Concentration**	**Concentration**	02/02/06	02/02/06	02/02/06	02/02/06	02/02/06	02/02/06	03/01/06	03/03/06	03/03/06
Chemical Name												
Total Metals (MG/KG)												
Antimony	0.34 J	0.02 J	4.7 J	0.63 J	0.67 J	0.5 J	0.49 J	0.25 J	0.53 J	0.6 J	0.78 J	0.83 J

Notes:

Shading indicates detections

J - Analyte present, value may or may not be accurate or precise

MG/KG - Milligrams per kilogram

TABLE 2-6
East Vieques Surface Soil Antimony Detections
No Action Decision Document
PI 21
Vieques, Puerto Rico

Site ID	**Maximum**			PAOC U							PI-4/SWMU 20			
Station ID	**Concentration**	**Lowest**	**Highest**	EPAU-SO04		EPAU-SO05	EPAU-SO06	EPAU-SO07	EPAU-SO08	EPAU-SO09	EPI04-SO08		EPI04-SO11	EPI04-SO12
Sample ID	**Detected in surface soil**	**Detected**	**Detected**	EPAU-SS04-0001	EPAU-SS04P-0001	EPAU-SS05-0001	EPAU-SS06-0001	EPAU-SS07-0001	EPAU-SS08-0001	EPAU-SS09-0001	EPI04-SS08-0001	EPI04-SS08P-0001	EPI04-SS11-0001	EPI04-SS12-0001
Sample Date	**at the PI 21 Site**	**Concentration**	**Concentration**	03/03/06	03/03/06	03/03/06	03/03/06	03/03/06	03/01/06	03/03/06	01/25/06	01/25/06	01/25/06	01/24/06
Chemical Name														
Total Metals (MG/KG)														
Antimony	0.34 J	0.02 J	4.7 J	0.77 J	0.84 J	0.56 J	0.61 J	0.22 J	0.53 J	0.56 J	0.62 J	0.75 J	0.82 J	0.58 J

Notes:

Shading indicates detections

J - Analyte present, value may or may not be accurate or precise

MG/KG - Milligrams per kilogram

TABLE 2-6
East Vieques Surface Soil Antimony Detections
No Action Decision Document
PI 21
Vieques, Puerto Rico

Site ID	**Maximum**			PI-7									
Station ID	**Concentration**	**Lowest**	**Highest**	EPI07-SO01		EPI07-SO02	EPI07-SO03	EPI07-SO04	EPI07-SO05	EPI07-SO06	EPI07-SO07	EPI07-SO08	EPI07-SO09
Sample ID	**Detected in surface soil**	**Detected**	**Detected**	EPI07-SS01-0001	EPI07-SS01-0001P	EPI07-SS02-0001	EPI07-SS03-0001	EPI07-SS04-0001	EPI07-SS05-0001	EPI07-SS06-0001	EPI07-SS07-0001	EPI07-SS08-0001	EPI07-SS09-0001
Sample Date	**at the PI 21 Site**	**Concentration**	**Concentration**	03/13/06	03/13/06	03/13/06	03/13/06	03/13/06	03/14/06	03/14/06	03/14/06	03/14/06	03/14/06
Chemical Name													
Total Metals (MG/KG)													
Antimony	0.34 J	0.02 J	4.7 J	0.68 J	0.41 J	0.62 J	0.73 J	0.61 J	0.63 J	0.63 J	0.73 J	0.72 J	0.53 J

Notes:

Shading indicates detections

J - Analyte present, value may or may not be accurate or precise

MG/KG - Milligrams per kilogram

TABLE 2-6
East Vieques Surface Soil Antimony Detections
No Action Decision Document
PI 21
Vieques, Puerto Rico

Site ID	**Maximum**			PI-7								
Station ID	**Concentration**	**Lowest**	**Highest**	EPI07-SO10	EPI07-SO11	EPI07-SO12	EPI07-SO13	EPI07-SO14	EPI07-SO15	EPI07-SO16		EPI07-SO17
Sample ID	**Detected in surface soil**	**Detected**	**Detected**	EPI07-SS10-0001	EPI07-SS11-0001	EPI07-SS12-0001	EPI07-SS13-0001	EPI07-SS14-0001	EPI07-SS15-0001	EPI07-SS16-0001	EPI07-SS16P-0001	EPI07-SS17-0001
Sample Date	**at the PI 21 Site**	**Concentration**	**Concentration**	03/14/06	03/14/06	03/14/06	03/14/06	03/14/06	03/16/06	03/16/06	03/16/06	03/15/06
Chemical Name												
Total Metals (MG/KG)												
Antimony	0.34 J	0.02 J	4.7 J	0.46 J	0.57 J	0.61 J	0.6 J	0.78 J	0.72 J	0.58 J	0.63 J	0.83 J

Notes:

Shading indicates detections

J - Analyte present, value may or may not be accurate or precise

MG/KG - Milligrams per kilogram

TABLE 2-6
East Vieques Surface Soil Antimony Detections
No Action Decision Document
PI 21
Vieques, Puerto Rico

Site ID	**Maximum**			PI-7								
Station ID	**Concentration**	**Lowest**	**Highest**	EPI07-SO18	EPI07-SO19	EPI07-SO20	EPI07-SO21	EPI07-SO22	VEP7-SO24	VEP7-SO39	VEP7-SO40	VEP7-SO41
Sample ID	**Detected in surface soil**	**Detected**	**Detected**	EPI07-SS18-0001	EPI07-SS19-0001	EPI07-SS20-0001	EPI07-SS21-0001	EPI07-SS22-0001	VEP7-SS24-0H-0409	VEP7-SS39-0H-0409	VEP7-SS40-0H-0509	VEP7-SS41-0H-0409
Sample Date	**at the PI 21 Site**	**Concentration**	**Concentration**	03/15/06	03/15/06	03/16/06	03/16/06	03/16/06	04/20/09	04/22/09	05/01/09	04/30/09
Chemical Name												
Total Metals (MG/KG)												
Antimony	0.34 J	0.02 J	4.7 J	0.77 J	0.68 J	0.4 J	0.56 J	0.43 J	0.13	0.12	0.08 J	0.12 J

Notes:

Shading indicates detections

J - Analyte present, value may or may not be accurate or precise

MG/KG - Milligrams per kilogram

TABLE 2-6
East Vieques Surface Soil Antimony Detections
No Action Decision Document
PI 21
Vieques, Puerto Rico

Site ID	**Maximum**			ECA	PI-10	PI-5						
Station ID	**Concentration**	**Lowest**	**Highest**	VEECA-4SS01	VEP10-SO03	VEP5-SO01	VEP5-SO02	VEP5-SO03	VEP5-SO04	VEP5-SO06	VEP5-SO07	
Sample ID	**Detected in surface soil**	**Detected**	**Detected**	VEECA-4SS01P-0001-0211	VEP10-SS03-01-0309	VEP5-SS01-01-0209	VEP5-SS02-01-0209	VEP5-SS03-02-0209	VEP5-SS04-02-0209	VEP5-SS06-01-0309	VEP5-SS07-0H-0209	VEP5-SS07P-0H-0209
Sample Date	**at the PI 21 Site**	**Concentration**	**Concentration**	02/08/11	03/13/09	02/25/09	02/25/09	02/25/09	02/25/09	03/12/09	02/25/09	02/25/09
Chemical Name												
Total Metals (MG/KG)												
Antimony	0.34 J	0.02 J	4.7 J	1.5 J	0.13 J	0.03 J	0.05 J	0.04 J	0.04 J	0.21 J	0.03 J	0.02 J

Notes:

Shading indicates detections

J - Analyte present, value may or may not be accurate or precise

MG/KG - Milligrams per kilogram

TABLE 2-6
East Vieques Surface Soil Antimony Detections
No Action Decision Document
PI 21
Vieques, Puerto Rico

Site ID	**Maximum**			PI-6	PI-8							
Station ID	**Concentration**	**Lowest**	**Highest**	VEP6-SO07	VEP8-SO05	VEP8-SO06	VEP8-SO07		VEP8-SO08	VEP8-SO09	VEP8-SO10	VEP8-SO11
Sample ID	**Detected in surface soil**	**Detected**	**Detected**	VEP6-SS07-01-0309	VEP8-SS05-01-0209	VEP8-SS06-01-0209	VEP8-SS07-01-0209	VEP8-SS07P-01-0209	VEP8-SS08-01-0209	VEP8-SS09-01-0209	VEP8-SS10-01-0209	VEP8-SS11-01-0209
Sample Date	**at the PI 21 Site**	**Concentration**	**Concentration**	03/05/09	02/19/09	02/19/09	02/20/09	02/20/09	02/19/09	02/20/09	02/11/09	02/11/09
Chemical Name												
Total Metals (MG/KG)												
Antimony	0.34 J	0.02 J	4.7 J	0.39 J	0.56 J	0.19 J	0.94 J	0.93 J	0.21 J	0.06 J	0.26	0.28

Notes:

Shading indicates detections

J - Analyte present, value may or may not be accurate or precise

MG/KG - Milligrams per kilogram

TABLE 2-6
East Vieques Surface Soil Antimony Detections
No Action Decision Document
PI 21
Vieques, Puerto Rico

Site ID	**Maximum**			PI-8		PI-21					
Station ID	**Concentration**	**Lowest**	**Highest**	VEP8-SO12	VEP8-SO14	VE-PI-21-SB01		VE-PI-21-SB02	VE-PI-21-SB03	VE-PI-21-SB04	VE-PI-21-SB05
Sample ID	**Detected in surface soil**	**Detected**	**Detected**	VEP8-SS12-01-0209	VEP8-SS14-01-0209	VEP21-SS01-0001	VEP21-SS01P-0001	VEP21-SS02-0001	VEP21-SS03-0001	VEP21-SS04-0001	VEP21-SS05-0001
Sample Date	**at the PI 21 Site**	**Concentration**	**Concentration**	02/18/09	02/23/09	04/11/13	04/11/13	04/11/13	04/11/13	04/11/13	04/11/13
Chemical Name											
Total Metals (MG/KG)											
Antimony	0.34 J	0.02 J	4.7 J	0.1 J	0.58 J	0.13 J	0.13 J	0.12 J	0.19 J	0.34 J	0.11 J

Notes:

Shading indicates detections

J - Analyte present, value may or may not be accurate or precise

MG/KG - Milligrams per kilogram

TABLE 2-6
East Vieques Surface Soil Antimony Detections
No Action Decision Document
PI 21
Vieques, Puerto Rico

Site ID	**Maximum**			PAOC I					PAOC O		
Station ID	**Concentration**	**Lowest**	**Highest**	VEPI-SO01	VEPI-SO02	VEPI-SO03	VEPI-SO04	VEPI-SO05	VEPO-SO01	VEPO-SO02	
Sample ID	**Detected in surface soil**	**Detected**	**Detected**	VEPI-SS01-01-0209	VEPI-SS02-01-0209	VEPI-SS03P-01-0209	VEPI-SS04-01-0209	VEPI-SS05-01-0209	VEPO-SS01-01-0209	VEPO-SS02-01-0209	VEPO-SS02P-01-0209
Sample Date	**at the PI 21 Site**	**Concentration**	**Concentration**	02/24/09	02/24/09	02/24/09	02/24/09	02/24/09	02/20/09	02/20/09	02/20/09
Chemical Name											
Total Metals (MG/KG)											
Antimony	0.34 J	0.02 J	4.7 J	0.25 J	0.13 J	0.34 J	4.7 J	1.2 J	0.44 J	0.6 J	0.66 J

Notes:

Shading indicates detections

J - Analyte present, value may or may not be accurate or precise

MG/KG - Milligrams per kilogram

TABLE 2-6
East Vieques Surface Soil Antimony Detections
No Action Decision Document
PI 21
Vieques, Puerto Rico

Site ID	**Maximum**			PAOC Q/R					PAOC X		
Station ID	**Concentration**	**Lowest**	**Highest**	VEPQ/R-SO01		VEPQ/R-SO02			VEPX-SO06	VEPX-SO07	VEPX-SO08
Sample ID	**Detected in surface soil**	**Detected**	**Detected**	VEPQ/R-SS01-01-0209	VEPQ_R-SS01-0405-0810	VEPQ/R-SS02-01-0209	VEPQ/R-SS02P-01-0209	VEPQ_R-SS02-0304-0810	VEPX-SS06-01-0309	VEPX-SS07-0H-0309	VEPX-SS08-0H-0309
Sample Date	**at the PI 21 Site**	**Concentration**	**Concentration**	02/23/09	08/11/10	02/23/09	02/23/09	08/10/10	03/05/09	03/04/09	03/04/09
Chemical Name											
Total Metals (MG/KG)											
Antimony	0.34 J	0.02 J	4.7 J	0.2 J	0.62 J	0.11 J	0.15 J	0.23 J	0.21 J	0.2 J	1 J

Notes:

Shading indicates detections

J - Analyte present, value may or may not be accurate or precise

MG/KG - Milligrams per kilogram

TABLE 2-6
East Vieques Surface Soil Antimony Detections
No Action Decision Document
PI 21
Vieques, Puerto Rico

Site ID	**Maximum**			PAOC X				
Station ID	**Concentration**	**Lowest**	**Highest**	VEPX-SO09		VEPX-SO10	VEPX-SO11	VEPX-SO12
Sample ID	**Detected in surface soil**	**Detected**	**Detected**	VEPX-SS09-0H-0309	VEPX-SS09P-0H-0309	VEPX-SS10-0H-0309	VEPX-SS11-0H-0309	VEPX-SS12-0H-0309
Sample Date	**at the PI 21 Site**	**Concentration**	**Concentration**	03/09/09	03/09/09	03/09/09	03/09/09	03/09/09
Chemical Name								
Total Metals (MG/KG)								
Antimony	0.34 J	0.02 J	4.7 J	1	1	1.4	0.78	0.28

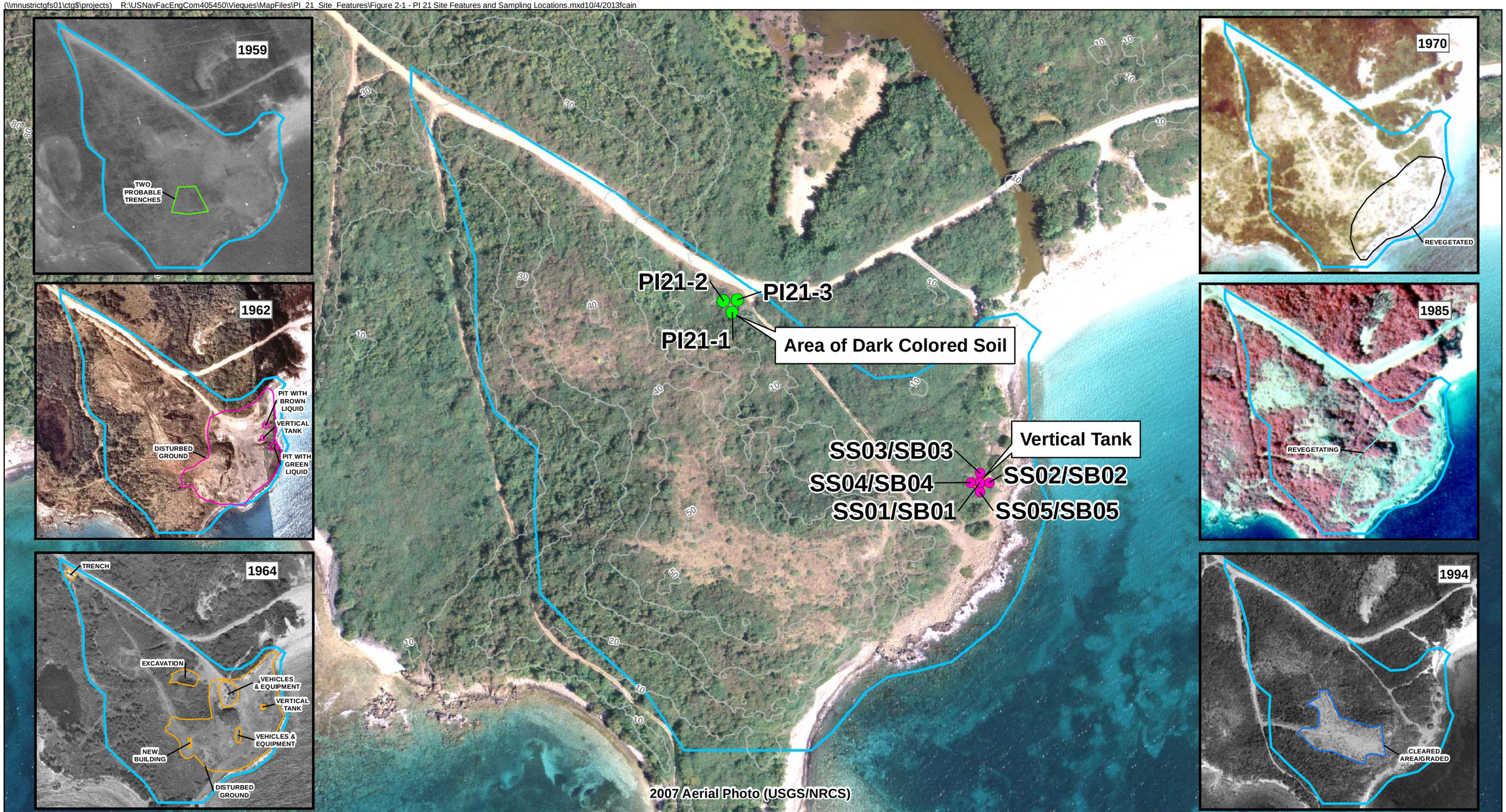
Notes:

Shading indicates detections

J - Analyte present, value may or may not be accurate or precise

MG/KG - Milligrams per kilogram

(\\mnustrictgfs01\ctg$\projects) R:\USNavFacEngCom405450\Vieques\MapFiles\PI_21_Site_Features\Figure 2-1 - PI 21 Site Features and Sampling Locations.mxd10/4/2013fcain

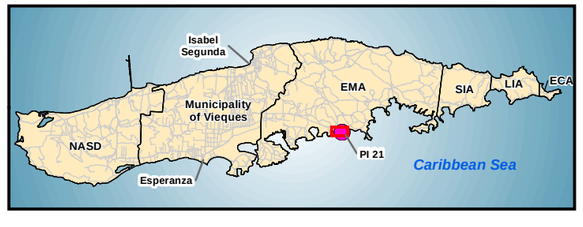


EBS Historic Aerial Photo Findings

- 1959 Findings
- 1962 Findings
- 1964 Findings
- 1970 Findings
- 1985 Findings
- 1994 Findings

- EBS Sample Locations (2002)
- SI Sample Locations (2013)
- Topographic Contours (10 Foot)
- PI 21

Note:
EBS - Environmental Baseline Survey

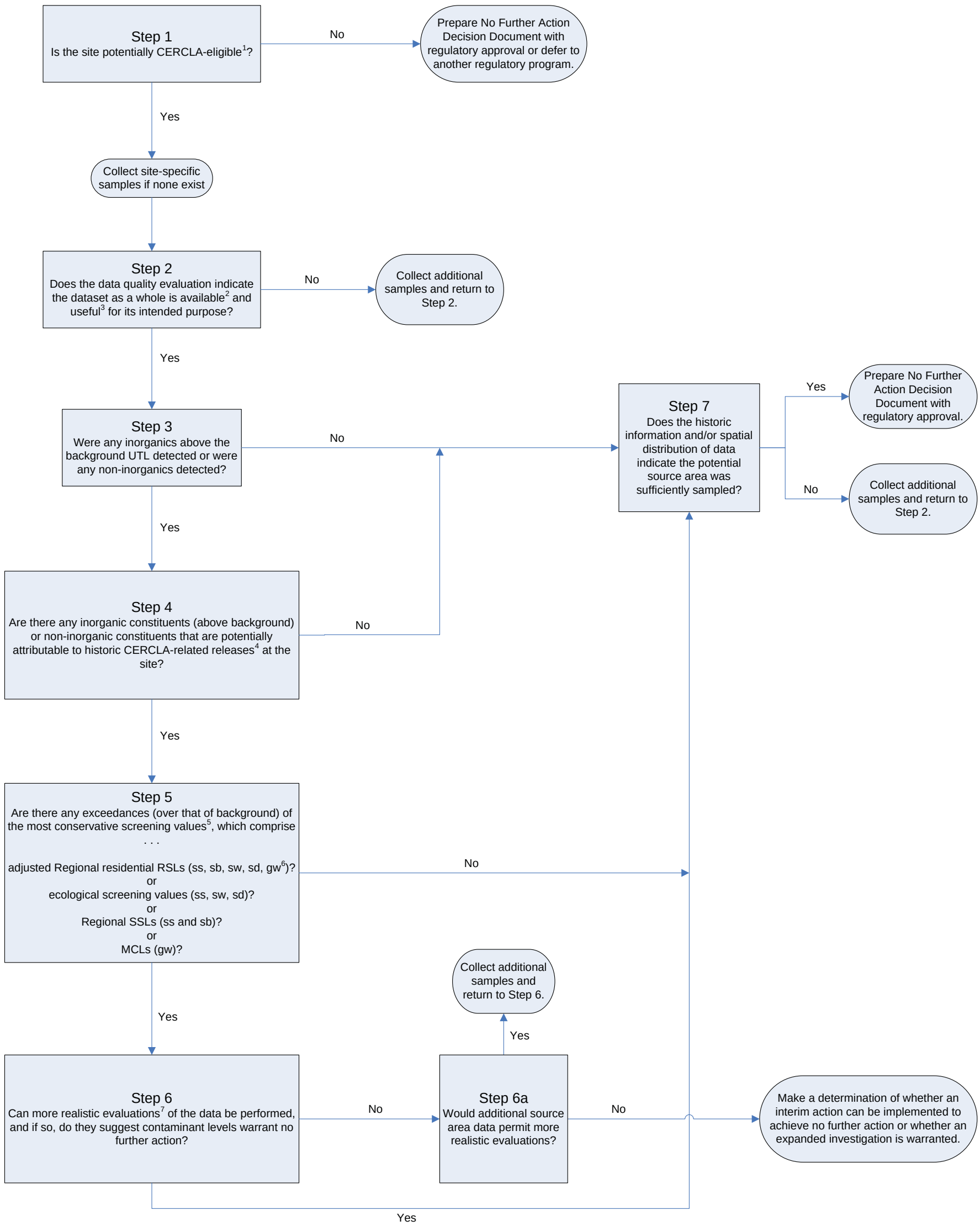


N W E S

0 100 200 400 Feet

Figure 2-1
PI 21 Site Features and Sampling Locations
No Action Decision Document PI 21
Atlantic Fleet Weapons Training Area - Vieques
Former Vieques Naval Training Range
Vieques, Puerto Rico

CH2MHILL



Notes:
The decision makers associated with this decision tree are the Navy, USEPA, PREQB, and USFWS.

[1] Determination of CERCLA eligibility is described in Worksheet #11 of the Final SI/ESI SAP Addendum for PI 21 (CH2M HILL, 2013) and in Section 1.1 of the Final PA/SI Report (CH2M HILL, June 2008)

[2] "Available" data are described in Worksheet #37 of the Final SI/ESI SAP Addendum for PI 21 (CH2M HILL, 2013)

[3] "Useful" data are described in Worksheet #37 of the Final SI/ESI SAP Addendum for PI 21 (CH2M HILL, 2013)

[4] CERCLA-related releases are defined in Worksheet #11 of the Final SI/ESI SAP Addendum for PI 21 (CH2M HILL, 2013) and in Section 1.1 of the Final PA/SI Report (CH2M HILL, June 2008)

[5] For UST sites, PREQB UST Corrective Action Criteria are also included in the evaluation

[6] ss = surface soil; sb = subsurface soil; sw = surface water; sd = sediment; gw = groundwater

[7] Examples of the types of more realistic evaluations that may be performed are described in Section 1.1 of the Final PA/SI Report (CH2M HILL, June 2008)

Figure 2-2
Decision Tree
No Action Decision Document PI 21
Atlantic Fleet Weapons Training Area – Vieques
Former Vieques Naval Training Range
Vieques, Puerto Rico

SECTION 3

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Appendix A
Soil Boring Logs

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
408040.FI.FR.01	#1	SHEET 1 OF 1

SOIL BORING LOG

PROJECT: PI-21 - NAVFAC LOCATION: LOCATION #1 DATE: 4/11/13

WEATHER: SUNNY / CLEAR 80'S DRILLING CONTRACTOR: NA ~~EDS~~ PK

DRILLING METHOD AND EQUIPMENT USED: HAND AUGER

WATER LEVELS: NA START: 0800 END: 0920 LOGGER: R. FIELDS

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone Above Hole
0.5	0-~~1.5~~ 0.7 PK	NA	NA	NA	0-0.7' ORGANIC SILTS (OL) DARK BROWN (7.5YR 3/4) DRY, LOOSE, NO COHESIVE NON-PLASTIC, FINE TO MEDIUM GRAINED SAND, GRAVEL	PID BZ = 0.0 ppm PID ABOVE HOLE = 0.0 ppm
1.0	0.7-1.5'	NA	NA	NA	0.7-1.5' SILT WITH SAND (ML) 10YR 4/3 (BROWN) MOIST, NON PLASTIC, NON COHESIVE, SILT W/SAND W/LITTLE TO FEW SMALL GRAVEL, VERY FINE TO FINE SAND	0800 COLLECT SAMPLE VEP21-SS01-0001 0-12" + VEP21-SS01P-0001 PID = 0
1.5						0920 COLLECT SAMPLE VEP21-SB01-011H 12-18"
2.0						
2.5						

4/11/13

Sampler Signature: Date: 4/11/13

Soil Boring Blank Log.xlsx

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
408040.FI.FK.01	#2	SHEET 1 OF 1

SOIL BORING LOG

PROJECT: PI-21 / NAVFAC LOCATION: #2 DATE: 4/11/13

WEATHER: SUNNY / CLEAR 80'S DRILLING CONTRACTOR: NA ~~EDS~~ RG

DRILLING METHOD AND EQUIPMENT USED: HAND AUGER

WATER LEVELS: START: 1015 END: 1130 LOGGER: R. FIELDS

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone Above Hole
0.5	0-1.4'	NA	NA	NA	0-1.4' SILT WITH SAND (ML) 10YR 3/3 (DARK BROWN), MOIST, NON PLASTIC, NON COHESIVE SILT W/SAND, VERY FINE TO FINE SAND, FEW SMALL GRAVEL	PID (BZ) = 0.0 ppm PID ABOVE HOLE = 0.0 ppm 1015 COLLECT SAMPLE VEP21-SS02-0001
1.0						
1.4						
1.5					* NOTE: OFFSET LOCATION ≈ 10' TO THE WEST. R. FIELDS	1130 COLLECT SAMPLE VEP21-SB02-0011H PID = 0.0 ppm
2.0						
2.5						

4/11/13

Sampler Signature: Date: 4/11/13

Soil Boring Blank Log.xlsx

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
408040.FI.FK.01	#3	SHEET 1 OF 1

SOIL BORING LOG

PROJECT: PI-21 / NAVFAC LOCATION: LOCATION #3 DATE: 4/11/13

WEATHER: SUNNY/CLEAR 80'S DRILLING CONTRACTOR: NA ~~EDS~~ RG

DRILLING METHOD AND EQUIPMENT USED: HAND AUGER

WATER LEVELS: START: 0830 END: 1025 LOGGER: R. FIELDS

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone Above Hole
0.5	0-0.9	NA	NA	NA	0-0.9' ORGANIC SILTS (OL) DARK BROWN (7.5YR 3/4) DRY, NON PLASTIC, NON COHESIVE, SILT WITH FINE TO MEDIUM GRAINED SAND, ROOTS, SMALL TO LARGE GRAVEL	PID (BZ) = 0.0 ppm PID ABOVE BOREHOLE = 0.0 ppm
0.9						
1.0					0.9-1.6' SILT WITH SAND (ML), 10YR 4/3 (BROWN) MOIST, NON PLASTIC, NON COHESIVE, SILT WITH VERY FINE TO FINE SAND LITTLE TO FEW SMALL TO LARGE GRAVEL	0830 COLLECT SAMPLE [VEP21-SS03-0001]
1.5						
1.6						1025 COLLECT SAMPLE [VEP21-SB03-0102] PID = 0.0 ppm
2.0						
2.5						4/11/13

Sampler Signature: [signature] Date: 4/11/13

Soil Boring Blank Log.xlsx

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
408040.FI.FK.01	#4	SHEET 1 OF 1

SOIL BORING LOG

PROJECT: PI-21 / NAVFAC LOCATION: LOCATION # 4 DATE: 4/11/13

WEATHER: SUNNY / CLEAR 80'S DRILLING CONTRACTOR: NA ~~EDS~~

DRILLING METHOD AND EQUIPMENT USED: HAND AUGER

WATER LEVELS: START: 0900 END: 1045 LOGGER: R. FIELDS

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone Above Hole
0.5	0-1.5'	NA	NA	NA	0-1.5' SILT WITH SAND (ML) (10YR 4/3), BROWN, MOIST NON PLASTIC, NON COHESIVE SILT WITH VERY FINE TO FINE SAND, FEW LARGE TO SMALL GRAVEL.	PID (BZ) = 0.0 ppm PID ABOVE BOREHOLE: 0.0 ppm 0900 COLLECT SAMPLE VEP21-SS04-0001 + VEP21-SS04-0001-MS VEP21-SS04-0001-SD
1.0						1045 COLLECT SAMPLE VEP21-SB04-0011H PID = 0.1 ppm
1.5						
2.0						
2.5						

DRY

4/11/13

Sampler Signature: Date: 4/11/13

Soil Boring Blank Log.xlsx

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
408040.FI.FK.01	#5	SHEET 1 OF 1

SOIL BORING LOG

PROJECT: PI-21 / NAVFAC LOCATION: LOCATION #5 DATE: 4/11/13

WEATHER: SUNNY / CLEAR 80'S DRILLING CONTRACTOR: NA ~~EDS~~ RR

DRILLING METHOD AND EQUIPMENT USED: HAND AUGER

WATER LEVELS: START: 1000 END: 1100 LOGGER: R. FIELDS

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone Above Hole
0.5	0-1.5'	NA	NA	NA	0-~~0~~ 1.5' SILT WITH SAND (ML), 10YR 3/3, DARK BROWN, MOIST, NON PLASTIC NON COHESIVE, SILT WITH VERY FINE TO FINE SAND WITH FEW SMALL TO LARGE GRAVEL	PID (BZ) = 0.0 ppm PID ABOVE BOREHOLE = 0.0 ppm 1000 COLLECT SAMPLE VEP21-SS05-0001 PID = 0.0 ppm
1.0						1100 COLLECT SAMPLE VEP21-SB05-0111 PID = 0.0 ppm
1.5						
2.0						
2.5						

Sampler Signature: [signature] Date: 4/11/13

Soil Boring Blank Log.xlsx

Appendix B
Data Quality Evaluation

Final

Data Quality Evaluation
No Action Decision Document
Photo-Identified (PI) Site 21

Atlantic Fleet Weapons Training Area-Vieques
Former Vieques Naval Training Range
Vieques, Puerto Rico

Contract Task Order 0037

June 2014

Prepared for

Department of the Navy
Naval Facilities Engineering Command
Atlantic

Under the

NAVFAC CLEAN 1000 Program
Contract N62470-08-D-1000

Prepared by

CH2MHILL

Virginia Beach, Virginia

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B-2 Data Availability and Use

APPENDIX B

Data Quality Evaluation

B.1 Data Quality Assessment

This data quality evaluation assesses the effect of the overall analytical process on the "availability" of the analytical data. "Availability" in this context refers to whether results can be used by the project team based on their analytical soundness. If a result is analytically sound, it is available for use for evaluating the potential releases, nature and extent of contamination, and estimating potentially associated human health and ecological risks. However, a particular result or group of results may not be "usable" for these purposes if other conditions apply. For example, if there were a hypothetical site where a TCE spill had occurred and the TCE data for many or all of the samples were rejected, the data may not be usable for making site-specific determinations even if all the non-TCE data were analytically sound and available for use by the project team. In order to avoid confusion of terms, this data quality evaluation differentiates the "availability" of results from "usability" of results. "Available" results are analytically sound and available for use by the project team to make decisions, even if they are not usable for a particular purpose.

The three major categories of data evaluation are laboratory performance, field collection performance (i.e. blank contamination), and matrix interferences. Evaluation of laboratory performance is a check for compliance with the method requirements; in other words, a check of whether the laboratory analyzed the samples within the limits of the analytical method. Additionally, a third-party validator (DataQual Environmental Services, LLC) conducted a review of the laboratory data to assess whether the analytical methods were within required control limits at the time of analysis. Evaluation of potential matrix interferences involves the review of several areas of results, including surrogate spike recoveries, matrix spike recoveries, and duplicate sample results. Evaluation of field collection performance, such as blank contamination and field duplicates, involves the review of field QC and the determination of their effect on the sample results.

The data evaluation and validation is a multi-tiered approach. The process begins with an internal laboratory review, continues with a review by a third-party data validator, and ends with an overall review by the Navy contractor project chemistry team. The process provides a medium for essential communication between the laboratory, validator, and project team, and allows for data quality to be thoroughly evaluated.

This document presents the results of the data quality evaluation performed on the data set corresponding to Vieques PI-21 (site), discrete surface and subsurface soil (matrices), and April 11-23 2013 (date range).

B.1.1 Laboratory Internal Quality Control Review

Prior to releasing the analytical data, the laboratory (Katahdin Analytical Services, Inc.) reviewed both the sample and QC data to verify sample identity, instrument calibration, LOQs, dilution factors, numerical computations, accuracy of transcriptions, and chemical interpretations. In addition, the QC data were tabulated and the results reviewed to ascertain whether they were within the contract-required or laboratory-defined limits for accuracy and precision. Any non-conforming data were discussed in the data package cover letter and case narrative. The case narrative was then reviewed by the data validator and incorporated into the data validation report. If necessary, the exceedances were verified and qualifiers were applied based on this information.

B.1.2 Data Validation

A third-party data validator reviewed all data packages using the validation criteria outlined in the site-specific UFP-SAP Worksheets #34-36 (CH2M HILL, 2009). For the most part, these Worksheets reference the appropriate Region II SOP if such an SOP exists for that analysis method. Then, UFP-SAP limits are used in place of those referenced in the SOP. If a Region II SOP does not exist for the analysis method, then the data are validated against the limits in the UFP-SAP. Guidance and qualifiers are taken from related Region II SOPs and guidance is taken from National Functional Guidelines. The following protocol was used for validation:

- For VOA via SW-846 8260B:
  - "Validation of Organic Data Acquired Using SW-846 Method 8260B (SOP HW-24, Rev. 2)" (August, 2008)
  - UFP-SAP Addendum limits for accuracy/precision (CH2M Hill, 2013)
  - Guidance from "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review" (EPA, October, 1999) as needed

- For SVOA via SW-846 8270D and 8270D_SIM:
  - "Validation of Organic Data Acquired Using SW-846 Method 8270D (SOP HW-22, Rev. 3)" (October, 2006)
  - UFP-SAP Addendum limits for accuracy/precision
  - Guidance from "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review" as needed

- For PEST/PCB via SW-846 8081B and 8082A:
  - "Validation of Organic Data Acquired Using SW-846 Method 8081B (SOP HW-44, Rev. 1)" (October, 2006)
  - "Validation of Organic Data Acquired Using SW-846 Method 8082A (SOP HW-45, Rev. 1)" (October, 2006)
  - UFP-SAP Addendum limits for accuracy/precision
  - Guidance from "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review" as needed

- For METAL via SW-846 6020, 7471A, and 9012:
  - UFP-SAP and UFP-SAP Addendum QA/QC criteria referencing analytical methods and laboratory SOPs
  - Guidance and qualifiers from "Validation of Metals for the Contract Laboratory Program (CLP) based on SOW ILM05.3 (SOP HW-2, Rev. 13)" (September, 2006)
  - Guidance from "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review" (EPA, October, 2004) as needed

Although not subject to such stringent data validation, WCHEM and GRAINSIZE data were still subject to the verification and validation procedures outlined in Worksheets #34-36.

As stated above, the data validation process was separate from the laboratory's internal review. The process was specifically focused on the effects of the laboratory's performance and sample matrix on the analytical results. Areas of review consisted of holding time compliance, surrogate recovery accuracy, matrix spiked sample precision and accuracy, blank contamination, initial and continuing calibration accuracy and precision, laboratory control sample accuracy, internal standard response and retention time accuracy, instrument tune criteria accuracy, and duplicate sample precision (laboratory replicates and field duplicates).

Multiple analyses are most-often the result of concentrations exceeding the calibration range or QC results outside of control limits. When multiple analyses were performed, the “best result” was selected for purposes of this data quality evaluation. Among multiple valid and/or invalid results, the “best result” is:

1. The non-rejected result
2. The result from the appropriate concentration range (dilution factor)
3. The detect when one or more result is detected and one or more result is nondetect
4. The greater of detects, and
5. The lesser of nondetects (U-Values).

Qualification of data is not an unusual occurrence. To define a laboratory QC exceedance and when a laboratory QC exceedance occurs, the laboratory refers to its in-house SOPs. The SOPs are based on DOD requirements, the requested analytical method, and accumulated laboratory experience. When a laboratory QC exceedance occurs, the situation may be acceptable or it may require further action by the laboratory, such as application of a laboratory qualifier or re-extraction and/or reanalysis of the sample. The data validator uses a separate set of QC criteria, based on guidance from the EPA region that applies to the samples. A laboratory QC exceedance may not constitute a data validation exceedance and a data validation exceedance may not constitute a laboratory QC exceedance. Data validation criteria exceedances may result in the qualification of or rejection of data, as deemed appropriate by the data validator.

The data validator examines each data point and determines any effects that QC exceedances have had. Most often, these effects dictate that the result or limit of detection (LOD) should be considered estimated, but is still available for use. The J-qualification, UJ-qualification, and U-qualification of results are common occurrences and have no adverse effect on the availability of that result to the project team for making decisions. J-qualified results are available, at the reported result, for use as detects as long as they are considered “estimated” by the project team. Human health risk assessment guidance suggests that these qualifiers “indicate uncertainty in the reported concentration of the chemical, but not in its assigned identity. Therefore, these data can be used just as positive data with no qualifiers or codes.” In addition, the same risk assessment guidance (EPA, 1989) suggests that one should use “J-qualified concentrations the same way as positive data that do not have this qualifier”. U-qualified and UJ-qualified results are available, at the reported LOD or level, for use as nondetects as long as they are considered “nondetect,” “not detected at significantly greater than that in an associated blank” or “nondetect, estimated LOD,” as appropriate.

In extreme cases, a result is rejected and deemed to be unusable. “Unusable” in this instance is defined as a result that is not analytically sound and is not generally considered available for use by the project team. In some cases, the project team may still decide to use a rejected result. An example of this occurrence would be if a result is rejected because it is biased extremely high, yet it is still below the screening level (SL). A conservative decision may be made to consider this result a non-exceedance, even if its concentration was rejected. For that reason, it is important to examine why a result was rejected. For the most part, however, rejected results are not usable, and the R-qualifier is the only qualifier that has an adverse effect on the availability of data.

In large data sets, rejected results are often inconsequential because there are sufficient non-rejected data available to the project team. If there are enough non-rejected data or the project team is able to infer results from adjacent sampling locations or there is other site-specific information that can provide additional lines of evidence, it may not be necessary to know the concentrations of some rejected constituents. It may also not be necessary to prove a constituent’s absence if there are sufficient additional lines of evidence.

B.1.3 Primary Data Validation Qualifiers

The following data validation qualifiers were applied to one or more analytical results:

- **U** - Not detected. Sample was analyzed for this parameter, but it was not detected at greater than the reported LOD. The data validator may also apply this qualifier to indicate that a concentration was not detected at significantly greater than that in an associated blank. Thus, this qualifier does not necessarily indicate a quality control exceedance.
- **UJ** – Not detected, LOD estimated. Sample was analyzed for this parameter, but it was not detected above the reported LOD. The LOD for this parameter is estimated due to a quality control exceedance.
- **J** - Concentration estimated. The parameter was positively identified and the associated numerical value is the approximate concentration of the parameter in the sample. Often, a J-qualifier is applied simply because the result was less than the limit of quantitation and thus does not necessarily indicate a quality control exceedance.
- **NJ** - Qualitative identification questionable due to poor resolution. The parameter was presumptively identified and the associated numerical value is the approximate concentration of the parameter in the sample.
- **R** - Rejected. The result was rejected because quality control limits were exceeded. It may or may not have been detected by the laboratory. The presence or absence of the parameter cannot be verified and the result generally is not usable as detected or not detected.
- **[No qualifier present] -** Detected. Qualification was not warranted.

B.1.4 Impact of Data Quality on Project Data Quality Objectives and Data Usability

The laboratories analyzed the samples in accordance with EPA SW-846 methods. The data packages were reviewed by a data validator taking guidance from USEPA Region II Validation procedures.

The laboratory utilized various qualifiers to represent “below reporting limit,” “nondetect,” and “detected.” Any other extraneous laboratory qualifiers were superseded by data validation qualifiers. The data validator utilized J-qualifiers, NJ-qualifiers, UJ-qualifiers, U-qualifiers, and R-qualifiers to represent “estimated,” “presumptively present at approximate quantity”, “nondetect, estimated LOD,” “nondetect or not detected at significantly greater than that in an associated blank,” and “rejected,” respectively. The only time the data validator changed a result’s detect status was when J-qualifiers were changed to U-qualifiers (detect to nondetect) as a result of blank contamination. There were also eight instances where R-qualifiers were applied to nondetected data as a result of a continuing calibration recovery below QC limits.

The J-, NJ-, and UJ-qualifiers indicate that some results are estimated. These qualifiers indicate that data are available for use as detects, detects, and nondetects, respectively. These qualifiers do not necessarily indicate a problem that adversely affects the availability of data. For example, J-qualifiers are often applied simply because results are below the quantitation limit.

Region II data validation guidance mandates the use of J- and UJ-qualifiers when QA/QC exceedances dictate their necessity. This is distinctly different from other EPA regions, such as Region I and Region III. In Region I, a data validator may use J^+ and J^--qualifiers to indicate that data are biased high or biased low, respectively. In Region III, a data validator may use K- and L-qualifiers to indicate that data are biased high or biased low, respectively. In Region III, a data validator may use UL-qualifiers to indicate that quantitation limits are biased low and may use B-qualifiers to indicate when results may be attributable to blank contamination. In Region II, if the direction of bias is known, it is not implied by the J- or UJ-qualifier. In Region II, if a result is attributable to blank contamination, it is U-qualified and is no longer distinguishable from results that are simply nondetect. The U-qualified value is elevated to the LOD if necessary. This supports the practice that J-qualified results, while estimated, are available for

use as detects at their qualified concentration and U- and UJ-qualifiers are available for use as nondetects at their qualified LOD or level. In general, J-, UJ-, and U-qualified results are available for use as qualified for evaluating potential releases, the nature and extent of contamination, and estimating potentially associated human health and ecological risks.

It is a common occurrence for achieved LODs to be greater than SLs or for LODs to be elevated above what was expected or requested. In many cases, SLs are simply unreasonably low or the laboratory was forced, by the analytical method or sample matrices, to raise limits for various reasons. In the instance where nondetect LODs are greater than SLs, the results are available for use as nondetects, but their use adds uncertainty to the conclusions drawn. There are a variety of typical and potentially unavoidable reasons why the reporting limits of nondetect results may exceed SLs:

- If an SL is unreasonably low, current instrumentation technology may not be able to achieve a LOD less than the SL.
- The laboratory-specific limits may have been established at a time when the SL was higher (less stringent) or not present, but the reporting is being done using new (more stringent) criteria. Published screening levels, such as EPA Regional Screening Levels, may change periodically as toxicity values are updated.
- If a target compound or analyte is present at an elevated level, the laboratory will dilute the entire sample in order to report that concentration within the instrument's linear calibration range. It may not be possible to analyze the sample at a lesser dilution if the target compound's high concentration is likely to damage or saturate the instrument. The high concentration of a non-target compound or analyte may also necessitate initial dilution for the same reason.
- If matrix effects mask low concentrations, the laboratory may be forced to elevate their limits to demonstrate the fact that low concentrations cannot be detected.
- If matrix effects are particularly strong, the laboratory may be forced to analyze the sample at an initial dilution in an attempt to dilute the matrix effects.
- If historical concentrations warrant, the laboratory detects an odor or the field team designates a sample as "expected high concentration," the laboratory may pre-screen the sample and initially dilute it.
- If the sample appearance indicates possible high concentrations, the laboratory may be forced to analyze the sample at a concentration range different from what is requested. For example, if a sample is designated as "groundwater," but is actually an emulsion or sludge, the laboratory may be forced to analyze the sample using the "medium" instead of the "low" or "SIM" concentration range.
- If the field team cannot provide the full sample volume, the laboratory may be forced to dilute the sample by adding water until the minimum volume is achieved.
- If a soil or sediment sample is characterized by high percent moisture, the reporting limits will be elevated such that the concentrations and quantitation limits are reported on a dry-weight basis.

B.1.5 Comparison of Nondetects to Screening Levels

When evaluating the data and making decisions, the project team compares detected sample results to SLs in order to determine exceedances. For this project, the SLs are as follows:

- Soil (surface and subsurface) samples are compared to the appropriate Vieques East Soil Background, Adjusted Residential Soil EPA Regional Screening Levels (RSLs) (May, 2013), and SSLs.
- Surface soil samples are also compared to Soil Ecological Screening Values (ESVs).

Nondetect results are also compared to SLs, typically during a risk assessment or exceedance screening, by comparing one-half the LOD to the SL. However, this is only done when the same constituent was detected in another sample of the same matrix at the same site. The assumption is that, if the

constituent is present in a given sample of a particular matrix at a site, then it may also be present at low concentrations (less than the LOD) in a nondetect sample of the same matrix from the same site. However, when a constituent was not detected in any samples of a particular matrix at a site, then it is considered not present at the site in that matrix. In this instance, it is important to compare the nondetect results to the SL. If the nondetect results (LODs) are not low enough when compared to the SL, then it may be possible that the constituent is present in a sample at greater than the SL but not detected or reported by the laboratory instrumentation. This situation is a common occurrence and is not cause for alarm. There are various typical reasons why this occurs and is expected. Please refer to section B.0.4, above. Then, refer to **Table B-1**. It should be noted that whenever a nondetect U-value exceeded one or more applicable SLs, the SSL was the lesser of applicable SLs. For the purpose of performing this comparison, the minimum of applicable SLs for each matrix (SSLs) is considered to be the SL for each combination of matrix, analysis group, and analyte. One row (combination of matrix, analysis group, and analyte) was generated if there was at least one instance where a nondetect U-Value (LOD or detected result U-qualified due to blank contamination) exceeded a SL.

The minimum and maximum U-Values are further presented in **Table B-1**. The minimum U-Value is generally understood as the lowest LOD that the instrumentation can practically report considering the conditions at the site. The maximum U-Value is then generally understood as the LOD adjusted for the worst conditions (i.e. greatest dilution factors, matrix interference, and percent moisture). Because there is not a large spread between the minimum and maximum U-Values, it is therefore concluded that the site conditions did not have a significant impact on the analysis for this data set. There are 1,840 nondetect (U- or UJ-qualified) data points in this data set. Of these, 513 nondetect data points exceeded the SSL. They corresponded to four nondetect data points (one analyte; selenium) in the METAL fraction, 66 nondetect data points (six analytes; alpha-BHC, Aroclor-1221, Aroclor-1232, beta-BHC, delta-BHC, and dieldrin) in the PEST/PCB fraction, 241 nondetect data points (23 analytes) in the SVOA fraction, and 201 nondetect data points (19 analytes) in the VOA fraction. In five cases (1,1-dichloroethene, benzene, methyl-tert-butyl ether, benzo(a)anthracene, and selenium), the maximum U-Value exceeded the SSL but the minimum U-Value did not. These are instances where the LOD is usually low enough, but conditions necessitated elevating the LOD in one or more samples. In the remaining cases, the minimum U-Value exceeded the SSL. These are instances where the concentration range is not low enough to practically report an LOD at less than the SSL. In these instances, however, where the LOD > SSL, the instrumentation may still be able to report a result, if an analyte is detected in a sample at greater than the SSL, when the DL is less than the SSL.

Therefore, when a U-Value exceeds a SL, it is worthwhile to consider the DL. Note that DLs, as reported by the laboratory and as presented in **Table B-1**, are “Adjusted DLs” in that they are adjusted for dilution factors, matrix interference, etc. This is synonymous with the adjustment of nondetect results (U-Values or LODs), and also detected results. The DL is the level at which the laboratory is able to distinguish a detection from noise, and therefore is able to report a detection. Furthermore, the laboratory will report (J-qualified as applicable) any detections at greater than the DL. The minimum and maximum DLs are also presented in **Table B-1**. Unshaded rows are those where the U-Value is greater than the SSL, but the DL is less than the SSL for all nondetect samples. A total of 20 rows (combinations of analysis group and constituent; corresponding to 201 results) correspond to instances where the U-Value is greater than the SSL but the DL is still less than the SSL. A total of three rows (corresponding to 33 results, shown in light yellow) correspond to instances where the U-value is greater than the SSL and at least one nondetect DL is also greater than the SSL. A total of 26 rows (corresponding to 278 results, shown in pink) correspond to instances where the U-Value is greater than the SSL and the DL is also greater than the SSL for all nondetect results.

Looking at **Table B-1** from an analytical group standpoint, one can see that there are several affected analytes for VOAs and SVOAs and only a few affected analytes for PEST/PCBs. This phenomenon is due to unrealistically low SSLs (established without considering current instrumentation technology), which the reporting limits could not meet.

For these instances where the DL is greater than the SSL, the data user must understand that an analyte may be present in a sample at or at greater than the SSL, but the laboratory instrumentation may not be sensitive enough to detect it. This phenomenon is unavoidable when projects use a "Full TCL/TAL" approach and the project team is not able to focus on constituents of concern. This is most-common for projects in the early stages of investigation. However, because there is no suspected release for any of these contaminants, it should not be necessary to demonstrate their absence at less than the SSL. It is also worth noting that the achieved reporting limits are comparable to those required by the UFP-SAP and Addendum and so the laboratory performed the analyses at the concentration ranges specified in the approved work plan.

All nondetect U-values were less than ESVs and there were only 11 nondetect U-values at greater than the RSL (one analyte, dibenz(a,h)anthracene, in all samples).

B.1.6 Laboratory Qualifications, Data Validation Qualifiers, Data Validation Reason Codes, Data Availability, and Data Use

Please refer to **Table B-2**. For the complete data set, all combinations of laboratory qualifier, data validation qualifier, and data validation qualifier are provided. For each combination, the count (number of results that possess this combination) is provided as well as the determination of whether such a result is available for use as reported, available for use as qualified, or not available for use (rejected). Totals for each are provided. In addition, the procedure used for qualification is described in addition to the reason for qualification.

A total of 65.04% of the data are available for use as reported by the laboratory. A total of 34.58% of the data are available for use as qualified by the data validator. Altogether, a total of 99.62% of the data are available for use, qualified as applicable. The UFP-SAP project completeness goal of "95% available data" was met for this data set and overall, the data completeness is excellent. A total of 0.3749% of the data are rejected and not available for use.

B.2 Vieques PI-21 Soil

The purpose of this data quality evaluation is to summarize the findings of the data validation and any effects on the availability of the soil data within Vieques PI-21, as well as to provide an assessment of data usability. Soil samples were collected by CH2M HILL, Inc. on April 11, 2013 and April 23, 2013.

B.2.1 Soil VOA

SOM01-List VOCs (excluding 1,4-Dioxane) were analyzed via SW-846 8260B. The validation process resulted in the following qualifiers for results in the VOA fraction:

Matrix	Analysis Group	Validator Qualifier	QC Narrative	Count	Percent
Soil	VOA	UJ	SSL	466	81.46%
Soil	VOA	U	[NONE]	91	15.91%
Soil	VOA	UJ	ISL	9	1.57%
Soil	VOA	J	SSL	2	0.35%
Soil	VOA	UJ	ICH	2	0.35%

Matrix	Analysis Group	Validator Qualifier	QC Narrative	Count	Percent
Soil	VOA	UJ	CCL	1	0.17%
Soil	VOA	UJ	CCH	1	0.17%
				572	100.00%

100.00% not R-flagged and available for use

B.2.2 Soil SVOA

SOM01-List SVOAs (including 1,4-Dioxane) were analyzed via SW-846 8270D and 8270D_SIM. The validation process resulted in the following qualifiers for results in the SVOA fraction:

Matrix	Analysis Group	Validator Qualifier	QC Narrative	Count	Percent
Soil	SVOA	U	[NONE]	659	88.10%
Soil	SVOA	UJ	ICH	33	4.41%
Soil	SVOA	UJ	CCL	16	2.14%
Soil	SVOA	J	[NONE]	15	2.01%
Soil	SVOA	UJ	CCH	11	1.47%
Soil	SVOA	R	CCL	8	1.07%
Soil	SVOA	UJ	MSL	4	0.53%
Soil	SVOA	[NONE]	[NONE]	1	0.13%
Soil	SVOA	J	CCH	1	0.13%
				748	100.00%

98.93% not R-flagged and available for use

All R-flags were applied due to an extremely low recovery in a continuing calibration. The continuing calibration is used to ensure the instrument remains calibrated throughout an entire analytical run. Because 2,4-dinitrophenol was characterized by extremely low recovery in the continuing calibration, there may be a potential extreme low bias for 2,4-dinitrophenol in the field samples. Therefore, related nondetects were R-qualified as “rejected” by the data validator.

R-qualified results are not available for use by the project team, but the data user can confidently draw conclusions with the available data in the overall dataset. The only affected analyte was 2,4-dinitrophenol. There are still three available nondetects for 2,4-dinitrophenol in soil associated with an acceptable continuing calibration.

B.2.3 Soil Pesticides and PCBs

SOM01-list pesticides and PCBs were analyzed via SW-846 8081B and 8082. The validation process resulted in the following qualifiers for results in the pesticides and PCBs fraction:

Matrix	Analysis Group	Validator Qualifier	QC Narrative	Count	Percent
Soil	PEST/PCB	U	[NONE]	174	52.73%
Soil	PEST/PCB	UJ	SSL	133	40.30%
Soil	PEST/PCB	J	SSL	10	3.03%
Soil	PEST/PCB	J	2C	6	1.82%
Soil	PEST/PCB	J	[NONE]	5	1.52%
Soil	PEST/PCB	NJ	2C	2	0.61%
				330	100.00%

100.00% not R-flagged and available for use

B.2.4 Soil Metals

ILM05-List metals, mercury, and cyanide were analyzed via SW-846 6020, 7471A, and 9012B, respectively. The validation process resulted in the following qualifiers for results in the metals fraction:

Matrix	Analysis Group	Validator Qualifier	QC Narrative	Count	Percent
Soil	METAL	[NONE]	[NONE]	179	67.80%
Soil	METAL	J	[NONE]	33	12.50%
Soil	METAL	J	MSL	22	8.33%
Soil	METAL	U	[NONE]	11	4.17%
Soil	METAL	U	MBL	10	3.79%
Soil	METAL	U	CCBL	9	3.41%
				264	100.00%

100.00% not R-flagged and available for use

B.2.5 Soil Wet Chemistry

Wet chemistry (pH and TOC) were analyzed via SW-846 9045C and Lloyd Kahn, respectively. No qualifiers were deemed necessary or applied.

B.2.6 Soil Grain Size

Grain size (sieve-only, no hydrometer) was analyzed via ASTM D422. No qualifiers were deemed necessary or applied.

B.3 PARCC Considerations

B.3.1 Precision

Precision is defined as the agreement between duplicate results and was characterized by comparing duplicate matrix spike recoveries, laboratory replicates, and field duplicate sample results. For this data set, precision was also assessed by examining dual-column reproducibility (percent difference between instrument columns). There is no actual significant negative impact on precision because no data points were deemed unusable (rejected) due to precision exceedances (dual column reproducibility).

B.3.2 Accuracy

Accuracy is a measure of the agreement between an experimental determination and the true value of the parameter being measured. For organic analyses, each sample was spiked with surrogate compounds; and for organic and inorganic analyses, an MS/MSD and LCS were spiked with a known parameter concentration before preparation. Internal standards also provide a measure of accuracy. Internal standards, surrogates and MS/MSD provide a measure of the matrix effects on the analytical accuracy. LCS demonstrates accuracy of the method and the laboratory's ability to meet the method criteria. Accuracy is also assessed by calibration recoveries. There is no significant negative impact on accuracy due to QC exceedances because very few data points were deemed unusable (rejected) due to accuracy exceedances (continuing calibration recovery). Refer to Section B.1.2, above.

B.3.3 Representativeness

Representativeness is a qualitative measure of the degree to which sample data accurately and precisely represent a characteristic environmental condition (in this case, nature and extent of contamination). Representativeness is a subjective parameter and is used to evaluate the efficacy of the sample planning design. In terms of data quality, representativeness was assured because the sampling team followed approved standard operating procedures for sample collection and handling, and the laboratory followed approved standard operating procedures for sample handling, preparation, and analysis.

B.3.4 Completeness

For purposes of this DQE, completeness is defined as the percentage of measurements that are judged to be valid; validity being defined by the DQOs. Therefore, completeness is calculated as the number of analytically-sound results that are available for use compared to the total number of measurements made. USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review; EPA 540/R-99/008; October, 1999, USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review; EPA 540-R-04-004; October, 2004; SOP HW-22 Validation of Organic Data Acquired Using SW-846 Method 8270D (Rev. 3, October, 2006); SOP HW-44 Validation of Organic Data Acquired Using SW-846 Method 8081B (Rev. 1, October, 2006); SOP HW-45 Validation of Organic Data Acquired Using SW-846 Method 8082A (Rev. 1, October, 2006) and Validation of Metals for the Contract Laboratory Program (CLP) based on SOW ILM05.3 (Rev. 13, September, 2006) designate all results except those R-qualified as "rejected" to be available for use as analytically-sound results. The R-qualifier is the only qualifier that negatively affects a data point's availability. Completeness is provided, above, for each combination of matrix and analysis group.

The overall completeness goal of 95% was met for this data set; it was also met for the individual matrices and for each combination of matrix and analysis group. All planned samples were collected and analyzed.

B.3.5 Comparability

Comparability is a qualitative measure designed to express the confidence with which one data set may be compared to another. Factors that affect comparability are sample collection and handling techniques, sample matrix, and analytical methods. In this case, because approved standard operating procedures were used for sample collection and handling, a common sample matrix was evaluated (soil) and EPA SW-846 methods were utilized, the data user may express confidence in the fact that this data set is comparable to others of acceptable data quality. In addition, comparability is controlled by the other PARCC parameters because data sets can be compared with confidence only when precision and accuracy are known. Except in the case of rejected data, precision and accuracy were demonstrated to be acceptable, and the data user may be confident that this data set is comparable to others of high data quality.

B.4 References

CH2M HILL. 2013. *Site Inspection/Expanded Site Inspection Sampling and Analysis Plan Addendum, Site Inspection for Photo-Identified (PI) Site 21*. February.

CH2M HILL. 2009. *Site Inspection/Expanded Site Inspection Sampling and Analysis Plan, 7 Consent Order Sites and 16 PI/PAOC Sites*. February.

EPA. 2006. *Validation of Metals for the Contract Laboratory Program (CLP) based on SOW ILM05.3.* SOP HW-2, September.

EPA. 2004. *Contract Laboratory Program National Functional Guidelines for Inorganic Data Review.* October.

EPA. 1999. *Contract Laboratory Program National Functional Guidelines for Organic Data Review.* October.

EPA. 1989. *Risk Assessment Guidance for Superfund: Volume I - Human Health Evaluation Manual.* EPA/540/1-89/002, Part A, October.

TABLE B-1

Comparison of Nondetects to Screening Levels

PI-21 No Action Decision Document

Former VNTR, Vieques, Puerto Rico

											For SSLs (the minimum SL)							
Matrix	Analysis Group	Analyte	CAS	SSL	RSL	ESV	Units	# Detects	min Detect	max Detect	# Exceeds	# NDs	min ND	max ND	# U-Value Exceeds	min ND DL	max ND DL	# ND DLs Exceed
SS or SB	VOA	1,1,2,2-Tetrachloroethane	79-34-5	0.026	560	5000	UG_KG	-	-	-	-	11	2.5	4	11	0.84	1.3	11
SS or SB	VOA	1,1,2-Trichloroethane	79-00-5	1.6	160	2000	UG_KG	-	-	-	-	11	2.5	4	11	0.97	1.6	0
SS or SB	VOA	1,1-Dichloroethane	75-34-3	0.68	3300	548	UG_KG	-	-	-	-	11	2.5	4	11	1.7	2.7	11
SS or SB	VOA	1,1-Dichloroethene	75-35-4	2.5	24000	-	UG_KG	-	-	-	-	11	2.5	4	10	0.93	1.5	0
SS or SB	VOA	1,2-Dibromo-3-chloropropane	96-12-8	0.086	5.4	-	UG_KG	-	-	-	-	11	2.5	4	11	1.5	2.4	11
SS or SB	VOA	1,2-Dibromoethane	106-93-4	0.014	34	-	UG_KG	-	-	-	-	11	2.5	4	11	1.2	1.9	11
SS or SB	VOA	1,2-Dichloroethane	107-06-2	1.4	430	-	UG_KG	-	-	-	-	11	2.5	4	11	1	1.6	2
SS or SB	VOA	1,2-Dichloropropane	78-87-5	1.7	940	38800	UG_KG	-	-	-	-	11	2.5	4	11	1.4	2.2	5
SS or SB	VOA	2-Hexanone	591-78-6	7.9	21000	-	UG_KG	-	-	-	-	11	12	20	11	4.8	7.7	0
SS or SB	VOA	Benzene	71-43-2	2.6	1100	-	UG_KG	-	-	-	-	11	2.5	4	10	0.92	1.5	0
SS or SB	VOA	Bromomethane	74-83-9	1.8	730	-	UG_KG	-	-	-	-	11	5	8	11	1.1	1.8	0
SS or SB	VOA	Carbon tetrachloride	56-23-5	1.9	610	-	UG_KG	-	-	-	-	11	2.5	4	11	1.3	2.1	2
SS or SB	VOA	cis-1,3-Dichloropropene	6923-20-2	0.15	1700	-	UG_KG	-	-	-	-	11	2.5	4	11	0.72	1.2	11
SS or SB	VOA	Methylene chloride	75-09-2	1.3	36000	1250	UG_KG	-	-	-	-	11	12	20	11	7.9	13	11
SS or SB	VOA	Methyl-tert-butyl ether (MTBE)	1634-04-4	2.8	43000	-	UG_KG	-	-	-	-	11	2.5	4	6	1.1	1.8	0
SS or SB	VOA	Tetrachloroethene	127-18-4	2.3	8600	200	UG_KG	-	-	-	-	11	2.5	4	11	1.2	1.9	0
SS or SB	VOA	trans-1,3-Dichloropropene	10061-02-6	0.15	1700	-	UG_KG	-	-	-	-	11	2.5	4	11	0.86	1.4	11
SS or SB	VOA	Trichloroethene	79-01-6	1.8	440	10	UG_KG	-	-	-	-	11	2.5	4	11	0.59	0.94	0
SS or SB	VOA	Vinyl chloride	75-01-4	0.69	60	412	UG_KG	-	-	-	-	11	5	8	11	0.87	1.4	11
SS or SB	SVOA	1,1-Biphenyl	92-52-4	8.7	5100	-	UG_KG	-	-	-	-	11	9.6	11	11	5.5	6.3	0
SS or SB	SVOA	1,2,4,5-Tetrachlorobenzene	95-94-3	5.8	1800	1000	UG_KG	-	-	-	-	11	240	270	11	130	150	11
SS or SB	SVOA	1,4-Dioxane	123-91-1	0.14	4900	-	UG_KG	-	-	-	-	11	48	55	11	1.1	1.2	11
SS or SB	SVOA	2,2'-Oxybis(1-chloropropane)	108-60-1	0.11	4600	-	UG_KG	-	-	-	-	11	24	28	11	6.5	7.4	11
SS or SB	SVOA	2,4,6-Trichlorophenol	95-95-4	13	6100	-	UG_KG	-	-	-	-	11	24	28	11	7.5	8.6	0
SS or SB	SVOA	2,4-Dinitrophenol	51-28-5	34	12000	20000	UG_KG	-	-	-	-	3	72	80	3	61	67	3
SS or SB	SVOA	2,4-Dinitrotoluene	121-14-2	0.28	1600	-	UG_KG	-	-	-	-	11	24	28	11	6.8	7.7	11
SS or SB	SVOA	2,6-Dinitrotoluene	606-20-2	0.058	330	8500	UG_KG	-	-	-	-	11	24	28	11	6.4	7.3	11
SS or SB	SVOA	3,3'-Dichlorobenzidine	91-94-1	0.71	1100	-	UG_KG	-	-	-	-	11	24	28	11	8.4	9.6	11
SS or SB	SVOA	4,6-Dinitro-2-methylphenol	534-52-1	2	490	1000	UG_KG	-	-	-	-	11	96	110	11	23	26	11
SS or SB	SVOA	4-Chloroaniline	106-47-8	0.13	2400	-	UG_KG	-	-	-	-	11	48	55	11	48	55	11
SS or SB	SVOA	4-Nitroaniline	100-01-6	1.4	24000	-	UG_KG	-	-	-	-	11	48	55	11	28	32	11
SS or SB	SVOA	4-Nitrophenol	100-02-7	0.079	4800	380	UG_KG	-	-	-	-	11	48	55	11	7.7	8.8	11
SS or SB	SVOA	Atrazine	1912-24-9	1.9	2100	-	UG_KG	-	-	-	-	11	9.6	11	11	0.96	1.1	0
SS or SB	SVOA	Benzo(a)anthracene	56-55-3	10	150	-	UG_KG	-	-	-	-	11	9.6	11	7	2.2	2.5	0

TABLE B-1

Comparison of Nondetects to Screening Levels

PI-21 No Action Decision Document

Former VNTR, Vieques, Puerto Rico

											For SSLs (the minimum SL)							
Matrix	Analysis Group	Analyte	CAS	SSL	RSL	ESV	Units	# Detects	min Detect	max Detect	# Exceeds	# NDs	min ND	max ND	# U-Value Exceeds	min ND DL	max ND DL	# ND DLs Exceed
SS or SB	SVOA	bis(2-Chloroethoxy)methane	111-91-1	11	18000	-	UG_KG	-	-	-	-	11	24	28	11	7.4	8.5	0
SS or SB	SVOA	bis(2-Chloroethyl)ether	111-44-4	0.0031	210	-	UG_KG	-	-	-	-	11	24	28	11	7.4	8.5	11
SS or SB	SVOA	Dibenz(a,h)anthracene	53-70-3	11	15	-	UG_KG	-	-	-	-	11	24	28	11	8.9	10	0
SS or SB	SVOA	Hexachlorobutadiene	87-68-3	0.5	6100	-	UG_KG	-	-	-	-	11	9.6	11	11	7	7.9	11
SS or SB	SVOA	Hexachloroethane	67-72-1	0.48	4300	-	UG_KG	-	-	-	-	11	9.6	11	11	4	4.5	11
SS or SB	SVOA	Isophorone	78-59-1	22	510000	-	UG_KG	-	-	-	-	11	24	28	11	16	19	0
SS or SB	SVOA	Nitrobenzene	98-95-3	0.079	4800	-	UG_KG	-	-	-	-	11	9.6	11	11	4.6	5.3	0
SS or SB	SVOA	Pentachlorophenol	87-86-5	10	890	5000	UG_KG	-	-	-	-	11	48	55	11	14	15	11
SS or SB	PEST/PCB	alpha-BHC	319-84-6	0.036	77	-	UG_KG	-	-	-	-	11	0.18	0.19	11	0.07	0.075	11
SS or SB	PEST/PCB	Aroclor-1221	11104-28-2	0.069	140	8000	UG_KG	-	-	-	-	11	1.8	1.9	11	1.6	1.8	11
SS or SB	PEST/PCB	Aroclor-1232	11141-16-5	0.069	140	-	UG_KG	-	-	-	-	11	2.1	2.2	11	1.9	2.1	11
SS or SB	PEST/PCB	beta-BHC	319-85-7	0.13	270	342	UG_KG	-	-	-	-	11	1.8	1.9	11	0.068	0.073	0
SS or SB	PEST/PCB	delta-BHC	319-86-8	0.13	270	-	UG_KG	-	-	-	-	11	0.18	0.19	11	0.066	0.071	0
SS or SB	PEST/PCB	Dieldrin	60-57-1	0.061	30	10.5	UG_KG	-	-	-	-	11	0.34	0.36	11	0.046	0.049	0
SS or SB	METAL	Selenium	7782-49-2	0.26	39	-	MG_KG	1	0.33	0.33	1	10	0.24	0.3	4	0.03	0.04	0

A row is provided to represent each instance (combination of analysis group and analyte) for which at least one U-value exceeds the screening level.

Light yellow shading indicates instances for which at least one nondetect DL exceeds the screening level.

Pink shading indicates instances for which the nondetect DL exceeds the screening level for all samples where the analyte is nondetect.

TABLE B-2

Data Availability and Use

PI-21 No Action Decision Document

Atlantic Fleet Weapons Training Area-Vieques

Former Vieques Naval Training Range

Vieques, Puerto Rico

Lab_Qual	Validator Qualifier	QC Narrative[1]	Count	Percent	Available as Reported	Available as Qualified	Not Available	Comment
U (and UL, ULL, ULLM, UM, UMM, and UU)	U	[NONE]	935	43.81%	43.81%			Not detected by the laboratory and miscellaneous QA/QC exceedances were noted. The reported result is the LOD. No further qualification was necessary.
U (and UL, ULMM, UM, and UMM)	UJ	SSL	597	27.976%		27.98%		Not detected by the laboratory and miscellaneous QA/QC exceedances were noted. The reported result is the LOD. The result is available for use at the reported LOD as long as the data user understands that it is "not detected, LOD estimated" due to low spiked surrogate recovery.
[NONE]	[NONE]	[NONE]	400	18.74%	18.74%			Detected by the laboratory. No further qualification was necessary.
J (and JM)	J	[NONE]	53	2.484%	2.484%			Detected by the laboratory at less than the LOQ and miscellaneous QA/QC exceedances were noted. No further qualification was necessary. The result is available for use at the reported value as long as the data user understands that it is "estimated".
U (and UMM)	UJ	ICH	35	1.640%		1.6401%		Not detected by the laboratory and miscellaneous QA/QC exceedances were noted. The reported result is the LOD. The result is available for use at the reported LOD as long as the data user understands that it is "not detected, LOD estimated" due to high initial calibration recovery.
[NONE]	J	MSL	22	1.031%		1.031%		Detected by the laboratory. The result is available for use at the reported value as long as the data user understands that it is "estimated" due to low matrix spike recovery.
U	UJ	CCL	17	0.7966%		0.7966%		Not detected by the laboratory. The reported result is the LOD. The result is available for use at the reported LOD as long as the data user understands that it is "not detected, LOD estimated" due to low continuing calibration recovery.
U (and UL, ULL, and UMM)	UJ	CCH	12	0.5623%		0.5623%		Not detected by the laboratory. The reported result is the LOD. The result is available for use at the reported LOD as long as the data user understands that it is "not detected, LOD estimated" due to high continuing calibration recovery.
J (and JL)	J	SSL	9	0.4217%		0.4217%		Detected by the laboratory at less than the LOQ. The result is available for use at the reported value as long as the data user understands that it is "estimated" due to low spiked surrogate recovery.
J	U	MBL	10	0.4686%		0.4686%		Detected by the laboratory at less than the LOQ. The data validator determined that the detect was not significantly high compared to the blank contamination, applied a U-flag, and raised the result to the LOD (if less than the LOD). The result is available for use as a nondetect as long as the data user understands that it was "not detected at significantly greater than that in an associated blank" due to method blank contamination.
J	U	CCBL	9	0.4217%		0.4217%		Detected by the laboratory at less than the LOQ. The data validator determined that the detect was not significantly high compared to the blank contamination, applied a U-flag, and raised the result to the LOD (if less than the LOD). The result is available for use as a nondetect as long as the data user understands that it was "not detected at significantly greater than that in an associated blank" due to continuing calibration blank contamination.
U	UJ	ISL	9	0.4217%		0.4217%		Not detected by the laboratory. The reported result is the LOD. The result is available for use at the reported LOD as long as the data user understands that it is "not detected, LOD estimated" due to low internal standard recovery.
U	R	CCL	8	0.3749%			0.3749%	Not detected by the laboratory. The reported result is the LOD. The result was rejected and is not available for use due to extremely low continuing calibration recovery. This corresponds to 2,4-dinitrophenol results in 8 soil samples.
JJ	J	2C	4	0.1874%		0.1874%		Detected by the laboratory at less than the LOQ and miscellaneous QA/QC exceedances were noted. The result is available for use at the reported value as long as the data user understands that it is "estimated" due to poor dual-column reproducibility (precision exceedance).
U (and ULMM and UMM)	UJ	MSL	4	0.1874%		0.1874%		Not detected by the laboratory and miscellaneous QA/QC exceedances were noted. The reported result is the LOD. The result is available for use at the reported LOD as long as the data user understands that it is "not detected, LOD estimated" due to low matrix spike recovery
[NONE]	J	SSL	3	0.1406%		0.141%		Detected by the laboratory. The result is available for use at the reported value as long as the data user understands that it is "estimated" due to low spiked surrogate recovery.
P	J	2C	2	0.0937%		0.0937%		Detected by the laboratory and miscellaneous QA/QC exceedances were noted. The result is available for use at the reported value as long as the data user understands that it is "estimated" due to poor dual-column reproducibility (precision exceedance).

TABLE B-2

Data Availability and Use

PI-21 No Action Decision Document

Atlantic Fleet Weapons Training Area-Vieques

Former Vieques Naval Training Range

Vieques, Puerto Rico

Lab_Qual	Validator Qualifier	QC Narrative[1]	Count	Percent	Available as Reported	Available as Qualified	Not Available	Comment
J (and JL)	UJ	SSL	2	0.0937%		0.0937%		Detected by the laboratory at less than the LOQ and miscellaneous QA/QC exceedances were noted. The data validator determined that the detect was not significantly high compared to the blank contamination, applied a U-flag, and raised the result to the LOD (if less than the LOD). An additional QA/QC exceedance was noted which warranted the application of a J-flag (resulting in a UJ-flag). The result is available for use as a nondetect as long as the data user understands that it was "not detected at significantly greater than that in an associated blank, LOD estimated" due to low spiked surrogate recovery.
J	J	CCH	1	0.0469%		0.0469%		Detected by the laboratory at less than the LOQ. The result is available for use at the reported value as long as the data user understands that it is "estimated" due to high continuing calibration recovery.
JJ	NJ	2C	1	0.0469%		0.0469%		Detected by the laboratory at less than the LOQ and miscellaneous QA/QC exceedances were noted. The data validator determined that qualitative identification was questionable due to poor resolution. The result is available for use at the reported value as long as the data user understands that it is "tentatively identified, estimated" due to poor dual-column reproducibility (precision exceedance).
P	NJ	2C	1	0.0469%		0.0469%		Detected by the laboratory and miscellaneous QA/QC exceedances were noted. The data validator determined that qualitative identification was questionable due to poor resolution. The result is available for use at the reported value as long as the data user understands that it is "tentatively identified, estimated" due to poor dual-column reproducibility (precision exceedance).
			Totals:		65.04%	34.58%	0.3749%	

Notes

[1] SSL, MSL, CCL, and ISL suggest a potential low bias. ICH and CCH suggest a potential high bias.

Appendix C
ProUCL Output

General UCL Statistics for Data Sets with Non-Detects

User Selected Options

From File	Sheet1.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Aluminum

General Statistics

Number of Valid Observations	10	Number of Distinct Observations	10

Raw Statistics

Minimum	18400
Maximum	25800
Mean	20530
Geometric Mean	20450
Median	20350
SD	2017
Std. Error of Mean	637.7
Coefficient of Variation	0.0982
Skewness	2.235

Log-transformed Statistics

Minimum of Log Data	9.82
Maximum of Log Data	10.16
Mean of log Data	9.926
SD of log Data	0.0912

Relevant UCL Statistics

Normal Distribution Test

Shapiro Wilk Test Statistic	0.751
Shapiro Wilk Critical Value	0.842

Data not Normal at 5% Significance Level

Lognormal Distribution Test

Shapiro Wilk Test Statistic	0.794
Shapiro Wilk Critical Value	0.842

Data not Lognormal at 5% Significance Level

Assuming Normal Distribution

95% Student's-t UCL	21699

95% UCLs (Adjusted for Skewness)

95% Adjusted-CLT UCL (Chen-1995)	22061
95% Modified-t UCL (Johnson-1978)	21774

Assuming Lognormal Distribution

95% H-UCL	N/A
95% Chebyshev (MVUE) UCL	23107
97.5% Chebyshev (MVUE) UCL	24224
99% Chebyshev (MVUE) UCL	26418

Gamma Distribution Test

k star (bias corrected)	89.29
Theta Star	229.9
MLE of Mean	20530
MLE of Standard Deviation	2173
nu star	1786
Approximate Chi Square Value (.05)	1689
Adjusted Level of Significance	0.0267
Adjusted Chi Square Value	1672
Anderson-Darling Test Statistic	0.906
Anderson-Darling 5% Critical Value	0.724
Kolmogorov-Smirnov Test Statistic	0.287
Kolmogorov-Smirnov 5% Critical Value	0.266

Data Distribution

Data do not follow a Discernable Distribution (0.05)

Nonparametric Statistics

95% CLT UCL	21579
95% Jackknife UCL	21699
95% Standard Bootstrap UCL	21500
95% Bootstrap-t UCL	22568
95% Hall's Bootstrap UCL	26369
95% Percentile Bootstrap UCL	21630
95% BCA Bootstrap UCL	22060

Data not Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

95% Approximate Gamma UCL (Use when n >= 40)	21711
95% Adjusted Gamma UCL (Use when n < 40)	21925

95% Chebyshev(Mean, Sd) UCL	23310
97.5% Chebyshev(Mean, Sd) UCL	24513
99% Chebyshev(Mean, Sd) UCL	26875

Potential UCL to Use

Use 95% Student's-t UCL	21699
or 95% Modified-t UCL	21774

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Arsenic

General Statistics

Number of Valid Observations	10
Number of Distinct Observations	9

Raw Statistics

Minimum	3.2
Maximum	5.6
Mean	4.11
Geometric Mean	4.053
Median	4.05
SD	0.746
Std. Error of Mean	0.236
Coefficient of Variation	0.182
Skewness	0.954

Log-transformed Statistics

Minimum of Log Data	1.163
Maximum of Log Data	1.723
Mean of log Data	1.399
SD of log Data	0.174

Relevant UCL Statistics

Normal Distribution Test

Shapiro Wilk Test Statistic	0.903
Shapiro Wilk Critical Value	0.842

Data appear Normal at 5% Significance Level

Lognormal Distribution Test

Shapiro Wilk Test Statistic	0.934
Shapiro Wilk Critical Value	0.842

Data appear Lognormal at 5% Significance Level

Assuming Normal Distribution

95% Student's-t UCL	4.542

95% UCLs (Adjusted for Skewness)

95% Adjusted-CLT UCL (Chen-1995)	4.574
95% Modified-t UCL (Johnson-1978)	4.554

Assuming Lognormal Distribution

95% H-UCL	4.583
95% Chebyshev (MVUE) UCL	5.097
97.5% Chebyshev (MVUE) UCL	5.524
99% Chebyshev (MVUE) UCL	6.364

Gamma Distribution Test

k star (bias corrected)	25.2
Theta Star	0.163
MLE of Mean	4.11
MLE of Standard Deviation	0.819
nu star	504.1
Approximate Chi Square Value (.05)	453
Adjusted Level of Significance	0.0267
Adjusted Chi Square Value	444.6

Data Distribution

Data appear Normal at 5% Significance Level

Nonparametric Statistics

95% CLT UCL	4.498
95% Jackknife UCL	4.542
95% Standard Bootstrap UCL	4.476

Anderson-Darling Test Statistic	0.408
Anderson-Darling 5% Critical Value	0.724
Kolmogorov-Smirnov Test Statistic	0.226
Kolmogorov-Smirnov 5% Critical Value	0.266

Data appear Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

95% Approximate Gamma UCL (Use when n >= 40)	4.573
95% Adjusted Gamma UCL (Use when n < 40)	4.66

95% Bootstrap-t UCL	4.731
95% Hall's Bootstrap UCL	5.89
95% Percentile Bootstrap UCL	4.51
95% BCA Bootstrap UCL	4.53
95% Chebyshev(Mean, Sd) UCL	5.138
97.5% Chebyshev(Mean, Sd) UCL	5.583
99% Chebyshev(Mean, Sd) UCL	6.457

Potential UCL to Use

Use 95% Student's-t UCL 4.542

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Chromium

General Statistics

Number of Valid Observations	10
Number of Distinct Observations	10

Raw Statistics

Minimum	10.6
Maximum	21.8
Mean	14.29
Geometric Mean	14.03
Median	13.95
SD	3.09
Std. Error of Mean	0.977
Coefficient of Variation	0.216
Skewness	1.682

Log-transformed Statistics

Minimum of Log Data	2.361
Maximum of Log Data	3.082
Mean of log Data	2.641
SD of log Data	0.197

Relevant UCL Statistics

Normal Distribution Test

Shapiro Wilk Test Statistic	0.853
Shapiro Wilk Critical Value	0.842

Data appear Normal at 5% Significance Level

Lognormal Distribution Test

Shapiro Wilk Test Statistic	0.924
Shapiro Wilk Critical Value	0.842

Data appear Lognormal at 5% Significance Level

Assuming Normal Distribution

95% Student's-t UCL	16.08

95% UCLs (Adjusted for Skewness)

95% Adjusted-CLT UCL (Chen-1995)	16.45
95% Modified-t UCL (Johnson-1978)	16.17

Assuming Lognormal Distribution

95% H-UCL	16.18
95% Chebyshev (MVUE) UCL	18.16
97.5% Chebyshev (MVUE) UCL	19.85
99% Chebyshev (MVUE) UCL	23.15

Gamma Distribution Test

k star (bias corrected)	19.11
Theta Star	0.748
MLE of Mean	14.29
MLE of Standard Deviation	3.269
nu star	382.2

Data Distribution

Data appear Normal at 5% Significance Level

Approximate Chi Square Value (.05)	337.9
Adjusted Level of Significance	0.0267
Adjusted Chi Square Value	330.6
Anderson-Darling Test Statistic	0.443
Anderson-Darling 5% Critical Value	0.725
Kolmogorov-Smirnov Test Statistic	0.216
Kolmogorov-Smirnov 5% Critical Value	0.266

Data appear Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

95% Approximate Gamma UCL (Use when n >= 40)	16.16
95% Adjusted Gamma UCL (Use when n < 40)	16.52

Nonparametric Statistics

95% CLT UCL	15.9
95% Jackknife UCL	16.08
95% Standard Bootstrap UCL	15.83
95% Bootstrap-t UCL	17.13
95% Hall's Bootstrap UCL	24.85
95% Percentile Bootstrap UCL	15.93
95% BCA Bootstrap UCL	16.33
95% Chebyshev(Mean, Sd) UCL	18.55
97.5% Chebyshev(Mean, Sd) UCL	20.39
99% Chebyshev(Mean, Sd) UCL	24.01

Potential UCL to Use

Use 95% Student's-t UCL 16.08

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Iron

General Statistics

Number of Valid Observations	10	Number of Distinct Observations	8

Raw Statistics

Minimum	29700
Maximum	38300
Mean	33220
Geometric Mean	33153
Median	32900
SD	2261
Std. Error of Mean	714.9
Coefficient of Variation	0.0681
Skewness	0.968

Log-transformed Statistics

Minimum of Log Data	10.3
Maximum of Log Data	10.55
Mean of log Data	10.41
SD of log Data	0.0667

Relevant UCL Statistics

Normal Distribution Test

Shapiro Wilk Test Statistic	0.898
Shapiro Wilk Critical Value	0.842

Data appear Normal at 5% Significance Level

Lognormal Distribution Test

Shapiro Wilk Test Statistic	0.913
Shapiro Wilk Critical Value	0.842

Data appear Lognormal at 5% Significance Level

Assuming Normal Distribution

95% Student's-t UCL 34530

95% UCLs (Adjusted for Skewness)

95% Adjusted-CLT UCL (Chen-1995)	34630
95% Modified-t UCL (Johnson-1978)	34567

Assuming Lognormal Distribution

95% H-UCL	N/A
95% Chebyshev (MVUE) UCL	36274
97.5% Chebyshev (MVUE) UCL	37596
99% Chebyshev (MVUE) UCL	40192

Gamma Distribution Test

k star (bias corrected)	172.9
Theta Star	192.2
MLE of Mean	33220
MLE of Standard Deviation	2527
nu star	3457
Approximate Chi Square Value (.05)	3322
Adjusted Level of Significance	0.0267
Adjusted Chi Square Value	3298
Anderson-Darling Test Statistic	0.525
Anderson-Darling 5% Critical Value	0.724
Kolmogorov-Smirnov Test Statistic	0.211
Kolmogorov-Smirnov 5% Critical Value	0.266

Data appear Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

95% Approximate Gamma UCL (Use when n >= 40)	34576
95% Adjusted Gamma UCL (Use when n < 40)	34819

Data Distribution

Data appear Normal at 5% Significance Level

Nonparametric Statistics

95% CLT UCL	34396
95% Jackknife UCL	34530
95% Standard Bootstrap UCL	34342
95% Bootstrap-t UCL	34820
95% Hall's Bootstrap UCL	36294
95% Percentile Bootstrap UCL	34430
95% BCA Bootstrap UCL	34510
95% Chebyshev(Mean, Sd) UCL	36336
97.5% Chebyshev(Mean, Sd) UCL	37684
99% Chebyshev(Mean, Sd) UCL	40333

Potential UCL to Use

Use 95% Student's-t UCL 34530

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Appendix D
Data Validation Reports

DataQual

Environmental Services, LLC

CH2M HILL
5701 Cleveland Street
Suite 200
Virginia Beach, VA 23462

June 12, 2013
SDG# SG2441, Katahdin
Vieques East, Puerto Rico- PI-21

Dear Ms. Dean,

The following Data Validation report is provided as requested for the parameters noted in the table below for SDG # SG2441. The data validation was performed in accordance with the SW-846 methods utilized by the laboratory, the Region II Standard Operating Procedures for the Validation of Organic Data Acquired Using SW-846 Methods (8270D-Rev 3, October 2006-SOP #HW-22, 8081B-Rev. 1.0, October 2006-SOP HW-44, 8082A- Rev 1, October 2006- SOP# HW-45, and ILM05.3-Rev. 13, September 2006-SOP #HW-2) and professional judgment. The SOP for the inorganic parameters (metals) is used but is modified as necessary to reflect the QC requirements of the method and the site SAP. Region II flagging conventions were used. All areas of concern are discussed in the body of the report and a summary of data qualifications is provided.

Sample ID	Lab ID	Matrix	SV-SIM	SV	Pest	PCB	Metals	Hg	CN
VEP21-SS01-0001	SG2441-1	soil	X	X	X	X	X	X	X
VEP21-SS01P-0001	SG2441-2	soil	X	X	X	X	X	X	X
VEP21-SS03-0001	SG2441-3	soil	X	X	X	X	X	X	X
VEP21-SS04-0001	SG2441-4	soil	X	X	X	X	X	X	X
VEP21-SB01-011H	SG2441-5	soil	X	X	X	X	X	X	X
VEP21-SS05-0001	SG2441-6	soil	X	X	X	X	X	X	X
VEP21-SS02-0001	SG2441-7	soil	X	X	X	X	X	X	X
VEP21-SB03-0102	SG2441-8	soil	X	X	X	X	X	X	X
VEP21-SB04-011H	SG2441-9	soil	X	X	X	X	X	X	X
VEP21-SB05-011H	SG2441-10	soil	X	X	X	X	X	X	X
VEP21-SB02-011H	SG2441-11	soil	X	X	X	X	X	X	X
VEP21-EB01-041113	SG2441-13	water	X	X	X	X	X	X	X
VEP21-SS04-0001 MS	SG2441-4MS	soil	X	X	X	X	X	X	X
VEP21-SS04-0001 MSD	SG2441-4MSD	soil	X	X	X	X	X	X	X

The following quality control samples were provided with this SDG: sample VEP21-EB01-041113-equipment blank and sample VEP21-SS01P-0001-field duplicate of sample VEP21-SS01-0001.

5830 Amberway Drive • St. Louis, MO 63128 • 314-330-1327 • Fax 314-849-6264

The samples were evaluated based on the following criteria:

• Data Completeness	*
• Sample Condition	*
• Technical Holding Times	*
• GC/MS Tuning	*
• GC Performance	*
• ICP MS Tuning	*
• Initial/Continuing Calibrations	
• ICSA/ICSAB Standards	*
• LLQ Standards	*
• Blanks	
• Internal Standards	*
• Surrogate Recoveries	
• Laboratory Control Samples	
• Matrix Spike Recoveries	
• Matrix Duplicate RPDs	*
• Serial Dilutions	*
• Field Duplicates	*
• Identification/Quantitation	
• Reporting Limits	*
• Tentatively Identified Compounds	NA

* - indicates that qualifications were not required based on this criteria

Overall Evaluation of Data/Potential Usability Issues

A summary of qualifications applied to the sample results are noted below for the fractions validated. Specific details regarding qualification of the data are addressed in the Specific Evaluation section of this narrative. If an issue is not addressed there were no actions required based on unmet quality criteria. When more than one qualifier is associated with a compound/analyte the validator has chosen the qualifier that best indicates possible bias in the results and flagged the data accordingly. However, information regarding all quality control issues is provided in the body of the report and on the qualification summary page. Please note that when a compound or analyte is flagged due to blank contamination the BL qualifier code takes precedence over all other qualifier codes except a code that explains rejected data.

SVOA-SIM

Several sample compounds were qualified as estimated based on high %RSDs and %Ds which were exhibited in the initial and continuing calibrations. One of the continuing calibrations exhibited a low RRF value which resulted in qualifying the associated sample positive results as estimated and non-detect results as rejected.

One of the laboratory control samples exhibited low recoveries; therefore results for that compound were qualified as estimated.

Due to non-compliant recoveries in the matrix spike and matrix spike duplicate, qualifications were added to the associated sample.

SVOA

One of the laboratory control samples exhibited low recoveries; therefore results for that compound were qualified as estimated.

Due to non-compliant recoveries in the matrix spike and matrix spike duplicate, qualifications were added to the associated sample.

Pesticides

Several samples were qualified based on low surrogate recoveries.

Some reported positive results required qualification based on column quantitation %Ds greater than 40%.

PCBs

One sample was qualified based on low surrogate recoveries.

Metals & Cyanide

Laboratory blanks exhibited contamination that resulted in qualifications to the sample results.

The submitted MS/MSD pair exhibited recoveries that were non-compliant. Therefore, qualifications to the data were required.

Specific Evaluation of Data

Data Completeness

The SDG was received complete and intact. Resubmissions were not required.

Technical Holding Times

According to chain of custody records, sampling was performed on 4/11/13 and samples were received on 4/15/13. All sample preparation and analysis was performed within Region II and/or method holding time requirements.

Initial/Continuing Calibration

SVOA-SIM

Calibration standards exhibited %RSD, %D and RRFs that were non-compliant. A summary of these non-compliances and affected samples are noted in the following table. Sample results were qualified as indicated.

Calibration File	Compound(s)	RRF, %RSD, %D	Samples	Q Flag	Q Code
IC 4/15/13	di-n-octylphthalate	28.45	all samples	J/UJ	ICH
	indeno(1,2,3-cd)pyrene	30.19			
	dibenzo(a,h)anthracene	30.82			
CC 4/17/13	2,4-dinitrophenol	0.0462	VEP21-SS01-0001, VEP21-SS01P-0001, VEP21-SS03-0001, VEP21-SB01-011H, VEP21-SS05-0001, VEP21-SS02-0001, VEP21-SB03-0102, VEP21-SB05-011H	J/R	CCL
	4-nitroaniline	-25.45		J/UJ	CCL
	3,3'-dichlorobenzidine	-26.38			
	indeno(1,2,3-cd)pyrene	-39.15			
	dibenzo(a,h)anthracene	-25.55			
CC 4/22/13	hexachloroethane	37.35	VEP21-EB01-041113, VEP21-SB02-011H, VEP21-SS04-0001, VEP21-SB04-001H	J/UJ	CCH
	2-nitrophenol	29.18			
	n-nitrosodiphenylamine	27.02			
	butylbenzylphthalate	23.39			
	di-n-octylphthalate	31.76			

Blanks

Metals & Cyanide

Associated blanks exhibited contamination as noted in the following table.

Blank ID	Analyte	Concentration	Action Level
PBSGD161MS1	selenium	0.040J mg/Kg	LOD
ICB – JGD17A, 4/17 @1724	thallium	0.006J ug/L	LOD

Associated samples and required qualifications are noted in the following table.

Sample ID	Analyte	Q Flag
all soil samples except VEP21-SB03-0102	selenium	U at LOD
all soil samples except VEP21-SB01-011H & VEP21-SB03-0102	thallium	U at LOD

Surrogates

PCBs

The following samples exhibited non-compliant recoveries for the surrogate listed in the table below; qualifications were applied as noted.

Sample ID	Non-compliant Surrogate	% Rec	QC Limits	Qualifier	Q Code
VEP21-EB01-041113	2,4,5,6-tetrachloro-m-xylene	26.3/28.6	56-115	J/UJ	SSL

Pesticides

The following samples exhibited non-compliant recoveries for the surrogate listed in the table below; qualifications were applied as noted.

Sample ID	Non-compliant Surrogate	% Rec	QC Limits	Qualifier	Q Code
VEP21-SS01-0001	2,4,5,6-tetrachloro-m-xylene	61.2/60.3	70-125	J/UJ	SSL
VEP21-SB05-011H		68.8/232			
VEP21-SS01P-0001		65.3/65.2			
VEP21-SS03-0001		67.7/68.7			
VEP21-SS04-0001		68.4/65.5			
VEP21-SS02-0001		64.0/60.2			
VEP21-SB04-011H		63.6/59.3			

Matrix Spike Recoveries

SVOA-SIM

The matrix spike and matrix spike duplicate associated with sample VEP21-SS04-0001 exhibited non-compliant recoveries for the compounds listed in the table below, qualifications were applied as stated.

Sample ID	Compound	% MS Rec	% MSD Rec	QC Limits	Qualifier	Q Code
VEP21-SS04-0001	hexachlorocyclopentadiene	6.39	5.09	10-128	J/UJ	MSL
	3,3'-dichlorobenzidine	7.95	9.84	10-64		
	4-chloroaniline	4.26	2.01	10-50		

SVOA

The matrix spike and matrix spike duplicate associated with sample VEP21-SS04-0001 exhibited non-compliant recoveries for the compounds listed in the table below, qualifications were applied as stated.

Sample ID	Compound	% MS Rec	% MSD Rec	QC Limits	Qualifier	Q Code
VEP21-SS04-0001	2-chloronaphthalene	42.5	40.8	45-105	J/UJ	MSL

Metals & Cyanide

The matrix spike pair submitted in this SDG exhibited non-compliant %R's for two analytes that resulted in qualification in the field samples. A summary of these non-compliances and affected samples are noted in the following table. Please note that results were not qualified unless both recoveries were non-compliant.

MS	Analytes	Samples	%R	Q Flag	Q Code
VEP21-SS04-0001	antimony	all soil samples	29/29	J/UJ	MSL
	sodium		77/60		

Laboratory Control Sample

SVOA-SIM

The LCS associated with VEP21-EB01-041113 exhibited non-compliant recoveries for the compounds listed in the table below, qualifications were applied as stated.

Sample ID	Compound	% LCS Rec	% LCS Rec	QC Limits	Qualifier	Q Code
VEP21-EB01-041113	1,1-biphenyl	40	40	56-96	J/UJ	BSL
	2,2-oxybis(1-chloropropane)	44.2	41.2	57-90		
	hexachloroethane	40.8	35.6	48-80		

SVOA

The LCS associated with VEP21-EB01-041113 exhibited non-compliant recoveries for the compounds listed in the table below, qualifications were applied as stated.

Sample ID	Compound	% LCS Rec	% LCS Rec	QC Limits	Qualifier	Q Code
VEP21-EB01-041113	2-chloronaphthalene	45.4	40.6	50-105	J/UJ	BSL

Identification/Quantitation

Pesticides

Qualifications were required in the samples due to high (>40%) column quantitation %Ds. Region II guidelines were followed in applying these qualifications. Sample results were flagged as noted in the following table.

Sample ID	Compound	Column Quant %D	Qualifier	Q Code
VEP21-SS01P-0001	4,4'-DDT	96	NJ	2C
VEP21-SS04-0001	4,4'-DDD	42.5	J	2C
	4,4'-DDT	54.3	J	
VEP21-SB01-011H	4,4'-DDD	44.2	J	2C
	4,4'-DDT	50	J	
VEP21-SB03-0102	4,4'-DDT	74.6	J	2C
VEP21-SB05-011H	4,4'-DDT	148.8	NJ	2C
VEP21-SB02-011H	4,4'-DDT	52	J	2C

A summary of qualifications required is provided on the following page. Please do not hesitate to contact DataQual ES with any questions regarding this validation report.

Sincerely,

Jacqueline Cleveland

Jacqueline Cleveland
Vice President

Summary of Data Qualifications

SVOA-SIM

Sample ID	Compound	Results	Q flag	Q Code
all samples	di-n-octylphthalate indeno(1,2,3-cd)pyrene dibenzo(a,h)anthracene	+/-	J/UJ	ICH
VEP21-SS01-0001, VEP21-SS01P-0001, VEP21-SS03-0001, VEP21-SB01-011H, VEP21-SS05-0001, VEP21-SS02-0001, VEP21-SB03-0102, VEP21-SB05-011H	2,4-dinitrophenol	+/-	J/R	CCL
VEP21-SS01-0001, VEP21-SS01P-0001, VEP21-SS03-0001, VEP21-SB01-011H, VEP21-SS05-0001, VEP21-SS02-0001, VEP21-SB03-0102, VEP21-SB05-011H	4-nitroaniline 3,3'-dichlorobenzidine indeno(1,2,3-cd)pyrene* dibenzo(a,h)anthracene*	+/-	J/UJ	CCL
VEP21-EB01-041113, VEP21-SB02-011H, VEP21-SS04-0001, VEP21-SB04-001H	hexachloroethane 2-nitrophenol n-nitrosodiphenylamine butylbenzylphthalate di-n-octylphthalate*	+/-	J/UJ	CCH
VEP21-SS04-0001	hexachlorocyclopentadiene 3,3'-dichlorobenzidine 4-chloroaniline	+/-	J/UJ	MSL
VEP21-EB01-041113	1,1-biphenyl 2,2-oxybis(1-chloropropane) hexachloroethane^	+/-	J/UJ	BSL

**final qualifier due to initial calibration non-compliance*
^ final qualifier due to continuing calibration non-compliance

SVOA

Sample ID	Compound	Results	Q flag	Q Code
VEP21-SS04-0001	2-chloronaphthalene	+/-	J/UJ	MSL
VEP21-EB01-041113	2-chloronaphthalene	+/-	J/UJ	BSL

Pesticides

Sample ID	Compound	Results	Q flag	Q Code
VEP21-SS01-0001, VEP21-SB05-011H, VEP21-SS01P-0001, VEP21-SS03-0001, VEP21-SS04-0001, VEP21-SS02-0001, VEP21-SB04-011H	all compounds	+/-	J/UJ	SSL

Summary of Data Qualifications

Pesticides, continued

Sample ID	Compound	Results	Q flag	Q Code
VEP21-SS01P-0001	4,4'-DDT	+	NJ	2C
VEP21-SS04-0001	4,4'-DDD 4,4'-DDT	+	J J	2C
VEP21-SB01-011H	4,4'-DDD 4,4'-DDT	+	J J	2C
VEP21-SB03-0102	4,4'-DDT	+	J	2C
VEP21-SB05-011H	4,4'-DDT	+	NJ	2C
VEP21-SB02-011H	4,4'-DDT	+	J	2C

*Note: final qualifier code for samples requiring qualification due to non-compliant surrogate recoveries was SSL with the exception of compounds flagged due to column quantitation differences. The qualifier code for those compounds is 2C.

PCBs

Sample ID	Compound	Results	Q flag	Q Code
VEP21-EB01-041113	all compounds	+/-	J/UJ	SSL

Metals & Cyanide

Sample ID	Analyte	Results	Q flag	Q Code
all soil samples except VEP21-SB03-0102	selenium	+J	U at LOD	MBL
all soil samples except VEP21-SB01-011H & VEP21-SB03-0102	thallium	+J	U at LOD	CCBL
all soil samples	antimony sodium	+/-	J/UJ	MSL

Glossary of Qualification Flags and Abbreviations

Qualification Flags (Q-Flags)

U	not detected above the reported sample quantitation limit
J	estimated value
UJ	reported quantitation limit is qualified as estimated
N	analyte has been tentatively identified
JN	analyte has been tentatively identified, estimated value
R	result is rejected; the presence or absence of the analyte cannot be verified

Method/Preparation/Field QC Blank Qualification Flags (Q-Flags)

Organic Methods

NA	The sample result for the blank contaminant is greater than the LOD (2X sample LOD for common laboratory contaminants) when the blank value is less than the LOD. The sample result for the blank contaminant is not qualified with any blank qualifiers.
LOD	The sample result for the blank contaminant is less than the LOD (2X sample LOD for common laboratory contaminants) but greater than the MDL when the blank value is less than the LOD. The sample result for the blank contaminant is changed to the LOD and qualified as non-detect U.

Inorganic Methods

ICB/CCB/PB Action:

No Action -	The sample result is greater than the LOD and greater than ten times (10X) the blank value.
U -	The sample result is greater than or equal to the MDL but less than or equal to the LOD, result is reported as non-detect at the LOD, when the ICB/CCB/PB result is less or greater than the LOD.
R -	Sample result is greater than the LOD and less than the ICB/CCB/PB value when the ICB/CCB/PB value is greater than the LOD.
J -	Sample result is greater than the ICB/CCB/PB value but less than 10X the ICB/CCB/PB value when ICB/CCB/PB value is greater than the LOD.
J/UJ -	Sample result is less than 10X LOD when blank result is below the negative LOD.

Glossary of Qualification Flags and Abbreviations, continued

Field QC Blank action:

Note – Use field blanks to qualify data only if field blank results are greater than prep blank results.

Do not use rinsate blank associated with soils to qualify water samples and vice versa.

No Action -	The sample result is greater than the LOD and greater than ten times (10X) the blank value.
U -	The sample result is greater than or equal to the MDL but less than or equal to the LOD, result is reported as non-detect at the LOD, when the FB result is less or greater than the LOD.
R -	Sample result is greater than the LOD and less than the FB value when the FB value is greater than the LOD.
J -	Sample result is greater than the FB value but less than 10X the FB value when FB value is greater than the LOD.

General Abbreviations

RL	reporting limit
MDL	method detection limit
IDL	instrument detection limit
LOD	Level of Detection
LOD	Level of Quantitation
+	positive result
-	non-detect result

QUALIFIER CODE REFERENCE

Qualifier	Description
TN	Tune
BSL	Blank Spike/LCS - High Recovery
BSH	Blank Spike/LCS - Low Recovery
BD	Blank Spike/Blank Spike Duplicate (LCS/LCSD) Precision
BRL	Below Reporting Limit
ISL	Internal Standard - Low Recovery
ISH	Internal Standard - High Recovery
MSL	Matrix Spike and/or Matrix Spike Duplicate - Low Recovery
MSH	Matrix Spike and/or Matrix Spike Duplicate - High Recovery
MI	Matrix interference obscuring the raw data
MDP	Matrix Spike/Matrix Spike Duplicate Precision
2S	Second Source - Bad reproducibility between tandem detectors
SSL	Spiked Surrogate - Low Recovery
SSH	Spiked Surrogate - High Recovery
SD	Serial Dilution Reproducibility
ICL	Initial Calibration - Low Relative Response Factors (RRF)
ICH	Initial Calibration - High Relative Response Factors (RRF)
ICB	Initial Calibration - Bad Linearity or Curve Function
CCL	Continuing Calibration - Low Recovery or %Difference
CCH	Continuing Calibration - High Recovery or %Difference
LD	Lab Duplicate Reproducibility
HT	Holding Time
PD	Pesticide Degradation
2C	Second Column - Poor Dual Column Reproducibility
LR	Concentration Exceeds Linear Range
BL	Blank Contamination
RE	Redundant Result - due to Re-analysis or Re-extraction
DL	Redundant Result - due to Dilution
FD	Field Duplicate
OT	Other - explained in data validation report
%SOL	High moisture content

Katahdin
ANALYTICAL SERVICES

Cert No E87604

Report of Analytical Results

Client: CH2MHill
Lab ID: SG2441-1
Client ID: VEP21-SS01-0001
Project: NTR Vieques East CTO-037 1
SDG: SG2441
Lab File ID: G8457.D

Sample Date: 11-APR-13
Received Date: 15-APR-13
Extract Date: 15-APR-13
Extracted By: JMS
Extraction Method: SW846 3540
Lab Prep Batch: WG122732

Analysis Date: 17-APR-13
Analyst: JCG
Analysis Method: SW846 M8270D
Matrix: SL
% Solids: 90.
Report Date: 03-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
bis(2-Chloroethyl)ether	U ~~UL~~	27.	ug/Kgdrywt	1	33	36.	8.4	27.
2-Chlorophenol	U	11.	ug/Kgdrywt	1	33	36.	7.2	11.
2-Methylphenol	U	54.	ug/Kgdrywt	1	100	110	9.2	54.
3&4-Methylphenol	U	27.	ug/Kgdrywt	1	33	36.	11.	27.
n-Nitroso-di-n-propylamine	U	27.	ug/Kgdrywt	1	33	36.	8.4	27.
Nitrobenzene	U	11.	ug/Kgdrywt	1	20	22.	5.2	11.
2,4-Dimethylphenol	U	27.	ug/Kgdrywt	1	33	36.	11.	27.
2,4-Dichlorophenol	U	27.	ug/Kgdrywt	1	33	36.	9.0	27.
Naphthalene	U	11.	ug/Kgdrywt	1	13	14.	7.2	11.
2-Methylnaphthalene	U	11.	ug/Kgdrywt	1	13	14.	7.1	11.
Hexachlorocyclopentadiene	U	11.	ug/Kgdrywt	1	20	22.	1.6	11.
2,4,6-Trichlorophenol	U	27.	ug/Kgdrywt	1	33	36.	8.5	27.
2,4,5-Trichlorophenol	U	54.	ug/Kgdrywt	1	67	73.	28.	54.
4-Nitrophenol	U	54.	ug/Kgdrywt	1	100	110	8.7	54.
2,4-Dinitrotoluene	U	27.	ug/Kgdrywt	1	33	36.	7.6	27.
4,6-Dinitro-2-methylphenol	U	110	ug/Kgdrywt	1	200	220	26.	110
Hexachlorobenzene	U	11.	ug/Kgdrywt	1	13	14.	7.3	11.
Atrazine	U	11.	ug/Kgdrywt	1	20	22.	1.1	11.
Pentachlorophenol	U	54.	ug/Kgdrywt	1	100	110	15.	54.
3,3'-Dichlorobenzidine	~~U~~ UJ CCL	27.	ug/Kgdrywt	1	33	36.	9.4	27.
Benzo(a)anthracene	U	11.	ug/Kgdrywt	1	13	14.	2.5	11.
Benzo(b)Fluoranthene	J	5.1	ug/Kgdrywt	1	13	14.	3.4	11.
Benzo(k)fluoranthene	U	11.	ug/Kgdrywt	1	13	14.	10.	11.
Benzo(a)pyrene	U	11.	ug/Kgdrywt	1	13	14.	7.4	11.
Indeno(1,2,3-cd)pyrene	~~U~~ UJ ICH	27.	ug/Kgdrywt	1	33	36.	9.9	27.
Dibenzo(a,h)anthracene	~~U~~ UJ ICH	27.	ug/Kgdrywt	1	33	36.	10.	27.
2,4-Dinitrophenol	~~U~~ R CCL	81.	ug/Kgdrywt	1	100	110	68.	81.
n-Nitrosodiphenylamine	U	11.	ug/Kgdrywt	1	13	14.	7.5	11.
Benzaldehyde	J	9.2	ug/Kgdrywt	1	33	36.	9.1	27.
2,2'-Oxybis(1-Chloropropane)	U	27.	ug/Kgdrywt	1	33	36.	7.3	27.
Hexachloroethane	U ~~UL~~	11.	ug/Kgdrywt	1	13	14.	4.4	11.
Isophorone	U	27.	ug/Kgdrywt	1	33	36.	18.	27.
2-Nitrophenol	U	27.	ug/Kgdrywt	1	33	36.	16.	27.
Bis(2-Chloroethoxy)Methane	U	27.	ug/Kgdrywt	1	33	36.	8.4	27.
4-Chloroaniline	U	54.	ug/Kgdrywt	1	100	110	54.	54.

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ANALYTICAL SERVICES

Cert No E87604

Report of Analytical Results

Client: CH2MHill
Lab ID: SG2441-1
Client ID: VEP21-SS01-0001
Project: NTR Vieques East CTO-037 1
SDG: SG2441
Lab File ID: G8457.D

Sample Date: 11-APR-13
Received Date: 15-APR-13
Extract Date: 15-APR-13
Extracted By: JMS
Extraction Method: SW846 3540
Lab Prep Batch: WG122732

Analysis Date: 17-APR-13
Analyst: JCG
Analysis Method: SW846 M8270D
Matrix: SL
% Solids: 90.
Report Date: 03-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Hexachlorobutadiene	U	11.	ug/Kgdrywt	1	33	36.	7.8	11.
4-Chloro-3-Methylphenol	U	27.	ug/Kgdrywt	1	33	36.	6.1	27.
1,1'-Biphenyl	U	11.	ug/Kgdrywt	1	13	14.	6.2	11.
2-Nitroaniline	U	27.	ug/Kgdrywt	1	33	36.	20.	27.
2,6-Dinitrotoluene	U	27.	ug/Kgdrywt	1	33	36.	7.2	27.
Dibenzofuran	U	11.	ug/Kgdrywt	1	13	14.	6.2	11.
4-Nitroaniline	~~U~~ UJ CCL	54.	ug/Kgdrywt	1	67	73.	32.	54.
Butylbenzylphthalate	U	54.	ug/Kgdrywt	1	100	110	4.3	54.
Di-N-Octylphthalate	~~U~~ UJ ICH	54.	ug/Kgdrywt	1	100	110	50.	54.
2,3,4,6-Tetrachlorophenol	U	54.	ug/Kgdrywt	1	100	110	2.9	54.
1,4-Dioxane	U	54.	ug/Kgdrywt	1	100	110	1.2	54.
2-Methylnaphthalene-D10		74.4	%					
Fluorene-D10		82.6	%					
Pyrene-D10		92.7	%					
2,4-Dibromophenol		85.5	%					

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Katahdin
ANALYTICAL SERVICES

Cert No E87604

Report of Analytical Results

Client: CH2MHill
Lab ID: SG2441-2
Client ID: VEP21-SS01P-0001
Project: NTR Vieques East CTO-0371
SDG: SG2441
Lab File ID: G8458.D

Sample Date: 11-APR-13
Received Date: 15-APR-13
Extract Date: 15-APR-13
Extracted By: JMS
Extraction Method: SW846 3540
Lab Prep Batch: WG122732

Analysis Date: 17-APR-13
Analyst: JCG
Analysis Method: SW846 M8270D
Matrix: SL
% Solids: 91.
Report Date: 03-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
bis(2-Chloroethyl)ether	U~~LL~~	27.	ug/Kgdrywt	1	33	36.	8.3	27.
2-Chlorophenol	U	11.	ug/Kgdrywt	1	33	36.	7.1	11.
2-Methylphenol	U	54.	ug/Kgdrywt	1	100	110	9.2	54.
3&4-Methylphenol	U	27.	ug/Kgdrywt	1	33	36.	11.	27.
n-Nitroso-di-n-propylamine	U	27.	ug/Kgdrywt	1	33	36.	8.3	27.
Nitrobenzene	U	11.	ug/Kgdrywt	1	20	22.	5.2	11.
2,4-Dimethylphenol	U	27.	ug/Kgdrywt	1	33	36.	11.	27.
2,4-Dichlorophenol	U	27.	ug/Kgdrywt	1	33	36.	9.0	27.
Naphthalene	U	11.	ug/Kgdrywt	1	13	14.	7.1	11.
2-Methylnaphthalene	U	11.	ug/Kgdrywt	1	13	14.	7.0	11.
Hexachlorocyclopentadiene	U	11.	ug/Kgdrywt	1	20	22.	1.6	11.
2,4,6-Trichlorophenol	U	27.	ug/Kgdrywt	1	33	36.	8.4	27.
2,4,5-Trichlorophenol	U	54.	ug/Kgdrywt	1	67	72.	28.	54.
4-Nitrophenol	U	54.	ug/Kgdrywt	1	100	110	8.6	54.
2,4-Dinitrotoluene	U	27.	ug/Kgdrywt	1	33	36.	7.6	27.
4,6-Dinitro-2-methylphenol	U	110	ug/Kgdrywt	1	200	220	26.	110
Hexachlorobenzene	U	11.	ug/Kgdrywt	1	13	14.	7.2	11.
Atrazine	U	11.	ug/Kgdrywt	1	20	22.	1.1	11.
Pentachlorophenol	U	54.	ug/Kgdrywt	1	100	110	15.	54.
3,3'-Dichlorobenzidine	~~U~~ UJ CCL	27.	ug/Kgdrywt	1	33	36.	9.4	27.
Benzo(a)anthracene	U	11.	ug/Kgdrywt	1	13	14.	2.5	11.
Benzo(b)Fluoranthene	J	5.6	ug/Kgdrywt	1	13	14.	3.4	11.
Benzo(k)fluoranthene	U	11.	ug/Kgdrywt	1	13	14.	10.	11.
Benzo(a)pyrene	U	11.	ug/Kgdrywt	1	13	14.	7.4	11.
Indeno(1,2,3-cd)pyrene	~~U~~ UJ ICH	27.	ug/Kgdrywt	1	33	36.	9.8	27.
Dibenzo(a,h)anthracene	~~U~~ UJ ICH	27.	ug/Kgdrywt	1	33	36.	10.	27.
2,4-Dinitrophenol	~~U~~ R CCL	81.	ug/Kgdrywt	1	100	110	68.	81.
n-Nitrosodiphenylamine	U	11.	ug/Kgdrywt	1	13	14.	7.5	11.
Benzaldehyde	U	27.	ug/Kgdrywt	1	33	36.	9.1	27.
2,2'-Oxybis(1-Chloropropane)	U	27.	ug/Kgdrywt	1	33	36.	7.2	27.
Hexachloroethane	U~~LL~~	11.	ug/Kgdrywt	1	13	14.	4.4	11.
Isophorone	U	27.	ug/Kgdrywt	1	33	36.	18.	27.
2-Nitrophenol	U	27.	ug/Kgdrywt	1	33	36.	16.	27.
Bis(2-Chloroethoxy)Methane	U	27.	ug/Kgdrywt	1	33	36.	8.3	27.
4-Chloroaniline	U	54.	ug/Kgdrywt	1	100	110	54.	54.

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Katahdin
ANALYTICAL SERVICES

Cert No E87604

Report of Analytical Results

Client: CH2MHill
Lab ID: SG2441-2
Client ID: VEP21-SS01P-0001
Project: NTR Vieques East CTO-037 1
SDG: SG2441
Lab File ID: G8458.D

Sample Date: 11-APR-13
Received Date: 15-APR-13
Extract Date: 15-APR-13
Extracted By: JMS
Extraction Method: SW846 3540
Lab Prep Batch: WG122732

Analysis Date: 17-APR-13
Analyst: JCG
Analysis Method: SW846 M8270D
Matrix: SL
% Solids: 91.
Report Date: 03-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Hexachlorobutadiene	U	11.	ug/Kgdrywt	1	33	36.	7.8	11.
4-Chloro-3-Methylphenol	U	27.	ug/Kgdrywt	1	33	36.	6.1	27.
1,1'-Biphenyl	U	11.	ug/Kgdrywt	1	13	14.	6.2	11.
2-Nitroaniline	U	27.	ug/Kgdrywt	1	33	36.	19.	27.
2,6-Dinitrotoluene	U	27.	ug/Kgdrywt	1	33	36.	7.1	27.
Dibenzofuran	U	11.	ug/Kgdrywt	1	13	14.	6.2	11.
4-Nitroaniline	~~U~~ UJ CCL	54.	ug/Kgdrywt	1	67	72.	31.	54.
Butylbenzylphthalate	U	54.	ug/Kgdrywt	1	100	110	4.3	54.
Di-N-Octylphthalate	~~U~~ UJ ICH	54.	ug/Kgdrywt	1	100	110	50.	54.
2,3,4,6-Tetrachlorophenol	U	54.	ug/Kgdrywt	1	100	110	2.9	54.
1,4-Dioxane	U	54.	ug/Kgdrywt	1	100	110	1.2	54.
2-Methylnaphthalene-D10		73.4	%					
Fluorene-D10		82.1	%					
Pyrene-D10		88.6	%					
2,4-Dibromophenol		82.6	%					

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Katahdin
ANALYTICAL SERVICES

Cert No E87604

Report of Analytical Results

Client: CH2MHill
Lab ID: SG2441-3
Client ID: VEP21-SS03-0001
Project: NTR Vieques East CTO-037 1
SDG: SG2441
Lab File ID: G8459.D

Sample Date: 11-APR-13
Received Date: 15-APR-13
Extract Date: 15-APR-13
Extracted By: JMS
Extraction Method: SW846 3540
Lab Prep Batch: WG122732

Analysis Date: 17-APR-13
Analyst: JCG
Analysis Method: SW846 M8270D
Matrix: SL
% Solids: 90.
Report Date: 03-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
bis(2-Chloroethyl)ether	U~~LL~~	27.	ug/Kgdrywt	1	33	36.	8.4	27.
2-Chlorophenol	U	11.	ug/Kgdrywt	1	33	36.	7.2	11.
2-Methylphenol	U	54.	ug/Kgdrywt	1	100	110	9.2	54.
3&4-Methylphenol	U	27.	ug/Kgdrywt	1	33	36.	11.	27.
n-Nitroso-di-n-propylamine	U	27.	ug/Kgdrywt	1	33	36.	8.4	27.
Nitrobenzene	U	11.	ug/Kgdrywt	1	20	22.	5.2	11.
2,4-Dimethylphenol	U	27.	ug/Kgdrywt	1	33	36.	11.	27.
2,4-Dichlorophenol	U	27.	ug/Kgdrywt	1	33	36.	9.0	27.
Naphthalene	U	11.	ug/Kgdrywt	1	13	14.	7.2	11.
2-Methylnaphthalene	U	11.	ug/Kgdrywt	1	13	14.	7.1	11.
Hexachlorocyclopentadiene	U	11.	ug/Kgdrywt	1	20	22.	1.6	11.
2,4,6-Trichlorophenol	U	27.	ug/Kgdrywt	1	33	36.	8.5	27.
2,4,5-Trichlorophenol	U	54.	ug/Kgdrywt	1	67	73.	28.	54.
4-Nitrophenol	U	54.	ug/Kgdrywt	1	100	110	8.7	54.
2,4-Dinitrotoluene	U	27.	ug/Kgdrywt	1	33	36.	7.6	27.
4,6-Dinitro-2-methylphenol	U	110	ug/Kgdrywt	1	200	220	26.	110
Hexachlorobenzene	U	11.	ug/Kgdrywt	1	13	14.	7.3	11.
Atrazine	U	11.	ug/Kgdrywt	1	20	22.	1.1	11.
Pentachlorophenol	U	54.	ug/Kgdrywt	1	100	110	15.	54.
3,3'-Dichlorobenzidine	~~U~~ UJ CCL	27.	ug/Kgdrywt	1	33	36.	9.5	27.
Benzo(a)anthracene	U	11.	ug/Kgdrywt	1	13	14.	2.5	11.
Benzo(b)Fluoranthene	J	8.0	ug/Kgdrywt	1	13	14.	3.4	11.
Benzo(k)fluoranthene	U	11.	ug/Kgdrywt	1	13	14.	10.	11.
Benzo(a)pyrene	U	11.	ug/Kgdrywt	1	13	14.	7.4	11.
Indeno(1,2,3-cd)pyrene	~~U~~ UJ ICH	27.	ug/Kgdrywt	1	33	36.	9.9	27.
Dibenzo(a,h)anthracene	~~U~~ UJ ICH	27.	ug/Kgdrywt	1	33	36.	10.	27.
2,4-Dinitrophenol	~~U~~ R CCL	82.	ug/Kgdrywt	1	100	110	68.	82.
n-Nitrosodiphenylamine	U	11.	ug/Kgdrywt	1	13	14.	7.5	11.
Benzaldehyde	J	11.	ug/Kgdrywt	1	33	36.	9.1	27.
2,2'-Oxybis(1-Chloropropane)	U	27.	ug/Kgdrywt	1	33	36.	7.3	27.
Hexachloroethane	U~~LL~~	11.	ug/Kgdrywt	1	13	14.	4.5	11.
Isophorone	U	27.	ug/Kgdrywt	1	33	36.	18.	27.
2-Nitrophenol	U	27.	ug/Kgdrywt	1	33	36.	16.	27.
Bis(2-Chloroethoxy)Methane	U	27.	ug/Kgdrywt	1	33	36.	8.4	27.
4-Chloroaniline	U	54.	ug/Kgdrywt	1	100	110	54.	54.

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ANALYTICAL SERVICES

Cert No E87604

Report of Analytical Results

Client: CH2MHill
Lab ID: SG2441-3
Client ID: VEP21-SS03-0001
Project: NTR Vieques East CTO-037 1
SDG: SG2441
Lab File ID: G8459.D

Sample Date: 11-APR-13
Received Date: 15-APR-13
Extract Date: 15-APR-13
Extracted By: JMS
Extraction Method: SW846 3540
Lab Prep Batch: WG122732

Analysis Date: 17-APR-13
Analyst: JCG
Analysis Method: SW846 M8270D
Matrix: SL
% Solids: 90.
Report Date: 03-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Hexachlorobutadiene	U	11.	ug/Kgdrywt	1	33	36.	7.8	11.
4-Chloro-3-Methylphenol	U	27.	ug/Kgdrywt	1	33	36.	6.1	27.
1,1'-Biphenyl	U	11.	ug/Kgdrywt	1	13	14.	6.2	11.
2-Nitroaniline	U	27.	ug/Kgdrywt	1	33	36.	20.	27.
2,6-Dinitrotoluene	U	27.	ug/Kgdrywt	1	33	36.	7.2	27.
Dibenzofuran	U	11.	ug/Kgdrywt	1	13	14.	6.2	11.
4-Nitroaniline	~~U~~ WJCL	54.	ug/Kgdrywt	1	67	73.	32.	54.
Butylbenzylphthalate	U	54.	ug/Kgdrywt	1	100	110	4.4	54.
Di-N-Octylphthalate	~~U~~ WJCH	54.	ug/Kgdrywt	1	100	110	50.	54.
2,3,4,6-Tetrachlorophenol	U	54.	ug/Kgdrywt	1	100	110	2.9	54.
1,4-Dioxane	U	54.	ug/Kgdrywt	1	100	110	1.2	54.
2-Methylnaphthalene-D10		83.3	%					
Fluorene-D10		85.9	%					
Pyrene-D10		93.0	%					
2,4-Dibromophenol		91.0	%					

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Katahdin
ANALYTICAL SERVICES

Cert No E87604

Report of Analytical Results

Client: CH2MHill
Lab ID: SG2441-4
Client ID: VEP21-SS04-0001
Project: NTR Vieques East CTO-037 I
SDG: SG2441
Lab File ID: G8473.D

Sample Date: 11-APR-13
Received Date: 15-APR-13
Extract Date: 15-APR-13
Extracted By: JMS
Extraction Method: SW846 3540
Lab Prep Batch: WG122732

Analysis Date: 22-APR-13
Analyst: JCG
Analysis Method: SW846 M8270D
Matrix: SL
% Solids: 89.
Report Date: 03-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
bis(2-Chloroethyl)ether	U~~LM~~	26.	ug/Kgdrywt	1	33	35.	8.2	26.
2-Chlorophenol	UM	11.	ug/Kgdrywt	1	33	35.	7.0	11.
2-Methylphenol	UM	53.	ug/Kgdrywt	1	100	110	9.0	53.
3&4-Methylphenol	U	26.	ug/Kgdrywt	1	33	35.	10.	26.
n-Nitroso-di-n-propylamine	UM	26.	ug/Kgdrywt	1	33	35.	8.2	26.
Nitrobenzene	U	11.	ug/Kgdrywt	1	20	21.	5.1	11.
2,4-Dimethylphenol	U	26.	ug/Kgdrywt	1	33	35.	10.	26.
2,4-Dichlorophenol	U	26.	ug/Kgdrywt	1	33	35.	8.8	26.
Naphthalene	U	11.	ug/Kgdrywt	1	13	14.	7.0	11.
2-Methylnaphthalene	U	11.	ug/Kgdrywt	1	13	14.	6.9	11.
Hexachlorocyclopentadiene	~~UMM~~ UJ MSL	11.	ug/Kgdrywt	1	20	21.	1.6	11.
2,4,6-Trichlorophenol	U	26.	ug/Kgdrywt	1	33	35.	8.3	26.
2,4,5-Trichlorophenol	U	53.	ug/Kgdrywt	1	67	71.	28.	53.
4-Nitrophenol	U	53.	ug/Kgdrywt	1	100	110	8.5	53.
2,4-Dinitrotoluene	U	26.	ug/Kgdrywt	1	33	35.	7.4	26.
4,6-Dinitro-2-methylphenol	U	110	ug/Kgdrywt	1	200	210	26.	110
Hexachlorobenzene	UM	11.	ug/Kgdrywt	1	13	14.	7.1	11.
Atrazine	U	11.	ug/Kgdrywt	1	20	21.	1.1	11.
Pentachlorophenol	UM	53.	ug/Kgdrywt	1	100	110	15.	53.
3,3'-Dichlorobenzidine	~~UMM~~ UJ MSL	26.	ug/Kgdrywt	1	33	35.	9.2	26.
Benzo(a)anthracene	UM	11.	ug/Kgdrywt	1	13	14.	2.4	11.
Benzo(b)Fluoranthene	JM	5.4	ug/Kgdrywt	1	13	14.	3.3	11.
Benzo(k)fluoranthene	U	11.	ug/Kgdrywt	1	13	14.	10.	11.
Benzo(a)pyrene	U	11.	ug/Kgdrywt	1	13	14.	7.2	11.
Indeno(1,2,3-cd)pyrene	~~UMM~~ UJ ICH	26.	ug/Kgdrywt	1	33	35.	9.7	26.
Dibenzo(a,h)anthracene	~~UMM~~ UJ ICH	26.	ug/Kgdrywt	1	33	35.	9.8	26.
2,4-Dinitrophenol	U	80.	ug/Kgdrywt	1	100	110	67.	80.
n-Nitrosodiphenylamine	~~U~~ UJ CCH	11.	ug/Kgdrywt	1	13	14.	7.3	11.
Benzaldehyde	U	26.	ug/Kgdrywt	1	33	35.	8.9	26.
2,2'-Oxybis(1-Chloropropane)	U	26.	ug/Kgdrywt	1	33	35.	7.1	26.
Hexachloroethane	~~ULL~~ UJ CCH	11.	ug/Kgdrywt	1	13	14.	4.4	11.
Isophorone	U	26.	ug/Kgdrywt	1	33	35.	18.	26.
2-Nitrophenol	~~U~~ UJ CCH	26.	ug/Kgdrywt	1	33	35.	16.	26.
Bis(2-Chloroethoxy)Methane	U	26.	ug/Kgdrywt	1	33	35.	8.2	26.
4-Chloroaniline	~~UMM~~ UJ MSL	53.	ug/Kgdrywt	1	100	110	53.	53.

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Katahdin
ANALYTICAL SERVICES

Cert No E87604

Report of Analytical Results

Client: CH2MHill
Lab ID: SG2441-4
Client ID: VEP21-SS04-0001
Project: NTR Vieques East CTO-0371
SDG: SG2441
Lab File ID: G8473.D

Sample Date: 11-APR-13
Received Date: 15-APR-13
Extract Date: 15-APR-13
Extracted By: JMS
Extraction Method: SW846 3540
Lab Prep Batch: WG122732

Analysis Date: 22-APR-13
Analyst: JCG
Analysis Method: SW846 M8270D
Matrix: SL
% Solids: 89.
Report Date: 03-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Hexachlorobutadiene	U	11.	ug/Kgdrywt	1	33	35.	7.6	11.
4-Chloro-3-Methylphenol	U	26.	ug/Kgdrywt	1	33	35.	6.0	26.
1,1'-Biphenyl	U	11.	ug/Kgdrywt	1	13	14.	6.1	11.
2-Nitroaniline	U	26.	ug/Kgdrywt	1	33	35.	19.	26.
2,6-Dinitrotoluene	U	26.	ug/Kgdrywt	1	33	35.	7.0	26.
Dibenzofuran	U	11.	ug/Kgdrywt	1	13	14.	6.1	11.
4-Nitroaniline	U	53.	ug/Kgdrywt	1	67	71.	31.	53.
Butylbenzylphthalate	~~UMM~~ LI CCH	53.	ug/Kgdrywt	1	100	110	4.2	53.
Di-N-Octylphthalate	~~UMM~~ LI ICH	53.	ug/Kgdrywt	1	100	110	49.	53.
2,3,4,6-Tetrachlorophenol	UMM	53.	ug/Kgdrywt	1	100	110	2.9	53.
1,4-Dioxane	U	53.	ug/Kgdrywt	1	100	110	1.2	53.
2-Methylnaphthalene-D10		75.9	%					
Fluorene-D10		82.2	%					
Pyrene-D10		99.8	%					
2,4-Dibromophenol		83.8	%					

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019

Katahdin
ANALYTICAL SERVICES

Cert No E87604

Report of Analytical Results

Client: CH2MHill
Lab ID: SG2441-5
Client ID: VEP21-SB01-011H
Project: NTR Vieques East CTO-037 1
SDG: SG2441
Lab File ID: G8460.D

Sample Date: 11-APR-13
Received Date: 15-APR-13
Extract Date: 15-APR-13
Extracted By: JMS
Extraction Method: SW846 3540
Lab Prep Batch: WG122732

Analysis Date: 17-APR-13
Analyst: JCG
Analysis Method: SW846 M8270D
Matrix: SL
% Solids: 91.
Report Date: 03-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
bis(2-Chloroethyl)ether	U~~V~~	26.	ug/Kgdrywt	1	33	35.	8.1	26.
2-Chlorophenol	U	10.	ug/Kgdrywt	1	33	35.	7.0	10.
2-Methylphenol	U	53.	ug/Kgdrywt	1	100	100	9.0	53.
3&4-Methylphenol	U	26.	ug/Kgdrywt	1	33	35.	10.	26.
n-Nitroso-di-n-propylamine	U	26.	ug/Kgdrywt	1	33	35.	8.1	26.
Nitrobenzene	U	10.	ug/Kgdrywt	1	20	21.	5.1	10.
2,4-Dimethylphenol	U	26.	ug/Kgdrywt	1	33	35.	10.	26.
2,4-Dichlorophenol	U	26.	ug/Kgdrywt	1	33	35.	8.8	26.
Naphthalene	U	10.	ug/Kgdrywt	1	13	14.	7.0	10.
2-Methylnaphthalene	U	10.	ug/Kgdrywt	1	13	14.	6.9	10.
Hexachlorocyclopentadiene	U	10.	ug/Kgdrywt	1	20	21.	1.6	10.
2,4,6-Trichlorophenol	U	26.	ug/Kgdrywt	1	33	35.	8.2	26.
2,4,5-Trichlorophenol	U	53.	ug/Kgdrywt	1	67	71.	27.	53.
4-Nitrophenol	U	53.	ug/Kgdrywt	1	100	100	8.4	53.
2,4-Dinitrotoluene	U	26.	ug/Kgdrywt	1	33	35.	7.4	26.
4,6-Dinitro-2-methylphenol	U	100	ug/Kgdrywt	1	200	210	25.	100
Hexachlorobenzene	U	10.	ug/Kgdrywt	1	13	14.	7.1	10.
Atrazine	U	10.	ug/Kgdrywt	1	20	21.	1.0	10.
Pentachlorophenol	U	53.	ug/Kgdrywt	1	100	100	15.	53.
3,3'-Dichlorobenzidine	~~U~~ UJ CCL	26.	ug/Kgdrywt	1	33	35.	9.2	26.
Benzo(a)anthracene	U	10.	ug/Kgdrywt	1	13	14.	2.4	10.
Benzo(b)Fluoranthene	J	5.1	ug/Kgdrywt	1	13	14.	3.3	10.
Benzo(k)fluoranthene	U	10.	ug/Kgdrywt	1	13	14.	9.9	10.
Benzo(a)pyrene	U	10.	ug/Kgdrywt	1	13	14.	7.2	10.
Indeno(1,2,3-cd)pyrene	~~U~~ UJ ICH	26.	ug/Kgdrywt	1	33	35.	9.6	26.
Dibenzo(a,h)anthracene	~~U~~ UJ ICH	26.	ug/Kgdrywt	1	33	35.	9.7	26.
2,4-Dinitrophenol	~~U~~ R CCL	79.	ug/Kgdrywt	1	100	100	66.	79.
n-Nitrosodiphenylamine	U	10.	ug/Kgdrywt	1	13	14.	7.3	10.
Benzaldehyde		50.	ug/Kgdrywt	1	33	35.	8.9	26.
2,2'-Oxybis(1-Chloropropane)	U	26.	ug/Kgdrywt	1	33	35.	7.1	26.
Hexachloroethane	U~~V~~	10.	ug/Kgdrywt	1	13	14.	4.3	10.
Isophorone	U	26.	ug/Kgdrywt	1	33	35.	18.	26.
2-Nitrophenol	U	26.	ug/Kgdrywt	1	33	35.	16.	26.
Bis(2-Chloroethoxy)Methane	U	26.	ug/Kgdrywt	1	33	35.	8.1	26.
4-Chloroaniline	U	53.	ug/Kgdrywt	1	100	100	53.	53.

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020

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ANALYTICAL SERVICES

Cert No E87604

Report of Analytical Results

Client: CH2MHill
Lab ID: SG2441-5
Client ID: VEP21-SB01-011H
Project: NTR Vieques East CTO-0371
SDG: SG2441
Lab File ID: G8460.D

Sample Date: 11-APR-13
Received Date: 15-APR-13
Extract Date: 15-APR-13
Extracted By: JMS
Extraction Method: SW846 3540
Lab Prep Batch: WG122732

Analysis Date: 17-APR-13
Analyst: JCG
Analysis Method: SW846 M8270D
Matrix: SL
% Solids: 91.
Report Date: 03-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Hexachlorobutadiene	U	10.	ug/Kgdrywt	1	33	35.	7.6	10.
4-Chloro-3-Methylphenol	U	26.	ug/Kgdrywt	1	33	35.	5.9	26.
1,1'-Biphenyl	U	10.	ug/Kgdrywt	1	13	14.	6.0	10.
2-Nitroaniline	U	26.	ug/Kgdrywt	1	33	35.	19.	26.
2,6-Dinitrotoluene	U	26.	ug/Kgdrywt	1	33	35.	7.0	26.
Dibenzofuran	U	10.	ug/Kgdrywt	1	13	14.	6.0	10.
4-Nitroaniline	~~U~~ UJ CCL	53.	ug/Kgdrywt	1	67	71.	31.	53.
Butylbenzylphthalate	J	4.8	ug/Kgdrywt	1	100	100	4.2	53.
Di-N-Octylphthalate	~~U~~ UJ ICH	53.	ug/Kgdrywt	1	100	100	48.	53.
2,3,4,6-Tetrachlorophenol	U	53.	ug/Kgdrywt	1	100	100	2.8	53.
1,4-Dioxane	U	53.	ug/Kgdrywt	1	100	100	1.2	53.
2-Methylnaphthalene-D10		77.1	%					
Fluorene-D10		81.7	%					
Pyrene-D10		89.8	%					
2,4-Dibromophenol		92.2	%					

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Katahdin
ANALYTICAL SERVICES

Cert No E87604

Report of Analytical Results

Client: CH2MHill
Lab ID: SG2441-6
Client ID: VEP21-SS05-0001
Project: NTR Vieques East CTO-037 1
SDG: SG2441
Lab File ID: G8461.D

Sample Date: 11-APR-13
Received Date: 15-APR-13
Extract Date: 15-APR-13
Extracted By: JMS
Extraction Method: SW846 3540
Lab Prep Batch: WG122732

Analysis Date: 17-APR-13
Analyst: JCG
Analysis Method: SW846 M8270D
Matrix: SL
% Solids: 92.
Report Date: 03-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
bis(2-Chloroethyl)ether	UJ~~V~~	27.	ug/Kgdrywt	1	33	35.	8.2	27.
2-Chlorophenol	U	11.	ug/Kgdrywt	1	33	35.	7.0	11.
2-Methylphenol	U	53.	ug/Kgdrywt	1	100	110	9.1	53.
3&4-Methylphenol	U	27.	ug/Kgdrywt	1	33	35.	10.	27.
n-Nitroso-di-n-propylamine	U	27.	ug/Kgdrywt	1	33	35.	8.2	27.
Nitrobenzene	U	11.	ug/Kgdrywt	1	20	21.	5.1	11.
2,4-Dimethylphenol	U	27.	ug/Kgdrywt	1	33	35.	10.	27.
2,4-Dichlorophenol	U	27.	ug/Kgdrywt	1	33	35.	8.8	27.
Naphthalene	U	11.	ug/Kgdrywt	1	13	14.	7.0	11.
2-Methylnaphthalene	U	11.	ug/Kgdrywt	1	13	14.	6.9	11.
Hexachlorocyclopentadiene	U	11.	ug/Kgdrywt	1	20	21.	1.6	11.
2,4,6-Trichlorophenol	U	27.	ug/Kgdrywt	1	33	35.	8.3	27.
2,4,5-Trichlorophenol	U	53.	ug/Kgdrywt	1	67	72.	28.	53.
4-Nitrophenol	U	53.	ug/Kgdrywt	1	100	110	8.5	53.
2,4-Dinitrotoluene	U	27.	ug/Kgdrywt	1	33	35.	7.5	27.
4,6-Dinitro-2-methylphenol	U	110	ug/Kgdrywt	1	200	210	26.	110
Hexachlorobenzene	U	11.	ug/Kgdrywt	1	13	14.	7.2	11.
Atrazine	U	11.	ug/Kgdrywt	1	20	21.	1.1	11.
Pentachlorophenol	U	53.	ug/Kgdrywt	1	100	110	15.	53.
3,3'-Dichlorobenzidine	~~U~~ UJ CCL	27.	ug/Kgdrywt	1	33	35.	9.3	27.
Benzo(a)anthracene	U	11.	ug/Kgdrywt	1	13	14.	2.4	11.
Benzo(b)Fluoranthene	J	5.4	ug/Kgdrywt	1	13	14.	3.3	11.
Benzo(k)fluoranthene	U	11.	ug/Kgdrywt	1	13	14.	10.	11.
Benzo(a)pyrene	U	11.	ug/Kgdrywt	1	13	14.	7.2	11.
Indeno(1,2,3-cd)pyrene	~~U~~ UJ ICH	27.	ug/Kgdrywt	1	33	35.	9.7	27.
Dibenzo(a,h)anthracene	~~U~~ UJ ICH	27.	ug/Kgdrywt	1	33	35.	9.8	27.
2,4-Dinitrophenol	~~U~~ R CCL	80.	ug/Kgdrywt	1	100	110	67.	80.
n-Nitrosodiphenylamine	U	11.	ug/Kgdrywt	1	13	14.	7.4	11.
Benzaldehyde	U	27.	ug/Kgdrywt	1	33	35.	9.0	27.
2,2'-Oxybis(1-Chloropropane)	U	27.	ug/Kgdrywt	1	33	35.	7.2	27.
Hexachloroethane	UJ~~V~~	11.	ug/Kgdrywt	1	13	14.	4.4	11.
Isophorone	U	27.	ug/Kgdrywt	1	33	35.	18.	27.
2-Nitrophenol	U	27.	ug/Kgdrywt	1	33	35.	16.	27.
Bis(2-Chloroethoxy)Methane	U	27.	ug/Kgdrywt	1	33	35.	8.2	27.
4-Chloroaniline	U	53.	ug/Kgdrywt	1	100	110	53.	53.

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Katahdin
ANALYTICAL SERVICES

Cert No E87604

Report of Analytical Results

Client: CH2MHill
Lab ID: SG2441-6
Client ID: VEP21-SS05-0001
Project: NTR Vieques East CTO-0371
SDG: SG2441
Lab File ID: G8461.D

Sample Date: 11-APR-13
Received Date: 15-APR-13
Extract Date: 15-APR-13
Extracted By: JMS
Extraction Method: SW846 3540
Lab Prep Batch: WG122732

Analysis Date: 17-APR-13
Analyst: JCG
Analysis Method: SW846 M8270D
Matrix: SL
% Solids: 92.
Report Date: 03-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Hexachlorobutadiene	U	11.	ug/Kgdrywt	1	33	35.	7.7	11.
4-Chloro-3-Methylphenol	U	27.	ug/Kgdrywt	1	33	35.	6.0	27.
1,1'-Biphenyl	U	11.	ug/Kgdrywt	1	13	14.	6.1	11.
2-Nitroaniline	U	27.	ug/Kgdrywt	1	33	35.	19.	27.
2,6-Dinitrotoluene	U	27.	ug/Kgdrywt	1	33	35.	7.0	27.
Dibenzofuran	U	11.	ug/Kgdrywt	1	13	14.	6.1	11.
4-Nitroaniline	~~U~~ UJ CCL	53.	ug/Kgdrywt	1	67	72.	31.	53.
Butylbenzylphthalate	U	53.	ug/Kgdrywt	1	100	110	4.3	53.
Di-N-Octylphthalate	~~U~~ UJ ICH	53.	ug/Kgdrywt	1	100	110	49.	53.
2,3,4,6-Tetrachlorophenol	U	53.	ug/Kgdrywt	1	100	110	2.9	53.
1,4-Dioxane	U	53.	ug/Kgdrywt	1	100	110	1.2	53.
2-Methylnaphthalene-D10		79.2	%					
Fluorene-D10		84.4	%					
Pyrene-D10		87.4	%					
2,4-Dibromophenol		87.3	%					

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023

Katahdin
ANALYTICAL SERVICES

Cert No E87604

Report of Analytical Results

Client: CH2MHill
Lab ID: SG2441-7
Client ID: VEP21-SS02-0001
Project: NTR Vieques East CTO-037 I
SDG: SG2441
Lab File ID: G8462.D

Sample Date: 11-APR-13
Received Date: 15-APR-13
Extract Date: 15-APR-13
Extracted By: JMS
Extraction Method: SW846 3540
Lab Prep Batch: WG122732

Analysis Date: 17-APR-13
Analyst: JCG
Analysis Method: SW846 M8270D
Matrix: SL
% Solids: 83.
Report Date: 03-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
bis(2-Chloroethyl)ether	U LL	27.	ug/Kgdrywt	1	33	36.	8.4	27.
2-Chlorophenol	U	11.	ug/Kgdrywt	1	33	36.	7.2	11.
2-Methylphenol	U	54.	ug/Kgdrywt	1	100	110	9.2	54.
3&4-Methylphenol	U	27.	ug/Kgdrywt	1	33	36.	11.	27.
n-Nitroso-di-n-propylamine	U	27.	ug/Kgdrywt	1	33	36.	8.4	27.
Nitrobenzene	U	11.	ug/Kgdrywt	1	20	22.	5.2	11.
2,4-Dimethylphenol	U	27.	ug/Kgdrywt	1	33	36.	11.	27.
2,4-Dichlorophenol	U	27.	ug/Kgdrywt	1	33	36.	9.0	27.
Naphthalene	U	11.	ug/Kgdrywt	1	13	14.	7.2	11.
2-Methylnaphthalene	U	11.	ug/Kgdrywt	1	13	14.	7.0	11.
Hexachlorocyclopentadiene	U	11.	ug/Kgdrywt	1	20	22.	1.6	11.
2,4,6-Trichlorophenol	U	27.	ug/Kgdrywt	1	33	36.	8.5	27.
2,4,5-Trichlorophenol	U	54.	ug/Kgdrywt	1	67	73.	28.	54.
4-Nitrophenol	U	54.	ug/Kgdrywt	1	100	110	8.7	54.
2,4-Dinitrotoluene	U	27.	ug/Kgdrywt	1	33	36.	7.6	27.
4,6-Dinitro-2-methylphenol	U	110	ug/Kgdrywt	1	200	220	26.	110
Hexachlorobenzene	U	11.	ug/Kgdrywt	1	13	14.	7.3	11.
Atrazine	U	11.	ug/Kgdrywt	1	20	22.	1.1	11.
Pentachlorophenol	U	54.	ug/Kgdrywt	1	100	110	15.	54.
3,3'-Dichlorobenzidine	U WS CCL	27.	ug/Kgdrywt	1	33	36.	9.4	27.
Benzo(a)anthracene	U	11.	ug/Kgdrywt	1	13	14.	2.5	11.
Benzo(b)Fluoranthene	J	5.2	ug/Kgdrywt	1	13	14.	3.4	11.
Benzo(k)fluoranthene	U	11.	ug/Kgdrywt	1	13	14.	10.	11.
Benzo(a)pyrene	U	11.	ug/Kgdrywt	1	13	14.	7.4	11.
Indeno(1,2,3-cd)pyrene	U WS ICH	27.	ug/Kgdrywt	1	33	36.	9.9	27.
Dibenzo(a,h)anthracene	U WS ICH	27.	ug/Kgdrywt	1	33	36.	10.	27.
2,4-Dinitrophenol	U R CCL	81.	ug/Kgdrywt	1	100	110	68.	81.
n-Nitrosodiphenylamine	U	11.	ug/Kgdrywt	1	13	14.	7.5	11.
Benzaldehyde	J	21.	ug/Kgdrywt	1	33	36.	9.1	27.
2,2'-Oxybis(1-Chloropropane)	U	27.	ug/Kgdrywt	1	33	36.	7.3	27.
Hexachloroethane	U LL	11.	ug/Kgdrywt	1	13	14.	4.4	11.
Isophorone	U	27.	ug/Kgdrywt	1	33	36.	18.	27.
2-Nitrophenol	U	27.	ug/Kgdrywt	1	33	36.	16.	27.
Bis(2-Chloroethoxy)Methane	U	27.	ug/Kgdrywt	1	33	36.	8.4	27.
4-Chloroaniline	U	54.	ug/Kgdrywt	1	100	110	54.	54.

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024

Katahdin
ANALYTICAL SERVICES

Cert No E87604

Report of Analytical Results

Client: CH2MHill
Lab ID: SG2441-7
Client ID: VEP21-SS02-0001
Project: NTR Vieques East CTO-037 1
SDG: SG2441
Lab File ID: G8462.D

Sample Date: 11-APR-13
Received Date: 15-APR-13
Extract Date: 15-APR-13
Extracted By: JMS
Extraction Method: SW846 3540
Lab Prep Batch: WG122732

Analysis Date: 17-APR-13
Analyst: JCG
Analysis Method: SW846 M8270D
Matrix: SL
% Solids: 83.
Report Date: 03-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Hexachlorobutadiene	U	11.	ug/Kgdrywt	1	33	36.	7.8	11.
4-Chloro-3-Methylphenol	U	27.	ug/Kgdrywt	1	33	36.	6.1	27.
1,1'-Biphenyl	U	11.	ug/Kgdrywt	1	13	14.	6.2	11.
2-Nitroaniline	U	27.	ug/Kgdrywt	1	33	36.	20.	27.
2,6-Dinitrotoluene	U	27.	ug/Kgdrywt	1	33	36.	7.2	27.
Dibenzofuran	U	11.	ug/Kgdrywt	1	13	14.	6.2	11.
4-Nitroaniline	~~U~~ UJ CCL	54.	ug/Kgdrywt	1	67	73.	31.	54.
Butylbenzylphthalate	U	54.	ug/Kgdrywt	1	100	110	4.3	54.
Di-N-Octylphthalate	~~U~~ UJ ICH	54.	ug/Kgdrywt	1	100	110	50.	54.
2,3,4,6-Tetrachlorophenol	U	54.	ug/Kgdrywt	1	100	110	2.9	54.
1,4-Dioxane	U	54.	ug/Kgdrywt	1	100	110	1.2	54.
2-Methylnaphthalene-D10		68.7	%					
Fluorene-D10		82.0	%					
Pyrene-D10		87.6	%					
2,4-Dibromophenol		86.2	%					

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025

Katahdin
ANALYTICAL SERVICES

Cert No E87604

Report of Analytical Results

Client: CH2MHill
Lab ID: SG2441-8
Client ID: VEP21-SB03-0102
Project: NTR Vieques East CTO-037 I
SDG: SG2441
Lab File ID: G8463.D

Sample Date: 11-APR-13
Received Date: 15-APR-13
Extract Date: 15-APR-13
Extracted By: JMS
Extraction Method: SW846 3540
Lab Prep Batch: WG122732

Analysis Date: 17-APR-13
Analyst: JCG
Analysis Method: SW846 M8270D
Matrix: SL
% Solids: 85.
Report Date: 03-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
bis(2-Chloroethyl)ether	U~~UL~~	28.	ug/Kgdrywt	1	33	36.	8.5	28.
2-Chlorophenol	U	11.	ug/Kgdrywt	1	33	36.	7.3	11.
2-Methylphenol	U	55.	ug/Kgdrywt	1	100	110	9.4	55.
3&4-Methylphenol	U	28.	ug/Kgdrywt	1	33	36.	11.	28.
n-Nitroso-di-n-propylamine	U	28.	ug/Kgdrywt	1	33	36.	8.5	28.
Nitrobenzene	U	11.	ug/Kgdrywt	1	20	22.	5.3	11.
2,4-Dimethylphenol	U	28.	ug/Kgdrywt	1	33	36.	11.	28.
2,4-Dichlorophenol	U	28.	ug/Kgdrywt	1	33	36.	9.1	28.
Naphthalene	U	11.	ug/Kgdrywt	1	13	14.	7.3	11.
2-Methylnaphthalene	U	11.	ug/Kgdrywt	1	13	14.	7.2	11.
Hexachlorocyclopentadiene	U	11.	ug/Kgdrywt	1	20	22.	1.6	11.
2,4,6-Trichlorophenol	U	28.	ug/Kgdrywt	1	33	36.	8.6	28.
2,4,5-Trichlorophenol	U	55.	ug/Kgdrywt	1	67	74.	29.	55.
4-Nitrophenol	U	55.	ug/Kgdrywt	1	100	110	8.8	55.
2,4-Dinitrotoluene	U	28.	ug/Kgdrywt	1	33	36.	7.7	28.
4,6-Dinitro-2-methylphenol	U	110	ug/Kgdrywt	1	200	220	26.	110
Hexachlorobenzene	U	11.	ug/Kgdrywt	1	13	14.	7.4	11.
Atrazine	U	11.	ug/Kgdrywt	1	20	22.	1.1	11.
Pentachlorophenol	U	55.	ug/Kgdrywt	1	100	110	15.	55.
3,3'-Dichlorobenzidine	~~U~~ UJ CCL	28.	ug/Kgdrywt	1	33	36.	9.6	28.
Benzo(a)anthracene	U	11.	ug/Kgdrywt	1	13	14.	2.5	11.
Benzo(b)Fluoranthene	J	6.3	ug/Kgdrywt	1	13	14.	3.4	11.
Benzo(k)fluoranthene	U	11.	ug/Kgdrywt	1	13	14.	10.	11.
Benzo(a)pyrene	U	11.	ug/Kgdrywt	1	13	14.	7.5	11.
Indeno(1,2,3-cd)pyrene	~~U~~ UJ ICH	28.	ug/Kgdrywt	1	33	36.	10.	28.
Dibenzo(a,h)anthracene	~~U~~ UJ ICH	28.	ug/Kgdrywt	1	33	36.	10.	28.
2,4-Dinitrophenol	~~U~~ R CCL	83.	ug/Kgdrywt	1	100	110	69.	83.
n-Nitrosodiphenylamine	U	11.	ug/Kgdrywt	1	13	14.	7.6	11.
Benzaldehyde	U	28.	ug/Kgdrywt	1	33	36.	9.2	28.
2,2'-Oxybis(1-Chloropropane)	U	28.	ug/Kgdrywt	1	33	36.	7.4	28.
Hexachloroethane	U~~UL~~	11.	ug/Kgdrywt	1	13	14.	4.5	11.
Isophorone	U	28.	ug/Kgdrywt	1	33	36.	19.	28.
2-Nitrophenol	U	28.	ug/Kgdrywt	1	33	36.	16.	28.
Bis(2-Chloroethoxy)Methane	U	28.	ug/Kgdrywt	1	33	36.	8.5	28.
4-Chloroaniline	U	55.	ug/Kgdrywt	1	100	110	55.	55.

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026

Katahdin
ANALYTICAL SERVICES

Cert No E87604

Report of Analytical Results

Client: CH2MHill
Lab ID: SG2441-8
Client ID: VEP21-SB03-0102
Project: NTR Vieques East CTO-037 1
SDG: SG2441
Lab File ID: G8463.D

Sample Date: 11-APR-13
Received Date: 15-APR-13
Extract Date: 15-APR-13
Extracted By: JMS
Extraction Method: SW846 3540
Lab Prep Batch: WG122732

Analysis Date: 17-APR-13
Analyst: JCG
Analysis Method: SW846 M8270D
Matrix: SL
% Solids: 85.
Report Date: 03-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Hexachlorobutadiene	U	11.	ug/Kgdrywt	1	33	36.	7.9	11.
4-Chloro-3-Methylphenol	U	28.	ug/Kgdrywt	1	33	36.	6.2	28.
1,1'-Biphenyl	U	11.	ug/Kgdrywt	1	13	14.	6.3	11.
2-Nitroaniline	U	28.	ug/Kgdrywt	1	33	36.	20.	28.
2,6-Dinitrotoluene	U	28.	ug/Kgdrywt	1	33	36.	7.3	28.
Dibenzofuran	U	11.	ug/Kgdrywt	1	13	14.	6.3	11.
4-Nitroaniline	~~U~~ UJ CCV	55.	ug/Kgdrywt	1	67	74.	32.	55.
Butylbenzylphthalate	U	55.	ug/Kgdrywt	1	100	110	4.4	55.
Di-N-Octylphthalate	~~U~~ UJ ICH	55.	ug/Kgdrywt	1	100	110	51.	55.
2,3,4,6-Tetrachlorophenol	U	55.	ug/Kgdrywt	1	100	110	3.0	55.
1,4-Dioxane	U	55.	ug/Kgdrywt	1	100	110	1.2	55.
2-Methylnaphthalene-D10		71.6	%					
Fluorene-D10		83.0	%					
Pyrene-D10		85.7	%					
2,4-Dibromophenol		80.3	%					

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027

Katahdin
ANALYTICAL SERVICES

Cert No E87604

Report of Analytical Results

Client: CH2MHill
Lab ID: SG2441-9
Client ID: VEP21-SB04-011H
Project: NTR Vieques East CTO-037 1
SDG: SG2441
Lab File ID: G8476.D

Sample Date: 11-APR-13
Received Date: 15-APR-13
Extract Date: 15-APR-13
Extracted By: JMS
Extraction Method: SW846 3540
Lab Prep Batch: WG122732

Analysis Date: 22-APR-13
Analyst: JCG
Analysis Method: SW846 M8270D
Matrix: SL
% Solids: 90.
Report Date: 03-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
bis(2-Chloroethyl)ether	U~~W~~	24.	ug/Kgdrywt	1	33	32.	7.4	24.
2-Chlorophenol	U	9.6	ug/Kgdrywt	1	33	32.	6.4	9.6
2-Methylphenol	U	48.	ug/Kgdrywt	1	100	96.	8.2	48.
3&4-Methylphenol	U	24.	ug/Kgdrywt	1	33	32.	9.6	24.
n-Nitroso-di-n-propylamine	U	24.	ug/Kgdrywt	1	33	32.	7.4	24.
Nitrobenzene	U	9.6	ug/Kgdrywt	1	20	19.	4.6	9.6
2,4-Dimethylphenol	U	24.	ug/Kgdrywt	1	33	32.	9.5	24.
2,4-Dichlorophenol	U	24.	ug/Kgdrywt	1	33	32.	8.0	24.
Naphthalene	U	9.6	ug/Kgdrywt	1	13	12.	6.4	9.6
2-Methylnaphthalene	U	9.6	ug/Kgdrywt	1	13	12.	6.3	9.6
Hexachlorocyclopentadiene	U	9.6	ug/Kgdrywt	1	20	19.	1.4	9.6
2,4,6-Trichlorophenol	U	24.	ug/Kgdrywt	1	33	32.	7.5	24.
2,4,5-Trichlorophenol	U	48.	ug/Kgdrywt	1	67	65.	25.	48.
4-Nitrophenol	U	48.	ug/Kgdrywt	1	100	96.	7.7	48.
2,4-Dinitrotoluene	U	24.	ug/Kgdrywt	1	33	32.	6.8	24.
4,6-Dinitro-2-methylphenol	U	96.	ug/Kgdrywt	1	200	190	23.	96.
Hexachlorobenzene	U	9.6	ug/Kgdrywt	1	13	12.	6.5	9.6
Atrazine	U	9.6	ug/Kgdrywt	1	20	19.	0.96	9.6
Pentachlorophenol	U	48.	ug/Kgdrywt	1	100	96.	14.	48.
3,3'-Dichlorobenzidine	U	24.	ug/Kgdrywt	1	33	32.	8.4	24.
Benzo(a)anthracene	U	9.6	ug/Kgdrywt	1	13	12.	2.2	9.6
Benzo(b)Fluoranthene	U	9.6	ug/Kgdrywt	1	13	12.	3.0	9.6
Benzo(k)fluoranthene	U	9.6	ug/Kgdrywt	1	13	12.	9.1	9.6
Benzo(a)pyrene	U	9.6	ug/Kgdrywt	1	13	12.	6.6	9.6
Indeno(1,2,3-cd)pyrene	~~U~~ UJ ICH	24.	ug/Kgdrywt	1	33	32.	8.8	24.
Dibenzo(a,h)anthracene	~~U~~ UJ ICH	24.	ug/Kgdrywt	1	33	32.	8.9	24.
2,4-Dinitrophenol	U	72.	ug/Kgdrywt	1	100	96.	61.	72.
n-Nitrosodiphenylamine	~~U~~ UJ CCH	9.6	ug/Kgdrywt	1	13	12.	6.7	9.6
Benzaldehyde	U	24.	ug/Kgdrywt	1	33	32.	8.1	24.
2,2'-Oxybis(1-Chloropropane)	U	24.	ug/Kgdrywt	1	33	32.	6.5	24.
Hexachloroethane	~~ULL~~ UJ CCH	9.6	ug/Kgdrywt	1	13	12.	4.0	9.6
Isophorone	U	24.	ug/Kgdrywt	1	33	32.	16.	24.
2-Nitrophenol	~~U~~ UJ CCH	24.	ug/Kgdrywt	1	33	32.	14.	24.
Bis(2-Chloroethoxy)Methane	U	24.	ug/Kgdrywt	1	33	32.	7.4	24.
4-Chloroaniline	U	48.	ug/Kgdrywt	1	100	96.	48.	48.

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028

Katahdin
ANALYTICAL SERVICES

Cert No E87604

Report of Analytical Results

Client: CH2MHill
Lab ID: SG2441-9
Client ID: VEP21-SB04-011H
Project: NTR Vieques East CTO-037 I
SDG: SG2441
Lab File ID: G8476.D

Sample Date: 11-APR-13
Received Date: 15-APR-13
Extract Date: 15-APR-13
Extracted By: JMS
Extraction Method: SW846 3540
Lab Prep Batch: WG122732

Analysis Date: 22-APR-13
Analyst: JCG
Analysis Method: SW846 M8270D
Matrix: SL
% Solids: 90.
Report Date: 03-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Hexachlorobutadiene	U	9.6	ug/Kgdrywt	1	33	32.	7.0	9.6
4-Chloro-3-Methylphenol	U	24.	ug/Kgdrywt	1	33	32.	5.4	24.
1,1'-Biphenyl	U	9.6	ug/Kgdrywt	1	13	12.	5.5	9.6
2-Nitroaniline	U	24.	ug/Kgdrywt	1	33	32.	17.	24.
2,6-Dinitrotoluene	U	24.	ug/Kgdrywt	1	33	32.	6.4	24.
Dibenzofuran	U	9.6	ug/Kgdrywt	1	13	12.	5.5	9.6
4-Nitroaniline	U	48.	ug/Kgdrywt	1	67	65.	28.	48.
Butylbenzylphthalate	~~U~~ UJ CCH	48.	ug/Kgdrywt	1	100	96.	3.9	48.
Di-N-Octylphthalate	~~U~~ UJ ICH	48.	ug/Kgdrywt	1	100	96.	44.	48.
2,3,4,6-Tetrachlorophenol	U	48.	ug/Kgdrywt	1	100	96.	2.6	48.
1,4-Dioxane	U	48.	ug/Kgdrywt	1	100	96.	1.1	48.
2-Methylnaphthalene-D10		78.0	%					
Fluorene-D10		74.2	%					
Pyrene-D10		92.8	%					
2,4-Dibromophenol		79.1	%					

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029

Katahdin
ANALYTICAL SERVICES

Cert No E87604

Report of Analytical Results

Client: CH2MHill
Lab ID: SG2441-10
Client ID: VEP21-SB05-011H
Project: NTR Vieques East CTO-037 1
SDG: SG2441
Lab File ID: G8464.D

Sample Date: 11-APR-13
Received Date: 15-APR-13
Extract Date: 15-APR-13
Extracted By: JMS
Extraction Method: SW846 3540
Lab Prep Batch: WG122732

Analysis Date: 17-APR-13
Analyst: JCG
Analysis Method: SW846 M8270D
Matrix: SL
% Solids: 93.
Report Date: 03-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
bis(2-Chloroethyl)ether	U~~VV~~	26.	ug/Kgdrywt	1	33	35.	8.2	26.
2-Chlorophenol	U	10.	ug/Kgdrywt	1	33	35.	7.0	10.
2-Methylphenol	U	53.	ug/Kgdrywt	1	100	100	9.0	53.
3&4-Methylphenol	U	26.	ug/Kgdrywt	1	33	35.	10.	26.
n-Nitroso-di-n-propylamine	U	26.	ug/Kgdrywt	1	33	35.	8.2	26.
Nitrobenzene	U	10.	ug/Kgdrywt	1	20	21.	5.1	10.
2,4-Dimethylphenol	U	26.	ug/Kgdrywt	1	33	35.	10.	26.
2,4-Dichlorophenol	U	26.	ug/Kgdrywt	1	33	35.	8.8	26.
Naphthalene	U	10.	ug/Kgdrywt	1	13	14.	7.0	10.
2-Methylnaphthalene	U	10.	ug/Kgdrywt	1	13	14.	6.9	10.
Hexachlorocyclopentadiene	U	10.	ug/Kgdrywt	1	20	21.	1.6	10.
2,4,6-Trichlorophenol	U	26.	ug/Kgdrywt	1	33	35.	8.3	26.
2,4,5-Trichlorophenol	U	53.	ug/Kgdrywt	1	67	71.	28.	53.
4-Nitrophenol	U	53.	ug/Kgdrywt	1	100	100	8.5	53.
2,4-Dinitrotoluene	U	26.	ug/Kgdrywt	1	33	35.	7.4	26.
4,6-Dinitro-2-methylphenol	U	100	ug/Kgdrywt	1	200	210	25.	100
Hexachlorobenzene	U	10.	ug/Kgdrywt	1	13	14.	7.1	10.
Atrazine	U	10.	ug/Kgdrywt	1	20	21.	1.0	10.
Pentachlorophenol	U	53.	ug/Kgdrywt	1	100	100	15.	53.
3,3'-Dichlorobenzidine	~~U~~ UJ CCL	26.	ug/Kgdrywt	1	33	35.	9.2	26.
Benzo(a)anthracene	U	10.	ug/Kgdrywt	1	13	14.	2.4	10.
Benzo(b)Fluoranthene	J	5.1	ug/Kgdrywt	1	13	14.	3.3	10.
Benzo(k)fluoranthene	U	10.	ug/Kgdrywt	1	13	14.	10.	10.
Benzo(a)pyrene	U	10.	ug/Kgdrywt	1	13	14.	7.2	10.
Indeno(1,2,3-cd)pyrene	~~U~~ UJ ICH	26.	ug/Kgdrywt	1	33	35.	9.6	26.
Dibenzo(a,h)anthracene	~~U~~ UJ ICH	26.	ug/Kgdrywt	1	33	35.	9.7	26.
2,4-Dinitrophenol	~~U~~ R CCL	79.	ug/Kgdrywt	1	100	100	67.	79.
n-Nitrosodiphenylamine	U	10.	ug/Kgdrywt	1	13	14.	7.3	10.
Benzaldehyde	J	11.	ug/Kgdrywt	1	33	35.	8.9	26.
2,2'-Oxybis(1-Chloropropane)	U	26.	ug/Kgdrywt	1	33	35.	7.1	26.
Hexachloroethane	U~~VV~~	10.	ug/Kgdrywt	1	13	14.	4.3	10.
Isophorone	U	26.	ug/Kgdrywt	1	33	35.	18.	26.
2-Nitrophenol	U	26.	ug/Kgdrywt	1	33	35.	16.	26.
Bis(2-Chloroethoxy)Methane	U	26.	ug/Kgdrywt	1	33	35.	8.2	26.
4-Chloroaniline	U	53.	ug/Kgdrywt	1	100	100	53.	53.

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030

Katahdin
ANALYTICAL SERVICES

Cert No E87604

Report of Analytical Results

Client: CH2MHill
Lab ID: SG2441-10
Client ID: VEP21-SB05-011H
Project: NTR Vieques East CTO-037 I
SDG: SG2441
Lab File ID: G8464.D

Sample Date: 11-APR-13
Received Date: 15-APR-13
Extract Date: 15-APR-13
Extracted By: JMS
Extraction Method: SW846 3540
Lab Prep Batch: WG122732

Analysis Date: 17-APR-13
Analyst: JCG
Analysis Method: SW846 M8270D
Matrix: SL
% Solids: 93.
Report Date: 03-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Hexachlorobutadiene	U	10.	ug/Kgdrywt	1	33	35.	7.6	10.
4-Chloro-3-Methylphenol	U	26.	ug/Kgdrywt	1	33	35.	5.9	26.
1,1'-Biphenyl	U	10.	ug/Kgdrywt	1	13	14.	6.0	10.
2-Nitroaniline	U	26.	ug/Kgdrywt	1	33	35.	19.	26.
2,6-Dinitrotoluene	U	26.	ug/Kgdrywt	1	33	35.	7.0	26.
Dibenzofuran	U	10.	ug/Kgdrywt	1	13	14.	6.0	10.
4-Nitroaniline	~~U~~ UJCCL	53.	ug/Kgdrywt	1	67	71.	31.	53.
Butylbenzylphthalate	J	7.9	ug/Kgdrywt	1	100	100	4.2	53.
Di-N-Octylphthalate	~~U~~ UJICH	53.	ug/Kgdrywt	1	100	100	49.	53.
2,3,4,6-Tetrachlorophenol	U	53.	ug/Kgdrywt	1	100	100	2.8	53.
1,4-Dioxane	U	53.	ug/Kgdrywt	1	100	100	1.2	53.
2-Methylnaphthalene-D10		76.2	%					
Fluorene-D10		86.4	%					
Pyrene-D10		102.	%					
2,4-Dibromophenol		91.5	%					

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031

Katahdin
ANALYTICAL SERVICES

Cert No E87604

Report of Analytical Results

Client: CH2MHill
Lab ID: SG2441-11
Client ID: VEP21-SB02-011H
Project: NTR Vieques East CTO-037 1
SDG: SG2441
Lab File ID: G8472.D

Sample Date: 11-APR-13
Received Date: 15-APR-13
Extract Date: 15-APR-13
Extracted By: JMS
Extraction Method: SW846 3540
Lab Prep Batch: WG122732

Analysis Date: 22-APR-13
Analyst: JCG
Analysis Method: SW846 M8270D
Matrix: SL
% Solids: 92.
Report Date: 03-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
bis(2-Chloroethyl)ether	U~~VV~~	26.	ug/Kgdrywt	1	33	34.	8.0	26.
2-Chlorophenol	U	10.	ug/Kgdrywt	1	33	34.	6.9	10.
2-Methylphenol	U	52.	ug/Kgdrywt	1	100	100	8.8	52.
3&4-Methylphenol	U	26.	ug/Kgdrywt	1	33	34.	10.	26.
n-Nitroso-di-n-propylamine	U	26.	ug/Kgdrywt	1	33	34.	8.0	26.
Nitrobenzene	U	10.	ug/Kgdrywt	1	20	21.	5.0	10.
2,4-Dimethylphenol	U	26.	ug/Kgdrywt	1	33	34.	10.	26.
2,4-Dichlorophenol	U	26.	ug/Kgdrywt	1	33	34.	8.6	26.
Naphthalene	U	10.	ug/Kgdrywt	1	13	14.	6.9	10.
2-Methylnaphthalene	U	10.	ug/Kgdrywt	1	13	14.	6.8	10.
Hexachlorocyclopentadiene	U	10.	ug/Kgdrywt	1	20	21.	1.6	10.
2,4,6-Trichlorophenol	U	26.	ug/Kgdrywt	1	33	34.	8.1	26.
2,4,5-Trichlorophenol	U	52.	ug/Kgdrywt	1	67	70.	27.	52.
4-Nitrophenol	U	52.	ug/Kgdrywt	1	100	100	8.3	52.
2,4-Dinitrotoluene	U	26.	ug/Kgdrywt	1	33	34.	7.3	26.
4,6-Dinitro-2-methylphenol	U	100	ug/Kgdrywt	1	200	210	25.	100
Hexachlorobenzene	U	10.	ug/Kgdrywt	1	13	14.	7.0	10.
Atrazine	U	10.	ug/Kgdrywt	1	20	21.	1.0	10.
Pentachlorophenol	U	52.	ug/Kgdrywt	1	100	100	14.	52.
3,3'-Dichlorobenzidine	U	26.	ug/Kgdrywt	1	33	34.	9.1	26.
Benzo(a)anthracene	U	10.	ug/Kgdrywt	1	13	14.	2.4	10.
Benzo(b)Fluoranthene	U	10.	ug/Kgdrywt	1	13	14.	3.2	10.
Benzo(k)fluoranthene	U	10.	ug/Kgdrywt	1	13	14.	9.8	10.
Benzo(a)pyrene	U	10.	ug/Kgdrywt	1	13	14.	7.1	10.
Indeno(1,2,3-cd)pyrene	~~U~~ UJ ICH	26.	ug/Kgdrywt	1	33	34.	9.5	26.
Dibenzo(a,h)anthracene	~~U~~ UJ ICH	26.	ug/Kgdrywt	1	33	34.	9.6	26.
2,4-Dinitrophenol	U	78.	ug/Kgdrywt	1	100	100	66.	78.
n-Nitrosodiphenylamine	~~U~~ UJ CCH	10.	ug/Kgdrywt	1	13	14.	7.2	10.
Benzaldehyde	U	26.	ug/Kgdrywt	1	33	34.	8.8	26.
2,2'-Oxybis(1-Chloropropane)	U	26.	ug/Kgdrywt	1	33	34.	7.0	26.
Hexachloroethane	~~ULL~~ UJ CCH	10.	ug/Kgdrywt	1	13	14.	4.3	10.
Isophorone	U	26.	ug/Kgdrywt	1	33	34.	18.	26.
2-Nitrophenol	~~U~~ UJ CCH	26.	ug/Kgdrywt	1	33	34.	16.	26.
Bis(2-Chloroethoxy)Methane	U	26.	ug/Kgdrywt	1	33	34.	8.0	26.
4-Chloroaniline	U	52.	ug/Kgdrywt	1	100	100	52.	52.

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032

Katahdin
ANALYTICAL SERVICES

Cert No E87604

Report of Analytical Results

Client: CH2MHill
Lab ID: SG2441-11
Client ID: VEP21-SB02-011H
Project: NTR Vieques East CTO-037 1
SDG: SG2441
Lab File ID: G8472.D

Sample Date: 11-APR-13
Received Date: 15-APR-13
Extract Date: 15-APR-13
Extracted By: JMS
Extraction Method: SW846 3540
Lab Prep Batch: WG122732

Analysis Date: 22-APR-13
Analyst: JCG
Analysis Method: SW846 M8270D
Matrix: SL
% Solids: 92.
Report Date: 03-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Hexachlorobutadiene	U	10.	ug/Kgdrywt	1	33	34.	7.5	10.
4-Chloro-3-Methylphenol	U	26.	ug/Kgdrywt	1	33	34.	5.8	26.
1,1'-Biphenyl	U	10.	ug/Kgdrywt	1	13	14.	5.9	10.
2-Nitroaniline	U	26.	ug/Kgdrywt	1	33	34.	19.	26.
2,6-Dinitrotoluene	U	26.	ug/Kgdrywt	1	33	34.	6.9	26.
Dibenzofuran	U	10.	ug/Kgdrywt	1	13	14.	5.9	10.
4-Nitroaniline	U	52.	ug/Kgdrywt	1	67	70.	30.	52.
Butylbenzylphthalate	~~J~~ J CCH	6.4	ug/Kgdrywt	1	100	100	4.2	52.
Di-N-Octylphthalate	~~U~~ UJ ICH	52.	ug/Kgdrywt	1	100	100	48.	52.
2,3,4,6-Tetrachlorophenol	U	52.	ug/Kgdrywt	1	100	100	2.8	52.
1,4-Dioxane	U	52.	ug/Kgdrywt	1	100	100	1.1	52.
2-Methylnaphthalene-D10		76.0	%					
Fluorene-D10		75.1	%					
Pyrene-D10		101.	%					
2,4-Dibromophenol		77.0	%					

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Katahdin
ANALYTICAL SERVICES

Cert No E87604

Report of Analytical Results

Client: CH2MHill
Lab ID: SG2441-13
Client ID: VEP21-EB01-041113
Project: NTR Vieques East CTO-037 1
SDG: SG2441
Lab File ID: G8469.D

Sample Date: 11-APR-13
Received Date: 15-APR-13
Extract Date: 17-APR-13
Extracted By: JMS
Extraction Method: SW846 3520
Lab Prep Batch: WG122803

Analysis Date: 22-APR-13
Analyst: JCG
Analysis Method: SW846 M8270D
Matrix: AQ
% Solids: NA
Report Date: 03-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
2-Chlorophenol	U	0.48	ug/L	1	1	0.97	0.27	0.48
Naphthalene	U	0.097	ug/L	1	.2	0.19	0.097	0.097
Hexachlorobutadiene	UJ	2.4	ug/L	1	5	4.8	1.4	2.4
2-Methylnaphthalene	U	0.48	ug/L	1	1	0.97	0.19	0.48
Hexachlorobenzene	U	0.097	ug/L	1	.2	0.19	0.097	0.097
Pentachlorophenol	U	0.48	ug/L	1	1	0.97	0.32	0.48
Benzo(a)anthracene	U	0.48	ug/L	1	1	0.97	0.19	0.48
Benzo(b)fluoranthene	U	0.097	ug/L	1	.2	0.19	0.097	0.097
Benzo(k)fluoranthene	U	0.097	ug/L	1	.2	0.19	0.097	0.097
Benzo(a)pyrene	U	0.097	ug/L	1	.2	0.19	0.097	0.097
Indeno(1,2,3-cd)pyrene	~~U~~ UJ ICH	0.097	ug/L	1	.2	0.19	0.050	0.097
Dibenzo(a,h)anthracene	~~U~~ UJ ICH	0.097	ug/L	1	.2	0.19	0.097	0.097
1,1'-Biphenyl	~~ULL~~ UJ BSL	0.48	ug/L	1	1	0.97	0.097	0.48
2,2'-Oxybis(1-Chloropropane)	~~ULL~~ UJ BSL	0.14	ug/L	1	.2	0.19	0.12	0.14
2,4,5-Trichlorophenol	U	0.48	ug/L	1	1	0.97	0.097	0.48
2,4,6-Trichlorophenol	U	0.48	ug/L	1	1	0.97	0.19	0.48
2,4-Dichlorophenol	U	0.97	ug/L	1	2	1.9	0.86	0.97
2,4-Dimethylphenol	U	0.97	ug/L	1	2	1.9	0.50	0.97
2,4-Dinitrophenol	U	2.4	ug/L	1	5	4.8	1.9	2.4
2,4-Dinitrotoluene	U	2.4	ug/L	1	5	4.8	0.97	2.4
2,6-Dinitrotoluene	U	0.48	ug/L	1	1	0.97	0.19	0.48
2-Methylphenol	U	0.48	ug/L	1	1	0.97	0.19	0.48
2-Nitroaniline	U	0.48	ug/L	1	1	0.97	0.19	0.48
2-Nitrophenol	~~U~~ UJ CCH	2.4	ug/L	1	5	4.8	0.79	2.4
3,3'-Dichlorobenzidine	U	0.48	ug/L	1	1	0.97	0.19	0.48
4,6-Dinitro-2-Methylphenol	U	2.4	ug/L	1	5	4.8	0.48	2.4
4-Chloro-3-Methylphenol	U	0.48	ug/L	1	1	0.97	0.14	0.48
4-Chloroaniline	U	1.4	ug/L	1	3	2.9	1.4	1.4
3&4-Methylphenol	U	0.48	ug/L	1	1	0.97	0.43	0.48
4-Nitroaniline	U	0.48	ug/L	1	1	0.97	0.097	0.48
4-Nitrophenol	U	2.4	ug/L	1	5	4.8	0.22	2.4
Atrazine	U	0.097	ug/L	1	.2	0.19	0.037	0.097
Benzaldehyde	U	0.48	ug/L	1	1	0.97	0.19	0.48
Bis(2-Chloroethoxy)Methane	U	2.4	ug/L	1	5	4.8	0.97	2.4
Bis(2-Chloroethyl)Ether	U	0.48	ug/L	1	1	0.97	0.19	0.48

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034

Katahdin
ANALYTICAL SERVICES

Cert No E87604

Report of Analytical Results

Client: CH2MHill
Lab ID: SG2441-13
Client ID: VEP21-EB01-041113
Project: NTR Vieques East CTO-037 1
SDG: SG2441
Lab File ID: G8469.D

Sample Date: 11-APR-13
Received Date: 15-APR-13
Extract Date: 17-APR-13
Extracted By: JMS
Extraction Method: SW846 3520
Lab Prep Batch: WG122803

Analysis Date: 22-APR-13
Analyst: JCG
Analysis Method: SW846 M8270D
Matrix: AQ
% Solids: NA
Report Date: 03-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Butylbenzylphthalate	~~U~~ UJ CCH	0.48	ug/L	1	1	0.97	0.19	0.48
Dibenzofuran	U	0.48	ug/L	1	1	0.97	0.097	0.48
Di-N-Octylphthalate	~~U~~ UJ ICH	0.48	ug/L	1	1	0.97	0.29	0.48
Hexachlorocyclopentadiene	U	2.4	ug/L	1	5	4.8	1.4	2.4
Hexachloroethane	~~ULL~~ UJ CCH	2.4	ug/L	1	5	4.8	1.9	2.4
Isophorone	U	0.48	ug/L	1	1	0.97	0.20	0.48
Nitrobenzene	U ~~UK~~	0.97	ug/L	1	2	1.9	0.13	0.97
N-Nitroso-Di-N-Propylamine	U	0.24	ug/L	1	.5	0.48	0.097	0.24
N-Nitrosodiphenylamine	~~U~~ UJ CCH	0.48	ug/L	1	1	0.97	0.097	0.48
2,3,4,6-Tetrachlorophenol	U	0.48	ug/L	1	1	0.97	0.069	0.48
1,4-Dioxane	U	0.48	ug/L	1	1	0.97	0.028	0.48
2-Methylnaphthalene-D10		78.0	%					
Fluorene-D10		77.7	%					
Pyrene-D10		92.0	%					
2,4-Dibromophenol		65.3	%					

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035

Katahdin
ANALYTICAL SERVICES

Cert No E87604

Report of Analytical Results

Client: CH2MHill
Lab ID: SG2441-1
Client ID: VEP21-SS01-0001
Project: NTR Vieques East CTO-037 1
SDG: SG2441
Lab File ID: N8153.D

Sample Date: 11-APR-13
Received Date: 15-APR-13
Extract Date: 15-APR-13
Extracted By: JMS
Extraction Method: SW846 3540
Lab Prep Batch: WG122731

Analysis Date: 17-APR-13
Analyst: JCG
Analysis Method: SW846 8270D
Matrix: SL
% Solids: 90.
Report Date: 24-APR-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Phenol	U	270	ug/Kgdrywt	1	330	360	170	270
2-Chloronaphthalene	UL	270	ug/Kgdrywt	1	330	360	94.	270
Dimethyl phthalate	UL	270	ug/Kgdrywt	1	330	360	85.	270
3-Nitroaniline	U	670	ug/Kgdrywt	1	820	890	100	670
Diethylphthalate	UL	270	ug/Kgdrywt	1	330	360	87.	270
4-Chlorophenyl-phenylether	U	270	ug/Kgdrywt	1	330	360	85.	270
4-Bromophenyl-phenylether	U	270	ug/Kgdrywt	1	330	360	92.	270
Carbazole	U	270	ug/Kgdrywt	1	330	360	120	270
Di-n-butylphthalate	UL	270	ug/Kgdrywt	1	330	360	110	270
Bis(2-ethylhexyl)phthalate	UL	270	ug/Kgdrywt	1	330	360	110	270
Acetophenone	U	270	ug/Kgdrywt	1	330	360	190	270
Caprolactam	U	270	ug/Kgdrywt	1	330	360	160	270
Acenaphthylene	U	270	ug/Kgdrywt	1	330	360	76.	270
Acenaphthene	U	270	ug/Kgdrywt	1	330	360	71.	270
Fluorene	U	270	ug/Kgdrywt	1	330	360	88.	270
Fluoranthene	U	270	ug/Kgdrywt	1	330	360	120	270
Pyrene	U	270	ug/Kgdrywt	1	330	360	110	270
Chrysene	UL	270	ug/Kgdrywt	1	330	360	100	270
Phenanthrene	U	270	ug/Kgdrywt	1	330	360	90.	270
Anthracene	UL	270	ug/Kgdrywt	1	330	360	91.	270
Benzo(g,h,i)perylene	U	270	ug/Kgdrywt	1	330	360	110	270
1,2,4,5-Tetrachlorobenzene	U	270	ug/Kgdrywt	1	330	360	150	270
2-Fluorophenol		61.6						
Phenol-d6		67.7						
Nitrobenzene-d5		63.0						
2-Fluorobiphenyl		77.9						
2,4,6-Tribromophenol		71.3						
Terphenyl-d14		108.						

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Katahdin
ANALYTICAL SERVICES

Cert No E87604

Report of Analytical Results

Client: CH2MHill
Lab ID: SG2441-2
Client ID: VEP21-SS01P-0001
Project: NTR Vieques East CTO-037 1
SDG: SG2441
Lab File ID: N8154.D

Sample Date: 11-APR-13
Received Date: 15-APR-13
Extract Date: 15-APR-13
Extracted By: JMS
Extraction Method: SW846 3540
Lab Prep Batch: WG122731

Analysis Date: 17-APR-13
Analyst: JCG
Analysis Method: SW846 8270D
Matrix: SL
% Solids: 91.
Report Date: 24-APR-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Phenol	U	270	ug/Kgdrywt	1	330	360	170	270
2-Chloronaphthalene	U	270	ug/Kgdrywt	1	330	360	94.	270
Dimethyl phthalate	U	270	ug/Kgdrywt	1	330	360	84.	270
3-Nitroaniline	U	660	ug/Kgdrywt	1	820	890	100	660
Diethylphthalate	U	270	ug/Kgdrywt	1	330	360	86.	270
4-Chlorophenyl-phenylether	U	270	ug/Kgdrywt	1	330	360	84.	270
4-Bromophenyl-phenylether	U	270	ug/Kgdrywt	1	330	360	92.	270
Carbazole	U	270	ug/Kgdrywt	1	330	360	120	270
Di-n-butylphthalate	U	270	ug/Kgdrywt	1	330	360	110	270
Bis(2-ethylhexyl)phthalate	U	270	ug/Kgdrywt	1	330	360	110	270
Acetophenone	U	270	ug/Kgdrywt	1	330	360	190	270
Caprolactam	U	270	ug/Kgdrywt	1	330	360	160	270
Acenaphthylene	U	270	ug/Kgdrywt	1	330	360	76.	270
Acenaphthene	U	270	ug/Kgdrywt	1	330	360	70.	270
Fluorene	U	270	ug/Kgdrywt	1	330	360	88.	270
Fluoranthene	U	270	ug/Kgdrywt	1	330	360	110	270
Pyrene	U	270	ug/Kgdrywt	1	330	360	110	270
Chrysene	U	270	ug/Kgdrywt	1	330	360	100	270
Phenanthrene	U	270	ug/Kgdrywt	1	330	360	90.	270
Anthracene	U	270	ug/Kgdrywt	1	330	360	91.	270
Benzo(g,h,i)perylene	U	270	ug/Kgdrywt	1	330	360	110	270
1,2,4,5-Tetrachlorobenzene	U	270	ug/Kgdrywt	1	330	360	150	270
2-Fluorophenol		54.0						
Phenol-d6		62.3						
Nitrobenzene-d5		60.6						
2-Fluorobiphenyl		73.9						
2,4,6-Tribromophenol		58.7						
Terphenyl-d14		104.						

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Report of Analytical Results

Client: CH2MHill
Lab ID: SG2441-3
Client ID: VEP21-SS03-0001
Project: NTR Vieques East CTO-0371
SDG: SG2441
Lab File ID: N8155.D

Sample Date: 11-APR-13
Received Date: 15-APR-13
Extract Date: 15-APR-13
Extracted By: JMS
Extraction Method: SW846 3540
Lab Prep Batch: WG122731

Analysis Date: 17-APR-13
Analyst: JCG
Analysis Method: SW846 8270D
Matrix: SL
% Solids: 90.
Report Date: 24-APR-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Phenol	U	270	ug/Kgdrywt	1	330	360	170	270
2-Chloronaphthalene	UL	270	ug/Kgdrywt	1	330	360	95.	270
Dimethyl phthalate	UL	270	ug/Kgdrywt	1	330	360	85.	270
3-Nitroaniline	U	670	ug/Kgdrywt	1	820	890	100	670
Diethylphthalate	UL	270	ug/Kgdrywt	1	330	360	87.	270
4-Chlorophenyl-phenylether	U	270	ug/Kgdrywt	1	330	360	85.	270
4-Bromophenyl-phenylether	U	270	ug/Kgdrywt	1	330	360	92.	270
Carbazole	U	270	ug/Kgdrywt	1	330	360	120	270
Di-n-butylphthalate	UL	270	ug/Kgdrywt	1	330	360	110	270
Bis(2-ethylhexyl)phthalate	UL	270	ug/Kgdrywt	1	330	360	110	270
Acetophenone	U	270	ug/Kgdrywt	1	330	360	190	270
Caprolactam	U	270	ug/Kgdrywt	1	330	360	160	270
Acenaphthylene	U	270	ug/Kgdrywt	1	330	360	76.	270
Acenaphthene	U	270	ug/Kgdrywt	1	330	360	71.	270
Fluorene	U	270	ug/Kgdrywt	1	330	360	88.	270
Fluoranthene	U	270	ug/Kgdrywt	1	330	360	120	270
Pyrene	U	270	ug/Kgdrywt	1	330	360	110	270
Chrysene	UL	270	ug/Kgdrywt	1	330	360	100	270
Phenanthrene	U	270	ug/Kgdrywt	1	330	360	90.	270
Anthracene	UL	270	ug/Kgdrywt	1	330	360	91.	270
Benzo(g,h,i)perylene	U	270	ug/Kgdrywt	1	330	360	110	270
1,2,4,5-Tetrachlorobenzene	U	270	ug/Kgdrywt	1	330	360	150	270
2-Fluorophenol		71.6						
Phenol-d6		79.6						
Nitrobenzene-d5		72.9						
2-Fluorobiphenyl		85.1						
2,4,6-Tribromophenol		78.8						
Terphenyl-d14		122.						

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Report of Analytical Results

Client: CH2MHill
Lab ID: SG2441-4
Client ID: VEP21-SS04-0001
Project: NTR Vieques East CTO-037 1
SDG: SG2441
Lab File ID: N8156.D

Sample Date: 11-APR-13
Received Date: 15-APR-13
Extract Date: 15-APR-13
Extracted By: JMS
Extraction Method: SW846 3540
Lab Prep Batch: WG122731

Analysis Date: 17-APR-13
Analyst: JCG
Analysis Method: SW846 8270D
Matrix: SL
% Solids: 89.
Report Date: 24-APR-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Phenol	U	260	ug/Kgdrywt	1	330	350	160	260
2-Chloronaphthalene	~~UL~~ UJ MSL	260	ug/Kgdrywt	1	330	350	92.	260
Dimethyl phthalate	UL	260	ug/Kgdrywt	1	330	350	83.	260
3-Nitroaniline	U	650	ug/Kgdrywt	1	820	870	100	650
Diethylphthalate	UL	260	ug/Kgdrywt	1	330	350	85.	260
4-Chlorophenyl-phenylether	U	260	ug/Kgdrywt	1	330	350	83.	260
4-Bromophenyl-phenylether	U	260	ug/Kgdrywt	1	330	350	90.	260
Carbazole	U	260	ug/Kgdrywt	1	330	350	120	260
Di-n-butylphthalate	UL	260	ug/Kgdrywt	1	330	350	110	260
Bis(2-ethylhexyl)phthalate	UL	260	ug/Kgdrywt	1	330	350	100	260
Acetophenone	U	260	ug/Kgdrywt	1	330	350	190	260
Caprolactam	U	260	ug/Kgdrywt	1	330	350	150	260
Acenaphthylene	U	260	ug/Kgdrywt	1	330	350	74.	260
Acenaphthene	U	260	ug/Kgdrywt	1	330	350	69.	260
Fluorene	U	260	ug/Kgdrywt	1	330	350	86.	260
Fluoranthene	U	260	ug/Kgdrywt	1	330	350	110	260
Pyrene	U	260	ug/Kgdrywt	1	330	350	110	260
Chrysene	UL	260	ug/Kgdrywt	1	330	350	100	260
Phenanthrene	U	260	ug/Kgdrywt	1	330	350	88.	260
Anthracene	UL	260	ug/Kgdrywt	1	330	350	89.	260
Benzo(g,h,i)perylene	U	260	ug/Kgdrywt	1	330	350	110	260
1,2,4,5-Tetrachlorobenzene	U	260	ug/Kgdrywt	1	330	350	140	260
2-Fluorophenol		59.4						
Phenol-d6		63.9						
Nitrobenzene-d5		59.9						
2-Fluorobiphenyl		74.0						
2,4,6-Tribromophenol		74.4						
Terphenyl-d14		113.						

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Report of Analytical Results

Client: CH2MHill
Lab ID: SG2441-5
Client ID: VEP21-SB01-011H
Project: NTR Vieques East CTO-037 1
SDG: SG2441
Lab File ID: N8159.D

Sample Date: 11-APR-13
Received Date: 15-APR-13
Extract Date: 15-APR-13
Extracted By: JMS
Extraction Method: SW846 3540
Lab Prep Batch: WG122731

Analysis Date: 17-APR-13
Analyst: JCG
Analysis Method: SW846 8270D
Matrix: SL
% Solids: 91.
Report Date: 24-APR-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Phenol	U	260	ug/Kgdrywt	1	330	350	160	260
2-Chloronaphthalene	UL	260	ug/Kgdrywt	1	330	350	92.	260
Dimethyl phthalate	UL	260	ug/Kgdrywt	1	330	350	82.	260
3-Nitroaniline	U	650	ug/Kgdrywt	1	820	860	99.	650
Diethylphthalate	UL	260	ug/Kgdrywt	1	330	350	84.	260
4-Chlorophenyl-phenylether	U	260	ug/Kgdrywt	1	330	350	82.	260
4-Bromophenyl-phenylether	U	260	ug/Kgdrywt	1	330	350	90.	260
Carbazole	U	260	ug/Kgdrywt	1	330	350	120	260
Di-n-butylphthalate	UL	260	ug/Kgdrywt	1	330	350	110	260
Bis(2-ethylhexyl)phthalate	UL	260	ug/Kgdrywt	1	330	350	100	260
Acetophenone	U	260	ug/Kgdrywt	1	330	350	190	260
Caprolactam	U	260	ug/Kgdrywt	1	330	350	150	260
Acenaphthylene	U	260	ug/Kgdrywt	1	330	350	74.	260
Acenaphthene	U	260	ug/Kgdrywt	1	330	350	69.	260
Fluorene	U	260	ug/Kgdrywt	1	330	350	86.	260
Fluoranthene	U	260	ug/Kgdrywt	1	330	350	110	260
Pyrene	U	260	ug/Kgdrywt	1	330	350	110	260
Chrysene	UL	260	ug/Kgdrywt	1	330	350	100	260
Phenanthrene	U	260	ug/Kgdrywt	1	330	350	88.	260
Anthracene	UL	260	ug/Kgdrywt	1	330	350	89.	260
Benzo(g,h,i)perylene	U	260	ug/Kgdrywt	1	330	350	110	260
1,2,4,5-Tetrachlorobenzene	U	260	ug/Kgdrywt	1	330	350	140	260
2-Fluorophenol		61.4						
Phenol-d6		67.9						
Nitrobenzene-d5		63.1						
2-Fluorobiphenyl		78.4						
2,4,6-Tribromophenol		78.7						
Terphenyl-d14		116.						

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Report of Analytical Results

Client: CH2MHill
Lab ID: SG2441-6
Client ID: VEP21-SS05-0001
Project: NTR Vieques East CTO-037 1
SDG: SG2441
Lab File ID: N8160.D

Sample Date: 11-APR-13
Received Date: 15-APR-13
Extract Date: 15-APR-13
Extracted By: JMS
Extraction Method: SW846 3540
Lab Prep Batch: WG122731

Analysis Date: 17-APR-13
Analyst: JCG
Analysis Method: SW846 8270D
Matrix: SL
% Solids: 92.
Report Date: 24-APR-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Phenol	U	260	ug/Kgdrywt	1	330	350	170	260
2-Chloronaphthalene	U	260	ug/Kgdrywt	1	330	350	93.	260
Dimethyl phthalate	U	260	ug/Kgdrywt	1	330	350	83.	260
3-Nitroaniline	U	660	ug/Kgdrywt	1	820	880	100	660
Diethylphthalate	U	260	ug/Kgdrywt	1	330	350	85.	260
4-Chlorophenyl-phenylether	U	260	ug/Kgdrywt	1	330	350	83.	260
4-Bromophenyl-phenylether	U	260	ug/Kgdrywt	1	330	350	91.	260
Carbazole	U	260	ug/Kgdrywt	1	330	350	120	260
Di-n-butylphthalate	U	260	ug/Kgdrywt	1	330	350	110	260
Bis(2-ethylhexyl)phthalate	U	260	ug/Kgdrywt	1	330	350	100	260
Acetophenone	U	260	ug/Kgdrywt	1	330	350	190	260
Caprolactam	U	260	ug/Kgdrywt	1	330	350	150	260
Acenaphthylene	U	260	ug/Kgdrywt	1	330	350	75.	260
Acenaphthene	U	260	ug/Kgdrywt	1	330	350	69.	260
Fluorene	U	260	ug/Kgdrywt	1	330	350	86.	260
Fluoranthene	U	260	ug/Kgdrywt	1	330	350	110	260
Pyrene	U	260	ug/Kgdrywt	1	330	350	110	260
Chrysene	U	260	ug/Kgdrywt	1	330	350	100	260
Phenanthrene	U	260	ug/Kgdrywt	1	330	350	88.	260
Anthracene	U	260	ug/Kgdrywt	1	330	350	90.	260
Benzo(g,h,i)perylene	U	260	ug/Kgdrywt	1	330	350	110	260
1,2,4,5-Tetrachlorobenzene	U	260	ug/Kgdrywt	1	330	350	140	260
2-Fluorophenol		65.2						
Phenol-d6		73.9						
Nitrobenzene-d5		69.7						
2-Fluorobiphenyl		81.5						
2,4,6-Tribromophenol		72.5						
Terphenyl-d14		115.						

WM 060615

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Report of Analytical Results

Client: CH2MHill
Lab ID: SG2441-7
Client ID: VEP21-SS02-0001
Project: NTR Vieques East CTO-037 1
SDG: SG2441
Lab File ID: N8161.D

Sample Date: 11-APR-13
Received Date: 15-APR-13
Extract Date: 15-APR-13
Extracted By: JMS
Extraction Method: SW846 3540
Lab Prep Batch: WG122731

Analysis Date: 17-APR-13
Analyst: JCG
Analysis Method: SW846 8270D
Matrix: SL
% Solids: 83.
Report Date: 24-APR-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Phenol	U	270	ug/Kgdrywt	1	330	360	170	270
2-Chloronaphthalene	U	270	ug/Kgdrywt	1	330	360	94.	270
Dimethyl phthalate	U	270	ug/Kgdrywt	1	330	360	85.	270
3-Nitroaniline	U	670	ug/Kgdrywt	1	820	890	100	670
Diethylphthalate	U	270	ug/Kgdrywt	1	330	360	87.	270
4-Chlorophenyl-phenylether	U	270	ug/Kgdrywt	1	330	360	85.	270
4-Bromophenyl-phenylether	U	270	ug/Kgdrywt	1	330	360	92.	270
Carbazole	U	270	ug/Kgdrywt	1	330	360	120	270
Di-n-butylphthalate	U	270	ug/Kgdrywt	1	330	360	110	270
Bis(2-ethylhexyl)phthalate	U	270	ug/Kgdrywt	1	330	360	110	270
Acetophenone	U	270	ug/Kgdrywt	1	330	360	190	270
Caprolactam	U	270	ug/Kgdrywt	1	330	360	160	270
Acenaphthylene	U	270	ug/Kgdrywt	1	330	360	76.	270
Acenaphthene	U	270	ug/Kgdrywt	1	330	360	70.	270
Fluorene	U	270	ug/Kgdrywt	1	330	360	88.	270
Fluoranthene	U	270	ug/Kgdrywt	1	330	360	110	270
Pyrene	U	270	ug/Kgdrywt	1	330	360	110	270
Chrysene	U	270	ug/Kgdrywt	1	330	360	100	270
Phenanthrene	U	270	ug/Kgdrywt	1	330	360	90.	270
Anthracene	U	270	ug/Kgdrywt	1	330	360	91.	270
Benzo(g,h,i)perylene	U	270	ug/Kgdrywt	1	330	360	110	270
1,2,4,5-Tetrachlorobenzene	U	270	ug/Kgdrywt	1	330	360	150	270
2-Fluorophenol		58.3						
Phenol-d6		63.5						
Nitrobenzene-d5		59.1						
2-Fluorobiphenyl		72.4						
2,4,6-Tribromophenol		71.8						
Terphenyl-d14		114.						

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ANALYTICAL SERVICES

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Report of Analytical Results

Client: CH2MHill
Lab ID: SG2441-8
Client ID: VEP21-SB03-0102
Project: NTR Vieques East CTO-037 I
SDG: SG2441
Lab File ID: N8162.D

Sample Date: 11-APR-13
Received Date: 15-APR-13
Extract Date: 15-APR-13
Extracted By: JMS
Extraction Method: SW846 3540
Lab Prep Batch: WG122731

Analysis Date: 17-APR-13
Analyst: JCG
Analysis Method: SW846 8270D
Matrix: SL
% Solids: 85.
Report Date: 24-APR-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Phenol	U	270	ug/Kgdrywt	1	330	360	170	270
2-Chloronaphthalene	UL	270	ug/Kgdrywt	1	330	360	96.	270
Dimethyl phthalate	UL	270	ug/Kgdrywt	1	330	360	86.	270
3-Nitroaniline	U	680	ug/Kgdrywt	1	820	900	100	680
Diethylphthalate	UL	270	ug/Kgdrywt	1	330	360	88.	270
4-Chlorophenyl-phenylether	U	270	ug/Kgdrywt	1	330	360	86.	270
4-Bromophenyl-phenylether	U	270	ug/Kgdrywt	1	330	360	94.	270
Carbazole	U	270	ug/Kgdrywt	1	330	360	120	270
Di-n-butylphthalate	UL	270	ug/Kgdrywt	1	330	360	110	270
Bis(2-ethylhexyl)phthalate	UL	270	ug/Kgdrywt	1	330	360	110	270
Acetophenone	U	270	ug/Kgdrywt	1	330	360	200	270
Caprolactam	U	270	ug/Kgdrywt	1	330	360	160	270
Acenaphthylene	U	270	ug/Kgdrywt	1	330	360	77.	270
Acenaphthene	U	270	ug/Kgdrywt	1	330	360	72.	270
Fluorene	U	270	ug/Kgdrywt	1	330	360	89.	270
Fluoranthene	U	270	ug/Kgdrywt	1	330	360	120	270
Pyrene	U	270	ug/Kgdrywt	1	330	360	110	270
Chrysene	UL	270	ug/Kgdrywt	1	330	360	100	270
Phenanthrene	U	270	ug/Kgdrywt	1	330	360	91.	270
Anthracene	UL	270	ug/Kgdrywt	1	330	360	92.	270
Benzo(g,h,i)perylene	U	270	ug/Kgdrywt	1	330	360	110	270
1,2,4,5-Tetrachlorobenzene	U	270	ug/Kgdrywt	1	330	360	150	270
2-Fluorophenol		53.1						
Phenol-d6		61.8						
Nitrobenzene-d5		58.2						
2-Fluorobiphenyl		74.4						
2,4,6-Tribromophenol		59.4						
Terphenyl-d14		116.						

WM 060613

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Report of Analytical Results

Client: CH2MHill
Lab ID: SG2441-9
Client ID: VEP21-SB04-011H
Project: NTR Vieques East CTO-037 I
SDG: SG2441
Lab File ID: N8165.D

Sample Date: 11-APR-13
Received Date: 15-APR-13
Extract Date: 15-APR-13
Extracted By: JMS
Extraction Method: SW846 3540
Lab Prep Batch: WG122731

Analysis Date: 18-APR-13
Analyst: JCG
Analysis Method: SW846 8270D
Matrix: SL
% Solids: 90.
Report Date: 24-APR-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Phenol	U	240	ug/Kgdrywt	1	330	320	150	240
2-Chloronaphthalene	UL	240	ug/Kgdrywt	1	330	320	84.	240
Dimethyl phthalate	UL	240	ug/Kgdrywt	1	330	320	75.	240
3-Nitroaniline	U	590	ug/Kgdrywt	1	820	790	91.	590
Diethylphthalate	UL	240	ug/Kgdrywt	1	330	320	77.	240
4-Chlorophenyl-phenylether	U	240	ug/Kgdrywt	1	330	320	75.	240
4-Bromophenyl-phenylether	U	240	ug/Kgdrywt	1	330	320	82.	240
Carbazole	U	240	ug/Kgdrywt	1	330	320	110	240
Di-n-butylphthalate	UL	240	ug/Kgdrywt	1	330	320	98.	240
Bis(2-ethylhexyl)phthalate	UL	240	ug/Kgdrywt	1	330	320	95.	240
Acetophenone	U	240	ug/Kgdrywt	1	330	320	170	240
Caprolactam	U	240	ug/Kgdrywt	1	330	320	140	240
Acenaphthylene	U	240	ug/Kgdrywt	1	330	320	68.	240
Acenaphthene	U	240	ug/Kgdrywt	1	330	320	63.	240
Fluorene	U	240	ug/Kgdrywt	1	330	320	78.	240
Fluoranthene	U	240	ug/Kgdrywt	1	330	320	100	240
Pyrene	U	240	ug/Kgdrywt	1	330	320	98.	240
Chrysene	UL	240	ug/Kgdrywt	1	330	320	92.	240
Phenanthrene	U	240	ug/Kgdrywt	1	330	320	80.	240
Anthracene	UL	240	ug/Kgdrywt	1	330	320	81.	240
Benzo(g,h,i)perylene	U	240	ug/Kgdrywt	1	330	320	100	240
1,2,4,5-Tetrachlorobenzene	U	240	ug/Kgdrywt	1	330	320	130	240
2-Fluorophenol		59.0						
Phenol-d6		67.4						
Nitrobenzene-d5		62.7						
2-Fluorobiphenyl		77.6						
2,4,6-Tribromophenol		68.0						
Terphenyl-d14		120.						

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ANALYTICAL SERVICES

Cert No E87604

Report of Analytical Results

Client: CH2MHill
Lab ID: SG2441-10
Client ID: VEP21-SB05-011H
Project: NTR Vieques East CTO-037 1
SDG: SG2441
Lab File ID: N8163.D

Sample Date: 11-APR-13
Received Date: 15-APR-13
Extract Date: 15-APR-13
Extracted By: JMS
Extraction Method: SW846 3540
Lab Prep Batch: WG122731

Analysis Date: 18-APR-13
Analyst: JCG
Analysis Method: SW846 8270D
Matrix: SL
% Solids: 93.
Report Date: 24-APR-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Phenol	U	260	ug/Kgdrywt	1	330	350	160	260
2-Chloronaphthalene	UL	260	ug/Kgdrywt	1	330	350	92.	260
Dimethyl phthalate	UL	260	ug/Kgdrywt	1	330	350	83.	260
3-Nitroaniline	U	650	ug/Kgdrywt	1	820	870	100	650
Diethylphthalate	UL	260	ug/Kgdrywt	1	330	350	85.	260
4-Chlorophenyl-phenylether	U	260	ug/Kgdrywt	1	330	350	83.	260
4-Bromophenyl-phenylether	U	260	ug/Kgdrywt	1	330	350	90.	260
Carbazole	U	260	ug/Kgdrywt	1	330	350	120	260
Di-n-butylphthalate	UL	260	ug/Kgdrywt	1	330	350	110	260
Bis(2-ethylhexyl)phthalate	UL	260	ug/Kgdrywt	1	330	350	100	260
Acetophenone	U	260	ug/Kgdrywt	1	330	350	190	260
Caprolactam	U	260	ug/Kgdrywt	1	330	350	150	260
Acenaphthylene	U	260	ug/Kgdrywt	1	330	350	74.	260
Acenaphthene	U	260	ug/Kgdrywt	1	330	350	69.	260
Fluorene	U	260	ug/Kgdrywt	1	330	350	86.	260
Fluoranthene	U	260	ug/Kgdrywt	1	330	350	110	260
Pyrene	U	260	ug/Kgdrywt	1	330	350	110	260
Chrysene	UL	260	ug/Kgdrywt	1	330	350	100	260
Phenanthrene	U	260	ug/Kgdrywt	1	330	350	88.	260
Anthracene	UL	260	ug/Kgdrywt	1	330	350	89.	260
Benzo(g,h,i)perylene	U	260	ug/Kgdrywt	1	330	350	110	260
1,2,4,5-Tetrachlorobenzene	U	260	ug/Kgdrywt	1	330	350	140	260
2-Fluorophenol		58.4						
Phenol-d6		66.8						
Nitrobenzene-d5		61.4						
2-Fluorobiphenyl		76.7						
2,4,6-Tribromophenol		70.8						
Terphenyl-d14		114.						

WM 060613

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Report of Analytical Results

Client: CH2MHill
Lab ID: SG2441-11
Client ID: VEP21-SB02-011H
Project: NTR Vieques East CTO-037 I
SDG: SG2441
Lab File ID: N8164.D

Sample Date: 11-APR-13
Received Date: 15-APR-13
Extract Date: 15-APR-13
Extracted By: JMS
Extraction Method: SW846 3540
Lab Prep Batch: WG122731

Analysis Date: 18-APR-13
Analyst: JCG
Analysis Method: SW846 8270D
Matrix: SL
% Solids: 92.
Report Date: 24-APR-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Phenol	U	260	ug/Kgdrywt	1	330	340	160	260
2-Chloronaphthalene	UL	260	ug/Kgdrywt	1	330	340	91.	260
Dimethyl phthalate	UL	260	ug/Kgdrywt	1	330	340	81.	260
3-Nitroaniline	U	640	ug/Kgdrywt	1	820	850	98.	640
Diethylphthalate	UL	260	ug/Kgdrywt	1	330	340	83.	260
4-Chlorophenyl-phenylether	U	260	ug/Kgdrywt	1	330	340	81.	260
4-Bromophenyl-phenylether	U	260	ug/Kgdrywt	1	330	340	88.	260
Carbazole	U	260	ug/Kgdrywt	1	330	340	120	260
Di-n-butylphthalate	UL	260	ug/Kgdrywt	1	330	340	100	260
Bis(2-ethylhexyl)phthalate	UL	260	ug/Kgdrywt	1	330	340	100	260
Acetophenone	U	260	ug/Kgdrywt	1	330	340	180	260
Caprolactam	U	260	ug/Kgdrywt	1	330	340	150	260
Acenaphthylene	U	260	ug/Kgdrywt	1	330	340	73.	260
Acenaphthene	U	260	ug/Kgdrywt	1	330	340	68.	260
Fluorene	U	260	ug/Kgdrywt	1	330	340	84.	260
Fluoranthene	U	260	ug/Kgdrywt	1	330	340	110	260
Pyrene	U	260	ug/Kgdrywt	1	330	340	100	260
Chrysene	UL	260	ug/Kgdrywt	1	330	340	99.	260
Phenanthrene	U	260	ug/Kgdrywt	1	330	340	86.	260
Anthracene	UL	260	ug/Kgdrywt	1	330	340	88.	260
Benzo(g,h,i)perylene	U	260	ug/Kgdrywt	1	330	340	110	260
1,2,4,5-Tetrachlorobenzene	U	260	ug/Kgdrywt	1	330	340	140	260
2-Fluorophenol		55.6						
Phenol-d6		63.4						
Nitrobenzene-d5		61.5						
2-Fluorobiphenyl		73.6						
2,4,6-Tribromophenol		57.1						
Terphenyl-d14		117.						

WM 06/06/13

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Report of Analytical Results

Client: CH2MHill
Lab ID: SG2441-13
Client ID: VEP21-EB01-041113
Project: NTR Vieques East CTO-037 1
SDG: SG2441
Lab File ID: N8183.D

Sample Date: 11-APR-13
Received Date: 15-APR-13
Extract Date: 17-APR-13
Extracted By: JMS
Extraction Method: SW846 3520
Lab Prep Batch: WG122802

Analysis Date: 22-APR-13
Analyst: JCG
Analysis Method: SW846 8270D
Matrix: AQ
% Solids: NA
Report Date: 24-APR-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Phenol	U	7.3	ug/L	1	10	9.7	1.7	7.3
2-Chloronaphthalene	~~UL~~ UJ BSL	7.3	ug/L	1	10	9.7	2.8	7.3
Dimethyl phthalate	U	7.3	ug/L	1	10	9.7	2.0	7.3
Acenaphthylene	U	7.3	ug/L	1	10	9.7	1.4	7.3
3-Nitroaniline	U	18	ug/L	1	25	24.	1.4	18.
Acenaphthene	U	7.3	ug/L	1	10	9.7	1.4	7.3
Diethylphthalate	U	7.3	ug/L	1	10	9.7	1.9	7.3
Fluorene	U	7.3	ug/L	1	10	9.7	2.0	7.3
4-Chlorophenyl-phenylether	U	7.3	ug/L	1	10	9.7	2.1	7.3
4-Bromophenyl-phenylether	U	7.3	ug/L	1	10	9.7	1.8	7.3
Phenanthrene	U	7.3	ug/L	1	10	9.7	2.3	7.3
Anthracene	U	7.3	ug/L	1	10	9.7	1.6	7.3
Carbazole	U	7.3	ug/L	1	10	9.7	2.0	7.3
Di-n-butylphthalate	U	7.3	ug/L	1	10	9.7	2.4	7.3
Fluoranthene	U	7.3	ug/L	1	10	9.7	2.3	7.3
Pyrene	U	7.3	ug/L	1	10	9.7	1.8	7.3
Chrysene	U	7.3	ug/L	1	10	9.7	1.6	7.3
Bis(2-ethylhexyl)phthalate	U	7.3	ug/L	1	10	9.7	1.7	7.3
Benzo(g,h,i)perylene	U	7.3	ug/L	1	10	9.7	1.4	7.3
Acetophenone	U	7.3	ug/L	1	10	9.7	3.8	7.3
Caprolactam	U~~L~~	7.3	ug/L	1	10	9.7	0.39	7.3
1,2,4,5-Tetrachlorobenzene	U	7.3	ug/L	1	10	9.7	1.7	7.3
2-Fluorophenol		50.5						
Phenol-d6		69.2						
Nitrobenzene-d5		83.0						
2-Fluorobiphenyl		81.4						
2,4,6-Tribromophenol		57.3						
Terphenyl-d14		105.						

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Report of Analytical Results

Client: CH2MHill
Lab ID: SG2441-1
Client ID: VEP21-SS01-0001
Project: NTR Vieques East CTO-037 1
SDG: SG2441
Lab File ID: 1GE00105.D

Sample Date: 11-APR-13
Received Date: 15-APR-13
Extract Date: 16-APR-13
Extracted By: JH
Extraction Method: SW846 3540
Lab Prep Batch: WG122756

Analysis Date: 07-MAY-13
Analyst: JLP
Analysis Method: SW846 8081B
Matrix: SL
% Solids: 90.
Report Date: 08-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
alpha-BHC	U UJ SSL	0.18	ug/Kgdrywt	1	1.7	0.36	0.072	0.18
gamma-BHC	U	0.18	ug/Kgdrywt	1	1.7	0.36	0.057	0.18
Heptachlor	U	0.18	ug/Kgdrywt	1	1.7	0.36	0.061	0.18
Aldrin	U	0.18	ug/Kgdrywt	1	1.7	0.36	0.059	0.18
beta-BHC	U	0.18	ug/Kgdrywt	1	1.7	0.36	0.069	0.18
delta-BHC	U	0.18	ug/Kgdrywt	1	1.7	0.36	0.067	0.18
Heptachlor Epoxide	U	0.18	ug/Kgdrywt	1	1.7	0.36	0.046	0.18
Endosulfan I	U	0.18	ug/Kgdrywt	1	1.7	0.36	0.050	0.18
Gamma-Chlordane	U	0.18	ug/Kgdrywt	1	1.7	0.36	0.048	0.18
Alpha-Chlordane	U	0.18	ug/Kgdrywt	1	1.7	0.36	0.044	0.18
4,4'-DDE	J J	0.28	ug/Kgdrywt	1	3.3	0.69	0.040	0.35
Dieldrin	U UJ	0.35	ug/Kgdrywt	1	3.3	0.69	0.046	0.35
Endrin	U	0.35	ug/Kgdrywt	1	3.3	0.69	0.18	0.35
4,4'-DDD	U	0.35	ug/Kgdrywt	1	3.3	0.69	0.042	0.35
Endosulfan II	U	0.35	ug/Kgdrywt	1	3.3	0.69	0.072	0.35
4,4'-DDT	J J	0.30	ug/Kgdrywt	1	3.3	0.69	0.065	0.35
Endrin Aldehyde	U UJ	0.35	ug/Kgdrywt	1	3.3	0.69	0.10	0.35
Endosulfan Sulfate	U	0.35	ug/Kgdrywt	1	3.3	0.69	0.12	0.35
Methoxychlor	U	1.8	ug/Kgdrywt	1	17	3.6	0.10	1.8
Endrin Ketone	U	0.35	ug/Kgdrywt	1	3.3	0.69	0.084	0.35
Toxaphene	U	3.5	ug/Kgdrywt	1	33	6.9	1.5	3.5
Tetrachloro-M-Xylene		61.2	%					
Decachlorobiphenyl		85.2	%					

JAC 6/10/13

updated 6-20-13 JAC

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ANALYTICAL SERVICES

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Report of Analytical Results

Client: CH2MHill
Lab ID: SG2441-2
Client ID: VEP21-SS01P-0001
Project: NTR Vieques East CTO-037 1
SDG: SG2441
Lab File ID: 1GE00106.D

Sample Date: 11-APR-13
Received Date: 15-APR-13
Extract Date: 16-APR-13
Extracted By: JH
Extraction Method: SW846 3540
Lab Prep Batch: WG122756

Analysis Date: 07-MAY-13
Analyst: JLP
Analysis Method: SW846 8081B
Matrix: SL
% Solids: 91.
Report Date: 08-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
alpha-BHC	U UJ SSL	0.18	ug/Kgdrywt	1	1.7	0.37	0.073	0.18
gamma-BHC	U	0.18	ug/Kgdrywt	1	1.7	0.37	0.058	0.18
Heptachlor	U	0.18	ug/Kgdrywt	1	1.7	0.37	0.062	0.18
Aldrin	U	0.18	ug/Kgdrywt	1	1.7	0.37	0.060	0.18
beta-BHC	U	0.18	ug/Kgdrywt	1	1.7	0.37	0.071	0.18
delta-BHC	U	0.18	ug/Kgdrywt	1	1.7	0.37	0.069	0.18
Heptachlor Epoxide	U	0.18	ug/Kgdrywt	1	1.7	0.37	0.047	0.18
Endosulfan I	U	0.18	ug/Kgdrywt	1	1.7	0.37	0.052	0.18
Gamma-Chlordane	U	0.18	ug/Kgdrywt	1	1.7	0.37	0.050	0.18
Alpha-Chlordane	U	0.18	ug/Kgdrywt	1	1.7	0.37	0.045	0.18
4,4'-DDE	U	0.36	ug/Kgdrywt	1	3.3	0.71	0.041	0.36
Dieldrin	U	0.36	ug/Kgdrywt	1	3.3	0.71	0.047	0.36
Endrin	U	0.36	ug/Kgdrywt	1	3.3	0.71	0.18	0.36
4,4'-DDD	U	0.36	ug/Kgdrywt	1	3.3	0.71	0.043	0.36
Endosulfan II	U	0.36	ug/Kgdrywt	1	3.3	0.71	0.073	0.36
4,4'-DDT	~~JJ~~ NJ 2C	0.37	ug/Kgdrywt	1	3.3	0.71	0.067	0.36
Endrin Aldehyde	U UJ SSL	0.36	ug/Kgdrywt	1	3.3	0.71	0.10	0.36
Endosulfan Sulfate	U	0.36	ug/Kgdrywt	1	3.3	0.71	0.12	0.36
Methoxychlor	U	1.8	ug/Kgdrywt	1	17	3.7	0.11	1.8
Endrin Ketone	U	0.36	ug/Kgdrywt	1	3.3	0.71	0.086	0.36
Toxaphene	U	3.6	ug/Kgdrywt	1	33	7.1	1.5	3.6
Tetrachloro-M-Xylene		65.3	%					
Decachlorobiphenyl		92.2	%					

JC 6/10/13
updated JC 6-20-13

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ANALYTICAL SERVICES

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Report of Analytical Results

Client: CH2MHill
Lab ID: SG2441-3
Client ID: VEP21-SS03-0001
Project: NTR Vieques East CTO-037 1
SDG: SG2441
Lab File ID: 1GE00107.D

Sample Date: 11-APR-13
Received Date: 15-APR-13
Extract Date: 16-APR-13
Extracted By: JH
Extraction Method: SW846 3540
Lab Prep Batch: WG122756

Analysis Date: 07-MAY-13
Analyst: JLP
Analysis Method: SW846 8081B
Matrix: SL
% Solids: 90.
Report Date: 08-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
alpha-BHC	U UJ SL	0.18	ug/Kgdrywt	1	1.7	0.36	0.072	0.18
gamma-BHC	U	0.18	ug/Kgdrywt	1	1.7	0.36	0.057	0.18
Heptachlor	U	0.18	ug/Kgdrywt	1	1.7	0.36	0.061	0.18
Aldrin	U	0.18	ug/Kgdrywt	1	1.7	0.36	0.059	0.18
beta-BHC	U	0.18	ug/Kgdrywt	1	1.7	0.36	0.070	0.18
delta-BHC	U	0.18	ug/Kgdrywt	1	1.7	0.36	0.067	0.18
Heptachlor Epoxide	U	0.18	ug/Kgdrywt	1	1.7	0.36	0.046	0.18
Endosulfan I	U	0.18	ug/Kgdrywt	1	1.7	0.36	0.050	0.18
Gamma-Chlordane	U	0.18	ug/Kgdrywt	1	1.7	0.36	0.048	0.18
Alpha-Chlordane	U	0.18	ug/Kgdrywt	1	1.7	0.36	0.044	0.18
4,4'-DDE	J J	0.52	ug/Kgdrywt	1	3.3	0.70	0.040	0.35
Dieldrin	U UJ	0.35	ug/Kgdrywt	1	3.3	0.70	0.046	0.35
Endrin	U	0.35	ug/Kgdrywt	1	3.3	0.70	0.18	0.35
4,4'-DDD	J J	0.13	ug/Kgdrywt	1	3.3	0.70	0.042	0.35
Endosulfan II	U UJ	0.35	ug/Kgdrywt	1	3.3	0.70	0.072	0.35
4,4'-DDT	J J	0.54	ug/Kgdrywt	1	3.3	0.70	0.065	0.35
Endrin Aldehyde	U UJ	0.35	ug/Kgdrywt	1	3.3	0.70	0.10	0.35
Endosulfan Sulfate	U	0.35	ug/Kgdrywt	1	3.3	0.70	0.12	0.35
Methoxychlor	U	1.8	ug/Kgdrywt	1	17	3.6	0.10	1.8
Endrin Ketone	U	0.35	ug/Kgdrywt	1	3.3	0.70	0.084	0.35
Toxaphene	U	3.5	ug/Kgdrywt	1	33	7.0	1.5	3.5
Tetrachloro-M-Xylene		68.7	%					
Decachlorobiphenyl		86.3	%					

JJC 6/013

updated 6/20/13 JJC

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050

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ANALYTICAL SERVICES

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Report of Analytical Results

Client: CH2MHill
Lab ID: SG2441-4
Client ID: VEP21-SS04-0001
Project: NTR Vieques East CTO-0371
SDG: SG2441
Lab File ID: 1GE00108.D

Sample Date: 11-APR-13
Received Date: 15-APR-13
Extract Date: 16-APR-13
Extracted By: JH
Extraction Method: SW846 3540
Lab Prep Batch: WG122756

Analysis Date: 07-MAY-13
Analyst: JLP
Analysis Method: SW846 8081B
Matrix: SL
% Solids: 89.
Report Date: 09-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
alpha-BHC	U UJ SSL	0.18	ug/Kgdrywt	1	1.7	0.37	0.074	0.18
gamma-BHC	U	0.18	ug/Kgdrywt	1	1.7	0.37	0.059	0.18
Heptachlor	U	0.18	ug/Kgdrywt	1	1.7	0.37	0.063	0.18
Aldrin	U	0.18	ug/Kgdrywt	1	1.7	0.37	0.061	0.18
beta-BHC	U	0.18	ug/Kgdrywt	1	1.7	0.37	0.072	0.18
delta-BHC	U	0.18	ug/Kgdrywt	1	1.7	0.37	0.070	0.18
Heptachlor Epoxide	U	0.18	ug/Kgdrywt	1	1.7	0.37	0.048	0.18
Endosulfan I	U	0.18	ug/Kgdrywt	1	1.7	0.37	0.052	0.18
Gamma-Chlordane	U	0.18	ug/Kgdrywt	1	1.7	0.37	0.050	0.18
Alpha-Chlordane	U	0.18	ug/Kgdrywt	1	1.7	0.37	0.046	0.18
4,4'-DDE	J	0.79	ug/Kgdrywt	1	3.3	0.72	0.041	0.36
Dieldrin	U UJ	0.36	ug/Kgdrywt	1	3.3	0.72	0.048	0.36
Endrin	U	0.36	ug/Kgdrywt	1	3.3	0.72	0.18	0.36
4,4'-DDD	~~U~~ J 2C	0.26	ug/Kgdrywt	1	3.3	0.72	0.044	0.36
Endosulfan II	U UJ SSL	0.36	ug/Kgdrywt	1	3.3	0.72	0.074	0.36
4,4'-DDT	~~U~~ J 2C	0.92	ug/Kgdrywt	1	3.3	0.72	0.068	0.36
Endrin Aldehyde	U UJ SSL	0.36	ug/Kgdrywt	1	3.3	0.72	0.11	0.36
Endosulfan Sulfate	U	0.36	ug/Kgdrywt	1	3.3	0.72	0.13	0.36
Methoxychlor	U	1.8	ug/Kgdrywt	1	17	3.7	0.11	1.8
Endrin Ketone	U	0.36	ug/Kgdrywt	1	3.3	0.72	0.087	0.36
Toxaphene	U	3.6	ug/Kgdrywt	1	33	7.2	1.5	3.6
Tetrachloro-M-Xylene		68.4	%					
Decachlorobiphenyl		93.7	%					

JAC 6/10/13

updated 6/2013 JAC

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051

Katahdin
ANALYTICAL SERVICES

Cert No E87604

Report of Analytical Results

Client: CH2MHill
Lab ID: SG2441-5
Client ID: VEP21-SB01-011H
Project: NTR Vieques East CTO-037 1
SDG: SG2441
Lab File ID: 1GE00112.D

Sample Date: 11-APR-13
Received Date: 15-APR-13
Extract Date: 16-APR-13
Extracted By: JH
Extraction Method: SW846 3540
Lab Prep Batch: WG122756

Analysis Date: 07-MAY-13
Analyst: JLP
Analysis Method: SW846 8081B
Matrix: SL
% Solids: 91.
Report Date: 08-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
alpha-BHC	U	0.18	ug/Kgdrywt	1	1.7	0.36	0.071	0.18
gamma-BHC	U	0.18	ug/Kgdrywt	1	1.7	0.36	0.057	0.18
Heptachlor	U	0.18	ug/Kgdrywt	1	1.7	0.36	0.061	0.18
Aldrin	U	0.18	ug/Kgdrywt	1	1.7	0.36	0.059	0.18
beta-BHC	U	0.18	ug/Kgdrywt	1	1.7	0.36	0.069	0.18
delta-BHC	U	0.18	ug/Kgdrywt	1	1.7	0.36	0.067	0.18
Heptachlor Epoxide	U	0.18	ug/Kgdrywt	1	1.7	0.36	0.046	0.18
Endosulfan I	U	0.18	ug/Kgdrywt	1	1.7	0.36	0.050	0.18
Gamma-Chlordane	U	0.18	ug/Kgdrywt	1	1.7	0.36	0.048	0.18
Alpha-Chlordane	U	0.18	ug/Kgdrywt	1	1.7	0.36	0.044	0.18
4,4'-DDE	J	0.57	ug/Kgdrywt	1	3.3	0.69	0.040	0.35
Dieldrin	U	0.35	ug/Kgdrywt	1	3.3	0.69	0.046	0.35
Endrin	U	0.35	ug/Kgdrywt	1	3.3	0.69	0.18	0.35
4,4'-DDD	~~JJ~~ J 2C	0.30	ug/Kgdrywt	1	3.3	0.69	0.042	0.35
Endosulfan II	U	0.35	ug/Kgdrywt	1	3.3	0.69	0.071	0.35
4,4'-DDT	~~JJ~~ J 2C	0.52	ug/Kgdrywt	1	3.3	0.69	0.065	0.35
Endrin Aldehyde	U	0.35	ug/Kgdrywt	1	3.3	0.69	0.10	0.35
Endosulfan Sulfate	U	0.35	ug/Kgdrywt	1	3.3	0.69	0.12	0.35
Methoxychlor	U	1.8	ug/Kgdrywt	1	17	3.6	0.10	1.8
Endrin Ketone	U	0.35	ug/Kgdrywt	1	3.3	0.69	0.084	0.35
Toxaphene	U	3.5	ug/Kgdrywt	1	33	6.9	1.5	3.5
Tetrachloro-M-Xylene		73.4	%					
Decachlorobiphenyl		94.6	%					

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ANALYTICAL SERVICES

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Report of Analytical Results

Client: CH2MHill
Lab ID: SG2441-6
Client ID: VEP21-SS05-0001
Project: NTR Vieques East CTO-0371
SDG: SG2441
Lab File ID: 1GE00113.D

Sample Date: 11-APR-13
Received Date: 15-APR-13
Extract Date: 16-APR-13
Extracted By: JH
Extraction Method: SW846 3540
Lab Prep Batch: WG122756

Analysis Date: 07-MAY-13
Analyst: JLP
Analysis Method: SW846 8081B
Matrix: SL
% Solids: 92.
Report Date: 08-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
alpha-BHC	U	0.18	ug/Kgdrywt	1	1.7	0.35	0.070	0.18
gamma-BHC	U	0.18	ug/Kgdrywt	1	1.7	0.35	0.056	0.18
Heptachlor	U	0.18	ug/Kgdrywt	1	1.7	0.35	0.060	0.18
Aldrin	U	0.18	ug/Kgdrywt	1	1.7	0.35	0.058	0.18
beta-BHC	U	0.18	ug/Kgdrywt	1	1.7	0.35	0.068	0.18
delta-BHC	U	0.18	ug/Kgdrywt	1	1.7	0.35	0.066	0.18
Heptachlor Epoxide	U	0.18	ug/Kgdrywt	1	1.7	0.35	0.046	0.18
Endosulfan I	U	0.18	ug/Kgdrywt	1	1.7	0.35	0.050	0.18
Gamma-Chlordane	U	0.18	ug/Kgdrywt	1	1.7	0.35	0.048	0.18
Alpha-Chlordane	U	0.18	ug/Kgdrywt	1	1.7	0.35	0.044	0.18
4,4'-DDE	U	0.34	ug/Kgdrywt	1	3.3	0.68	0.039	0.34
Dieldrin	U	0.34	ug/Kgdrywt	1	3.3	0.68	0.046	0.34
Endrin	U	0.34	ug/Kgdrywt	1	3.3	0.68	0.18	0.34
4,4'-DDD	U	0.34	ug/Kgdrywt	1	3.3	0.68	0.041	0.34
Endosulfan II	U	0.34	ug/Kgdrywt	1	3.3	0.68	0.070	0.34
4,4'-DDT	J	0.28	ug/Kgdrywt	1	3.3	0.68	0.064	0.34
Endrin Aldehyde	U	0.34	ug/Kgdrywt	1	3.3	0.68	0.10	0.34
Endosulfan Sulfate	U	0.34	ug/Kgdrywt	1	3.3	0.68	0.12	0.34
Methoxychlor	U	1.8	ug/Kgdrywt	1	17	3.5	0.10	1.8
Endrin Ketone	U	0.34	ug/Kgdrywt	1	3.3	0.68	0.083	0.34
Toxaphene	U	3.4	ug/Kgdrywt	1	33	6.8	1.4	3.4
Tetrachloro-M-Xylene		72.5	%					
Decachlorobiphenyl		95.4	%					

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Report of Analytical Results

Client: CH2MHill
Lab ID: SG2441-7
Client ID: VEP21-SS02-0001
Project: NTR Vieques East CTO-037 1
SDG: SG2441
Lab File ID: 1GE00114.D

Sample Date: 11-APR-13
Received Date: 15-APR-13
Extract Date: 16-APR-13
Extracted By: JH
Extraction Method: SW846 3540
Lab Prep Batch: WG122756

Analysis Date: 07-MAY-13
Analyst: JLP
Analysis Method: SW846 8081B
Matrix: SL
% Solids: 83.
Report Date: 08-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
alpha-BHC	U UJ SSL	0.19	ug/Kgdrywt	1	1.7	0.38	0.075	0.19
gamma-BHC	U	0.19	ug/Kgdrywt	1	1.7	0.38	0.060	0.19
Heptachlor	U	0.19	ug/Kgdrywt	1	1.7	0.38	0.064	0.19
Aldrin	U	0.19	ug/Kgdrywt	1	1.7	0.38	0.062	0.19
beta-BHC	U	0.19	ug/Kgdrywt	1	1.7	0.38	0.073	0.19
delta-BHC	U	0.19	ug/Kgdrywt	1	1.7	0.38	0.071	0.19
Heptachlor Epoxide	U	0.19	ug/Kgdrywt	1	1.7	0.38	0.049	0.19
Endosulfan I	U	0.19	ug/Kgdrywt	1	1.7	0.38	0.053	0.19
Gamma-Chlordane	U	0.19	ug/Kgdrywt	1	1.7	0.38	0.051	0.19
Alpha-Chlordane	U	0.19	ug/Kgdrywt	1	1.7	0.38	0.046	0.19
4,4'-DDE	U	0.36	ug/Kgdrywt	1	3.3	0.73	0.042	0.36
Dieldrin	U	0.36	ug/Kgdrywt	1	3.3	0.73	0.049	0.36
Endrin	U	0.36	ug/Kgdrywt	1	3.3	0.73	0.19	0.36
4,4'-DDD	U	0.36	ug/Kgdrywt	1	3.3	0.73	0.044	0.36
Endosulfan II	U	0.36	ug/Kgdrywt	1	3.3	0.73	0.075	0.36
4,4'-DDT	U	0.36	ug/Kgdrywt	1	3.3	0.73	0.069	0.36
Endrin Aldehyde	U	0.36	ug/Kgdrywt	1	3.3	0.73	0.11	0.36
Endosulfan Sulfate	U	0.36	ug/Kgdrywt	1	3.3	0.73	0.13	0.36
Methoxychlor	U	1.9	ug/Kgdrywt	1	17	3.8	0.11	1.9
Endrin Ketone	U	0.36	ug/Kgdrywt	1	3.3	0.73	0.089	0.36
Toxaphene	U	3.6	ug/Kgdrywt	1	33	7.3	1.6	3.6
Tetrachloro-M-Xylene		64.0	%					
Decachlorobiphenyl		85.4	%					

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Report of Analytical Results

Client: CH2MHill
Lab ID: SG2441-8
Client ID: VEP21-SB03-0102
Project: NTR Vieques East CTO-037 I
SDG: SG2441
Lab File ID: 1GE00115.D

Sample Date: 11-APR-13
Received Date: 15-APR-13
Extract Date: 16-APR-13
Extracted By: JH
Extraction Method: SW846 3540
Lab Prep Batch: WG122756

Analysis Date: 07-MAY-13
Analyst: JLP
Analysis Method: SW846 8081B
Matrix: SL
% Solids: 85.
Report Date: 09-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
alpha-BHC	U	0.18	ug/Kgdrywt	1	1.7	0.37	0.074	0.18
gamma-BHC	U	0.18	ug/Kgdrywt	1	1.7	0.37	0.059	0.18
Heptachlor	U	0.18	ug/Kgdrywt	1	1.7	0.37	0.063	0.18
Aldrin	U	0.18	ug/Kgdrywt	1	1.7	0.37	0.061	0.18
beta-BHC	U	0.18	ug/Kgdrywt	1	1.7	0.37	0.072	0.18
delta-BHC	U	0.18	ug/Kgdrywt	1	1.7	0.37	0.070	0.18
Heptachlor Epoxide	U	0.18	ug/Kgdrywt	1	1.7	0.37	0.048	0.18
Endosulfan I	U	0.18	ug/Kgdrywt	1	1.7	0.37	0.052	0.18
Gamma-Chlordane	U	0.18	ug/Kgdrywt	1	1.7	0.37	0.050	0.18
Alpha-Chlordane	U	0.18	ug/Kgdrywt	1	1.7	0.37	0.046	0.18
4,4'-DDE	J	0.69	ug/Kgdrywt	1	3.3	0.72	0.042	0.36
Dieldrin	U	0.36	ug/Kgdrywt	1	3.3	0.72	0.048	0.36
Endrin	U	0.36	ug/Kgdrywt	1	3.3	0.72	0.18	0.36
4,4'-DDD	J	0.68	ug/Kgdrywt	1	3.3	0.72	0.044	0.36
Endosulfan II	U	0.36	ug/Kgdrywt	1	3.3	0.72	0.074	0.36
4,4'-DDT	~~J~~ J 2C	1.4	ug/Kgdrywt	1	3.3	0.72	0.068	0.36
Endrin Aldehyde	U	0.36	ug/Kgdrywt	1	3.3	0.72	0.11	0.36
Endosulfan Sulfate	U	0.36	ug/Kgdrywt	1	3.3	0.72	0.13	0.36
Methoxychlor	U	1.8	ug/Kgdrywt	1	17	3.7	0.11	1.8
Endrin Ketone	U	0.36	ug/Kgdrywt	1	3.3	0.72	0.087	0.36
Toxaphene	U	3.6	ug/Kgdrywt	1	33	7.2	1.5	3.6
Tetrachloro-M-Xylene		98.5	%					
Decachlorobiphenyl		92.2	%					

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Report of Analytical Results

Client: CH2MHill
Lab ID: SG2441-9
Client ID: VEP21-SB04-011H
Project: NTR Vieques East CTO-037 1
SDG: SG2441
Lab File ID: 1GE00116.D

Sample Date: 11-APR-13
Received Date: 15-APR-13
Extract Date: 16-APR-13
Extracted By: JH
Extraction Method: SW846 3540
Lab Prep Batch: WG122756

Analysis Date: 07-MAY-13
Analyst: JLP
Analysis Method: SW846 8081B
Matrix: SL
% Solids: 90.
Report Date: 08-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
alpha-BHC	U UJ SSL	0.18	ug/Kgdrywt	1	1.7	0.37	0.073	0.18
gamma-BHC	U	0.18	ug/Kgdrywt	1	1.7	0.37	0.058	0.18
Heptachlor	U	0.18	ug/Kgdrywt	1	1.7	0.37	0.062	0.18
Aldrin	U	0.18	ug/Kgdrywt	1	1.7	0.37	0.060	0.18
beta-BHC	U	0.18	ug/Kgdrywt	1	1.7	0.37	0.071	0.18
delta-BHC	U	0.18	ug/Kgdrywt	1	1.7	0.37	0.069	0.18
Heptachlor Epoxide	U	0.18	ug/Kgdrywt	1	1.7	0.37	0.047	0.18
Endosulfan I	U	0.18	ug/Kgdrywt	1	1.7	0.37	0.052	0.18
Gamma-Chlordane	U	0.18	ug/Kgdrywt	1	1.7	0.37	0.050	0.18
Alpha-Chlordane	U	0.18	ug/Kgdrywt	1	1.7	0.37	0.045	0.18
4,4'-DDE	J SSL	1.2	ug/Kgdrywt	1	3.3	0.71	0.041	0.36
Dieldrin	U UJ	0.36	ug/Kgdrywt	1	3.3	0.71	0.047	0.36
Endrin	U UJ	0.36	ug/Kgdrywt	1	3.3	0.71	0.18	0.36
4,4'-DDD	J J	0.18	ug/Kgdrywt	1	3.3	0.71	0.043	0.36
Endosulfan II	U UJ	0.36	ug/Kgdrywt	1	3.3	0.71	0.073	0.36
4,4'-DDT	J	1.3	ug/Kgdrywt	1	3.3	0.71	0.067	0.36
Endrin Aldehyde	U UJ SSL	0.36	ug/Kgdrywt	1	3.3	0.71	0.10	0.36
Endosulfan Sulfate	U	0.36	ug/Kgdrywt	1	3.3	0.71	0.12	0.36
Methoxychlor	U	1.8	ug/Kgdrywt	1	17	3.7	0.11	1.8
Endrin Ketone	U	0.36	ug/Kgdrywt	1	3.3	0.71	0.086	0.36
Toxaphene	U	3.6	ug/Kgdrywt	1	33	7.1	1.5	3.6
Tetrachloro-M-Xylene		63.6	%					
Decachlorobiphenyl		91.8	%					

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Report of Analytical Results

Client: CH2MHill
Lab ID: SG2441-10
Client ID: VEP21-SB05-011H
Project: NTR Vieques East CTO-037 1
SDG: SG2441
Lab File ID: 1GE00117.D

Sample Date: 11-APR-13
Received Date: 15-APR-13
Extract Date: 16-APR-13
Extracted By: JH
Extraction Method: SW846 3540
Lab Prep Batch: WG122756

Analysis Date: 07-MAY-13
Analyst: JLP
Analysis Method: SW846 8081B
Matrix: SL
% Solids: 93.
Report Date: 09-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
alpha-BHC	U UJ SSL	0.18	ug/Kgdrywt	1	1.7	0.36	0.073	0.18
gamma-BHC	U	0.18	ug/Kgdrywt	1	1.7	0.36	0.058	0.18
Heptachlor	U	0.18	ug/Kgdrywt	1	1.7	0.36	0.062	0.18
Aldrin	U	0.18	ug/Kgdrywt	1	1.7	0.36	0.060	0.18
beta-BHC	U	0.18	ug/Kgdrywt	1	1.7	0.36	0.071	0.18
delta-BHC	U	0.18	ug/Kgdrywt	1	1.7	0.36	0.068	0.18
Heptachlor Epoxide	U	0.18	ug/Kgdrywt	1	1.7	0.36	0.047	0.18
Endosulfan I	U	0.18	ug/Kgdrywt	1	1.7	0.36	0.051	0.18
Gamma-Chlordane	U	0.18	ug/Kgdrywt	1	1.7	0.36	0.049	0.18
Alpha-Chlordane	U	0.18	ug/Kgdrywt	1	1.7	0.36	0.045	0.18
4,4'-DDE	J	0.35	ug/Kgdrywt	1	3.3	0.71	0.041	0.35
Dieldrin	U UJ	0.35	ug/Kgdrywt	1	3.3	0.71	0.047	0.35
Endrin	U	0.35	ug/Kgdrywt	1	3.3	0.71	0.18	0.35
4,4'-DDD	U	0.35	ug/Kgdrywt	1	3.3	0.71	0.043	0.35
Endosulfan II	U	0.35	ug/Kgdrywt	1	3.3	0.71	0.073	0.35
4,4'-DDT	NJ 2C	1.4	ug/Kgdrywt	1	3.3	0.71	0.066	0.35
Endrin Aldehyde	U UJ SSL	0.35	ug/Kgdrywt	1	3.3	0.71	0.10	0.35
Endosulfan Sulfate	U	0.35	ug/Kgdrywt	1	3.3	0.71	0.12	0.35
Methoxychlor	U	1.8	ug/Kgdrywt	1	17	3.6	0.11	1.8
Endrin Ketone	U	0.35	ug/Kgdrywt	1	3.3	0.71	0.086	0.35
Toxaphene	U	3.5	ug/Kgdrywt	1	33	7.1	1.5	3.5
Tetrachloro-M-Xylene		232.	%					
Decachlorobiphenyl		93.8	%					

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Report of Analytical Results

Client: CH2MHill
Lab ID: SG2441-11
Client ID: VEP21-SB02-011H
Project: NTR Vieques East CTO-037 1
SDG: SG2441
Lab File ID: 1GE00118.D

Sample Date: 11-APR-13
Received Date: 15-APR-13
Extract Date: 16-APR-13
Extracted By: JH
Extraction Method: SW846 3540
Lab Prep Batch: WG122756

Analysis Date: 07-MAY-13
Analyst: JLP
Analysis Method: SW846 8081B
Matrix: SL
% Solids: 92.
Report Date: 08-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
alpha-BHC	U	0.18	ug/Kgdrywt	1	1.7	0.36	0.072	0.18
gamma-BHC	U	0.18	ug/Kgdrywt	1	1.7	0.36	0.057	0.18
Heptachlor	U	0.18	ug/Kgdrywt	1	1.7	0.36	0.062	0.18
Aldrin	U	0.18	ug/Kgdrywt	1	1.7	0.36	0.059	0.18
beta-BHC	U	0.18	ug/Kgdrywt	1	1.7	0.36	0.070	0.18
delta-BHC	U	0.18	ug/Kgdrywt	1	1.7	0.36	0.068	0.18
Heptachlor Epoxide	U	0.18	ug/Kgdrywt	1	1.7	0.36	0.047	0.18
Endosulfan I	U	0.18	ug/Kgdrywt	1	1.7	0.36	0.051	0.18
Gamma-Chlordane	U	0.18	ug/Kgdrywt	1	1.7	0.36	0.049	0.18
Alpha-Chlordane	U	0.18	ug/Kgdrywt	1	1.7	0.36	0.045	0.18
4,4'-DDE	U	0.35	ug/Kgdrywt	1	3.3	0.70	0.040	0.35
Dieldrin	U	0.35	ug/Kgdrywt	1	3.3	0.70	0.047	0.35
Endrin	U	0.35	ug/Kgdrywt	1	3.3	0.70	0.18	0.35
4,4'-DDD	J	0.060	ug/Kgdrywt	1	3.3	0.70	0.042	0.35
Endosulfan II	U	0.35	ug/Kgdrywt	1	3.3	0.70	0.072	0.35
4,4'-DDT	~~U~~ J 2C	0.19	ug/Kgdrywt	1	3.3	0.70	0.066	0.35
Endrin Aldehyde	U	0.35	ug/Kgdrywt	1	3.3	0.70	0.10	0.35
Endosulfan Sulfate	U	0.35	ug/Kgdrywt	1	3.3	0.70	0.12	0.35
Methoxychlor	U	1.8	ug/Kgdrywt	1	17	3.6	0.11	1.8
Endrin Ketone	U	0.35	ug/Kgdrywt	1	3.3	0.70	0.085	0.35
Toxaphene	U	3.5	ug/Kgdrywt	1	33	7.0	1.5	3.5
Tetrachloro-M-Xylene		74.0	%					
Decachlorobiphenyl		88.8	%					

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Report of Analytical Results

Client: CH2MHill
Lab ID: SG2441-13
Client ID: VEP21-EB01-041113
Project: NTR Vieques East CTO-037 1
SDG: SG2441
Lab File ID: 1GE00129.D

Sample Date: 11-APR-13
Received Date: 15-APR-13
Extract Date: 17-APR-13
Extracted By: JMS
Extraction Method: SW846 3510
Lab Prep Batch: WG122791

Analysis Date: 08-MAY-13
Analyst: JLP
Analysis Method: SW846 8081B
Matrix: AQ
% Solids: NA
Report Date: 08-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
alpha-BHC	U	0.024	ug/L	1	.05	0.048	0.0067	0.024
Gamma-BHC	U	0.024	ug/L	1	.05	0.048	0.0070	0.024
Heptachlor	U	0.024	ug/L	1	.05	0.048	0.0078	0.024
Aldrin	U	0.024	ug/L	1	.05	0.048	0.0072	0.024
beta-BHC	U	0.024	ug/L	1	.05	0.048	0.0061	0.024
delta-BHC	U	0.024	ug/L	1	.05	0.048	0.013	0.024
Heptachlor Epoxide	U	0.024	ug/L	1	.05	0.048	0.0072	0.024
Endosulfan I	U	0.024	ug/L	1	.05	0.048	0.0062	0.024
Gamma-Chlordane	U	0.024	ug/L	1	.05	0.048	0.0058	0.024
Alpha-Chlordane	U	0.024	ug/L	1	.05	0.048	0.0074	0.024
4,4'-DDE	U	0.048	ug/L	1	.1	0.097	0.0048	0.048
Dieldrin	U	0.048	ug/L	1	.1	0.097	0.0063	0.048
Endrin	U	0.048	ug/L	1	.1	0.097	0.0082	0.048
4,4'-DDD	U	0.048	ug/L	1	.1	0.097	0.0087	0.048
Endosulfan II	U	0.048	ug/L	1	.1	0.097	0.0055	0.048
4,4'-DDT	U	0.048	ug/L	1	.1	0.097	0.0086	0.048
Endrin Aldehyde	U	0.048	ug/L	1	.1	0.097	0.0060	0.048
Endosulfan Sulfate	U	0.048	ug/L	1	.1	0.097	0.0065	0.048
Methoxychlor	U	0.24	ug/L	1	.5	0.48	0.0082	0.24
Endrin Ketone	U	0.048	ug/L	1	.1	0.097	0.0076	0.048
Toxaphene	U	0.48	ug/L	1	1	0.97	0.16	0.48
Tetrachloro-M-Xylene		73.9	%					
Decachlorobiphenyl		36.4	%					

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Cert No E87604

Report of Analytical Results

Client: CH2MHill
Lab ID: SG2441-1
Client ID: VEP21-SS01-0001
Project: NTR Vieques East CTO-037 1
SDG: SG2441
Lab File ID: 7GD370.D

Sample Date: 11-APR-13
Received Date: 15-APR-13
Extract Date: 16-APR-13
Extracted By: JH
Extraction Method: SW846 3540
Lab Prep Batch: WG122757

Analysis Date: 01-MAY-13
Analyst: CB
Analysis Method: SW846 8082
Matrix: SL
% Solids: 90.
Report Date: 08-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Aroclor-1016	U	1.8	ug/Kgdrywt	1	17	3.6	1.3	1.8
Aroclor-1221	U	1.8	ug/Kgdrywt	1	17	3.6	1.7	1.8
Aroclor-1232	U	2.1	ug/Kgdrywt	1	17	3.6	2.0	2.1
Aroclor-1242	U	1.8	ug/Kgdrywt	1	17	3.6	1.2	1.8
Aroclor-1248	U	1.8	ug/Kgdrywt	1	17	3.6	1.3	1.8
Aroclor-1254	U	1.8	ug/Kgdrywt	1	17	3.6	0.99	1.8
Aroclor-1260	U	1.8	ug/Kgdrywt	1	17	3.6	1.3	1.8
Aroclor-1262	U	1.8	ug/Kgdrywt	1	17	3.6	0.78	1.8
Aroclor-1268	U	1.8	ug/Kgdrywt	1	17	3.6	0.55	1.8
Tetrachloro-M-Xylene		57.8	%					
Decachlorobiphenyl		62.8	%					

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Report of Analytical Results

Client: CH2MHill
Lab ID: SG2441-2
Client ID: VEP21-SS01P-0001
Project: NTR Vieques East CTO-037 1
SDG: SG2441
Lab File ID: 7GD375.D

Sample Date: 11-APR-13
Received Date: 15-APR-13
Extract Date: 16-APR-13
Extracted By: JH
Extraction Method: SW846 3540
Lab Prep Batch: WG122757

Analysis Date: 01-MAY-13
Analyst: CB
Analysis Method: SW846 8082
Matrix: SL
% Solids: 91.
Report Date: 08-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Aroclor-1016	U	1.8	ug/Kgdrywt	1	17	3.7	1.3	1.8
Aroclor-1221	U	1.8	ug/Kgdrywt	1	17	3.7	1.7	1.8
Aroclor-1232	U	2.2	ug/Kgdrywt	1	17	3.7	2.0	2.2
Aroclor-1242	U	1.8	ug/Kgdrywt	1	17	3.7	1.2	1.8
Aroclor-1248	U	1.8	ug/Kgdrywt	1	17	3.7	1.3	1.8
Aroclor-1254	U	1.8	ug/Kgdrywt	1	17	3.7	1.0	1.8
Aroclor-1260	U	1.8	ug/Kgdrywt	1	17	3.7	1.3	1.8
Aroclor-1262	U	1.8	ug/Kgdrywt	1	17	3.7	0.80	1.8
Aroclor-1268	U	1.8	ug/Kgdrywt	1	17	3.7	0.56	1.8
Tetrachloro-M-Xylene		60.7	%					
Decachlorobiphenyl		70.2	%					

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Report of Analytical Results

Client: CH2MHill
Lab ID: SG2441-3
Client ID: VEP21-SS03-0001
Project: NTR Vieques East CTO-037 1
SDG: SG2441
Lab File ID: 7GD376.D

Sample Date: 11-APR-13
Received Date: 15-APR-13
Extract Date: 16-APR-13
Extracted By: JH
Extraction Method: SW846 3540
Lab Prep Batch: WG122757

Analysis Date: 02-MAY-13
Analyst: CB
Analysis Method: SW846 8082
Matrix: SL
% Solids: 90.
Report Date: 08-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Aroclor-1016	U	1.8	ug/Kgdrywt	1	17	3.6	1.3	1.8
Aroclor-1221	U	1.8	ug/Kgdrywt	1	17	3.6	1.7	1.8
Aroclor-1232	U	2.1	ug/Kgdrywt	1	17	3.6	2.0	2.1
Aroclor-1242	U	1.8	ug/Kgdrywt	1	17	3.6	1.2	1.8
Aroclor-1248	U	1.8	ug/Kgdrywt	1	17	3.6	1.3	1.8
Aroclor-1254	U	1.8	ug/Kgdrywt	1	17	3.6	0.99	1.8
Aroclor-1260	U	1.8	ug/Kgdrywt	1	17	3.6	1.3	1.8
Aroclor-1262	U	1.8	ug/Kgdrywt	1	17	3.6	0.78	1.8
Aroclor-1268	U	1.8	ug/Kgdrywt	1	17	3.6	0.55	1.8
Tetrachloro-M-Xylene		66.7	%					
Decachlorobiphenyl		64.5	%					

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Report of Analytical Results

Client: CH2MHill
Lab ID: SG2441-4
Client ID: VEP21-SS04-0001
Project: NTR Vieques East CTO-037 I
SDG: SG2441
Lab File ID: 7GD377.D

Sample Date: 11-APR-13
Received Date: 15-APR-13
Extract Date: 16-APR-13
Extracted By: JH
Extraction Method: SW846 3540
Lab Prep Batch: WG122757

Analysis Date: 02-MAY-13
Analyst: CB
Analysis Method: SW846 8082
Matrix: SL
% Solids: 89.
Report Date: 08-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Aroclor-1016	U	1.8	ug/Kgdrywt	1	17	3.7	1.3	1.8
Aroclor-1221	U	1.8	ug/Kgdrywt	1	17	3.7	1.7	1.8
Aroclor-1232	U	2.2	ug/Kgdrywt	1	17	3.7	2.0	2.2
Aroclor-1242	U	1.8	ug/Kgdrywt	1	17	3.7	1.3	1.8
Aroclor-1248	U	1.8	ug/Kgdrywt	1	17	3.7	1.3	1.8
Aroclor-1254	U	1.8	ug/Kgdrywt	1	17	3.7	1.0	1.8
Aroclor-1260	U	1.8	ug/Kgdrywt	1	17	3.7	1.3	1.8
Aroclor-1262	U	1.8	ug/Kgdrywt	1	17	3.7	0.81	1.8
Aroclor-1268	U	1.8	ug/Kgdrywt	1	17	3.7	0.57	1.8
Tetrachloro-M-Xylene		67.8	%					
Decachlorobiphenyl		70.8	%					

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Client: CH2MHill
Lab ID: SG2441-5
Client ID: VEP21-SB01-011H
Project: NTR Vieques East CTO-037 1
SDG: SG2441
Lab File ID: 7GD378.D

Sample Date: 11-APR-13
Received Date: 15-APR-13
Extract Date: 16-APR-13
Extracted By: JH
Extraction Method: SW846 3540
Lab Prep Batch: WG122757

Analysis Date: 02-MAY-13
Analyst: CB
Analysis Method: SW846 8082
Matrix: SL
% Solids: 91.
Report Date: 08-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Aroclor-1016	U	1.8	ug/Kgdrywt	1	17	3.6	1.2	1.8
Aroclor-1221	U	1.8	ug/Kgdrywt	1	17	3.6	1.6	1.8
Aroclor-1232	U	2.1	ug/Kgdrywt	1	17	3.6	2.0	2.1
Aroclor-1242	U	1.8	ug/Kgdrywt	1	17	3.6	1.2	1.8
Aroclor-1248	U	1.8	ug/Kgdrywt	1	17	3.6	1.3	1.8
Aroclor-1254	U	1.8	ug/Kgdrywt	1	17	3.6	0.99	1.8
Aroclor-1260	U	1.8	ug/Kgdrywt	1	17	3.6	1.2	1.8
Aroclor-1262	U	1.8	ug/Kgdrywt	1	17	3.6	0.78	1.8
Aroclor-1268	U	1.8	ug/Kgdrywt	1	17	3.6	0.54	1.8
Tetrachloro-M-Xylene		64.2	%					
Decachlorobiphenyl		69.2	%					

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Report of Analytical Results

Client: CH2MHill
Lab ID: SG2441-6
Client ID: VEP21-SS05-0001
Project: NTR Vieques East CTO-037 1
SDG: SG2441
Lab File ID: 7GD379.D

Sample Date: 11-APR-13
Received Date: 15-APR-13
Extract Date: 16-APR-13
Extracted By: JH
Extraction Method: SW846 3540
Lab Prep Batch: WG122757

Analysis Date: 02-MAY-13
Analyst: CB
Analysis Method: SW846 8082
Matrix: SL
% Solids: 92.
Report Date: 08-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Aroclor-1016	U	1.8	ug/Kgdrywt	1	17	3.5	1.2	1.8
Aroclor-1221	U	1.8	ug/Kgdrywt	1	17	3.5	1.6	1.8
Aroclor-1232	U	2.1	ug/Kgdrywt	1	17	3.5	1.9	2.1
Aroclor-1242	U	1.8	ug/Kgdrywt	1	17	3.5	1.2	1.8
Aroclor-1248	U	1.8	ug/Kgdrywt	1	17	3.5	1.3	1.8
Aroclor-1254	U	1.8	ug/Kgdrywt	1	17	3.5	0.97	1.8
Aroclor-1260	U	1.8	ug/Kgdrywt	1	17	3.5	1.2	1.8
Aroclor-1262	U	1.8	ug/Kgdrywt	1	17	3.5	0.77	1.8
Aroclor-1268	U	1.8	ug/Kgdrywt	1	17	3.5	0.54	1.8
Tetrachloro-M-Xylene		67.2	%					
Decachlorobiphenyl		67.7	%					

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Report of Analytical Results

Client: CH2MHill
Lab ID: SG2441-7
Client ID: VEP21-SS02-0001
Project: NTR Vieques East CTO-037 1
SDG: SG2441
Lab File ID: 7GD380.D

Sample Date: 11-APR-13
Received Date: 15-APR-13
Extract Date: 16-APR-13
Extracted By: JH
Extraction Method: SW846 3540
Lab Prep Batch: WG122757

Analysis Date: 02-MAY-13
Analyst: CB
Analysis Method: SW846 8082
Matrix: SL
% Solids: 83.
Report Date: 08-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Aroclor-1016	U	1.9	ug/Kgdrywt	1	17	3.8	1.3	1.9
Aroclor-1221	U	1.9	ug/Kgdrywt	1	17	3.8	1.8	1.9
Aroclor-1232	U	2.2	ug/Kgdrywt	1	17	3.8	2.1	2.2
Aroclor-1242	U	1.9	ug/Kgdrywt	1	17	3.8	1.3	1.9
Aroclor-1248	U	1.9	ug/Kgdrywt	1	17	3.8	1.4	1.9
Aroclor-1254	U	1.9	ug/Kgdrywt	1	17	3.8	1.0	1.9
Aroclor-1260	U	1.9	ug/Kgdrywt	1	17	3.8	1.3	1.9
Aroclor-1262	U	1.9	ug/Kgdrywt	1	17	3.8	0.82	1.9
Aroclor-1268	U	1.9	ug/Kgdrywt	1	17	3.8	0.58	1.9
Tetrachloro-M-Xylene		59.5	%					
Decachlorobiphenyl		63.0	%					

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Report of Analytical Results

Client: CH2MHill
Lab ID: SG2441-8
Client ID: VEP21-SB03-0102
Project: NTR Vieques East CTO-037 1
SDG: SG2441
Lab File ID: 7GD381.D

Sample Date: 11-APR-13
Received Date: 15-APR-13
Extract Date: 16-APR-13
Extracted By: JH
Extraction Method: SW846 3540
Lab Prep Batch: WG122757

Analysis Date: 02-MAY-13
Analyst: CB
Analysis Method: SW846 8082
Matrix: SL
% Solids: 85.
Report Date: 08-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Aroclor-1016	U	1.8	ug/Kgdrywt	1	17	3.7	1.3	1.8
Aroclor-1221	U	1.8	ug/Kgdrywt	1	17	3.7	1.7	1.8
Aroclor-1232	U	2.2	ug/Kgdrywt	1	17	3.7	2.0	2.2
Aroclor-1242	U	1.8	ug/Kgdrywt	1	17	3.7	1.3	1.8
Aroclor-1248	U	1.8	ug/Kgdrywt	1	17	3.7	1.3	1.8
Aroclor-1254	U	1.8	ug/Kgdrywt	1	17	3.7	1.0	1.8
Aroclor-1260	U	1.8	ug/Kgdrywt	1	17	3.7	1.3	1.8
Aroclor-1262	U	1.8	ug/Kgdrywt	1	17	3.7	0.81	1.8
Aroclor-1268	U	1.8	ug/Kgdrywt	1	17	3.7	0.57	1.8
Tetrachloro-M-Xylene		73.0	%					
Decachlorobiphenyl		66.4	%					

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Report of Analytical Results

Client: CH2MHill
Lab ID: SG2441-9
Client ID: VEP21-SB04-011H
Project: NTR Vieques East CTO-037 1
SDG: SG2441
Lab File ID: 7GD382.D

Sample Date: 11-APR-13
Received Date: 15-APR-13
Extract Date: 16-APR-13
Extracted By: JH
Extraction Method: SW846 3540
Lab Prep Batch: WG122757

Analysis Date: 02-MAY-13
Analyst: CB
Analysis Method: SW846 8082
Matrix: SL
% Solids: 90.
Report Date: 08-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Aroclor-1016	U	1.8	ug/Kgdrywt	1	17	3.7	1.3	1.8
Aroclor-1221	U	1.8	ug/Kgdrywt	1	17	3.7	1.7	1.8
Aroclor-1232	U	2.2	ug/Kgdrywt	1	17	3.7	2.0	2.2
Aroclor-1242	U	1.8	ug/Kgdrywt	1	17	3.7	1.2	1.8
Aroclor-1248	U	1.8	ug/Kgdrywt	1	17	3.7	1.3	1.8
Aroclor-1254	U	1.8	ug/Kgdrywt	1	17	3.7	1.0	1.8
Aroclor-1260	U	1.8	ug/Kgdrywt	1	17	3.7	1.3	1.8
Aroclor-1262	U	1.8	ug/Kgdrywt	1	17	3.7	0.80	1.8
Aroclor-1268	U	1.8	ug/Kgdrywt	1	17	3.7	0.56	1.8
Tetrachloro-M-Xylene		62.5	%					
Decachlorobiphenyl		65.2	%					

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Report of Analytical Results

Client: CH2MHill
Lab ID: SG2441-10
Client ID: VEP21-SB05-011H
Project: NTR Vieques East CTO-037 I
SDG: SG2441
Lab File ID: 7GD383.D

Sample Date: 11-APR-13
Received Date: 15-APR-13
Extract Date: 16-APR-13
Extracted By: JH
Extraction Method: SW846 3540
Lab Prep Batch: WG122757

Analysis Date: 02-MAY-13
Analyst: CB
Analysis Method: SW846 8082
Matrix: SL
% Solids: 93.
Report Date: 08-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Aroclor-1016	U	1.8	ug/Kgdrywt	1	17	3.6	1.3	1.8
Aroclor-1221	U	1.8	ug/Kgdrywt	1	17	3.6	1.7	1.8
Aroclor-1232	U	2.1	ug/Kgdrywt	1	17	3.6	2.0	2.1
Aroclor-1242	U	1.8	ug/Kgdrywt	1	17	3.6	1.2	1.8
Aroclor-1248	U	1.8	ug/Kgdrywt	1	17	3.6	1.3	1.8
Aroclor-1254	U	1.8	ug/Kgdrywt	1	17	3.6	1.0	1.8
Aroclor-1260	U	1.8	ug/Kgdrywt	1	17	3.6	1.3	1.8
Aroclor-1262	U	1.8	ug/Kgdrywt	1	17	3.6	0.79	1.8
Aroclor-1268	U	1.8	ug/Kgdrywt	1	17	3.6	0.56	1.8
Tetrachloro-M-Xylene	*	225.	%					
Decachlorobiphenyl		66.3	%					

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Report of Analytical Results

Client: CH2MHill
Lab ID: SG2441-11
Client ID: VEP21-SB02-011H
Project: NTR Vieques East CTO-037 I
SDG: SG2441
Lab File ID: 7GD384.D

Sample Date: 11-APR-13
Received Date: 15-APR-13
Extract Date: 16-APR-13
Extracted By: JH
Extraction Method: SW846 3540
Lab Prep Batch: WG122757

Analysis Date: 02-MAY-13
Analyst: CB
Analysis Method: SW846 8082
Matrix: SL
% Solids: 92.
Report Date: 08-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Aroclor-1016	U	1.8	ug/Kgdrywt	1	17	3.6	1.3	1.8
Aroclor-1221	U	1.8	ug/Kgdrywt	1	17	3.6	1.7	1.8
Aroclor-1232	U	2.1	ug/Kgdrywt	1	17	3.6	2.0	2.1
Aroclor-1242	U	1.8	ug/Kgdrywt	1	17	3.6	1.2	1.8
Aroclor-1248	U	1.8	ug/Kgdrywt	1	17	3.6	1.3	1.8
Aroclor-1254	U	1.8	ug/Kgdrywt	1	17	3.6	1.0	1.8
Aroclor-1260	U	1.8	ug/Kgdrywt	1	17	3.6	1.3	1.8
Aroclor-1262	U	1.8	ug/Kgdrywt	1	17	3.6	0.79	1.8
Aroclor-1268	U	1.8	ug/Kgdrywt	1	17	3.6	0.55	1.8
Tetrachloro-M-Xylene		70.0	%					
Decachlorobiphenyl		65.7	%					

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Katahdin
ANALYTICAL SERVICES

Cert No E87604

Report of Analytical Results

Client: CH2MHill
Lab ID: SG2441-13
Client ID: VEP21-EB01-041113
Project: NTR Vieques East CTO-037 I
SDG: SG2441
Lab File ID: 7GD364.D

Sample Date: 11-APR-13
Received Date: 15-APR-13
Extract Date: 17-APR-13
Extracted By: JMS
Extraction Method: SW846 3510
Lab Prep Batch: WG122792

Analysis Date: 01-MAY-13
Analyst: CB
Analysis Method: SW846 8082
Matrix: AQ
% Solids: NA
Report Date: 08-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Aroclor-1016	U UJ SSL	0.24	ug/L	1	.5	0.48	0.14	0.24
Aroclor-1221	U	0.24	ug/L	1	.5	0.48	0.19	0.24
Aroclor-1232	U	0.24	ug/L	1	.5	0.48	0.086	0.24
Aroclor-1242	U	0.24	ug/L	1	.5	0.48	0.17	0.24
Aroclor-1248	U	0.24	ug/L	1	.5	0.48	0.19	0.24
Aroclor-1254	U	0.24	ug/L	1	.5	0.48	0.080	0.24
Aroclor-1260	U	0.24	ug/L	1	.5	0.48	0.16	0.24
Aroclor-1262	U	0.24	ug/L	1	.5	0.48	0.064	0.24
Aroclor-1268	U	0.24	ug/L	1	.5	0.48	0.070	0.24
Tetrachloro-M-Xylene		63.1	%					
Decachlorobiphenyl	*	28.6	%					

JC 6/2/13

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071

1

INORGANIC ANALYSIS DATA SHEET

Lab Name: Katahdin Analytical Services **Client Field ID:** VEP21-SS01-0001

Matrix: SOIL **SDG Name:** SG2441

Percent Solids: 90.2 **Lab Sample ID:** SG2441-001

Concentration Units : mg/Kgdrywt

CAS No.	Analyte	Concentration	C	Q	M	DF	LOQ	ADJUSTED MDL	LOD
7429-90-5	ALUMINUM, TOTAL	18600			MS	5	26	0.43	3.4
7440-36-0	ANTIMONY, TOTAL	0.13	J	~~N~~ MSL	MS	5	0.085	0.02	0.043
7440-38-2	ARSENIC, TOTAL	3.3			MS	5	0.43	0.13	0.34
7440-39-3	BARIUM, TOTAL	49.0			MS	5	0.17	0.03	0.085
7440-41-7	BERYLLIUM, TOTAL	0.19			MS	5	0.085	0.003	0.017
7440-43-9	CADMIUM, TOTAL	0.06	J		MS	5	0.085	0.009	0.017
7440-70-2	CALCIUM, TOTAL	14700			MS	5	8.5	3.26	6.8
7440-47-3	CHROMIUM, TOTAL	10.4			MS	5	0.43	0.04	0.34
7440-48-4	COBALT, TOTAL	13.7			MS	5	0.085	0.004	0.026
7440-50-8	COPPER, TOTAL	31.1			MS	5	0.26	0.06	0.17
7439-89-6	IRON, TOTAL	31300			MS	5	8.5	2.05	5.1
7439-92-1	LEAD, TOTAL	3.7			MS	5	0.085	0.004	0.043
7439-95-4	MAGNESIUM, TOTAL	12300			MS	5	8.5	1.16	6.8
7439-96-5	MANGANESE, TOTAL	731			MS	5	0.17	0.03	0.085
7439-97-6	MERCURY, TOTAL	0.006	J		CV	1	0.034	0.005	0.017
7440-02-0	NICKEL, TOTAL	6.1			MS	5	0.17	0.02	0.10
7440-09-7	POTASSIUM, TOTAL	1870			MS	5	85	3.89	34
7782-49-2	SELENIUM, TOTAL	0.26 ~~0.11~~	~~J~~	U MDL	MS	5	0.43	0.03	0.26
7440-22-4	SILVER, TOTAL	0.02	J		MS	5	0.085	0.004	0.034
7440-23-5	SODIUM, TOTAL	963	J	~~N~~ MSL	MS	5	85	2.19	34
7440-28-0	THALLIUM, TOTAL	0.034 ~~0.02~~	~~J~~	U CCBL	MS	5	0.085	0.009	0.034
7440-62-2	VANADIUM, TOTAL	87.6		~~N~~	MS	5	0.43	0.09	0.34
7440-66-6	ZINC, TOTAL	37.9			MS	5	0.85	0.11	0.68

JAC
6/12/13

Comments:

1

INORGANIC ANALYSIS DATA SHEET

Lab Name: Katahdin Analytical Services **Client Field ID:** VEP21-SS01P-0001

Matrix: SOIL **SDG Name:** SG2441

Percent Solids: 91.2 **Lab Sample ID:** SG2441-002

Concentration Units : mg/Kgdrywt

CAS No.	Analyte	Concentration	C	Q	M	DF	LOQ	ADJUSTED MDL	LOD
7429-90-5	ALUMINUM, TOTAL	20700			MS	5	27	0.46	3.6
7440-36-0	ANTIMONY, TOTAL	0.13	J	~~N~~ MBL	MS	5	0.090	0.02	0.045
7440-38-2	ARSENIC, TOTAL	4.1			MS	5	0.45	0.13	0.36
7440-39-3	BARIUM, TOTAL	49.7			MS	5	0.18	0.03	0.090
7440-41-7	BERYLLIUM, TOTAL	0.23			MS	5	0.090	0.004	0.018
7440-43-9	CADMIUM, TOTAL	0.06	J		MS	5	0.090	0.009	0.018
7440-70-2	CALCIUM, TOTAL	15000			MS	5	9.0	3.44	7.2
7440-47-3	CHROMIUM, TOTAL	14.0			MS	5	0.45	0.04	0.36
7440-48-4	COBALT, TOTAL	15.4			MS	5	0.090	0.004	0.027
7440-50-8	COPPER, TOTAL	39.0			MS	5	0.27	0.06	0.18
7439-89-6	IRON, TOTAL	34300			MS	5	9.0	2.16	5.4
7439-92-1	LEAD, TOTAL	4.1			MS	5	0.090	0.004	0.045
7439-95-4	MAGNESIUM, TOTAL	12600			MS	5	9.0	1.23	7.2
7439-96-5	MANGANESE, TOTAL	693			MS	5	0.18	0.04	0.090
7439-97-6	MERCURY, TOTAL	0.009	J		CV	1	0.032	0.005	0.016
7440-02-0	NICKEL, TOTAL	7.7			MS	5	0.18	0.02	0.11
7440-09-7	POTASSIUM, TOTAL	1850			MS	5	90	4.10	36
7782-49-2	SELENIUM, TOTAL	0.27 ~~0.19~~	~~J~~ U	MBL	MS	5	0.45	0.04	0.27
7440-22-4	SILVER, TOTAL	0.02	J		MS	5	0.090	0.004	0.036
7440-23-5	SODIUM, TOTAL	1100	J	~~N~~ MBL	MS	5	90	2.31	36
7440-28-0	THALLIUM, TOTAL	0.036 ~~0.03~~	~~J~~ U	CCBL	MS	5	0.090	0.009	0.036
7440-62-2	VANADIUM, TOTAL	109		~~N~~	MS	5	0.45	0.10	0.36
7440-66-6	ZINC, TOTAL	35.6			MS	5	0.90	0.12	0.72

JC 6/12/13

Comments:

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INORGANIC ANALYSIS DATA SHEET

Lab Name: Katahdin Analytical Services **Client Field ID:** VEP21-SS03-0001

Matrix: SOIL **SDG Name:** SG2441

Percent Solids: 89.8 **Lab Sample ID:** SG2441-003

Concentration Units : mg/Kgdrywt

CAS No.	Analyte	Concentration	C	Q	M	DF	LOQ	ADJUSTED MDL	LOD
7429-90-5	ALUMINUM, TOTAL	19600			MS	5	26	0.44	3.4
7440-36-0	ANTIMONY, TOTAL	0.19	J	N MSL	MS	5	0.086	0.02	0.043
7440-38-2	ARSENIC, TOTAL	3.6			MS	5	0.43	0.13	0.34
7440-39-3	BARIUM, TOTAL	49.6			MS	5	0.17	0.03	0.086
7440-41-7	BERYLLIUM, TOTAL	0.21			MS	5	0.086	0.003	0.017
7440-43-9	CADMIUM, TOTAL	0.08	J		MS	5	0.086	0.009	0.017
7440-70-2	CALCIUM, TOTAL	19700			MS	5	8.6	3.30	6.9
7440-47-3	CHROMIUM, TOTAL	13.1			MS	5	0.43	0.04	0.34
7440-48-4	COBALT, TOTAL	13.6			MS	5	0.086	0.004	0.026
7440-50-8	COPPER, TOTAL	44.7			MS	5	0.26	0.06	0.17
7439-89-6	IRON, TOTAL	32700			MS	5	8.6	2.07	5.2
7439-92-1	LEAD, TOTAL	5.8			MS	5	0.086	0.004	0.043
7439-95-4	MAGNESIUM, TOTAL	12600			MS	5	8.6	1.18	6.9
7439-96-5	MANGANESE, TOTAL	630			MS	5	0.17	0.03	0.086
7439-97-6	MERCURY, TOTAL	0.007	J		CV	1	0.032	0.005	0.016
7440-02-0	NICKEL, TOTAL	7.1			MS	5	0.17	0.02	0.10
7440-09-7	POTASSIUM, TOTAL	1600			MS	5	86	3.94	34
7782-49-2	SELENIUM, TOTAL	0.26 ~~-0.17~~	~~J~~	U MSL	MS	5	0.43	0.03	0.26
7440-22-4	SILVER, TOTAL	0.02	J		MS	5	0.086	0.004	0.034
7440-23-5	SODIUM, TOTAL	1500	J	N MSL	MS	5	86	2.21	34
7440-28-0	THALLIUM, TOTAL	0.034 ~~0.03~~	~~J~~	U CCBL	MS	5	0.086	0.009	0.034
7440-62-2	VANADIUM, TOTAL	92.0		N	MS	5	0.43	0.09	0.34
7440-66-6	ZINC, TOTAL	43.4			MS	5	0.86	0.11	0.69

JEC 6/2/13

Comments:

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INORGANIC ANALYSIS DATA SHEET

Lab Name: Katahdin Analytical Services **Client Field ID:** VEP21-SS04-0001

Matrix: SOIL **SDG Name:** SG2441

Percent Solids: 89.2 **Lab Sample ID:** SG2441-004

Concentration Units : mg/Kgdrywt

CAS No.	Analyte	Concentration	C	Q	M	DF	LOQ	ADJUSTED MDL	LOD
7429-90-5	ALUMINUM, TOTAL	20500			MS	5	30	0.51	4.0
7440-36-0	ANTIMONY, TOTAL	0.34	J	~~N~~ MSL	MS	5	0.10	0.02	0.050
7440-38-2	ARSENIC, TOTAL	3.2			MS	5	0.50	0.15	0.40
7440-39-3	BARIUM, TOTAL	54.5			MS	5	0.20	0.04	0.10
7440-41-7	BERYLLIUM, TOTAL	0.22			MS	5	0.10	0.004	0.020
7440-43-9	CADMIUM, TOTAL	0.11			MS	5	0.10	0.01	0.020
7440-70-2	CALCIUM, TOTAL	21700			MS	5	10	3.83	8.0
7440-47-3	CHROMIUM, TOTAL	14.7			MS	5	0.50	0.05	0.40
7440-48-4	COBALT, TOTAL	14.0			MS	5	0.10	0.005	0.030
7440-50-8	COPPER, TOTAL	45.8			MS	5	0.30	0.07	0.20
7439-89-6	IRON, TOTAL	31100			MS	5	10	2.40	6.0
7439-92-1	LEAD, TOTAL	7.7			MS	5	0.10	0.005	0.050
7439-95-4	MAGNESIUM, TOTAL	11500			MS	5	10	1.37	8.0
7439-96-5	MANGANESE, TOTAL	566			MS	5	0.20	0.04	0.10
7439-97-6	MERCURY, TOTAL	0.01	J		CV	1	0.029	0.004	0.015
7440-02-0	NICKEL, TOTAL	7.8			MS	5	0.20	0.03	0.12
7440-09-7	POTASSIUM, TOTAL	1440			MS	5	100	4.56	40
7782-49-2	SELENIUM, TOTAL	0.30 ~~0.27~~	~~J~~	U MBL	MS	5	0.50	0.04	0.30
7440-22-4	SILVER, TOTAL	0.02	J		MS	5	0.10	0.005	0.040
7440-23-5	SODIUM, TOTAL	2700	J	~~N~~ MSL	MS	5	100	2.57	40
7440-28-0	THALLIUM, TOTAL	0.040 ~~0.03~~	~~J~~	U CCBL	MS	5	0.10	0.01	0.040
7440-62-2	VANADIUM, TOTAL	85.9		~~N~~	MS	5	0.50	0.11	0.40
7440-66-6	ZINC, TOTAL	42.3			MS	5	1.0	0.13	0.80

JC 6/12/13

Comments:

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INORGANIC ANALYSIS DATA SHEET

Lab Name: Katahdin Analytical Services **Client Field ID:** VEP21-SB01-011H

Matrix: SOIL **SDG Name:** SG2441

Percent Solids: 91.0 **Lab Sample ID:** SG2441-005

Concentration Units : mg/Kgdrywt

CAS No.	Analyte	Concentration	C	Q	M	DF	LOQ	ADJUSTED MDL	LOD	
7429-90-5	ALUMINUM, TOTAL	21000			MS	5	25	0.42	3.3	
7440-36-0	ANTIMONY, TOTAL	0.14	J	~~N~~ MSL	MS	5	0.082	0.02	0.041	
7440-38-2	ARSENIC, TOTAL	4.2			MS	5	0.41	0.12	0.33	
7440-39-3	BARIUM, TOTAL	76.4			MS	5	0.16	0.03	0.082	
7440-41-7	BERYLLIUM, TOTAL	0.21			MS	5	0.082	0.003	0.016	
7440-43-9	CADMIUM, TOTAL	0.07	J		MS	5	0.082	0.008	0.016	
7440-70-2	CALCIUM, TOTAL	14100			MS	5	8.2	3.16	6.6	
7440-47-3	CHROMIUM, TOTAL	16.3			MS	5	0.41	0.04	0.33	
7440-48-4	COBALT, TOTAL	15.4			MS	5	0.082	0.004	0.025	
7440-50-8	COPPER, TOTAL	36.0			MS	5	0.25	0.06	0.16	
7439-89-6	IRON, TOTAL	32900			MS	5	8.2	1.98	5.0	
7439-92-1	LEAD, TOTAL	5.9			MS	5	0.082	0.004	0.041	
7439-95-4	MAGNESIUM, TOTAL	12400			MS	5	8.2	1.13	6.6	
7439-96-5	MANGANESE, TOTAL	756			MS	5	0.16	0.03	0.082	
7439-97-6	MERCURY, TOTAL	0.006	J		CV	1	0.031	0.005	0.016	
7440-02-0	NICKEL, TOTAL	7.8			MS	5	0.16	0.02	0.099	
7440-09-7	POTASSIUM, TOTAL	2280			MS	5	82	3.77	33	
7782-49-2	SELENIUM, TOTAL	0.25 ~~0.18~~	~~J~~ U	MBL	MS	5	0.41	0.03	0.25	
7440-22-4	SILVER, TOTAL	0.02	J		MS	5	0.082	0.004	0.033	
7440-23-5	SODIUM, TOTAL	1460	J	~~N~~ MSL	MS	5	82	2.12	33	
7440-28-0	THALLIUM, TOTAL	0.04 ~~0.04~~	~~J~~ J		MS	5	0.082	0.008	0.033	X1 corr JAC 61213
7440-62-2	VANADIUM, TOTAL	97.1		~~N~~	MS	5	0.41	0.09	0.33	
7440-66-6	ZINC, TOTAL	40.0			MS	5	0.82	0.11	0.66	

JAC 61213

Comments:

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INORGANIC ANALYSIS DATA SHEET

Lab Name: Katahdin Analytical Services **Client Field ID:** VEP21-SS05-0001

Matrix: SOIL **SDG Name:** SG2441

Percent Solids: 92.1 **Lab Sample ID:** SG2441-006

Concentration Units : mg/Kgdrywt

CAS No.	Analyte	Concentration	C	Q	M	DF	LOQ	ADJUSTED MDL	LOD
7429-90-5	ALUMINUM, TOTAL	18400			MS	5	26	0.44	3.5
7440-36-0	ANTIMONY, TOTAL	0.11	J	~~N~~ NMSL	MS	5	0.087	0.02	0.043
7440-38-2	ARSENIC, TOTAL	4.1			MS	5	0.43	0.13	0.35
7440-39-3	BARIUM, TOTAL	44.0			MS	5	0.17	0.03	0.087
7440-41-7	BERYLLIUM, TOTAL	0.19			MS	5	0.087	0.003	0.017
7440-43-9	CADMIUM, TOTAL	0.05	J		MS	5	0.087	0.009	0.017
7440-70-2	CALCIUM, TOTAL	13900			MS	5	8.7	3.32	6.9
7440-47-3	CHROMIUM, TOTAL	10.6			MS	5	0.43	0.04	0.35
7440-48-4	COBALT, TOTAL	13.2			MS	5	0.087	0.004	0.026
7440-50-8	COPPER, TOTAL	44.4			MS	5	0.26	0.06	0.17
7439-89-6	IRON, TOTAL	29700			MS	5	8.7	2.08	5.2
7439-92-1	LEAD, TOTAL	4.4			MS	5	0.087	0.004	0.043
7439-95-4	MAGNESIUM, TOTAL	11300			MS	5	8.7	1.19	6.9
7439-96-5	MANGANESE, TOTAL	617			MS	5	0.17	0.03	0.087
7439-97-6	MERCURY, TOTAL	0.02	J		CV	1	0.032	0.005	0.016
7440-02-0	NICKEL, TOTAL	6.4			MS	5	0.17	0.02	0.10
7440-09-7	POTASSIUM, TOTAL	2130			MS	5	87	3.96	35
7782-49-2	SELENIUM, TOTAL	0.26 ~~0.18~~	~~J~~	U MBL	MS	5	0.43	0.03	0.26
7440-22-4	SILVER, TOTAL	0.01	J		MS	5	0.087	0.004	0.035
7440-23-5	SODIUM, TOTAL	622	J	~~N~~ NMSL	MS	5	87	2.23	35
7440-28-0	THALLIUM, TOTAL	0.035 ~~0.03~~	~~J~~	U CCBL	MS	5	0.087	0.009	0.035
7440-62-2	VANADIUM, TOTAL	86.4		~~N~~	MS	5	0.43	0.10	0.35
7440-66-6	ZINC, TOTAL	37.9			MS	5	0.87	0.11	0.69

JAC 6/12/13

Comments:

1

INORGANIC ANALYSIS DATA SHEET

Lab Name: Katahdin Analytical Services **Client Field ID:** VEP21-SS02-0001

Matrix: SOIL **SDG Name:** SG2441

Percent Solids: 82.8 **Lab Sample ID:** SG2441-007

Concentration Units : mg/Kgdrywt

CAS No.	Analyte	Concentration	C	Q	M	DF	LOQ	ADJUSTED MDL	LOD
7429-90-5	ALUMINUM, TOTAL	20400			MS	5	28	0.49	3.8
7440-36-0	ANTIMONY, TOTAL	0.12	J	~~N~~ NSL	MS	5	0.095	0.02	0.048
7440-38-2	ARSENIC, TOTAL	3.3			MS	5	0.48	0.14	0.38
7440-39-3	BARIUM, TOTAL	43.2			MS	5	0.19	0.03	0.095
7440-41-7	BERYLLIUM, TOTAL	0.20			MS	5	0.095	0.004	0.019
7440-43-9	CADMIUM, TOTAL	0.05	J		MS	5	0.095	0.010	0.019
7440-70-2	CALCIUM, TOTAL	14900			MS	5	9.5	3.64	7.6
7440-47-3	CHROMIUM, TOTAL	14.4			MS	5	0.48	0.05	0.38
7440-48-4	COBALT, TOTAL	14.6			MS	5	0.095	0.005	0.028
7440-50-8	COPPER, TOTAL	42.2			MS	5	0.28	0.07	0.19
7439-89-6	IRON, TOTAL	32900			MS	5	9.5	2.28	5.7
7439-92-1	LEAD, TOTAL	3.5			MS	5	0.095	0.005	0.048
7439-95-4	MAGNESIUM, TOTAL	11800			MS	5	9.5	1.30	7.6
7439-96-5	MANGANESE, TOTAL	657			MS	5	0.19	0.04	0.095
7439-97-6	MERCURY, TOTAL	0.008	J		CV	1	0.038	0.006	0.020
7440-02-0	NICKEL, TOTAL	8.5			MS	5	0.19	0.02	0.11
7440-09-7	POTASSIUM, TOTAL	2080			MS	5	95	4.34	38
7782-49-2	SELENIUM, TOTAL	0.28 ~~0.17~~	~~J~~	U MBL	MS	5	0.48	0.04	0.28
7440-22-4	SILVER, TOTAL	0.02	J		MS	5	0.095	0.005	0.038
7440-23-5	SODIUM, TOTAL	1430	J	~~N~~ NSL	MS	5	95	2.44	38
7440-28-0	THALLIUM, TOTAL	0.038 ~~0.03~~	~~J~~	U CCBL	MS	5	0.095	0.010	0.038
7440-62-2	VANADIUM, TOTAL	103		~~N~~	MS	5	0.48	0.10	0.38
7440-66-6	ZINC, TOTAL	35.6			MS	5	0.95	0.12	0.76

JC 6/6/23

Comments:

1

INORGANIC ANALYSIS DATA SHEET

Lab Name: Katahdin Analytical Services **Client Field ID:** VEP21-SB03-0102

Matrix: SOIL **SDG Name:** SG2441

Percent Solids: 84.8 **Lab Sample ID:** SG2441-008

Concentration Units : mg/Kgdrywt

CAS No.	Analyte	Concentration	C	Q	M	DF	LOQ	ADJUSTED MDL	LOD
7429-90-5	ALUMINUM, TOTAL	25800			MS	5	29	0.50	3.9
7440-36-0	ANTIMONY, TOTAL	0.81	J	~~N~~ MSL	MS	5	0.097	0.02	0.049
7440-38-2	ARSENIC, TOTAL	5.6			MS	5	0.49	0.15	0.39
7440-39-3	BARIUM, TOTAL	64.1			MS	5	0.19	0.03	0.097
7440-41-7	BERYLLIUM, TOTAL	0.28			MS	5	0.097	0.004	0.019
7440-43-9	CADMIUM, TOTAL	0.41			MS	5	0.097	0.010	0.019
7440-70-2	CALCIUM, TOTAL	18500			MS	5	9.7	3.73	7.8
7440-47-3	CHROMIUM, TOTAL	21.8			MS	5	0.49	0.05	0.39
7440-48-4	COBALT, TOTAL	16.4			MS	5	0.097	0.005	0.029
7440-50-8	COPPER, TOTAL	46.0			MS	5	0.29	0.07	0.19
7439-89-6	IRON, TOTAL	38300			MS	5	9.7	2.34	5.8
7439-92-1	LEAD, TOTAL	24.9			MS	5	0.097	0.005	0.049
7439-95-4	MAGNESIUM, TOTAL	14500			MS	5	9.7	1.33	7.8
7439-96-5	MANGANESE, TOTAL	754			MS	5	0.19	0.04	0.097
7439-97-6	MERCURY, TOTAL	0.009	J		CV	1	0.037	0.006	0.019
7440-02-0	NICKEL, TOTAL	8.7			MS	5	0.19	0.02	0.12
7440-09-7	POTASSIUM, TOTAL	1970			MS	5	97	4.45	39
7782-49-2	SELENIUM, TOTAL	0.33	J		MS	5	0.49	0.04	0.29
7440-22-4	SILVER, TOTAL	0.03	J		MS	5	0.097	0.005	0.039
7440-23-5	SODIUM, TOTAL	3450	J	~~N~~ MSL	MS	5	97	2.50	39
7440-28-0	THALLIUM, TOTAL	0.04	J		MS	5	0.097	0.010	0.039
7440-62-2	VANADIUM, TOTAL	100		~~N~~	MS	5	0.49	0.11	0.39
7440-66-6	ZINC, TOTAL	67.3			MS	5	0.97	0.13	0.78

JC 6/2/13

Comments:

1

INORGANIC ANALYSIS DATA SHEET

Lab Name: Katahdin Analytical Services **Client Field ID:** VEP21-SB04-011H

Matrix: SOIL **SDG Name:** SG2441

Percent Solids: 90.3 **Lab Sample ID:** SG2441-009

Concentration Units : mg/Kgdrywt

CAS No.	Analyte	Concentration	C	Q	M	DF	LOQ	ADJUSTED MDL	LOD
7429-90-5	ALUMINUM, TOTAL	19500			MS	5	24	0.41	3.2
7440-36-0	ANTIMONY, TOTAL	0.26	J	~~N~~ MSL	MS	5	0.080	0.02	0.040
7440-38-2	ARSENIC, TOTAL	5.1			MS	5	0.40	0.12	0.32
7440-39-3	BARIUM, TOTAL	80.6			MS	5	0.16	0.03	0.080
7440-41-7	BERYLLIUM, TOTAL	0.24			MS	5	0.080	0.003	0.016
7440-43-9	CADMIUM, TOTAL	0.07	J		MS	5	0.080	0.008	0.016
7440-70-2	CALCIUM, TOTAL	12300			MS	5	8.0	3.07	6.4
7440-47-3	CHROMIUM, TOTAL	12.1			MS	5	0.40	0.04	0.32
7440-48-4	COBALT, TOTAL	14.8			MS	5	0.080	0.004	0.024
7440-50-8	COPPER, TOTAL	39.6			MS	5	0.24	0.06	0.16
7439-89-6	IRON, TOTAL	33200			MS	5	8.0	1.93	4.8
7439-92-1	LEAD, TOTAL	5.0			MS	5	0.080	0.004	0.040
7439-95-4	MAGNESIUM, TOTAL	12900			MS	5	8.0	1.09	6.4
7439-96-5	MANGANESE, TOTAL	667			MS	5	0.16	0.03	0.080
7439-97-6	MERCURY, TOTAL	0.018	U		CV	1	0.035	0.005	0.018
7440-02-0	NICKEL, TOTAL	7.1			MS	5	0.16	0.02	0.096
7440-09-7	POTASSIUM, TOTAL	1010			MS	5	80	3.66	32
7782-49-2	SELENIUM, TOTAL	0.24 ~~0.19~~	~~J~~	U MSL	MS	5	0.40	0.03	0.24
7440-22-4	SILVER, TOTAL	0.02	J		MS	5	0.080	0.004	0.032
7440-23-5	SODIUM, TOTAL	2830	J	~~N~~ MSL	MS	5	80	2.06	32
7440-28-0	THALLIUM, TOTAL	0.032 ~~0.02~~	~~J~~	U CCL	MS	5	0.080	0.008	0.032
7440-62-2	VANADIUM, TOTAL	83.3		~~N~~	MS	5	0.40	0.09	0.32
7440-66-6	ZINC, TOTAL	39.2			MS	5	0.80	0.10	0.64

JAC 6/2/13

Comments:

1

INORGANIC ANALYSIS DATA SHEET

Lab Name: Katahdin Analytical Services **Client Field ID:** VEP21-SB05-011H

Matrix: SOIL **SDG Name:** SG2441

Percent Solids: 92.8 **Lab Sample ID:** SG2441-010

Concentration Units : mg/Kgdrywt

CAS No.	Analyte	Concentration	C	Q	M	DF	LOQ	ADJUSTED MDL	LOD
7429-90-5	ALUMINUM, TOTAL	20300			MS	5	28	0.47	3.7
7440-36-0	ANTIMONY, TOTAL	0.10	J	~~N~~ MSL	MS	5	0.092	0.02	0.046
7440-38-2	ARSENIC, TOTAL	3.9			MS	5	0.46	0.14	0.37
7440-39-3	BARIUM, TOTAL	45.8			MS	5	0.18	0.03	0.092
7440-41-7	BERYLLIUM, TOTAL	0.20			MS	5	0.092	0.004	0.018
7440-43-9	CADMIUM, TOTAL	0.05	J		MS	5	0.092	0.009	0.018
7440-70-2	CALCIUM, TOTAL	12800			MS	5	9.2	3.52	7.4
7440-47-3	CHROMIUM, TOTAL	13.9			MS	5	0.46	0.05	0.37
7440-48-4	COBALT, TOTAL	14.7			MS	5	0.092	0.005	0.028
7440-50-8	COPPER, TOTAL	39.3			MS	5	0.28	0.06	0.18
7439-89-6	IRON, TOTAL	34400			MS	5	9.2	2.21	5.5
7439-92-1	LEAD, TOTAL	4.5			MS	5	0.092	0.005	0.046
7439-95-4	MAGNESIUM, TOTAL	12800			MS	5	9.2	1.26	7.4
7439-96-5	MANGANESE, TOTAL	744			MS	5	0.18	0.04	0.092
7439-97-6	MERCURY, TOTAL	0.007	J		CV	1	0.030	0.004	0.015
7440-02-0	NICKEL, TOTAL	7.2			MS	5	0.18	0.02	0.11
7440-09-7	POTASSIUM, TOTAL	1980			MS	5	92	4.20	37
7782-49-2	SELENIUM, TOTAL	0.28 ~~0.08~~	~~J~~ U	MSL	MS	5	0.46	0.04	0.28
7440-22-4	SILVER, TOTAL	0.02	J		MS	5	0.092	0.005	0.037
7440-23-5	SODIUM, TOTAL	947	J	~~N~~ MSL	MS	5	92	2.36	37
7440-28-0	THALLIUM, TOTAL	0.037 ~~0.03~~	~~J~~ U	CBL	MS	5	0.092	0.009	0.037
7440-62-2	VANADIUM, TOTAL	96.5		~~N~~	MS	5	0.46	0.10	0.37
7440-66-6	ZINC, TOTAL	43.6			MS	5	0.92	0.12	0.74

JAC 6/2/13

Comments:

INORGANIC ANALYSIS DATA SHEET

Lab Name: Katahdin Analytical Services **Client Field ID:** VEP21-SB02-011H

Matrix: SOIL **SDG Name:** SG2441

Percent Solids: 91.7 **Lab Sample ID:** SG2441-011

Concentration Units : mg/Kgdrywt

CAS No.	Analyte	Concentration	C	Q	M	DF	ADJUSTED LOQ	ADJUSTED MDL	ADJUSTED LOD
7429-90-5	ALUMINUM, TOTAL	19100			MS	5	26	0.45	3.5
7440-36-0	ANTIMONY, TOTAL	0.14	J	~~N~~ MBL	MS	5	0.087	0.02	0.044
7440-38-2	ARSENIC, TOTAL	4.0			MS	5	0.44	0.13	0.35
7440-39-3	BARIUM, TOTAL	44.0			MS	5	0.17	0.03	0.087
7440-41-7	BERYLLIUM, TOTAL	0.22			MS	5	0.087	0.003	0.017
7440-43-9	CADMIUM, TOTAL	0.04	J		MS	5	0.087	0.009	0.017
7440-70-2	CALCIUM, TOTAL	19500			MS	5	8.7	3.34	7.0
7440-47-3	CHROMIUM, TOTAL	12.0			MS	5	0.44	0.04	0.35
7440-48-4	COBALT, TOTAL	13.4			MS	5	0.087	0.004	0.026
7440-50-8	COPPER, TOTAL	33.2			MS	5	0.26	0.06	0.17
7439-89-6	IRON, TOTAL	32700			MS	5	8.7	2.09	5.2
7439-92-1	LEAD, TOTAL	4.0			MS	5	0.087	0.004	0.044
7439-95-4	MAGNESIUM, TOTAL	12100			MS	5	8.7	1.19	7.0
7439-96-5	MANGANESE, TOTAL	674			MS	5	0.17	0.03	0.087
7439-97-6	MERCURY, TOTAL	0.017	U		CV	1	0.032	0.005	0.017
7440-02-0	NICKEL, TOTAL	5.8			MS	5	0.17	0.02	0.10
7440-09-7	POTASSIUM, TOTAL	2370			MS	5	87	3.98	35
7782-49-2	SELENIUM, TOTAL	0.26 ~~0.10~~	~~J~~	U MBL	MS	5	0.44	0.03	0.26
7440-22-4	SILVER, TOTAL	0.02	J		MS	5	0.087	0.004	0.035
7440-23-5	SODIUM, TOTAL	1320	J	~~N~~ MBL	MS	5	87	2.24	35
7440-28-0	THALLIUM, TOTAL	0.035 ~~0.03~~	~~J~~	U CCBL	MS	5	0.087	0.009	0.035
7440-62-2	VANADIUM, TOTAL	82.2		~~N~~	MS	5	0.44	0.10	0.35
7440-66-6	ZINC, TOTAL	38.4			MS	5	0.87	0.11	0.70

JAC 6/5/13

Comments:

082

INORGANIC ANALYSIS DATA SHEET

Lab Name: Katahdin Analytical Services **Client Field ID:** VEP21-EB01-041113

Matrix: WATER **SDG Name:** SG2441

Percent Solids: 0.00 **Lab Sample ID:** SG2441-013

Concentration Units : ug/L

CAS No.	Analyte	Concentration	C	Q	M	DF	LOQ	ADJUSTED MDL	LOD
7429-90-5	ALUMINUM, TOTAL	8.5	J		MS	5	300	4.40	40
7440-36-0	ANTIMONY, TOTAL	0.12	J		MS	5	1.0	0.05	0.50
7440-38-2	ARSENIC, TOTAL	4.0	U		MS	5	5.0	2.25	4.0
7440-39-3	BARIUM, TOTAL	1.0	U		MS	5	2.0	0.25	1.0
7440-41-7	BERYLLIUM, TOTAL	0.20	U		MS	5	1.0	0.04	0.20
7440-43-9	CADMIUM, TOTAL	0.04	J		MS	5	1.0	0.03	0.20
7440-70-2	CALCIUM, TOTAL	80	U		MS	5	100	20.45	80
7440-47-3	CHROMIUM, TOTAL	2.4	J		MS	5	5.0	0.20	4.0
7440-48-4	COBALT, TOTAL	0.07	J		MS	5	1.0	0.05	0.30
7440-50-8	COPPER, TOTAL	0.44	J		MS	5	3.0	0.20	2.0
7439-89-6	IRON, TOTAL	56.6	J		MS	5	100	12.75	60
7439-92-1	LEAD, TOTAL	0.18	J		MS	5	1.0	0.05	0.50
7439-95-4	MAGNESIUM, TOTAL	8.9	J		MS	5	100	7.80	80
7439-96-5	MANGANESE, TOTAL	0.96	J		MS	5	2.0	0.35	1.0
7439-97-6	MERCURY, TOTAL	0.10	U		CV	1	0.20	0.01	0.10
7440-02-0	NICKEL, TOTAL	1.2	U		MS	5	2.0	0.15	1.2
7440-09-7	POTASSIUM, TOTAL	400	U		MS	5	1000	30.70	400
7782-49-2	SELENIUM, TOTAL	0.86	J		MS	5	5.0	0.20	3.0
7440-22-4	SILVER, TOTAL	0.40	U		MS	5	1.0	0.05	0.40
7440-23-5	SODIUM, TOTAL	42.6	J		MS	5	1000	18.50	400
7440-28-0	THALLIUM, TOTAL	0.40	U		MS	5	1.0	0.05	0.40
7440-62-2	VANADIUM, TOTAL	2.0	J		MS	5	5.0	0.50	4.0
7440-66-6	ZINC, TOTAL	8.0	U		MS	5	10	3.90	8.0

JBC 6/23

Comments:

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Report of Analytical Results

Client: Michael Zamboni
CH2MHill
15010 Conference Center Drive
Chantilly,VA 20151

Lab Sample ID: SG2441-1
Report Date: 08-MAY-13
Client PO: 948949
Project: NTR Vieques East CTO
SDG: SG2441

Sample Description	Matrix	Date Sampled	Date Received
VEP21-SS01-0001	SL	11-APR-13	15-APR-13

Parameter	Result	Adj LOQ	Adj MDL	Adj LOD	Anal. Method	QC.Batch	Anal. Date	Prep. Method	Prep. Date	Footnotes
TOC In Soil	7900 ug/gdrywt	440	94.	330	LLOYDKAHN	WG122813	17-APR-13 09:59:33	N/A	N/A	
Total Cyanide	U0.40 mg/Kgdrywt	0.50	0.22	0.40	SW846 M9012	WG122865	17-APR-13 14:52:48	SW846 M9012	17-APR-13	
Total Solids	90. %	1		N/A	SM2540G	WG123032	24-APR-13 07:25:02	SM2540G	23-APR-13	
pH(Soil)	7.9 pH	0.10	0.10	N/A	SW846 9045C	WG122747	16-APR-13 08:32:00	SW846 9045C	16-APR-13	

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034

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Report of Analytical Results

Client: Michael Zamboni
CH2MHill
15010 Conference Center Drive
Chantilly, VA 20151

Lab Sample ID: SG2441-2
Report Date: 08-MAY-13
Client PO: 948949
Project: NTR Vieques East CTO
SDG: SG2441

Sample Description	Matrix	Date Sampled	Date Received
VEP21-SS01P-0001	SL	11-APR-13	15-APR-13

Parameter	Result	Adj LOQ	Adj MDL	Adj LOD	Anal. Method	QC.Batch	Anal. Date	Prep. Method	Prep. Date	Footnotes
Total Cyanide	U0.40 mg/Kgdrywt	0.50	0.22	0.40	SW846 M9012	WG122865	17-APR-13 14:52:48	SW846 M9012	17-APR-13	
Total Solids	91. %	1		N/A	SM2540G	WG123032	24-APR-13 07:25:13	SM2540G	23-APR-13	

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Report of Analytical Results

Client: Michael Zamboni
CH2MHill
15010 Conference Center Drive
Chantilly,VA 20151

Lab Sample ID: SG2441-3
Report Date: 08-MAY-13
Client PO: 948949
Project: NTR Vieques East CTO
SDG: SG2441

Sample Description	Matrix	Date Sampled	Date Received
VEP21-SS03-0001	SL	11-APR-13	15-APR-13

Parameter	Result	Adj LOQ	Adj MDL	Adj LOD	Anal. Method	QC.Batch	Anal. Date	Prep. Method	Prep. Date	Footnotes
TOC In Soil	20000 ug/gdrywt	440	94.	330	LLOYDKAHN	WG122813	17-APR-13 10:49:04	N/A	N/A	
Total Cyanide	U0.40 mg/Kgdrywt	0.50	0.22	0.40	SW846 M9012	WG122865	17-APR-13 14:52:48	SW846 M9012	17-APR-13	
Total Solids	90. %	1		N/A	SM2540G	WG123032	24-APR-13 07:25:23	SM2540G	23-APR-13	
pH(Soil)	7.4 pH	0.10	0.10	N/A	SW846 9045C	WG122747	16-APR-13 08:36:00	SW846 9045C	16-APR-13	

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Report of Analytical Results

Client: Michael Zamboni
CH2MHill
15010 Conference Center Drive
Chantilly,VA 20151

Lab Sample ID: SG2441-4
Report Date: 08-MAY-13
Client PO: 948949
Project: NTR Vieques East CTO
SDG: SG2441

Sample Description	Matrix	Date Sampled	Date Received
VEP21-SS04-0001	SL	11-APR-13	15-APR-13

Parameter	Result	Adj LOQ	Adj MDL	Adj LOD	Anal. Method	QC.Batch	Anal. Date	Prep. Method	Prep. Date	Footnotes
TOC In Soil	7200 ug/gdrywt	450	95.	340	LLOYDKAHN	WG122813	17-APR-13 11:02:49	N/A	N/A	
Total Cyanide	U0.40 mg/Kgdrywt	0.50	0.22	0.40	SW846 M9012	WG122865	17-APR-13 14:52:48	SW846 M9012	17-APR-13	
Total Solids	89. %	1		N/A	SM2540G	WG123032	24-APR-13 07:25:33	SM2540G	23-APR-13	
pH(Soil)	8.6 pH	0.10	0.10	N/A	SW846 9045C	WG122747	16-APR-13 08:38:00	SW846 9045C	16-APR-13	

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Report of Analytical Results

Client: Michael Zamboni
CH2MHill
15010 Conference Center Drive
Chantilly,VA 20151

Lab Sample ID: SG2441-5
Report Date: 08-MAY-13
Client PO: 948949
Project: NTR Vieques East CTO
SDG: SG2441

Sample Description	Matrix	Date Sampled	Date Received
VEP21-SB01-011H	SL	11-APR-13	15-APR-13

Parameter	Result	Adj LOQ	Adj MDL	Adj LOD	Anal. Method	QC.Batch	Anal. Date	Prep. Method	Prep. Date	Footnotes
TOC In Soil	11000 ug/gdrywt	440	93.	330	LLOYDKAHN	WG122813	17-APR-13 11:09:49	N/A	N/A	
Total Cyanide	1.4 mg/Kgdrywt	0.55	0.24	0.44	SW846 M9012	WG122865	17-APR-13 15:21:36	SW846 M9012	17-APR-13	
Total Solids	91. %	1		N/A	SM2540G	WG123032	24-APR-13 07:25:44	SM2540G	23-APR-13	
pH(Soil)	7.2 pH	0.10	0.10	N/A	SW846 9045C	WG122747	16-APR-13 08:40:00	SW846 9045C	16-APR-13	

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088

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Report of Analytical Results

Client: Michael Zamboni
CH2MHill
15010 Conference Center Drive
Chantilly,VA 20151

Lab Sample ID: SG2441-6
Report Date: 08-MAY-13
Client PO: 948949
Project: NTR Vieques East CTO
SDG: SG2441

Sample Description	Matrix	Date Sampled	Date Received
VEP21-SS05-0001	SL	11-APR-13	15-APR-13

Parameter	Result	Adj LOQ	Adj MDL	Adj LOD	Anal. Method	QC.Batch	Anal. Date	Prep. Method	Prep. Date	Footnotes
TOC In Soil	23000 ug/gdrywt	430	92.	320	LLOYDKAHN	WG122813	17-APR-13 12:11:17	N/A	N/A	
Total Cyanide	J0.28 mg/Kgdrywt	0.55	0.24	0.44	SW846 M9012	WG122865	17-APR-13 15:21:36	SW846 M9012	17-APR-13	
Total Solids	92. %	1		N/A	SM2540G	WG123032	24-APR-13 07:25:53	SM2540G	23-APR-13	
pH(Soil)	7.7 pH	0.10	0.10	N/A	SW846 9045C	WG122747	16-APR-13 08:42:00	SW846 9045C	16-APR-13	

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Report of Analytical Results

Client: Michael Zamboni
CH2MHill
15010 Conference Center Drive
Chantilly,VA 20151

Lab Sample ID: SG2441-7
Report Date: 08-MAY-13
Client PO: 948949
Project: NTR Vieques East CTO
SDG: SG2441

Sample Description	Matrix	Date Sampled	Date Received
VEP21-SS02-0001	SL	11-APR-13	15-APR-13

Parameter	Result	Adj LOQ	Adj MDL	Adj LOD	Anal. Method	QC.Batch	Anal. Date	Prep. Method	Prep. Date	Footnotes
TOC In Soil	12000 ug/gdrywt	480	100	360	LLOYDKAHN	WG122813	17-APR-13 12:41:00	N/A	N/A	
Total Cyanide	U0.48 mg/Kgdrywt	0.60	0.27	0.48	SW846 M9012	WG122865	17-APR-13 14:52:48	SW846 M9012	17-APR-13	
Total Solids	83. %	1		N/A	SM2540G	WG123032	24-APR-13 07:26:03	SM2540G	23-APR-13	
pH(Soil)	8.8 pH	0.10	0.10	N/A	SW846 9045C	WG122747	16-APR-13 08:44:00	SW846 9045C	16-APR-13	

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Report of Analytical Results

Client: Michael Zamboni
CH2MHill
15010 Conference Center Drive
Chantilly, VA 20151

Lab Sample ID: SG2441-8
Report Date: 08-MAY-13
Client PO: 948949
Project: NTR Vieques East CTO
SDG: SG2441

Sample Description	Matrix	Date Sampled	Date Received
VEP21-SB03-0102	SL	11-APR-13	15-APR-13

Parameter	Result	Adj LOQ	Adj MDL	Adj LOD	Anal. Method	QC.Batch	Anal. Date	Prep. Method	Prep. Date	Footnotes
TOC In Soil	8300 ug/gdrywt	470	100	350	LLOYDKAHN	WG122813	17-APR-13 12:52:54	N/A	N/A	
Total Cyanide	U0.40 mg/Kgdrywt	0.50	0.22	0.40	SW846 M9012	WG122865	17-APR-13 14:52:48	SW846 M9012	17-APR-13	
Total Solids	85. %	1		N/A	SM2540G	WG123032	24-APR-13 07:26:13	SM2540G	23-APR-13	
pH(Soil)	7.9 pH	0.10	0.10	N/A	SW846 9045C	WG122747	16-APR-13 08:46:00	SW846 9045C	16-APR-13	

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Report of Analytical Results

Client: Michael Zamboni
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15010 Conference Center Drive
Chantilly,VA 20151

Lab Sample ID: SG2441-9
Report Date: 08-MAY-13
Client PO: 948949
Project: NTR Vieques East CTO
SDG: SG2441

Sample Description	Matrix	Date Sampled	Date Received
VEP21-SB04-011H	SL	11-APR-13	15-APR-13

Parameter	Result	Adj LOQ	Adj MDL	Adj LOD	Anal. Method	QC.Batch	Anal. Date	Prep. Method	Prep. Date	Footnotes
TOC In Soil	8600 ug/gdrywt	440	94.	330	LLOYDKAHN	WG122813	17-APR-13 13:06:55	N/A	N/A	
Total Cyanide	U0.40 mg/Kgdrywt	0.50	0.22	0.40	SW846 M9012	WG122865	17-APR-13 14:52:48	SW846 M9012	17-APR-13	
Total Solids	90. %	1		N/A	SM2540G	WG123032	24-APR-13 07:26:26	SM2540G	23-APR-13	
pH(Soil)	8.3 pH	0.10	0.10	N/A	SW846 9045C	WG122747	16-APR-13 08:48:00	SW846 9045C	16-APR-13	

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Report of Analytical Results

Client: Michael Zamboni
CH2MHill
15010 Conference Center Drive
Chantilly,VA 20151

Lab Sample ID: SG2441-10
Report Date: 08-MAY-13
Client PO: 948949
Project: NTR Vieques East CTO
SDG: SG2441

Sample Description	Matrix	Date Sampled	Date Received
VEP21-SB05-011H	SL	11-APR-13	15-APR-13

Parameter	Result	Adj LOQ	Adj MDL	Adj LOD	Anal. Method	QC.Batch	Anal. Date	Prep. Method	Prep. Date	Footnotes
TOC In Soil	22000 ug/gdrywt	430	91.	320	LLOYDKAHN	WG122813	17-APR-13 13:20:04	N/A	N/A	
Total Cyanide	U0.40 mg/Kgdrywt	0.50	0.22	0.40	SW846 M9012	WG122865	17-APR-13 14:52:48	SW846 M9012	17-APR-13	
Total Solids	93. %	1		N/A	SM2540G	WG123032	24-APR-13 07:26:36	SM2540G	23-APR-13	
pH(Soil)	8.2 pH	0.10	0.10	N/A	SW846 9045C	WG122747	16-APR-13 08:50:00	SW846 9045C	16-APR-13	

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Katahdin Analytical Services 50000 Series

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Report of Analytical Results

Client: Michael Zamboni
CH2MHill
15010 Conference Center Drive
Chantilly,VA 20151

Lab Sample ID: SG2441-11
Report Date: 08-MAY-13
Client PO: 948949
Project: NTR Vieques East CTO
SDG: SG2441

Sample Description	Matrix	Date Sampled	Date Received
VEP21-SB02-011H	SL	11-APR-13	15-APR-13

Parameter	Result	Adj LOQ	Adj MDL	Adj LOD	Anal. Method	QC.Batch	Anal. Date	Prep. Method	Prep. Date	Footnotes
TOC In Soil	13000 ug/gdrywt	440	92.	330	LLOYDKAHN	WG122813	17-APR-13 14:59:43	N/A	N/A	
Total Cyanide	U0.44 mg/Kgdrywt	0.55	0.24	0.44	SW846 M9012	WG122865	17-APR-13 14:52:48	SW846 M9012	17-APR-13	
Total Solids	92. %	1		N/A	SM2540G	WG123032	24-APR-13 07:26:47	SM2540G	23-APR-13	
pH(Soil)	8.7 pH	0.10	0.10	N/A	SW846 9045C	WG122747	16-APR-13 08:52:00	SW846 9045C	16-APR-13	

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Report of Analytical Results

Client: Michael Zamboni
CH2MHill
15010 Conference Center Drive
Chantilly,VA 20151

Lab Sample ID: SG2441-13
Report Date: 08-MAY-13
Client PO: 948949
Project: NTR Vieques East CTO
SDG: SG2441

Sample Description	Matrix	Date Sampled	Date Received
VEP21-EB01-041113	AQ	11-APR-13	15-APR-13

Parameter	Result	Adj LOQ	Adj MDL	Adj LOD	Anal. Method	QC.Batch	Anal. Date	Prep. Method	Prep. Date	Footnotes
Total Cyanide	U8.0 ug/L	10.	4.0	8.0	SW846 M9012B	WG122867	17-APR-13 15:36:00	SW846 M9012	17-APR-13	

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6/2/13

Katahdin Analytical Services 500000

SDG NARRATIVE
KATAHDIN ANALYTICAL SERVICES
CH2M HILL
NTR VIEQUES EAST CTO-037 PI-21
SG2441

Sample Receipt

The following samples were received on April 15, 2013 and were logged in under Katahdin Analytical Services work order number SG2441for a hardcopy due date of May 10, 2013.

KATAHDIN Sample No.	CH2M HILL Sample Identification
SG2441-1	VEP21-SS01-0001
SG2441-2	VEP21-SS01P-0001
SG2441-3	VEP21-SS03-0001
SG2441-4	VEP21-SS04-0001
SG2441-5	VEP21-SB01-011H
SG2441-6	VEP21-SS05-0001
SG2441-7	VEP21-SS02-0001
SG2441-8	VEP21-SB03-0102
SG2441-9	VEP21-SB04-011H
SG2441-10	VEP21-SB05-011H
SG2441-11	VEP21-SB02-011H
SG2441-12	VEP21-TB01-041113
SG2441-13	VEP21-EB01-041113

The samples were logged in for the analyses specified on the chain of custody form. All problems encountered and resolved during sample receipt have been documented on the applicable chain of custody forms.

We certify that the test results provided in this report meet all the requirements of the NELAC standards unless otherwise noted in this narrative or in the Report of Analysis.

Some clients ID on the Chain of Custody exceed the 19-character limit of the Katahdin Analytical Information Management System. Therefore, the first characters "VE" in the client IDs for SG1733-1, 3, 4, 6, 7, 11, 15, 17, 21 and 23 and SG1738-1, 3, 4, 6, 7, 9, 13, 15, 19 and 21; and the first characters "VEU" in the client ids for SG1733-2, 5, 13, and 19 and SG1738-2, 5, 11 and 17 were omitted on all forms.

Sample analyses have been performed by the methods as noted herein.

Should you have any questions or comments concerning this Report of Analysis, please do not hesitate to contact your Katahdin Analytical Services Project Manager, Ms. Jennifer Obrin. This narrative is an integral part of the Report of Analysis.

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Organics Analysis

The samples of Work Order SG2441 were analyzed in accordance with "Test Methods for Evaluating Solid Wastes: Physical/Chemical Methods." SW-846, 2nd edition, 1982 (revised 1984), 3rd edition, 1986, and Updates I, II, IIA, III, IIIA, and IIIB 1996, 1998 & 2004, Office of Solid Waste and Emergency Response, U.S. EPA, and/or for the specific methods listed below or on the Report of Analysis.

Sample SG2441-4 was used for the matrix spike (MS) and matrix spike duplicate (MSD), as per client request.

8270D SCAN Analysis

The independent check standard (file N7806), associated with the initial calibration analyzed on the N instrument on 03/06/13, had high concentrations for the target analytes 1,2,4,5-tetrachlorobenzene and di-n-octylphthalate, which exceeded the DoD QSM acceptance limit of ±20% of the expected value from the ICAL. The Independent Check Report consists of the full list of spiked analytes, but only the client's list of target analytes are evaluated.

The reported percent recovery acceptance limits for the Laboratory Control Samples (LCSs) are based on the DoD QSM for the full list of spiked compounds and all additional compounds are statistically derived. The recoveries of the spiked analytes in the LCS, Matrix Spike (MS) and Matrix Spike Duplicate (MSD) are compared to these acceptance limits. Katahdin standard operating procedure is to take corrective action only if the number of spiked analytes in the LCS that are outside of the QC limits is greater than the DoD QSM allowable number of exceedances. If the associated MS/MSD has greater than the allowable number of exceedances, no corrective action is taken, as long the LCS is acceptable.

The LCS WG122731-2 had high recoveries for six target analytes that were outside of the DoD QSM acceptance limits. The LCS also had a high recovery for the surrogate terphenyl-d14 that was outside of the DoD QSM acceptance limits. The DoD QSM allowable number of exceedances for 22 target analytes is one analyte. Since the LCSD was acceptable, after factoring in allowable exceedances, no further action was taken.

The LCSD WG122802-3 had a low recovery for one target analytes and a high recovery for one target analyte, that were outside of the DoD QSM acceptance limits. The DoD QSM allowable number of exceedances for 22 target analytes is one analyte. Since the LCS was acceptable, after factoring in allowable exceedances, no further action was taken.

8260B Analysis

All of the soil samples had low or high recoveries for one or more of the surrogates, which were outside of the DoD QSM acceptance limits. All of these samples, except samples SG2441-1, 11 and the MS/MSD WG122836-5 and 6, were reanalyzed and had similar surrogate deviations. Some of the samples also had low responses for one or more internal standards which were outside the method limit of -50% to +100% of the responses of the internal standards of the ICAL midpoint standard. The results from both analyses are included in the report.

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Sample SG2441-11 had a high recovery for one surrogate, which was outside of the laboratory established acceptance limits. Since a high recovery would indicate a high bias, and there were no analytes detected above the MDL in the sample, no further action was taken.

Sample SG2441-4 and the MS/MSD WG122836-5 and 6 had low recoveries for two surrogates, which were outside of the laboratory acceptance limits. Since sample SG2441-4 is the native sample for the MS/MSD and the surrogate deviations confirm a matrix effect, the samples were not reanalyzed.

The method blank WG122836-2 had high recoveries for two surrogates, which were outside of the laboratory acceptance limits. Since a high recovery would indicate a high bias, and there were no analytes detected above the MDL, no further action was taken.

The target analyte acetone was detected below ½ the reporting limit in the method blank WG122850-2. According to the DoD QSM section D.1.1.1, a method blank is considered to be contaminated if the concentration of any target analyte in the blank exceeds ½ the reporting limit. Since the method blank was acceptable, no further action was taken.

The independent check standard (file C0400A) associated with the initial calibration analyzed on the C instrument on 04/11/13 had high concentrations for the target analytes dichlorodifluoromethane, chloromethane, chloroethane, and vinyl chloride, which exceeded the DoD QSM acceptance limit of ±20% of the expected value from the ICAL.

The independent check standard (file T8050A) associated with the initial calibration analyzed on the T instrument on 04/16/13 had high concentrations for the target analytes dichlorodifluoromethane, chloromethane, vinyl chloride, acetone and isopropylbenzene, which exceeded the DoD QSM acceptance limit of ±20% of the expected value from the ICAL.

The calibration verification standards (CV) (file C0509 and T8076) had high responses for one or more of the following compounds: dichlorodifluoromethane, chloroethane, vinyl chloride, chloromethane, and/or trichlorofluoromethane, which resulted in %D's that were greater than the DoD QSM version 4.1 acceptance limits of 20%.

The reported percent recovery acceptance limits for the Laboratory Control Samples (LCSs) are based on the DoD QSM for the full list of spiked compounds and laboratory established acceptance limits for all other analytes. The recoveries of the spiked analytes in the LCS, Matrix Spike (MS) and Matrix Spike Duplicate (MSD) are compared to these acceptance limits. Katahdin standard operating procedure is to take corrective action only if the number of spiked analytes in the LCS that are outside of the QC limits is greater than the DoD QSM allowable number of exceedances. If the associated MS/MSD has greater than the allowable number of exceedances, no corrective action is taken, as long as the LCS is acceptable.

<u>8270D SIM Analysis</u>

Samples SG2441-1, 3, 4, 5, 7, 8, 10 and 11 were manually integrated for the analytes benzo(b)fluoranthene, indeno(1,2,3-cd)pyrene and/or butylbenzylphthalate. The specific reason for the manual integration is indicated on the raw data by the manual integration codes (M1-M11). These codes are further explained in the attachment following this narrative.

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The method blank WG122732-1 had a low response for the internal standard perylene-d12 that resulted in a %D which was outside the DoD QSM 4.1 acceptance limit of -50% to +100% of the response of the internal standard of the ICAL midpoint standard. Since there were no target analytes detected above the MDL in the method blank, and the internal standard responses in the associated samples were acceptable, no further action was taken.

The initial calibration analyzed on the G instrument on 04/15/2013 had %RSD values for several analytes that exceeded the method acceptance limit of 15%. For these analytes, either a linear or quadratic model was used for quantitation instead of an average response factor. The target analytes 3&4-methylphenol, di-n-octylphthalate, indeno(1,2,3-cd)pyrene and dibenzo(a,h)anthracene failed for both the linear and quadratic models in the initial calibration curve due to the correlation coefficient and the coefficient of determination being less than the method acceptance criteria of 0.995 and 0.990, respectively. These compounds were calibrated using the average model. The corresponding independent check standard (file G8440) had low concentrations for the target analytes 2,2'-oxybis(1-chloropropane), benzaldehyde, 4-chloroaniline, hexachlorocyclopentadiene, 2,4-dinitrophenol, N-nitrosodiphenylamine, di-n-octylphthalate and indeno(1,2,3-cd)pyrene, which exceeded the DoD QSM acceptance limit of ±20% of the expected value from the ICAL. The Independent Check Report consists of the full list of spiked analytes, but only the client's list of target analytes are evaluated.

The CV (file G8448) had a low average response factor (RF) for the system performance check compound (SPCC) 2,4-dinitrophenol, which was outside the method acceptance limit of 0.050.

The CV (file G8448) had low responses for the target analytes 4-nitroaniline, 3,3'-dichlorobenzidine, indeno(1,2,3-cd)pyrene and dibenzo(a,h)anthracene. The CV (file G8466) had high responses for the target analytes hexachloroethane, 2-nitrophenol, n-Nitrosodiphenylamine, butylbenzylphthalate, di-n-octylphthalate and the surrogate pyrene-d10. These responses resulted in %D's that were greater than the acceptance limit of 20% from DoD QSM Version 4.1.

The reported percent recovery acceptance limits for the Laboratory Control Samples (LCSs) are statistically derived limits for the full list of spiked compounds and are statistically derived limits for the surrogates. The recoveries of the spiked analytes in the LCS, Matrix Spike (MS) and Matrix Spike Duplicate (MSD) are compared to these statistical acceptance limits. Katahdin standard operating procedure is to take corrective action only if the number of spiked analytes in the LCS that are outside of the QC limits is greater than the DoD QSM allowable number of exceedances. If the associated MS/MSD has greater than the allowable number of exceedances, no corrective action is taken, as long as the LCS is acceptable.

The LCS WG122803-2 had low recoveries for three spiked target analytes and a high recovery for one spiked target analyte. The LCSD WG122803-3 had low recoveries for four spiked analytes. These recoveries were outside of the laboratory established acceptance limits. The LCSD also had a low response for the internal standard perylene-d12 that resulted in a %D which was outside the DoD QSM 4.1 acceptance limit of -50% to +100% of the response of the internal standard of the ICAL midpoint standard.
The DoD QSM allowable number of exceedances for 46 target analytes is two analytes. DoD QSM Version 4.1 Section G.7 lists the acceptance limits of the SW-846 Method 8270 target analytes. However, there is no indication if the analyses are analyzed by SCAN or SIM. The

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laboratory has used laboratory established acceptance limits for SIM analyses. If the DoD QSM acceptance limits are applied, the LCS and LCSD had acceptable recoveries for the spiked analytes, after factoring the allowable number of exceedances. Therefore, no further action was taken.

The LCS WG122732-2 had high recoveries for two spiked target analytes and the LCSD WG122803-3 had a high recovery for one analyte. These recoveries that were outside of the laboratory established acceptance limits. The DoD QSM allowable number of exceedances for 46 target analytes is two analytes. If the DoD QSM acceptance limits are applied, the LCS and LCSD had acceptable recoveries for the spiked analytes. Therefore, no further action was taken.

8082 Analysis

All soil samples and associated QC were subjected to the GPC sample clean-up process.

Sample SG2441-2 was manually integrated for the extraction surrogate DCB. The specific reason for the manual integration is indicated on the raw data by the manual integration codes (M1-M11). These codes are further explained in the attachment following this narrative.

Sample SG2441-1, the method blank and MSD WG122757-1RA and 5 had low recoveries for TCX on channel A, which were outside the laboratory established acceptance limits. Sample SG2441-10 had a high recovery for TCX on channel B. Since the recoveries were acceptable on the confirmation channel, no further action was taken.

Sample SG2441-13 and the method blank WG122792-1 had low recoveries for the extraction surrogate DCB on both channels, which were outside of the DoD QSM acceptance limits. The client was previously contacted about surrogate deviations for pesticides for this project and Michael Zamboni informed the laboratory that the sample did not need to be reextracted since one surrogate was acceptable.

The LCS/LCSD WG122792-2 and 3 had low recoveries for the extraction surrogate DCB on both channels, which were outside of the DoD QSM acceptance limits. The LCS also had low recoveries for the extraction surrogate TCX on both channels, which were outside of the laboratory established acceptance limits. Since the spike recoveries were acceptable, no further action was taken.

The opening calibration verification standard (CV) (file 7GD360) had low responses for Aroclor 1260 and DCB on channel B, which resulted in %D's that were outside of the DoD QSM acceptance limits of 20%. Since the responses were acceptable on channel A, the associated samples were not reanalyzed.

8081 Analysis

All soil samples and associated QC were subjected to the GPC sample clean-up process.

Samples SG2441-2, 4, 5, 8, 10 and 11 had RPD's for 4,4-DDD and/or 4,4'-DDT that were outside of the method acceptance limits of 40%. These analytes are flagged with a "J" qualifier on the report of analysis (ROA).

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Samples SG2441-1 through 4, 6, 7 and 9, the method blank WG122756-1, the LCS WG122756-6, the LCSD WG122756-3 and the MS/MSD WG122756-5 and 6 had low recoveries for the extraction surrogate TCX on one or both channels, which were outside of the DoD QSM acceptance limits. Sample SG2441-10 had a low recovery on channel A and a high recovery on channel B for the extraction surrogate TCX. The client was contacted and Michael Zamboni informed the laboratory that the samples did not need to be reextracted since one surrogate was acceptable.

Samples SG2441-2 and 5 were manually integrated for 4,4'-DDE or 4,4'-DDT. The specific reasons for the manual integrations are indicated on the raw data by the manual integration codes (M1-M11). These codes are further explained in the attachment following this narrative.

The reported percent recovery acceptance limits for the Laboratory Control Samples (LCSs) are DoD QSM limits for the full list of spiked compounds and statistically derived limits for toxaphene. The recoveries of the spiked analytes in the LCS, Matrix Spike (MS) and Matrix Spike Duplicate (MSD) are compared to these acceptance limits. Katahdin standard operating procedure is to take corrective action only if the number of spiked analytes in the LCS that are outside of the QC limits is greater than the DoD QSM allowable number of exceedances. If the associated MS/MSD has greater than the allowable number of exceedances, no corrective action is taken, as long as the LCS is acceptable.

The opening calibration verification standard (CV) (file 1GE00110) had high responses for endrin ketone on both channels and high responses for alpha-BHC, aldrin, alpha-chlordane, endosulfan I on channel A and endrin on channel B. These responses resulted in %D's that were outside of the DoD QSM acceptance limits of 20%. The responses for these analytes were acceptable on the confirmation channel. A high response would indicate a high bias and endrin ketone was not detected above the LOQ in the associated samples. For these reasons, the samples were not reanalyzed.

The closing CV (file 1GE100134) had high responses for delta-BHC on both channels, which resulted in %D's that were outside of the DoD QSM acceptance limits of 20%. Since a high response would indicate a high bias and this target analyte was not detected above the LOQ in the associated samples, the associated samples were not reanalyzed.

There were no other protocol deviations or observations noted by the organics laboratory staff.

Metals Analysis

The samples of Katahdin Work Order SG2441 were prepared and analyzed for metals in accordance with the "Test Methods for Evaluating Solid Wastes: Physical/Chemical Methods." SW-846. 2nd edition, 1982 (revised 1984), 3rd edition, 1986, and Updates I, II, IIA, III, IIIA and IIIB 1996, 1998 & 2004, Office of Solid Waste and Emergency Response, U.S. EPA.

Inductively-Coupled Plasma Mass Spectrometric Analysis (ICP-MS)

Soil-matrix Katahdin Sample Numbers SG2441-(1-11) were digested for ICP-MS analysis on

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04/16/13 (QC Batch GD16IMS1) in accordance with USEPA Method 3050B. Katahdin Sample Number SG2441-4 was prepared with duplicate matrix-spiked aliquots. The measured concentrations of arsenic, chromium, lead, nickel, and vanadium in the preparation blank that was digested in this batch are more than ½ the LOQ for each element. However, because the measured concentrations of these elements in all associated samples are more than ten times those measured in the preparation blank, no corrective action was required.

Aqueous-matrix Katahdin Sample Number SG2441-13 was digested for ICP-MS analysis on 04/17/13 (QC Batch GD17IMW2) in accordance with USEPA Method 3010A. Katahdin Sample Number SG2441 –10 was prepared with duplicate matrix-spiked aliquots. The measured iron and manganese concentrations in the preparation blank that was digested in this batch are more than ½ the LOQ for each element. However, because the measured iron and manganese concentrations in the associated sample are less than the LODs for these elements, no corrective action was required.

ICP-MS analyses of Katahdin Work Order SG2441 sample digestates was performed using an Agilent 7500 ICP-MS spectrometer in accordance with USEPA Method 6020A. Results for all standards and samples are reported using the mean of 3 replicate measurements. All sample digestates were diluted by a factor of 5 during analysis to reduce mass interferences from chlorine, which is present in the digestates from the hydrochloric acid used in digesting the samples. All samples were analyzed within holding times and all analytical run QC criteria were met.

Internal standard recoveries for ICP-MS analyses can be found in the raw data section of the accompanying data package. The following table indicates which analytes are associated with each internal standard element.

Internal Standard Element	**Associated Analytes**
Lithium	Beryllium
Scandium	Sodium, Magnesium, Aluminum, Potassium, Calcium
Germanium	Vanadium, Chromium, Manganese, Iron, Cobalt, Nickel, Copper, Zinc, Arsenic, Selenium, Silver, Cadmium
Terbium	Antimony, Barium
Bismuth	Lead, Thallium

Instrument tuning information can also be found in the raw data section in the report labeled "6020 QC Tune Report". The relative standard deviation was determined from 4 replicate measurements. The peak width was measured at 10% of the peak height.

Analysis of Mercury by Cold Vapor Atomic Absorption (CVAA)

Soil-matrix Katahdin Sample Numbers SG2441-(1-11) were digested for mercury analysis on 04/16/13 (QC Batch GD16HGS1) in accordance with USEPA Method 7471A. Katahdin Sample Number SG2441-4 was prepared with duplicate matrix-spiked aliquots.

Aqueous-matrix Katahdin Sample Numbers SG2441-13 was digested for mercury analysis on

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04/17/13 (QC Batch GD17HGW2) in accordance with USEPA Method 7470A.

Mercury analysis of the Katahdin Work Order SG2441 sample digestates were performed using a Cetac M6100 automated mercury analyzer in accordance with USEPA Methods 7470A. All analytical run QC criteria were met and all samples were analyzed within holding times.

Matrix QC Summary

The measured recoveries of antimony, sodium, and vanadium in one or both of the matrix-spiked aliquots of Katahdin Sample No. SG2441-4 are outside the laboratory's acceptance limits criteria (80% - 120% recovery of the added element, if the native concentration is less than four times the amount added). The measured recoveries of all analytes in a post-digestion matrix spike of this sample are within the laboratory's acceptance criteria (75% - 125% recovery of the added element, if the native concentration is less than four times the amount added).

The matrix spike duplicate analysis of Katahdin Sample Number SG2441-4 is within the laboratory's acceptance limit (<20% relative difference between duplicate matrix-spiked aliquots) for all analytes.

The serial dilution analysis of Katahdin Sample Number SG2441-4 is within the laboratory's acceptance limit (<10% relative percent difference, if the concentration in the original sample is greater than 50 times the LOQ) for all analytes.

Reporting of Metals Results

Per client request, analytical results for client samples on Form I and preparation blanks on Form IIIP have been reported using the laboratory's limits of detection (LOD). All results were evaluated down to the laboratory's method detection limits (MDLs). Results that fall between the MDL and the LOQ are flagged with "J" in the C-qualifier column, and the measured concentration appears in the concentration column. Results that are less than the MDL are flagged with "U" in the C-qualifier column, and the LOD is listed in the concentration column. These LOQs, MDLs and LODs have been adjusted for each sample based on the sample amounts used in preparation and analysis.

Analytical results on Forms VA, VD, VII, and IX for client samples, matrix QC samples (duplicates and matrix spikes), and laboratory control samples have been reported down to the laboratory's method detection limits (MDLs). Analytical results that are below the MDLs are flagged with "U" in the C-qualifier column, and the measured concentration is listed in the concentration column.

Analytical results for instrument run QC samples (ICVs, ICBs, etc.) have been reported down to the laboratory's instrument detection limits (IDLs).

IDLs, LODs, MDLs, and LOQs are listed on Form 10 of the accompanying data package.

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Wet Chemistry Analysis

The samples of Work Order SG2441 were analyzed in accordance with the specific methods listed on the Report of Analysis.

Analyses for total organic carbon in soil were performed according to "Determination of Total Organic Carbon in Sediment", Lloyd Kahn, USEPA Region II, 7/88.

Analyses for total solids were performed according to "Standard Methods for the Examination of Water and Wastewater", 15th, 16th, 17th, 18th, 19th, and 20th editions, 1980, 1985, 1989, 1992, 1995, 1999. APHA-AWWA-WPCF.

Analyses for cyanide and pH were performed according to "Test Methods for Evaluating Solid Wastes: Physical/Chemical Methods." SW-846. 2nd edition, 1982 (revised 1984), 3rd edition, 1986, and Updates I, II, IIA,III, IIIA and IIIB 1996, 1998 & 2004, Office of Solid Waste and Emergency Response, U.S. EPA.

All Wet Chemistry results were evaluated to Katahdin Analytical Services' Method Detection Limits (MDL). Measured concentrations that fall between the MDL and Katahdin's Limit of Quantitation (LOQ) are flagged "J". Measured concentrations that are below the MDL are flagged "U" and reported as "U LOD", where "LOD" is the numerical value of the Limit of Detection.

All analyses were performed within analytical holding times. All quality control criteria were met.

Subcontracted Data

Analyses for Grain Size by Method ASTM-D422 were performed by a subcontracted laboratory. Please refer to the section of the data package titled Subcontracted Data.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the Operations Manager or the Quality Assurance Officer as verified by the following signature.

Leslie Dimond
051013

Leslie Dimond
Quality Assurance Officer

P.O. Box 540, Scarborough, ME 04070 • Tel: (207) 874-2400 • Fax: (207) 775-4029 • 600 Technology Way, Scarborough, ME 04074
www.katahdinlab.com

Katahdin Analytical Services, Inc.

Manual Integration Codes For GC/MS, GC, HPLC and/or IC

M1	Peak splitting.
M2	Well defined peaks on the shoulders of the other peaks.
M3	There is additional area due to a coeluting interferant.
M4	There are negative spikes in the baseline.
M5	There are rising or falling baselines.
M6	The software has failed to detect a peak or misidentified a peak.
M7	Excessive peak tailing.
M8	Analysis such as GRO, DRO and TPH require a baseline hold.
M9	Peak was not completely integrated as in GC/MS.
M10	Primary ion was correctly integrated, but secondary or tertiary ion needed manual integration as in GC/MS.
M11	For GC analysis, when a sample is diluted by 1:10 or more, the surrogate is set to undetected and then the area under the surrogate is manually integrated.
M12	Manual integration saved in method due to TurboChrom floating point error.

Jennifer Obrin

From: Juliana.Dean@ch2m.com
Sent: Friday, April 12, 2013 9:47 AM
To: Juliana.Dean@ch2m.com; jobrin@katahdinlab.com
Cc: Michael.Zamboni@CH2M.com
Subject: RE: Vieques PI-21

One more thing to note is that some of the samples may be slightly out of holding for Encores tomorrow but please analyze anyway.

From: Dean, Juliana/VBO
Sent: Friday, April 12, 2013 9:44 AM
To: 'Jennifer Obrin'
Cc: Zamboni, Michael/WDC
Subject: RE: Vieques PI-21

Thanks for taking care of all of that!

Please let me know if you have any issues with the temperature upon receipt.

From: Jennifer Obrin [mailto:jobrin@katahdinlab.com]
Sent: Friday, April 12, 2013 9:26 AM
To: Dean, Juliana/VBO
Subject: RE: Vieques PI-21

Good Morning Juliana,

The coolers did not arrive. They are stuck in Memphis currently. I am going to switch the shipping address to be held at the FedEx location in Portland if they make it so we can pick them up tomorrow. The VOA staff will be coming in the extrude the EnCores tomorrow.

Jennifer Obrin
Federal Programs Project Manager
Katahdin Analytical Services
A Woman-Owned Small Business Enterprise
DoD ELAP Accredited
600 Technology Way
Scarborough, Maine 04074

Direct - 207.874.2400 x17
Fax - 207.775.4029

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From: Juliana.Dean@ch2m.com [mailto:Juliana.Dean@ch2m.com]
Sent: Friday, April 12, 2013 8:42 AM
To: jobrin@katahdinlab.com
Subject: Vieques PI-21

Hi Jen,

Samples were collected and shipped at Vieques PI-21 yesterday. Please see the attached COCs and let me know if you have any questions. The 8270 full and SIM split should follow the WS#15-2 split from the SAP. I do have one note from the field team:

these samples contained encore samples (4 per each sample), however the following encores for the following samples did not include the small label that is placed on the caps/devices themselves:
SB01
SS02
SB04
SS05
SB05
SS04 ms/msd

Thank you!

Juliana Dean

Chemist I
CH2M Hill
5701 Cleveland St, Suite 200
Virginia Beach, VA 23462
757-671-6232

No virus found in this message.
Checked by AVG - www.avg.com
Version: 2013.0.3272 / Virus Database: 3162/6238 - Release Date: 04/11/13

No virus found in this message.
Checked by AVG - www.avg.com
Version: 2013.0.3272 / Virus Database: 3162/6238 - Release Date: 04/11/13

1108

Jennifer Obrin

From: Michael.Zamboni@CH2M.com
Sent: Tuesday, April 30, 2013 4:02 PM
To: jobrin@katahdinlab.com; Juliana.Dean@ch2m.com; John.Swenfurth@CH2M.com
Cc: Michael.Zamboni@CH2M.com
Subject: RE: COC for samples received 4/15-NTR Vieques East CTO-037 PI-21-SG2441

Hi Jennifer,

Please refer to Worksheet #28-3 of the ancient tome (Final Preliminary Site Inspection/ Expanded Site Inspection, 7 Consent Order Sites and 16 PI/PAOC Sites, Former Vieques Naval Training Range, Vieques, Puerto Rico (CH2M HILL, 2009)). First of all, the acceptance limits are Katahdin statistical limits (specifically 42-104% for TCX). You have updated your limits but anyway it seems like there is no work plan exceedance here. Furthermore the corrective action is "No CA will be taken when one surrogate is within criteria. If surrogates are outside high and sample is <QL no CA taken. (3) If surrogates are outside low the affected samples are reextracted and reanalyzed.". Reference to QL means LOQ according to the PI-21 addendum. So there is no corrective action since one surrogate is within specification.

For that high TCX recovery, please examine whether VEP21-SB05-011H has any detections for PESTs. If not, then don't worry about it. If there are any detections, please examine whether there is obvious chromatographic interference present which I think you're saying there is. If so, then reanalysis may not be necessary as per current DoD QSM v. 4.1 . Long story short, I think you only need to take an action if there is a potential high bias on associated detected results.

Please let me know if you have any questions about this.

Thanks,
Mike Z.

From: Jennifer Obrin [mailto:jobrin@katahdinlab.com]
Sent: Tuesday, April 30, 2013 3:06 PM
To: Zamboni, Michael/WDC; Dean, Juliana/VBO; Swenfurth, John/TPA
Subject: RE: COC for samples received 4/15-NTR Vieques East CTO-037 PI-21-SG2441

Good Afternoon,

The lab has come to me with a non-conformance regarding the Pesticide analysis for SG2441, project Vieques CTO-037 PI-21. The Pesticide batch had low TCX on both channels. The TCX was barely out of the DoD acceptance limits of 70-125 as you can see on the attachment. As a side note, the TCX would have past using our lab limits (44-99) and the DoD QSM version 5 draft limits (42-129) that has not been implemented as of yet. There was a high TCX result for SG2441-10 due to a coeluting peak. The samples have small hits for the DDT series. The extraction hold time on these samples was 4/25 so re-extraction will not be done within holding time. Please let me know how you would like the lab to proceed.

From: Jennifer Obrin [mailto:jobrin@katahdinlab.com]
Sent: Monday, April 15, 2013 12:45 PM
To: 'Michael.Zamboni@CH2M.com'; 'Juliana.Dean@ch2m.com'; 'John.Swenfurth@CH2M.com'
Subject: COC for samples received 4/15-NTR Vieques East CTO-037 PI-21-SG2441

Please find attached the COC for samples received 4/15 for the project NTR Vieques East CTO-037 PI-21 under the work order SG2441. Please let me know if you have any questions.

Have a great day!

Jennifer Obrin
Federal Programs Project Manager
Katahdin Analytical Services
A Woman-Owned Small Business Enterprise
DoD ELAP Accredited
600 Technology Way
Scarborough, Maine 04074
Direct - 207.874.2400 x17
Fax - 207.775.4029

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No virus found in this message.
Checked by AVG - www.avg.com
Version: 2013.0.3272 / Virus Database: 3162/6287 - Release Date: 04/30/13

Katahdin Analytical Services, Inc. **Sample Receipt Condition Report**

Client: CH2MHill		KAS PM: JO		Sampled By: Client	
Project:		KIMS Entry By: GN		Delivered By: FedEx	
KAS Work Order#: 5G2441		KIMS Review By: JO		Received By: GN	
SDG #:	Cooler: 1 of 2			Date/Time Rec.: 4-15-13/09:00	

Receipt Criteria	Y	N	EX*	NA	Comments and/or Resolution
1. Custody seals present / intact?	✓				
2. Chain of Custody present in cooler?	✓				
3. Chain of Custody signed by client?	✓				
4. Chain of Custody matches samples?					
5. Temperature Blanks present? If not, take temperature of any sample w/ IR gun.	✓				Temp (°C): 5.2
Samples received at <6 °C w/o freezing?	✓				Note: Not required for metals analysis.
Ice packs or ice present?	✓				The lack of ice or ice packs (i.e. no attempt to begin cooling process) may not meet certain regulatory requirements and may invalidate certain data.
If temp. out, has the cooling process begun (i.e. ice or packs present) and sample collection times <6hrs., but samples are not yet cool?				✓	Note: No cooling process required for metals analysis.
6. Volatiles free of headspace: **Aqueous:** No bubble larger than a pea	✓				
Soil/Sediment: Received in airtight container?	✓				
Received in methanol?				✓	
Methanol covering soil?				✓	
7. Trip Blank present in cooler?	✓				
8. Proper sample containers and volume?	✓				
9. Samples within hold time upon receipt?	✓				
10. Aqueous samples properly preserved? Metals, COD, NH3, TKN, O/G, phenol, TPO4, N+N, TOC, DRO, TPH – pH <2				✓	
Sulfide - >9				✓	
Cyanide – pH >12				✓	

* Log-In Notes to Exceptions: document any problems with samples or discrepancies or pH adjustments

• EnCores past 48hr. extruding hold time – per clients request – lab will proceed w/ extruding and analysis.

111

Katahdin Analytical Services, Inc. — Sample Receipt Condition Report

Client: CH2MHill		KAS PM: SO		Sampled By: Client	
Project:		KIMS Entry By: GW		Delivered By: Fed Ex	
KAS Work Order#: 562441		KIMS Review By: [illegible]		Received By: GW	
SDG #:	Cooler: 2 of 2			Date/Time Rec.: 4-15-13/09:00	

Receipt Criteria	Y	N	EX*	NA	Comments and/or Resolution
1. Custody seals present / intact?	✓				
2. Chain of Custody present in cooler?	✓				
3. Chain of Custody signed by client?	✓				
4. Chain of Custody matches samples?	✓				
5. Temperature Blanks present? If not, take temperature of any sample w/ IR gun.	✓				Temp (°C): 0.9
Samples received at <6 °C w/o freezing?	✓				Note: Not required for metals analysis.
Ice packs or ice present?	✓				The lack of ice or ice packs (i.e. no attempt to begin cooling process) may not meet certain regulatory requirements and may invalidate certain data.
If temp. out, has the cooling process begun (i.e. ice or packs present) and sample collection times <6hrs., but samples are not yet cool?				✓	Note: No cooling process required for metals analysis.
6. Volatiles free of headspace: **Aqueous:** No bubble larger than a pea				✓	
Soil/Sediment: Received in airtight container?				✓	
Received in methanol?				✓	
Methanol covering soil?				✓	
7. Trip Blank present in cooler?				✓	
8. Proper sample containers and volume?	✓				
9. Samples within hold time upon receipt?	✓				
10. Aqueous samples properly preserved? Metals, COD, NH3, TKN, O/G, phenol, TPO4, N+N, TOC, DRO, TPH – pH <2	✓				
Sulfide - >9				✓	
Cyanide – pH >12	✓				

* Log-In Notes to Exceptions: document any problems with samples or discrepancies or pH adjustments

Katahdin Analytical Services, Inc
S62441

600 Technology Way
Scarborough, ME 04074

ELECTRONIC CHAIN OF CUSTODY RECORD

TEL: 207.874.2400
FAX: 207.775.4029

C.O.C. 20130411-PI21-SS-SB-KATAH-01

Report to: PLEASE PRINT
Company Name: CH2M HILL
Phone: 703.376.5301
Address: 15010 Conference Dr. ;200
Chantilly, VA 20151
Fax: 703.376.5801
Attn: Mike Zamboni

Invoice to: PLEASE PRINT
Company Name: See Contact
Phone:
Address:
Fax:
Attn:

Project Name/Number: CTO-037
Purchase Order Number:
Sampler (Print): not required
Sampler (Signature): not required

Date Shipped: 4/11/1313
Carrier: FedEx
Waybill No.: 799501783228
Comments:

Sample Identification	Location	Date Collected	Time Collected	Time Zone	No. of Containers	Matrix: Aq	Sed.	Soil		SW-846 8260B	SW-846 8270C	SW-846 8270C_SIM	SW-846 8081A	SW-846 8082	SW-846 6020	SW-846 7471	SW-846 9012	SW-846 9045	Lloyd Kahn	ASTM D422	
VEP21-SS01-0001		4/11/13	08:00	AST	8			✓		X	X	X	X	X	X	X	X	X	X	X	
VEP21-SS01P-0001		4/11/13	08:10	AST	8			✓		X	X	X	X	X	X	X	X				
VEP21-SS03-0001		4/11/13	08:30	AST	8			✓		X	X	X	X	X	X	X	X	X	X	X	
VEP21-SS04-0001		4/11/13	09:00	AST	8			✓		X	X	X	X	X	X	X	X	X	X	X	
VEP21-SS04-0001-MS		4/11/13	09:00	AST	8			✓		X	X	X	X	X	X	X	X				
VEP21-SS04-0001-SD		4/11/13	09:00	AST	8			✓		X	X	X	X	X	X	X	X				
VEP21-SB01-011H		4/11/13	09:20	AST	8			✓		X	X	X	X	X	X	X	X	X	X	X	
VEP21-SS05-0001		4/11/13	10:00	AST	8			✓		X	X	X	X	X	X	X	X	X	X	X	
VEP21-SS02-0001		4/11/13	10:15	AST	8			✓		X	X	X	X	X	X	X	X	X	X	X	
VEP21-SB03-0102		4/11/13	10:25	AST	8			✓		X	X	X	X	X	X	X	X	X	X	X	
VEP21-SB04-011H		4/11/13	10:45	AST	8			✓		X	X	X	X	X	X	X	X	X	X	X	

Shuttle Temperature:

Turnaround Requested: Check one
☐ Standard 2-3 wk ☐ One week ☐ 24/48 Hrs ☐ Other

Sample Disposal:
☐ Return to client ☐ Disposal by Lab (30-day retention)

Relinquished by:	Date	Time	Received by:	Relinquished by:	Date	Time	Received by:
[signature]	4/11/13	1320	[signature] 4-15-13 09:00				
Relinquished by:	Date	Time	Received by:	Relinquished by:	Date	Time	Received at lab by:

White: Return to client with report Yellow: Laboratory Copy Pink: Sampler

Note: The first sampled date of the ARF will be used as the COC number unless indicated otherwise.

Katahdin Analytical Services, Inc

600 Technology Way
Scarborough, ME 04074

ELECTRONIC CHAIN OF CUSTODY RECORD

TEL: 207.874.2400
FAX: 207.775.4029

C.O.C. 20130411-PI21-SS-SB-KATAH-02

Report to: PLEASE PRINT
Company Name: CH2M HILL
Phone: 703.376.5301
Address: 15010 Conference Dr. ;200
Chantilly, VA 20151
Fax: 703.376.5801
Attn: Mike Zamboni

Invoice to: PLEASE PRINT
Company Name: See Contact
Phone:
Address:
Fax:
Attn:

Project Name/Number: CTO-037
Purchase Order Number:
Sampler (Print): not required
Sampler (Signature): not required

Date Shipped: 4/11/13
Carrier: FedEx
Waybill No.: 799501744871
Comments:

Sample Identification	Location	Date Collected	Time Collected	Time Zone	No. of Containers	Matrix: Aq	Matrix: Sed.	Matrix: Soil		SW-846 8260B	SW-846 8270C	SW-846 8270C_SIM	SW-846 8081A	SW-846 8082	SW-846 6020	SW-846 7471	SW-846 9012	SW-846 9045	Lloyd Kahn	ASTM D422	
VEP21-SB05-011H		4/11/13	11:00	AST	8			✓		X	X	X	X	X	X	X	X	X	X	X	
VEP21-SB02-011H		4/11/13	11:30	AST	8			✓		X	X	X	X	X	X	X	X	X	X	X	
VEP21-TB01-041113		4/11/13	06:10	AST	3	✓				X											
VEP21-EB01-041113		4/11/13	06:20	AST	9	✓				X	X	X	X	X	X	X	X				
									✓												
									✓												
									✓												
									✓												

Shuttle Temperature:

Turnaround Requested: Check one
☐ Standard 2-3 wk ☐ One week ☐ 24/48 Hrs. ☐ Other

Sample Disposal:
☐ Return to client ☐ Disposal by Lab (30-day retention)

Relinquished by:	Date	Time	Received by:	Relinquished by:	Date	Time	Received by:
[signature]	4/11/13	1330	[signature] 4-15-13 0900				
Relinquished by:	Date	Time	Received by:	Relinquished by:	Date	Time	Received at lab by:

White: Return to client with report Yellow: Laboratory Copy Pink: Sampler

Note: The first sampled date of the ARF will be used as the COC number unless indicated otherwise.

Katahdin
ANALYTICAL SERVICES

Katahdin Analytical Services

Login Chain of Custody Report (Ino1)

Apr. 15, 2013
12:16 PM

Login Number: SG2441

Account: CH2MVA001 Web
CH2MHill

Project: CH2MVACTO37-PI21
NTR Vieques East CTO-037 PI-21

Primary Report Address:
Michael Zamboni
CH2MHill
15010 Conference Center Drive
Suite 200
Chantilly,VA 20151
michael.zamboni@ch2m.com

Primary Invoice Address:
Accounts Payable
CH2M Hill, Inc.
PO Box 241329

Denver,CO 80224

Report CC Addresses:
Invoice CC Addresses:

Quote/Incoming: CH2MVACTO37-PI2

Login Information:

ANALYSIS INSTRUCTIONS	:	DoD QSM 4.2 with DoD limits. ND to LOD. "J" flag between DL and LOQ. VOA soils will be EnCores. PCB FV=2mls, list includes 1262 and 1268. 1,4-Dioxane in SIM list.
CHECK NO.	:	
CLIENT PO#	:	948949
CLIENT PROJECT MANAGE	:	John Swenfurth
CONTRACT	:	N62470-08-D-1000
COOLER TEMPERATURE	:	5.2, 0.9
DELIVERY SERVICES	:	Fedex
EDD FORMAT	:	KAS106QC-XLS
LOGIN INITIALS	:	GN
PM	:	JO
PROJECT NAME	:	NTR Vieques East CTO-037 PI-21
QC LEVEL	:	IV
REGULATORY LIST	:	
REPORT INSTRUCTIONS	:	Data summary needs all forms. Send HC, CD and invoice copy to Mike.
SDG ID	:	
SDG STATUS	:	

Laboratory Sample ID	Client Sample Number	Collect Date/Time	Receive Date	PR	Verbal Date	Due Date	Mailed
SG2441-1	VEP21-SS01-0001	11-APR-13 08:00	15-APR-13			10-MAY-13	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Solid	S	ASTM-D422-SUB				
Solid	S	ENCORE				
Solid	S	LLOYDKAHN-TOCSOIL	25-APR-13	4oz Glass		
Solid	S	SW3050MS-PREP	08-OCT-13	4oz Glass		
Solid	S	SW6020-ALUMINUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-ANTIMONY	08-OCT-13	4oz Glass		
Solid	S	SW6020-ARSENIC	08-OCT-13	4oz Glass		
Solid	S	SW6020-BARIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-BERYLLIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-CADMIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-CALCIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-CHROMIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-COBALT	08-OCT-13	4oz Glass		
Solid	S	SW6020-COPPER	08-OCT-13	4oz Glass		
Solid	S	SW6020-IRON	08-OCT-13	4oz Glass		
Solid	S	SW6020-LEAD	08-OCT-13	4oz Glass		
Solid	S	SW6020-MAGNESIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-MANGANESE	08-OCT-13	4oz Glass		
Solid	S	SW6020-NICKEL	08-OCT-13	4oz Glass		
Solid	S	SW6020-POTASSIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-SELENIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-SILVER	08-OCT-13	4oz Glass		
Solid	S	SW6020-SODIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-THALLIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-VANADIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-ZINC	08-OCT-13	4oz Glass		
Solid	S	SW7471-MERCURY	09-MAY-13	4oz Glass		
Solid	S	SW8081	25-APR-13	4oz Glass		
Solid	S	SW8082-S	25-APR-13	4oz Glass		
Solid	S	SW8260-S	25-APR-13	40 mL Vial+DI+MEOH		
Solid	S	SW8270-S	25-APR-13	4oz Glass		
Solid	S	SW8270SIM-S	25-APR-13	4oz Glass		
Solid	S	SW9012M-CYANIDE	25-APR-13	4oz Glass		
Solid	S	SW9045C-PH SOIL	09-MAY-13	4oz Glass		

04.15.13

Katahdin
ANALYTICAL SERVICES

Katahdin Analytical Services

Login Chain of Custody Report (lno1)

Apr. 15, 2013
12:16 PM

Login Number: SG2441

Quote/Incoming: CH2MVACTO37-PI2

Account: CH2MVA001 Web
CH2MHill

Project: CH2MVACTO37-PI21
NTR Vieques East CTO-037 PI-21

Laboratory Sample ID	Client Sample Number	Collect Date/Time	Receive Date	PR	Verbal Date	Due Date	Mailed
SG2441-2	VEP21-SS01P-0001	11-APR-13 08:10	15-APR-13			10-MAY-13	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Solid	S	ENCORE				
Solid	S	SW3050MS-PREP	08-OCT-13	4oz Glass		
Solid	S	SW6020-ALUMINUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-ANTIMONY	08-OCT-13	4oz Glass		
Solid	S	SW6020-ARSENIC	08-OCT-13	4oz Glass		
Solid	S	SW6020-BARIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-BERYLLIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-CADMIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-CALCIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-CHROMIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-COBALT	08-OCT-13	4oz Glass		
Solid	S	SW6020-COPPER	08-OCT-13	4oz Glass		
Solid	S	SW6020-IRON	08-OCT-13	4oz Glass		
Solid	S	SW6020-LEAD	08-OCT-13	4oz Glass		
Solid	S	SW6020-MAGNESIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-MANGANESE	08-OCT-13	4oz Glass		
Solid	S	SW6020-NICKEL	08-OCT-13	4oz Glass		
Solid	S	SW6020-POTASSIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-SELENIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-SILVER	08-OCT-13	4oz Glass		
Solid	S	SW6020-SODIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-THALLIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-VANADIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-ZINC	08-OCT-13	4oz Glass		
Solid	S	SW7471-MERCURY	09-MAY-13	4oz Glass		
Solid	S	SW8081	25-APR-13	4oz Glass		
Solid	S	SW8082-S	25-APR-13	4oz Glass		
Solid	S	SW8260-S	25-APR-13	40 mL Vial+DI+MEOH		
Solid	S	SW8270-S	25-APR-13	4oz Glass		
Solid	S	SW8270SIM-S	25-APR-13	4oz Glass		
Solid	S	SW9012M-CYANIDE	25-APR-13	4oz Glass		

04-15-13 1116

Katahdin
ANALYTICAL SERVICES

Katahdin Analytical Services

Login Chain of Custody Report (Ino1)

Apr. 15, 2013
12:16 PM

Login Number: SG2441

Quote/Incoming: CH2MVACTO37-PI2

Account: CH2MVA001 Web
CH2MHill

Project: CH2MVACTO37-PI21
NTR Vieques East CTO-037 PI-21

Laboratory Sample ID	Client Sample Number	Collect Date/Time	Receive Date	PR	Verbal Date	Due Date	Mailed
SG2441-3	VEP21-SS03-0001	11-APR-13 08:30	15-APR-13			10-MAY-13	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Solid	S	ASTM-D422-SUB				
Solid	S	ENCORE				
Solid	S	LLOYDKAHN-TOCSOIL	25-APR-13	4oz Glass		
Solid	S	SW3050MS-PREP	08-OCT-13	4oz Glass		
Solid	S	SW6020-ALUMINUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-ANTIMONY	08-OCT-13	4oz Glass		
Solid	S	SW6020-ARSENIC	08-OCT-13	4oz Glass		
Solid	S	SW6020-BARIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-BERYLLIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-CADMIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-CALCIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-CHROMIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-COBALT	08-OCT-13	4oz Glass		
Solid	S	SW6020-COPPER	08-OCT-13	4oz Glass		
Solid	S	SW6020-IRON	08-OCT-13	4oz Glass		
Solid	S	SW6020-LEAD	08-OCT-13	4oz Glass		
Solid	S	SW6020-MAGNESIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-MANGANESE	08-OCT-13	4oz Glass		
Solid	S	SW6020-NICKEL	08-OCT-13	4oz Glass		
Solid	S	SW6020-POTASSIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-SELENIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-SILVER	08-OCT-13	4oz Glass		
Solid	S	SW6020-SODIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-THALLIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-VANADIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-ZINC	08-OCT-13	4oz Glass		
Solid	S	SW7471-MERCURY	09-MAY-13	4oz Glass		
Solid	S	SW8081	25-APR-13	4oz Glass		
Solid	S	SW8082-S	25-APR-13	4oz Glass		
Solid	S	SW8260-S	25-APR-13	40 mL Vial+DI+MEOH		
Solid	S	SW8270-S	25-APR-13	4oz Glass		
Solid	S	SW8270SIM-S	25-APR-13	4oz Glass		
Solid	S	SW9012M-CYANIDE	25-APR-13	4oz Glass		
Solid	S	SW9045C-PH SOIL	09-MAY-13	4oz Glass		

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Login Chain of Custody Report (lno1)

Apr. 15, 2013
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Login Number: SG2441

Quote/Incoming: CH2MVACTO37-PI2

Account: CH2MVA001 Web
CH2MHill

Project: CH2MVACTO37-PI21
NTR Vieques East CTO-037 PI-21

Laboratory Sample ID	Client Sample Number	Collect Date/Time	Receive Date	PR	Verbal Date	Due Date	Mailed
SG2441-4	VEP21-SS04-0001	11-APR-13 09:00	15-APR-13			10-MAY-13	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Solid	S	ASTM-D422-SUB				MS/MSD(not on TOC, pH, or grain size)
Solid	S	ENCORE				
Solid	S	LLOYDKAHN-TOCSOIL	25-APR-13	4oz Glass		
Solid	S	SW3050MS-PREP	08-OCT-13	4oz Glass		
Solid	S	SW6020-ALUMINUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-ANTIMONY	08-OCT-13	4oz Glass		
Solid	S	SW6020-ARSENIC	08-OCT-13	4oz Glass		
Solid	S	SW6020-BARIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-BERYLLIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-CADMIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-CALCIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-CHROMIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-COBALT	08-OCT-13	4oz Glass		
Solid	S	SW6020-COPPER	08-OCT-13	4oz Glass		
Solid	S	SW6020-IRON	08-OCT-13	4oz Glass		
Solid	S	SW6020-LEAD	08-OCT-13	4oz Glass		
Solid	S	SW6020-MAGNESIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-MANGANESE	08-OCT-13	4oz Glass		
Solid	S	SW6020-NICKEL	08-OCT-13	4oz Glass		
Solid	S	SW6020-POTASSIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-SELENIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-SILVER	08-OCT-13	4oz Glass		
Solid	S	SW6020-SODIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-THALLIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-VANADIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-ZINC	08-OCT-13	4oz Glass		
Solid	S	SW7471-MERCURY	09-MAY-13	4oz Glass		
Solid	S	SW8081	25-APR-13	4oz Glass		
Solid	S	SW8082-S	25-APR-13	4oz Glass		
Solid	S	SW8260-S	25-APR-13	40 mL Vial+DI+MEOH		
Solid	S	SW8270-S	25-APR-13	4oz Glass		
Solid	S	SW8270SIM-S	25-APR-13	4oz Glass		
Solid	S	SW9012M-CYANIDE	25-APR-13	4oz Glass		
Solid	S	SW9045C-PH SOIL	09-MAY-13	4oz Glass		

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Login Chain of Custody Report (lno1)

Apr. 15, 2013
12:16 PM

Login Number: SG2441

Quote/Incoming: CH2MVACTO37-PI2

Account: CH2MVA001 Web
CH2MHill

Project: CH2MVACTO37-PI21
NTR Vieques East CTO-037 PI-21

Laboratory Sample ID	Client Sample Number	Collect Date/Time	Receive Date	PR	Verbal Date	Due Date	Mailed
SG2441-5	VEP21-SB01-011H	11-APR-13 09:20	15-APR-13			10-MAY-13	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Solid	S	ASTM-D422-SUB				
Solid	S	ENCORE				
Solid	S	LLOYDKAHN-TOCSOIL	25-APR-13	4oz Glass		
Solid	S	SW3050MS-PREP	08-OCT-13	4oz Glass		
Solid	S	SW6020-ALUMINUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-ANTIMONY	08-OCT-13	4oz Glass		
Solid	S	SW6020-ARSENIC	08-OCT-13	4oz Glass		
Solid	S	SW6020-BARIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-BERYLLIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-CADMIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-CALCIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-CHROMIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-COBALT	08-OCT-13	4oz Glass		
Solid	S	SW6020-COPPER	08-OCT-13	4oz Glass		
Solid	S	SW6020-IRON	08-OCT-13	4oz Glass		
Solid	S	SW6020-LEAD	08-OCT-13	4oz Glass		
Solid	S	SW6020-MAGNESIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-MANGANESE	08-OCT-13	4oz Glass		
Solid	S	SW6020-NICKEL	08-OCT-13	4oz Glass		
Solid	S	SW6020-POTASSIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-SELENIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-SILVER	08-OCT-13	4oz Glass		
Solid	S	SW6020-SODIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-THALLIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-VANADIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-ZINC	08-OCT-13	4oz Glass		
Solid	S	SW7471-MERCURY	09-MAY-13	4oz Glass		
Solid	S	SW8081	25-APR-13	4oz Glass		
Solid	S	SW8082-S	25-APR-13	4oz Glass		
Solid	S	SW8260-S	25-APR-13	40 mL Vial+DI+MEOH		
Solid	S	SW8270-S	25-APR-13	4oz Glass		
Solid	S	SW8270SIM-S	25-APR-13	4oz Glass		
Solid	S	SW9012M-CYANIDE	25-APR-13	4oz Glass		
Solid	S	SW9045C-PH SOIL	09-MAY-13	4oz Glass		

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Login Chain of Custody Report (lno1)

Apr. 15, 2013
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Login Number: SG2441

Quote/Incoming: CH2MVACTO37-PI2

Account: CH2MVA001 Web
CH2MHill

Project: CH2MVACTO37-PI21
NTR Vieques East CTO-037 PI-21

Laboratory Sample ID	Client Sample Number	Collect Date/Time	Receive Date	PR	Verbal Date	Due Date	Mailed
SG2441-6	VEP21-SS05-0001	11-APR-13 10:00	15-APR-13			10-MAY-13	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Solid	S	ASTM-D422-SUB				
Solid	S	ENCORE				
Solid	S	LLOYDKAHN-TOCSOIL	25-APR-13	4oz Glass		
Solid	S	SW3050MS-PREP	08-OCT-13	4oz Glass		
Solid	S	SW6020-ALUMINUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-ANTIMONY	08-OCT-13	4oz Glass		
Solid	S	SW6020-ARSENIC	08-OCT-13	4oz Glass		
Solid	S	SW6020-BARIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-BERYLLIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-CADMIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-CALCIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-CHROMIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-COBALT	08-OCT-13	4oz Glass		
Solid	S	SW6020-COPPER	08-OCT-13	4oz Glass		
Solid	S	SW6020-IRON	08-OCT-13	4oz Glass		
Solid	S	SW6020-LEAD	08-OCT-13	4oz Glass		
Solid	S	SW6020-MAGNESIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-MANGANESE	08-OCT-13	4oz Glass		
Solid	S	SW6020-NICKEL	08-OCT-13	4oz Glass		
Solid	S	SW6020-POTASSIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-SELENIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-SILVER	08-OCT-13	4oz Glass		
Solid	S	SW6020-SODIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-THALLIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-VANADIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-ZINC	08-OCT-13	4oz Glass		
Solid	S	SW7471-MERCURY	09-MAY-13	4oz Glass		
Solid	S	SW8081	25-APR-13	4oz Glass		
Solid	S	SW8082-S	25-APR-13	4oz Glass		
Solid	S	SW8260-S	25-APR-13	40 mL Vial+DI+MEOH		
Solid	S	SW8270-S	25-APR-13	4oz Glass		
Solid	S	SW8270SIM-S	25-APR-13	4oz Glass		
Solid	S	SW9012M-CYANIDE	25-APR-13	4oz Glass		
Solid	S	SW9045C-PH SOIL	09-MAY-13	4oz Glass		

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Login Chain of Custody Report (lno1)

Apr. 15, 2013
12:16 PM

Login Number: SG2441

Quote/Incoming: CH2MVACTO37-PI2

Account: CH2MVA001 Web
CH2MHill

Project: CH2MVACTO37-PI21
NTR Vieques East CTO-037 PI-21

Laboratory Sample ID	Client Sample Number	Collect Date/Time	Receive Date	PR	Verbal Date	Due Date	Mailed
SG2441-7	VEP21-SS02-0001	11-APR-13 10:15	15-APR-13			10-MAY-13	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Solid	S	ASTM-D422-SUB				
Solid	S	ENCORE				
Solid	S	LLOYDKAHN-TOCSOIL	25-APR-13	4oz Glass		
Solid	S	SW3050MS-PREP	08-OCT-13	4oz Glass		
Solid	S	SW6020-ALUMINUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-ANTIMONY	08-OCT-13	4oz Glass		
Solid	S	SW6020-ARSENIC	08-OCT-13	4oz Glass		
Solid	S	SW6020-BARIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-BERYLLIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-CADMIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-CALCIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-CHROMIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-COBALT	08-OCT-13	4oz Glass		
Solid	S	SW6020-COPPER	08-OCT-13	4oz Glass		
Solid	S	SW6020-IRON	08-OCT-13	4oz Glass		
Solid	S	SW6020-LEAD	08-OCT-13	4oz Glass		
Solid	S	SW6020-MAGNESIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-MANGANESE	08-OCT-13	4oz Glass		
Solid	S	SW6020-NICKEL	08-OCT-13	4oz Glass		
Solid	S	SW6020-POTASSIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-SELENIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-SILVER	08-OCT-13	4oz Glass		
Solid	S	SW6020-SODIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-THALLIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-VANADIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-ZINC	08-OCT-13	4oz Glass		
Solid	S	SW7471-MERCURY	09-MAY-13	4oz Glass		
Solid	S	SW8081	25-APR-13	4oz Glass		
Solid	S	SW8082-S	25-APR-13	4oz Glass		
Solid	S	SW8260-S	25-APR-13	40 mL Vial+DI+MEOH		
Solid	S	SW8270-S	25-APR-13	4oz Glass		
Solid	S	SW8270SIM-S	25-APR-13	4oz Glass		
Solid	S	SW9012M-CYANIDE	25-APR-13	4oz Glass		
Solid	S	SW9045C-PH SOIL	09-MAY-13	4oz Glass		

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ANALYTICAL SERVICES

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Login Chain of Custody Report (Ino1)

Apr. 15, 2013
12:16 PM

Login Number: SG2441

Quote/Incoming: CH2MVACTO37-PI2

Account: CH2MVA001 Web
CH2MHill

Project: CH2MVACTO37-PI21
NTR Vieques East CTO-037 PI-21

Laboratory Sample ID	Client Sample Number	Collect Date/Time	Receive Date	PR	Verbal Date	Due Date	Mailed
SG2441-8	VEP21-SB03-0102	11-APR-13 10:25	15-APR-13			10-MAY-13	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Solid	S	ASTM-D422-SUB				
Solid	S	ENCORE				
Solid	S	LLOYDKAHN-TOCSOIL	25-APR-13	4oz Glass		
Solid	S	SW3050MS-PREP	08-OCT-13	4oz Glass		
Solid	S	SW6020-ALUMINUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-ANTIMONY	08-OCT-13	4oz Glass		
Solid	S	SW6020-ARSENIC	08-OCT-13	4oz Glass		
Solid	S	SW6020-BARIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-BERYLLIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-CADMIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-CALCIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-CHROMIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-COBALT	08-OCT-13	4oz Glass		
Solid	S	SW6020-COPPER	08-OCT-13	4oz Glass		
Solid	S	SW6020-IRON	08-OCT-13	4oz Glass		
Solid	S	SW6020-LEAD	08-OCT-13	4oz Glass		
Solid	S	SW6020-MAGNESIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-MANGANESE	08-OCT-13	4oz Glass		
Solid	S	SW6020-NICKEL	08-OCT-13	4oz Glass		
Solid	S	SW6020-POTASSIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-SELENIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-SILVER	08-OCT-13	4oz Glass		
Solid	S	SW6020-SODIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-THALLIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-VANADIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-ZINC	08-OCT-13	4oz Glass		
Solid	S	SW7471-MERCURY	09-MAY-13	4oz Glass		
Solid	S	SW8081	25-APR-13	4oz Glass		
Solid	S	SW8082-S	25-APR-13	4oz Glass		
Solid	S	SW8260-S	25-APR-13	40 mL Vial+DI+MEOH		
Solid	S	SW8270-S	25-APR-13	4oz Glass		
Solid	S	SW8270SIM-S	25-APR-13	4oz Glass		
Solid	S	SW9012M-CYANIDE	25-APR-13	4oz Glass		
Solid	S	SW9045C-PH SOIL	09-MAY-13	4oz Glass		

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ANALYTICAL SERVICES

Katahdin Analytical Services

Login Chain of Custody Report (lno1)

Apr. 15, 2013
12:16 PM

Login Number: SG2441

Quote/Incoming: CH2MVACTO37-PI2

Account: CH2MVA001 Web
CH2MHill

Project: CH2MVACTO37-PI21
NTR Vieques East CTO-037 PI-21

Laboratory Sample ID	Client Sample Number	Collect Date/Time	Receive Date	PR	Verbal Date	Due Date	Mailed
SG2441-9	VEP21-SB04-011H	11-APR-13 10:45	15-APR-13			10-MAY-13	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Solid	S	ASTM-D422-SUB				
Solid	S	ENCORE				
Solid	S	LLOYDKAHN-TOCSOIL	25-APR-13	4oz Glass		
Solid	S	SW3050MS-PREP	08-OCT-13	4oz Glass		
Solid	S	SW6020-ALUMINUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-ANTIMONY	08-OCT-13	4oz Glass		
Solid	S	SW6020-ARSENIC	08-OCT-13	4oz Glass		
Solid	S	SW6020-BARIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-BERYLLIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-CADMIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-CALCIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-CHROMIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-COBALT	08-OCT-13	4oz Glass		
Solid	S	SW6020-COPPER	08-OCT-13	4oz Glass		
Solid	S	SW6020-IRON	08-OCT-13	4oz Glass		
Solid	S	SW6020-LEAD	08-OCT-13	4oz Glass		
Solid	S	SW6020-MAGNESIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-MANGANESE	08-OCT-13	4oz Glass		
Solid	S	SW6020-NICKEL	08-OCT-13	4oz Glass		
Solid	S	SW6020-POTASSIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-SELENIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-SILVER	08-OCT-13	4oz Glass		
Solid	S	SW6020-SODIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-THALLIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-VANADIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-ZINC	08-OCT-13	4oz Glass		
Solid	S	SW7471-MERCURY	09-MAY-13	4oz Glass		
Solid	S	SW8081	25-APR-13	4oz Glass		
Solid	S	SW8082-S	25-APR-13	4oz Glass		
Solid	S	SW8260-S	25-APR-13	40 mL Vial+DI+MEOH		
Solid	S	SW8270-S	25-APR-13	4oz Glass		
Solid	S	SW8270SIM-S	25-APR-13	4oz Glass		
Solid	S	SW9012M-CYANIDE	25-APR-13	4oz Glass		
Solid	S	SW9045C-PH SOIL	09-MAY-13	4oz Glass		

04.15.13

Katahdin
ANALYTICAL SERVICES

Katahdin Analytical Services

Login Chain of Custody Report (lno1)

Apr. 15, 2013
12:16 PM

Login Number: SG2441

Quote/Incoming: CH2MVACTO37-PI2

Account: CH2MVA001 Web
CH2MHill

Project: CH2MVACTO37-PI21
NTR Vieques East CTO-037 PI-21

Laboratory Sample ID	Client Sample Number	Collect Date/Time	Receive Date	PR	Verbal Date	Due Date	Mailed
SG2441-10	VEP21-SB05-011H	11-APR-13 11:00	15-APR-13			10-MAY-13	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Solid	S	ASTM-D422-SUB				
Solid	S	ENCORE				
Solid	S	LLOYDKAHN-TOCSOIL	25-APR-13	4oz Glass		
Solid	S	SW3050MS-PREP	08-OCT-13	4oz Glass		
Solid	S	SW6020-ALUMINUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-ANTIMONY	08-OCT-13	4oz Glass		
Solid	S	SW6020-ARSENIC	08-OCT-13	4oz Glass		
Solid	S	SW6020-BARIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-BERYLLIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-CADMIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-CALCIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-CHROMIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-COBALT	08-OCT-13	4oz Glass		
Solid	S	SW6020-COPPER	08-OCT-13	4oz Glass		
Solid	S	SW6020-IRON	08-OCT-13	4oz Glass		
Solid	S	SW6020-LEAD	08-OCT-13	4oz Glass		
Solid	S	SW6020-MAGNESIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-MANGANESE	08-OCT-13	4oz Glass		
Solid	S	SW6020-NICKEL	08-OCT-13	4oz Glass		
Solid	S	SW6020-POTASSIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-SELENIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-SILVER	08-OCT-13	4oz Glass		
Solid	S	SW6020-SODIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-THALLIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-VANADIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-ZINC	08-OCT-13	4oz Glass		
Solid	S	SW7471-MERCURY	09-MAY-13	4oz Glass		
Solid	S	SW8081	25-APR-13	4oz Glass		
Solid	S	SW8082-S	25-APR-13	4oz Glass		
Solid	S	SW8260-S	25-APR-13	40 mL Vial+DI+MEOH		
Solid	S	SW8270-S	25-APR-13	4oz Glass		
Solid	S	SW8270SIM-S	25-APR-13	4oz Glass		
Solid	S	SW9012M-CYANIDE	25-APR-13	4oz Glass		
Solid	S	SW9045C-PH SOIL	09-MAY-13	4oz Glass		

CP
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Katahdin
ANALYTICAL SERVICES

Katahdin Analytical Services

Login Chain of Custody Report (Ino1)

Apr. 15, 2013
12:16 PM

Login Number: SG2441

Quote/Incoming: CH2MVACTO37-PI2

Account: CH2MVA001 Web
CH2MHill

Project: CH2MVACTO37-PI21
NTR Vieques East CTO-037 PI-21

Laboratory Sample ID	Client Sample Number	Collect Date/Time	Receive Date	PR	Verbal Date	Due Date	Mailed
SG2441-11	VEP21-SB02-011H	11-APR-13 11:30	15-APR-13			10-MAY-13	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Solid	S	ASTM-D422-SUB				
Solid	S	ENCORE				
Solid	S	LLOYDKAHN-TOCSOIL	25-APR-13	4oz Glass		
Solid	S	SW3050MS-PREP	08-OCT-13	4oz Glass		
Solid	S	SW6020-ALUMINUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-ANTIMONY	08-OCT-13	4oz Glass		
Solid	S	SW6020-ARSENIC	08-OCT-13	4oz Glass		
Solid	S	SW6020-BARIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-BERYLLIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-CADMIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-CALCIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-CHROMIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-COBALT	08-OCT-13	4oz Glass		
Solid	S	SW6020-COPPER	08-OCT-13	4oz Glass		
Solid	S	SW6020-IRON	08-OCT-13	4oz Glass		
Solid	S	SW6020-LEAD	08-OCT-13	4oz Glass		
Solid	S	SW6020-MAGNESIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-MANGANESE	08-OCT-13	4oz Glass		
Solid	S	SW6020-NICKEL	08-OCT-13	4oz Glass		
Solid	S	SW6020-POTASSIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-SELENIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-SILVER	08-OCT-13	4oz Glass		
Solid	S	SW6020-SODIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-THALLIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-VANADIUM	08-OCT-13	4oz Glass		
Solid	S	SW6020-ZINC	08-OCT-13	4oz Glass		
Solid	S	SW7471-MERCURY	09-MAY-13	4oz Glass		
Solid	S	SW8081	25-APR-13	4oz Glass		
Solid	S	SW8082-S	25-APR-13	4oz Glass		
Solid	S	SW8260-S	25-APR-13	40 mL Vial+DI+MEOH		
Solid	S	SW8270-S	25-APR-13	4oz Glass		
Solid	S	SW8270SIM-S	25-APR-13	4oz Glass		
Solid	S	SW9012M-CYANIDE	25-APR-13	4oz Glass		
Solid	S	SW9045C-PH SOIL	09-MAY-13	4oz Glass		

SG2441-12	VEP21-TB01-041113	11-APR-13 06:10	15-APR-13			10-MAY-13	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	SW8260-S	25-APR-13	40mL Vial+HCl		

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MM0031

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ANALYTICAL SERVICES

Katahdin Analytical Services

Login Chain of Custody Report (lno1)

Apr. 15, 2013
12:16 PM

Login Number: SG2441

Quote/Incoming: CH2MVACTO37-PI2

Account: CH2MVA001 Web
CH2MHill

Project: CH2MVACTO37-PI21
NTR Vieques East CTO-037 PI-21

Laboratory Sample ID	Client Sample Number	Collect Date/Time	Receive Date	PR	Verbal Date	Due Date	Mailed
SG2441-13	VEP21-EB01-041113	11-APR-13 06:20	15-APR-13			10-MAY-13	

Matrix		*Product*	*Hold Date (shortest)*	*Bottle Type*	*Bottle Count*	*Comments*
Aqueous	S	SW3010MS-PREP	08-OCT-13	250mL Plastic+HNO3		
Aqueous	S	SW6020-ALUMINUM	08-OCT-13	250mL Plastic+HNO3		
Aqueous	S	SW6020-ANTIMONY	08-OCT-13	250mL Plastic+HNO3		
Aqueous	S	SW6020-ARSENIC	08-OCT-13	250mL Plastic+HNO3		
Aqueous	S	SW6020-BARIUM	08-OCT-13	250mL Plastic+HNO3		
Aqueous	S	SW6020-BERYLLIUM	08-OCT-13	250mL Plastic+HNO3		
Aqueous	S	SW6020-CADMIUM	08-OCT-13	250mL Plastic+HNO3		
Aqueous	S	SW6020-CALCIUM	08-OCT-13	250mL Plastic+HNO3		
Aqueous	S	SW6020-CHROMIUM	08-OCT-13	250mL Plastic+HNO3		
Aqueous	S	SW6020-COBALT	08-OCT-13	250mL Plastic+HNO3		
Aqueous	S	SW6020-COPPER	08-OCT-13	250mL Plastic+HNO3		
Aqueous	S	SW6020-IRON	08-OCT-13	250mL Plastic+HNO3		
Aqueous	S	SW6020-LEAD	08-OCT-13	250mL Plastic+HNO3		
Aqueous	S	SW6020-MAGNESIUM	08-OCT-13	250mL Plastic+HNO3		
Aqueous	S	SW6020-MANGANESE	08-OCT-13	250mL Plastic+HNO3		
Aqueous	S	SW6020-NICKEL	08-OCT-13	250mL Plastic+HNO3		
Aqueous	S	SW6020-POTASSIUM	08-OCT-13	250mL Plastic+HNO3		
Aqueous	S	SW6020-SELENIUM	08-OCT-13	250mL Plastic+HNO3		
Aqueous	S	SW6020-SILVER	08-OCT-13	250mL Plastic+HNO3		
Aqueous	S	SW6020-SODIUM	08-OCT-13	250mL Plastic+HNO3		
Aqueous	S	SW6020-THALLIUM	08-OCT-13	250mL Plastic+HNO3		
Aqueous	S	SW6020-VANADIUM	08-OCT-13	250mL Plastic+HNO3		
Aqueous	S	SW6020-ZINC	08-OCT-13	250mL Plastic+HNO3		
Aqueous	S	SW7470-MERCURY	09-MAY-13	500mL Plastic+HNO3		
Aqueous	S	SW8081	18-APR-13	1L N-Amber Glass		
Aqueous	S	SW8082-S	18-APR-13	1L N-Amber Glass		
Aqueous	S	SW8260-S	25-APR-13	40mL Vial+HCl		
Aqueous	S	SW8270-S	18-APR-13	1L N-Amber Glass		
Aqueous	S	SW8270SIM-S	18-APR-13	1L N-Amber Glass		
Aqueous	S	SW9012M-CYANIDE	25-APR-13	250mL Plastic+NaOH		

***Total Samples:* 13** ***Total Analyses:* 402**

04.15.13

YES NO N/A

E - The concentration of this analyte exceeds the calibration range of the instrument.

A - Indicates a Tentatively Identified Compound (TIC) is a suspected adol-condensation product.

X,Y,Z- Laboratory defined flags. The data reviewer must change these qualifiers during validation so that the data user may understand their impact on the data.

I. PACKAGE COMPLETENESS AND DELIVERABLES

CASE NUMBER: SG2441 LAB: Katahdin

SITE NAME: NTR Vieques East PI-21

S/M

1.0 Data Completeness and Deliverables

1.1 Has all data been submitted in CLP deliverable format? [✓] ___ ___

ACTION: If not, note the effect on review of the data in the data assessment narrative.

2.0 Cover Letter, SDG Narrative

2.1 Is a laboratory narrative or cover letter present? [✓] ___ ___

2.2 Are case number and SDG number(s) contained in the narrative or cover letter? [✓] ___ ___

YES NO N/A

II. SEMIVOLATILE ANALYSES

1.0 Traffic Reports and Laboratory Narrative

1.1 Are the Traffic Report Forms present for all samples? ✓ ___ ___

ACTION: If no, contact lab for replacement of missing or illegible copies.

1.2 Do the Traffic Reports or Lab Narrative indicate any problems with sample receipt, condition of samples, analytical problems or special notations affecting the quality of the data? ___ ✓ ___

ACTION: If any sample analyzed as a soil, other than TCLP, contains 50%-90% water, all data should be flagged as estimated ("J"). If a soil sample, other than TCLP, contains more than 90% water, all non-detects data are qualified as unusable (R), and detects are flagged "J".

ACTION: If samples were not iced, or if the ice was melted upon arrival at the laboratory and the cooler temperature was elevated (10°C), flag all positive results "J" and all non-detects "UJ". temp 0.9-5.2

sampled 4/11/13 extr 4/15-17
recd 4/15 analy 4/17-22

2.0 Holding Times

2.1 Have any semivolatile technical holding times, determined from date of collection to date of extraction, been exceeded? ___ ✓ ___

Continuous extraction of water samples for semivolatile analysis must be started within **7** days of the date of collection. Soil/sediment samples must be extracted within **14** days of collection. Extracts must be analyzed within

YES NO N/A

40 days of the date of extraction.

Table of Holding Time Violations

Sample ID	Sample Matrix	Date Sampled	Date Lab Received	(See Traffic Report) Date Extracted	Date Analyzed

ACTION: If technical holding times are exceeded, flag all positive results as estimated ("J") and sample quantitation limits as estimated ("UJ"), and document in the narrative that holding times were exceeded.

If analyses were done more than 14 days beyond holding time, either on the first analysis or upon re analysis, the reviewer must use professional judgement to determine the reliability of the data and the effects of additional storage on the sample results. At a minimum, all results should be qualified "J", but the reviewer may determine that non-detect data are unusable ("R"). If holding times are exceeded by more than 28 days, all non-detect data are unusable (R).

	YES	NO	N/A
3.0 Surrogate Recovery (Form II/Equivalent)			
3.1 Have the semi volatile surrogate recoveries been listed on CLP Surrogate Recovery forms (Form II) for each of the following matrices:			
a. Low Water	[✓]	___	___
b. Low/Med Soil	[✓]	___	___
3.2 If so, are all the samples listed on the appropriate Surrogate Recovery Summary forms for each matrix:			
a. Low Water	[✓]	___	___
b. Low/Med Soil	[✓]	___	___
ACTION: If CLP deliverables are unavailable, document the effect(s) in data assessments. In some cases the lab may have to be contacted to obtain the data necessary to complete the validation.			
3.3 Were outliers marked correctly with an asterisk?	[ ]	___	[✓]
ACTION: Circle all outliers in red.			
3.4 Were two or more base neutral OR acid surrogate recoveries out of specification for any sample or method blank (Reviewer should use lab in house recovery limits. Use surrogate recovery limits from USEPA National Functional Guidlines January 2005 page 130, if in house limits are not available. See Method 8000B-43 or 80000C-24).	[ ]	[✓]	___
Note: Examine lab in house limits for reasonableness.			
If yes, were samples re-analyzed?	[ ]	___	[✓]

	YES	NO	N/A
Were method blanks re-analyzed?	[ ]	___	✓

ACTION: If all surrogate recoveries are > 10% but two within the base-neutral or acid fraction do not meet method specifications, <u>for the affected fraction only (i.e. either base-neutral or acid compounds):</u>

1. Flag all positive results as estimated ("J").

2. Flag all non-detects as estimated detection limits ("UJ") when recoveries are less than the lower acceptance limit.

3. If recoveries are greater than the upper acceptance limit, do not qualify non-detects.

If any base-neutral <u>or</u> acid surrogate has a recovery of < 10%:

1. Positive results for the fraction with < 10% surrogate recovery are qualified with "J".

2. Non-detects for that fraction should be qualified as unusable (R) .

NOTE: Professional judgement should be used to qualify data that have method blank surrogate recoveries out of specification in both original and reanalyses. Check the internal standard areas.

3.5 Are there any transcription/calculation errors between raw data and Form II?	___	✓	___

ACTION: If large errors exist, call lab for explanation/resubmittal, make any necessary corrections and document

YES NO N/A

effect in data assessments.

4.0 Matrix Spikes (Form III/Equivalent)

4.1 Have the semivolatile Matrix Spike and Matrix Spike Duplicate/or duplicate unspiked Sample recoveries been listed on the Recovery Form (Form III)? [✓] ___ ___

NOTE: Method 3500B/page 4 states the spiking compounds:

Base/neutrals	Acids
1,2,4-Trichlorobenzene	Pentachlorophenol
Acenaphthene	Phenol
2,4-Dinitrotoluene	2-Chlorophenol
Pyrene	4-Chloro-3-methylphenol
N-Nitroso-di-n-propylamine	4-Nitrophenol
1,4-Dichlorobenzene	

Note: Some projects may require the spiking of specific compounds of interest.

Note: See Method 8270D-sec 8.4.2 for deciding on whether to prepare and analyze duplicate samples or a martix spike/matrix spike duplicate. If samples are expected to contain target analytes, then laboratory may use one matrix spike and a duplicate analysis of an unspiked field sample. If samples are not expected to contain target analytes, laboratory should use a matrix spike and matrix spike duplicate pair.

4.2 Were matrix spikes analyzed at the required frequency for each of the following matrices:

a. Low Water [ ] ___ ___

b. Low Solid [✓] ___ ___

c. Med Solid [ ] ___ ___

YES NO N/A

ACTION: If any matrix spike data are missing, take the action specified in 3.2 above. It may be necessary to contact the lab to obtain the required data.

NOTE: If the data has not been reported on CLP equivalent form, then the laboratory must provide the information necessary to evaluate the spike recoveries in the MS and MSD. The required data which should have been provided by the lab include the analytes and concentrations used for spiking, background concentrations of the spiked analytes (i.e., concentrations in unspiked sample), methods and equations used to calculate the QC acceptance criteria for the spiked analytes, percent recovery data for all spiked analytes.

The data reviewer must verify that all reported equations and percent recoveries are correct before proceeding to the next section.

4.3 Were matrix spikes performed at concentration equal to 100ug/L for acid compounds, and 200ug/l for base compounds (Method 3500B-4), or those specified in project plan. ✓ ___ ___

4.4 How many semivolatile spike recoveries are outside Laboratory in house MS/MSD recovery limits (use recovery limits values in Method 8270D-43&44 Table 6 if in house values not available).

Water	Solids
____ out of ____	24 out of 92

All attached MS/MSD form - qualifications were applied when rec out in both MS and MSD

Katahdin
ANALYTICAL SERVICES

nelac
Cert No E87604

MS/MSD Recovery Report

MS ID: WG122732-4
MSD ID: WG122732-5
Sample ID: SG2441-4
Client ID: VEP21-SS04-0001
Project:
SDG: SG2441
MS File ID: G8474.D

Received Date:
Extract Date: 15-APR-13
Extracted By: JMS
Extraction Method: SW846 3540
Lab Prep Batch: WG122732
Report Date: 03-MAY-13
MSD File ID: G8475.D

Analysis Date: 22-APR-13
Analyst: JCG
Analysis Method: SW846 M8270D
Matrix: SL
% Solids: 89.

Compound	MS Spike	MSD Spike	Conc Units	Samp Conc	MS Conc	MSD Conc	MS Rec (%)	MSD Rec (%)	RPD (%)	RPD Limit	Limits	
bis(2-Chloroethyl)ether	72.3	74.2	ug/Kgdrywt	ULLM26	44.	53.	61.6	71.8*	18	30	30-70	
2-Chlorophenol	144.	148.	ug/Kgdrywt	UM11.	110	130	75.4	86.2*	16	30	38-80	
2-Methylphenol	144.	148.	ug/Kgdrywt	UM53.	110	130	78.2	85.6*	12	30	30-85	
3&4-Methylphenol	144.	148.	ug/Kgdrywt	U26.	120	130	84.4	88.9	8	30	29-94	
n-Nitroso-di-n-propylamine	72.3	74.2	ug/Kgdrywt	UM26.	42.	61.	58.8	82.2*	36*	30	28-76	
Nitrobenzene	72.3	74.2	ug/Kgdrywt	U11.	51.	58.	70.5	78.6	13	30	15-107	
2,4-Dimethylphenol	144.	148.	ug/Kgdrywt	U26.	120	130	83.7	85.6	5	30	10-113	
2,4-Dichlorophenol	144.	148.	ug/Kgdrywt	U26.	120	130	85.8	86.9	4	30	39-114	
Naphthalene	72.3	74.2	ug/Kgdrywt	U11.	53.	57.	73.7	77.1	7	30	10-129	
2-Methylnaphthalene	72.3	74.2	ug/Kgdrywt	U11.	56.	62.	78.0	84.1	10	30	10-152	
Hexachlorocyclopentadiene	72.3	74.2	ug/Kgdrywt	UMM11.	4.6	3.8	6.39*	5.09*	20	30	10-128	J/UJ
2,4,6-Trichlorophenol	144.	148.	ug/Kgdrywt	U26.	130	140	92.7	97.7	8	30	26-104	
2,4,5-Trichlorophenol	144.	148.	ug/Kgdrywt	U53.	120	130	83.7	88.3	8	30	28-104	
4-Nitrophenol	144.	148.	ug/Kgdrywt	U53.	180	170	121.	117.	0	30	10-150	
2,4-Dinitrotoluene	72.3	74.2	ug/Kgdrywt	U26.	62.	64.	85.1	86.2	4	30	29-124	
4,6-Dinitro-2-methylphenol	144.	148.	ug/Kgdrywt	U110	150	180	105.	119.	15	30	10-140	
Hexachlorobenzene	72.3	74.2	ug/Kgdrywt	UM11.	61.	60.	84.8*	81.1	2	30	36-84	
Atrazine	72.3	74.2	ug/Kgdrywt	U11.	72.	72.	100.	97.0	0	30	48-132	
Pentachlorophenol	144.	148.	ug/Kgdrywt	UMM53.	160	160	112.*	108.*	1	30	10-94	J⊕*
3,3'-Dichlorobenzidine	144.	148.	ug/Kgdrywt	UMM26.	12.	15.	7.95*	9.84*	24	30	10-64	J/UJ
Benzo(a)anthracene	72.3	74.2	ug/Kgdrywt	UMM11.	73.	74.	100.	100.	2	30	48-100	
Benzo(b)Fluoranthene	72.3	74.2	ug/Kgdrywt	JM5.4	81.	78.	104.*	98.6	3	30	53-100	
Benzo(k)fluoranthene	72.3	74.2	ug/Kgdrywt	U11.	53.	50.	73.4	68.0	5	30	49-96	
Benzo(a)pyrene	72.3	74.2	ug/Kgdrywt	U11.	60.	59.	83.3	79.2	2	30	61-101	
Indeno(1,2,3-cd)pyrene	72.3	74.2	ug/Kgdrywt	UMM26.	77.	85.	106.*	114.*	10	30	50-105	J⊕*
Dibenzo(a,h)anthracene	72.3	74.2	ug/Kgdrywt	UMM26.	77.	85.	107.*	114.*	10	30	55-105	J⊕*
2,4-Dinitrophenol	144.	148.	ug/Kgdrywt	U80.	190	200	131.	133.	4	30	10-143	
n-Nitrosodiphenylamine	72.3	74.2	ug/Kgdrywt	U11.	51.	51.	70.4	68.8	0	30	26-82	
Benzaldehyde	72.3	74.2	ug/Kgdrywt	U26.	38.	46.	52.0	62.5	21	30	10-150	
2,2'-Oxybis(1-Chloropropane)	72.3	74.2	ug/Kgdrywt	U26.	32.	38.	44.1	50.5	16	30	35-90	
Hexachloroethane	72.3	74.2	ug/Kgdrywt	ULL11.	43.	49.	59.8	65.9	12	30	30-70	
Isophorone	72.3	74.2	ug/Kgdrywt	U26.	47.	50.	65.6	67.2	5	30	22-108	
2-Nitrophenol	144.	148.	ug/Kgdrywt	U26.	120	140	83.7	92.3	12	30	15-111	

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* no qual as no ⊕ in assoc sample

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Cert No E87604

MS/MSD Recovery Report

MS ID: WG122732-4
MSD ID: WG122732-5
Sample ID: SG2441-4
Client ID: VEP21-SS04-0001
Project:
SDG: SG2441
MS File ID: G8474.D

Received Date:
Extract Date: 15-APR-13
Extracted By: JMS
Extraction Method: SW846 3540
Lab Prep Batch: WG122732
Report Date: 03-MAY-13
MSD File ID: G8475.D

Analysis Date: 22-APR-13
Analyst: JCG
Analysis Method: SW846 M8270D
Matrix: SL
% Solids: 89.

Compound	MS Spike	MSD Spike	Conc Units	Samp Conc	MS Conc	MSD Conc	MS Rec (%)	MSD Rec (%)	RPD (%)	RPD Limit	Limits
Bis(2-Chloroethoxy)Methane	72.3	74.2	ug/Kgdrywt	U26.	48.	51.	66.0	68.2	6	30	19-109
4-Chloroaniline	72.3	74.2	ug/Kgdrywt	UMM53.	3.1	1.5	4.26*	2.01*	70*	30	10-50
Hexachlorobutadiene	72.3	74.2	ug/Kgdrywt	U11.	44.	48.	60.3	64.7	10	30	10-127
4-Chloro-3-Methylphenol	144.	148.	ug/Kgdrywt	U26.	150	150	106.	101.	2	30	30-124
1,1'-Biphenyl	72.3	74.2	ug/Kgdrywt	U11.	52.	55.	71.5	73.7	6	30	23-109
2-Nitroaniline	72.3	74.2	ug/Kgdrywt	U26.	69.	75.	96.0	101.	7	30	32-118
2,6-Dinitrotoluene	72.3	74.2	ug/Kgdrywt	U26.	59.	66.	81.3	88.7	11	30	27-98
Dibenzofuran	72.3	74.2	ug/Kgdrywt	U11.	60.	64.	83.3	85.7	5	30	28-102
4-Nitroaniline	72.3	74.2	ug/Kgdrywt	U53.	28.	25.	38.4	33.4	11	30	26-137
Butylbenzylphthalate	72.3	74.2	ug/Kgdrywt	UMM53.	98.	98.	135.*	131.*	0	30	37-128
Di-N-Octylphthalate	72.3	74.2	ug/Kgdrywt	UMM53.	100	100	141.*	136.*	1	30	45-127
2,3,4,6-Tetrachlorophenol	144.	148.	ug/Kgdrywt	UMM53.	140	150	98.9*	99.0*	3	30	28-86
1,4-Dioxane	72.3	74.2	ug/Kgdrywt	U53.	38.	49.	53.1	65.6	24	30	30-150
2-Methylnaphthalene-D10							72.2	74.1			19-94
Fluorene-D10							82.2	84.4			20-96
Pyrene-D10							113.	112.			31-128
2,4-Dibromophenol							91.7	95.3			20-116

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YES NO N/A

4.5 How many RPD's for matrix spike and matrix spike duplicate recoveries are outside QC limits?

Water

____ out of ____

Solids

5 out of 46

ACTION: Circle all outliers with red pencil.

ACTION: No action is taken on MS/MSD data alone. However, using informed professional judgement, the data reviewer may use the matrix spike and matrix spike duplicate results in conjunction with other QC criteria to determine the need for some qualification of the data.

4.6 Was a Laboratory Control Sample (LCS) analyzed with each analytical batch? [✓] ___ ___

NOTE: When the results of the matrix spike analysis indicate a potential problem due to the sample matrix itself, the LCS results are used to verify that the laboratory can perform the analysis in a clean matrix.

5.0 Blanks (Form IV/Equivalent)

5.1 Is the Method Blank Summary (Form IV) present? [✓] ___ ___

5.2 Frequency of Analysis:

Has a reagent/method blank analysis been reported per 20 samples of similar matrix, or concentration level, and for each extraction batch? [✓] ___ ___

5.3 Has a method blank been analyzed either after

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	YES	NO	N/A
the calibration standard or at any other time during the analytical shift for each GC/MS system used ?	✓		

ACTION: If any method blank data are missing, call lab for explanation/resubmittal. If not available, use professional judgement to determine if the associated sample data should be qualified.

	YES	NO	N/A
5.4 Chromatography: review the blank raw data - chromatograms (RICs), quant reports or data system printouts and spectra.			
Is the chromatographic performance (baseline stability) for each instrument acceptable for the semivolatiles?	✓		

ACTION: Use professional judgement to determine the effect on the data.

6.0 Contamination

NOTE: "Water blanks", "drill blanks" and "distilled water blanks" are validated like any other sample and are not used to qualify the data. Do not confuse them with the other QC blanks discussed below.

	YES	NO	N/A
6.1 Do any method/instrument/reagent blanks have positive results for target analytes and/or TICs? When applied as described below, the contaminant concentration in these blanks are multiplied by the sample dilution factor and corrected for percent moisture where necessary.		✓	
6.2 Do any field/rinse/ blanks have positive results for target analytes and/or TICs (if required, see section 10 below)?		✓	

YES NO N/A

ACTION: Prepare a list of the samples associated with each of the contaminated blanks. (Attach a separate sheet.)

NOTE: All field blank results associated to a particular group of samples (may exceed one per case) must be used to qualify data. Blanks may not be qualified because of contamination in another blank. Field Blanks must be qualified for outlying surrogates, poor spectra, instrument performance or calibration QC problems.

ACTION: Follow the directions in the table below to qualify sample results due to contamination. Use the largest value from all the associated blanks. If gross contamination exists, all data in the associated samples should be qualified as unusable (R).

YES NO N/A

Blank Action for Semivolatile Analyses

Blank Type	Blank Result	Sample Result	Action for Samples
Method, Field	Detects	Not detected	No qualification required
	< CRQL *	< CRQL	Report CRQL value with a U
		≥ CRQL	No qualification required
	= CRQL *	< CRQL	Report CRQL value with a U
		≥ CRQL	No qualification required
	> CRQL *	< CRQL	Report CRQL value with a U
		≥ CRQL and < blank contamination	Report concentration of sample with a U
		≥ CRQL and ≥ blank contamination	No qualification required

NOTE: Analytes qualified "U" for blank contamination are still considered as "hits" when qualifying for calibration criteria.

NOTE: If the laboratory did not report TIC analyses, check the project plans to verify whether or not it was required.

6.3 Are there field/rinse/equipment blanks associated with every sample? ✓ ___ ___

ACTION: For low level samples, note in data assessment that there is no associated field/rinse/equipment blank. Exception: samples taken from a drinking water tap do not have associated field blanks.

6.4 Was a instrument blank analyzed after each sample/dilution which contained a target compound

	YES	NO	N/A
that exceeded the initial calibration range.	[ ]	___	✓
6.5 Does the instrument blank have positive results for target analytes and/or TICs?	___	✓	___

Note: Use professional judgement to determine if carryover occurred and qualify analytes accordingly.

7.0 GC/MS Apparatus and Materials

	YES	NO	N/A
7.1 Did the lab use the proper gas chromatographic column for analysis of semivolatiles by Method 8270D? Check raw data, instrument logs or contact the lab to determine what type of column was used. The method requires the use of 30 m x 0.25 mm ID (or 0.32 mm ID), silicone-coated, fused silica, capillary column.	✓	___	___

ACTION: If the specified column, or equivalent, was not used, document the effects in the data assessment. Use professional judgement to determine the acceptability of the data.

8.0 GC/MS Instrument Performance Check (Form V/Equivalent)

	YES	NO	N/A
8.1 Are the GC/MS Instrument Performance Check Forms (Form V) present for decafluorotriphenylphosphine (DFTPP)?	✓	___	___

NOTE: The performance solution should also contain 4,4-DDT, pentachlorophenol, and benzidine to verify injection port inertness and column performance. The degradation of DDT to DDE and DDD must be less than 20% total and the response of pentachlorophenol and benzidine should be within normal ranges for these compounds (based upon lab experience) and show no peak degradation or tailing before samples are analyzed. (see section 5.5

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	YES	NO	N/A
page 8270D-12).			
8.2 Are the enhanced bar graph spectrum and mass/charge (m/z) listing for the DFTPP provided for each twelve hour shift?	✓		
8.3 Has an instrument performance check solution been analyzed for every twelve hours of sample analysis per instrument?	✓		

ACTION: List date, time, instrument ID, and sample analyses for which no associated GC/MS tuning data are available.

DATE	TIME	INSTRUMENT	SAMPLE NUMBERS

ACTION: If lab cannot provide missing data, reject ("R") all data generated outside an acceptable twelve hour calibration interval.

ACTION: If mass assignment is in error, flag all associated sample data as unusable (R).

8.4 Have the ion abundances been normalized to m/z 198?	✓		
8.5 Have the ion abundance criteria been met for each instrument used?	✓		

ACTION: List all data which do not meet ion abundance criteria (attach a separate sheet).

	YES	NO	N/A
ACTION: If ion abundance criteria are not met, take action specified in section 3.2			
8.6 Are there any transcription/calculation errors between mass lists and Form Vs? (Check at least two values but if errors are found, check more.)		✓	
8.7 Have the appropriate number of significant figures (two) been reported?	✓		
ACTION: If large errors exist, call lab for explanation/resubmittal, make necessary corrections and document effect in data assessments.			
8.8 Are the spectra of the mass calibration compound acceptable?	✓		
ACTION: Use professional judgement to determine whether associated data should be accepted, qualified, or rejected.			
9.0 Target Analytes			
9.1 Are the Organic Analysis Data Sheets (Form I) present with required header information on each page, for each of the following:			
a. Samples and/or fractions as appropriate	✓		
b. Matrix spikes and matrix spike duplicates	✓		
c. Blanks	✓		
9.2 Has any special cleanup, such as GPC, been performed on all soil/sediment sample extracts (see section 7.2, page 8270D-14)?		✓	

	YES	NO	N/A
ACTION: If data suggests that extract cleanup was not performed, use professional judgement. Make note in the data assessment narrative.			
9.3 Are the Reconstructed Ion Chromatograms, mass spectra for the identified compounds, and the data system printouts (Quant Reports) included in the sample package for each of the following?			
a. Samples and/or fractions as appropriate	[✓]	___	___
b. Matrix spikes and matrix spike duplicates (Mass spectra not required)	[✓]	___	___
c. Blanks	[✓]	___	___
ACTION: If any data are missing, take action specified in 3.2 above.			
9.4 Are the response factors shown in the Quant Report?	[✓]	___	___
9.5 Is chromatographic performance acceptable with respect to:			
Baseline stability?	[✓]	___	___
Resolution?	[✓]	___	___
Peak shape?	[✓]	___	___
Full-scale graph (attenuation)?	[✓]	___	___
Other:_____	[ ]	___	___
ACTION: Use professional judgement to determine the acceptability of the data.			
9.6 Are the lab-generated standard mass spectra of identified semivolatile compounds present for			

	YES	NO	N/A
each sample?	[✓]	___	___

ACTION: If any mass spectra are missing, take action specified in 3.2 above. If the lab does not generate their own standard spectra, make a note in the data assessment narrative. If spectra are missing, reject all positive data.

9.7 Is the RRT of each reported compound within 0.06 RRT units of the standard RRT in the continuing calibration?	[✓]	___	___
9.8 Are all ions present in the standard mass spectrum at a relative intensity greater than 10% (of the most abundant ion) also present in the sample mass spectrum?	[✓]	___	___
9.9 Do the relative intensities of the characteristic ions in the sample agree within ± 30% of the corresponding relative intensities in the reference spectrum?	[✓]	___	___

ACTION: Use professional judgement to determine acceptability of data. If it is determined that incorrect identifications were made, all such data should be rejected (R), flagged "N" (Presumptive evidence of the presence of the compound) or changed to not detected (U) at the calculated detection limit. In order to be positively identified, the data must comply with the criteria listed in 9.7, 9.8, and 9.9.

ACTION: When sample carry-over is a possibility, professional judgement should be used to determine if instrument cross-contamination has affected any positive compound identification.

	YES	NO	N/A

10.0 Tentatively Identified Compounds (TIC)

10.1 If Tentatively Identified Compounds were required for this project, are all Form Is, Part B present; and do listed TICs include scan number or retention time, estimated concentration and "JN" qualifier? NO TICs

NOTE: Review sampling reports to determine if the lab was required to identify non target analytes (refer to section 7.6.2,page 8270D-21).

10.2 Are the mass spectra for the tentatively identified compounds and associated "best match" spectra included in the sample package for each of the following:	[ ]	___	✓
a. Samples and/or fractions as appropriate	[ ]	___	✓
b. Blanks	[ ]	___	✓

ACTION: If any TIC data are missing, take action specified in 3.2 above.

ACTION: Add "JN" qualifier only to analytes identified by CAS #.

10.3 Are any target compounds from one fraction listed as TIC compounds in another (e.g., an acid compound listed as a base neutral TIC)?	___	[ ]	✓

ACTION: i. Flag with "R" any target compound listed as a TIC.

ii. Make sure all rejected compounds are properly reported in the other fraction.

10.4 Are all ions present in the reference mass spectrum with a relative intensity greater than 10% (of the most abundant ion) also present in the

	YES	NO	N/A
sample mass spectrum?	[ ]	___	✓
10.5 Do TIC and "best match" standard relative ion intensities agree within ± 20%?	[ ]	___	✓

ACTION: Use professional judgement to determine acceptability of TIC identifications. If it is determined that an incorrect identification was made, change the identification to "unknown" or to some less specific identification (example: "C3 substituted benzene") as appropriate and remove "JN". Also, when a compound is not found in any blank, but is a suspected artifact of a common laboratory contaminant, the result should be qualified as unusable, "R."

11.0 Compound Quantitation and Reported Detection Limits

	YES	NO	N/A
11.1 Are there any transcription/calculation errors in Form I results? Check at least two positive values. Verify that the correct internal standard, quantitation ion, and RRF were used to calculate Form I result. Were any errors found?	___	[✓]	___

NOTE: Structural isomers with similar mass spectra, but insufficient GC resolution (i.e. percent valley between the two peaks > 25%) should be reported as isomeric pairs. The reviewer should check the raw data to ensure that all such isomers were included in the quantitation (i.e., add the areas of the two coeluting peaks to calculate the total concentration).

	YES	NO	N/A
11.2 Are the method detection limits adjusted to reflect sample dilutions and, for soils, sample moisture?	[✓]	___	___

YES NO N/A

ACTION: If errors are large, call lab for explanation/resubmittal, make any necessary corrections and document effect in data assessments.

ACTION: When a sample is analyzed at more than one dilution, the lowest detection limits are used (unless a QC exceedance dictates the use of the higher detection limit from the diluted sample data). Replace concentrations that exceed the calibration range in the original analysis by crossing out the "E" and it's associated value on the original Form I (if present) and substituting the data from the analysis of the diluted sample. Specify which Form I is to be used, then draw a red " X" across the entire page of all Form I's that should not be used, including any in the summary package.

12.0 Standards Data (GC/MS)

12.1 Are the Reconstructed Ion Chromatograms, and data system printouts (Quant, Reports) present for initial and continuing calibration? [✓] ___ ___

ACTION: If any calibration standard data are missing, take action specified in 3.2 above.

13.0 GC/MS Initial Calibration (Form VI/Equivalent)

13.1 Is the Initial Calibration Form (Form VI/ Equivalent) present and complete for the semivolatile fraction? [✓] ___ ___

ACTION: If any calibration forms or standard row data are missing, take action specified in 3.2 above.

13.2 Are all base neutral or acid RRFs > 0.050? [✓] ___ ___

YES NO N/A

Check the **average RRFs** of the four System Performance Check Compounds (SPCCs): N-nitroso-di-n-propylamine, hexachlorocyclopentadiene, 2,4-dinitrophenol, and 4-nitrophenol. These compounds must have **average RRFs** greater than or equal to 0.05 before running samples and should not show any peak tailing.

ACTION: Circle all outliers in red.

ACTION: For any target analyte with **average RRF <0.05**

1. "R" all non-detects;

2. "J" all positive results.

13.3 Are response factors for base neutral or acid target analytes stable over the concentration range of the calibration (% Relative standard deviation [%RSD] < 20.0%)? [ ] ✓ ___

NOTE: The % RSD for each individual Calibration Check Compound (CCC, Method 8270D-40 see Table 4) must be less than 30% before analysis can begin. If grater 30%, the lab must clean and recalibrate the instrument.

CALIBRATION CHECK COMPOUNDS

Base/Neutral Fraction	Acid Fraction
Acenaphthene	4-Chloro-3-methylphenol
1,4-Dichlorobenzene	2,4-Dichlorophenol
Hexachlorobutadiene	2-Nitrophenol
Diphenylamine	Phenol
Di-n-octyl phthalate	Pentachlorophenol
Fluoranthene	2,4,6-Trichlorophenol

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Form 5
Semivolatile Organic Instrument Performance Check

Lab Name : Katahdin Analytical Services
Project : NTR Vieques East CTO-037 PI-21
Lab File ID : GD199.D
Instrument ID : GCMS-G

SDG : SG2441
Date Analyzed : 15-APR-13
Time Analyzed : 11:53

m/e	Ion Abundance Criteria	% Relative Abundance		
51	30.0 - 60.0% of mass 198	35.4		
68	Less than 2.0% of mass 69	0.6	1.64	1
69	Less than 100.0% of mass 198	38.2		
70	Less than 2.0% of mass 69	0.2	0.60	1
127	40.0 - 60.0% of mass 198	55.7		
197	Less than 1.0% of mass 198	0.0		
198	Base Peak, 100% relative abundance	100		
199	5.0 - 9.0% of mass 198	6.8		
275	10.0 - 30.0% of mass 198	21.5		
365	1.0 - 100.0% of mass 198	2.7		
441	0.0 - 100.0% of mass 443	8.0	71.17	2
442	40.0 - 100.0% of mass 198	57.0		
443	17.0 - 23.0% of mass 442	11.3	19.82	3

1-Value is % mass 69
2-Value is % mass 443
3-Value is % mass 442

This check applies to the following samples, LCS, MS, MSD and standards:

Client Sample ID	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
Initial Calibration	WG122735-4	G8433.D	04/15/13	12:11
Initial Calibration	WG122735-7	G8434.D	04/15/13	12:54
Initial Calibration	WG122735-6	G8435.D	04/15/13	13:37
Initial Calibration	WG122735-5	G8436.D	04/15/13	14:20
Initial Calibration	WG122735-3	G8438.D	04/15/13	15:46
Initial Calibration	WG122735-2	G8439.D	04/15/13	16:29
Independent Source	WG122735-8	G8440.D	04/15/13	17:12

All Samples

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Katahdin
ANALYTICAL SERVICES

Cert No E87604

Form 6
Initial Calibration Summary

Lab Name : Katahdin Analytical Services **SDG:** SG2441
Project : NTR Vieques East CTO-037 PI-21 **Instrument ID:** GCMS-G
Lab File IDs : G8439.D G8438.D G8433.D G8436.D G8435.D G8434.D **Column ID:**
Calibration Date(s): 15-APR-13 12:11 15-APR-13 16:29

Butylbenzylphthalate	0.92050	0.76609	0.94689	0.94279	0.87380	0.90091	AVG		0.89183		7.55014	15.00000	O
Benzo(a)anthracene	0.84959	0.92984	1.10180	1.11888	1.10245	1.14897	AVG		1.04192		11.69072	15.00000	O
3,3'-Dichlorobenzidine	533	4140	7331	18877	63341	72358	QUA	0.27074	2.82967	0.98645	0.99105	0.99000	O
Di-n-octylphthalate	0.82738	1.04908	1.69352	1.75130	1.70428	1.78344	AVG		1.46816		28.44994	15.00000	W
Benzo(b)fluoranthene	2490	11861	28073	73126	237600	308899	LNR	0.16066	1.29777		0.99944	0.99000	O
Benzo(k)fluoranthene	2.11613	2.26364	2.14823	2.11553	1.90643	1.85828	AVG		2.06804		7.47156	15.00000	O
Benzo(a)pyrene	2567	12096	35074	83290	256891	313901	LNR	0.05900	1.33066		0.99891	0.99000	O
Indeno(1,2,3-cd)pyrene	0.58076	0.29586	0.37917	0.51461	0.72389	0.59437	AVG		0.51478		30.18561	15.00000	W
Dibenzo(a,h)anthracene	0.38064	0.41704	0.53455	0.67371	0.86139	0.68511	AVG		0.59207		30.82077	15.00000	W
2-Methylnaphthalene-D10	0.54148	0.58491	0.57508	0.60108	0.53754	0.49560	AVG		0.55595		6.93490	15.00000	
2,4-Dibromophenol	0.25529	0.29228	0.30445	0.32585	0.33520	0.32100	AVG		0.30568		9.51845	15.00000	
Fluorene-D10	11323	21775	38587	81539	206827	297144	LNR	-0.09597	0.89838		0.99958	0.99000	
Pyrene-D10	1.48440	1.18552	1.31997	1.22693	1.10178	1.13092	AVG		1.24159		11.40467	15.00000	

Legend: O = Kept Original Curve
Y = Failed Minimum RF
W = Failed %RSD Value

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YES NO N/A

Benzo(a)pyrene

ACTION: If the %RSD for any CCC >30% and no corrective action taken, then "J" qualify all positive hits and "UJ" qualify all non-detects.

ACTION: Circle all outliers in red.

ACTION: If the % RSD is ≥ 20.0%, qualify positive results for that analyte "J" and non-detects using professional judgement. When RSD > 90%, flag all non- detect results for that analyte "R," unusable. Alternatively, the lab should calculate first or second order regression fit of the calibration curve and select the fit which introduces the least amount of error.

NOTE: Analytes previously qualified "U" due to blank contamination are still considered as "hits" when qualifying for calibration criteria.

13.4 Did the laboratory calculate the calibration curve by the least squares regression fit? ___ [✓] ___

13.5 Are there any transcription/calculation errors in the reporting of average response factors (RRF) or % RSD? (Check at least two values but if errors are found, check more.) ___ [✓] ___

ACTION: Circle Errors in red.

ACTION: If errors are large, call lab for explanation/resubmittal, make any necessary corrections and note errors in data assessments.

13.5 Do the target compounds for this SDG include Pesticides? [ ] ✓ ___

	YES	NO	N/A
13.6 If the pesticide compounds include DDT, was the percent breakdown of DDT to DDD and DDE greater than 20%?	___	[ ]	✓

ACTION: If DDT percent breakdown exceeds 20%:

i. Qualify all positive results for DDT with "J". If DDT was not detected, but DDD and DDE results are positive, qualify the quantitation limit for DDT as unusable, "R".

ii. Qualify all positive results for DDD and DDE as presumptively present at an approximate concentration "JN".

14.0 GC/MS Calibration Verification (Form VII/Equivalent)

14.1 Are the Calibration Verification Forms (Form VII) present and complete for all compounds of interest?	✓	___	___
14.2 Has a calibration verification standard been analyzed for every twelve hours of sample analysis per instrument?	✓	___	___

ACTION: List below all sample analyses that were not within twelve hours of a calibration verification analysis for each instrument used.

_____

_____

_____

ACTION: If any forms are missing or no calibration verification standard has been analyzed within twelve hours of every sample analysis,

	YES	NO	N/A
call lab for explanation/resubmittal. If continuing calibration data are not available, flag all associated sample data as unusable ("R").			
14.3 Do any of the SPCCs have an RRF <0.05?		✓	
If YES, make a note in data assessment if the lab did not take corrective action specified in section 7.4.4, page 8270D-18.		✓	
14.4 Do any of the CCCs have a %D between the initial and continuing RRF which exceeds 20.0%?			
ACTION: If yes, make a note in data assessment.			
14.5 Do any semivolatile compounds have a % Difference (% D) between the initial and continuing RRF which exceeds 20.0%?	✓		
ACTION: Circle all outliers in red.			
ACTION: Qualify both positive results and non-detects for the outlier compound(s) as estimated (J). When %D is above 90%, qualify all non-detects for that analyte as "R", unusable.			
14.6 Do any semivolatile compounds have a RRF < 0.05?	✓		
ACTION: Circle all outliers in red.			
ACTION: If RRF < 0.05, qualify as unusable ("R") associated non-detects and "J" associated positive values.			
14.7 Are there any transcription/calculation errors in the reporting of average response factors (RRF) or percent difference (%D) between initial and continuing RRFs? (Check at least two values but if errors are found, check more).		✓	

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Form 5
Semivolatile Organic Instrument Performance Check

Lab Name : Katahdin Analytical Services
Project : NTR Vieques East CTO-037 PI-21
Lab File ID : GD201.D
Instrument ID : GCMS-G

SDG : SG2441
Date Analyzed : 17-APR-13
Time Analyzed : 08:46

m/e	Ion Abundance Criteria	% Relative Abundance		
51	30.0 - 60.0% of mass 198	33.6		
68	Less than 2.0% of mass 69	0.5	1.44	1
69	Less than 100.0% of mass 198	36.2		
70	Less than 2.0% of mass 69	0.2	0.55	1
127	40.0 - 60.0% of mass 198	54.2		
197	Less than 1.0% of mass 198	0.0		
198	Base Peak, 100% relative abundance	100		
199	5.0 - 9.0% of mass 198	6.9		
275	10.0 - 30.0% of mass 198	22.2		
365	1.0 - 100.0% of mass 198	2.9		
441	0.0 - 100.0% of mass 443	8.7	71.86	2
442	40.0 - 100.0% of mass 198	63.2		
443	17.0 - 23.0% of mass 442	12.1	19.20	3

1-Value is % mass 69 2-Value is % mass 443
3-Value is % mass 442

This check applies to the following samples, LCS, MS, MSD and standards:

Client Sample ID	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
Continuing Calibrati	WG122786-2	G8448.D	04/17/13	09:13
Method Blank Sample	WG122732-1	G8449.D	04/17/13	09:55
Laboratory Control S	WG122732-2	G8453.D	04/17/13	12:46
Laboratory Control S	WG122732-3	G8454.D	04/17/13	13:28
VEP21-SS01-0001	SG2441-1	G8457.D	04/17/13	15:36
VEP21-SS01P-0001	SG2441-2	G8458.D	04/17/13	16:19
VEP21-SS03-0001	SG2441-3	G8459.D	04/17/13	17:01
VEP21-SB01-011H	SG2441-5	G8460.D	04/17/13	17:44
VEP21-SS05-0001	SG2441-6	G8461.D	04/17/13	18:26
VEP21-SS02-0001	SG2441-7	G8462.D	04/17/13	19:07
VEP21-SB03-0102	SG2441-8	G8463.D	04/17/13	19:49
VEP21-SB05-011H	SG2441-10	G8464.D	04/17/13	20:31

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ANALYTICAL SERVICES

Cert No E87604

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : NTR Vieques East CTO-037 PI-21 **SDG:** SG2441
Lab ID : WG122786-2 **Analytical Date:** 04/17/13 09:13
Lab File ID : G8448.D **Instrument ID:** GCMS-G
Initial Calibration Date(s): 04/15/13 12:11 04/15/13 16:29 **Column ID:**

Compound	RRF/Amount	RF1	CCAL RRF1	Min	%D/ %Drift	Max %D/ %Drift	Curve Type		
2 1,4-Dioxane	0.48047	0.52764	0.52764	0.010	9.81854	20.00000	Averaged		
3 Benzaldehyde	0.47682	0.54171	0.54171	0.010	13.60900	20.00000	Averaged		
5 Bis(2-Chloroethyl)ether	1.13450	1.08642	1.08642	0.010	-4.23758	20.00000	Averaged		
6 2-Chlorophenol	1.29365	1.43972	1.43972	0.010	11.29080	20.00000	Averaged		
8 2-Methylphenol	1.06890	1.12273	1.12273	0.010	5.03644	20.00000	Averaged		
9 2,2'-Oxybis(1-chloropropane	1.28422	1.27807	1.27807	0.010	-0.47852	20.00000	Averaged		
11 N-Nitroso-di-n-propylamine	1.00000	1.03962	0.91476	0.050	3.96239	20.00000	Quadratic		
12 3&4-Methylphenol	1.26066	1.37429	1.37429	0.010	9.01334	20.00000	Averaged		
13 Hexachloroethane	1.00000	0.96024	0.44698	0.010	-3.97563	20.00000	Linear		
14 Nitrobenzene	0.28524	0.28925	0.28925	0.010	1.40828	20.00000	Averaged		
15 Isophorone	1.00000	0.87705	0.46898	0.010	-12.29471	20.00000	Linear		
16 2-Nitrophenol	0.14138	0.15897	0.15897	0.010	12.44479	20.01000	Averaged		
17 2,4-Dimethylphenol	0.29919	0.29774	0.29774	0.010	-0.48517	20.00000	Averaged		
18 bis(2-Chloroethoxy)methane	0.34097	0.35029	0.35029	0.010	2.73329	20.00000	Averaged		
19 2,4-Dichlorophenol	0.25519	0.25914	0.25914	0.010	1.54769	20.01000	Averaged		
21 Naphthalene	0.95794	0.92506	0.92506	0.010	-3.43293	20.00000	Averaged		
22 4-Chloroaniline	0.35161	0.33514	0.33514	0.010	-4.68384	20.00000	Averaged		
23 Hexachlorobutadiene	0.15096	0.14655	0.14655	0.010	-2.91628	20.01000	Averaged		
25 4-Chloro-3-Methylphenol	0.24544	0.24354	0.24354	0.010	-0.77461	20.01000	Averaged		
27 2-Methylnaphthalene	0.62216	0.59944	0.59944	0.010	-3.65130	20.00000	Averaged		
30 Hexachlorocyclopentadiene	0.20475	0.20009	0.20009	0.050	-2.27858	20.00000	Averaged		
32 2,4,6-Trichlorophenol	0.35522	0.36057	0.36057	0.010	1.50572	20.01000	Averaged		
33 2,4,5-Trichlorophenol	0.43463	0.41498	0.41498	0.010	-4.52125	20.00000	Averaged		
35 1,1'-Biphenyl	1.58096	1.70355	1.70355	0.010	7.75413	20.00000	Averaged		
36 2-Nitroaniline	0.25036	0.24478	0.24478	0.010	-2.22705	20.00000	Averaged		
38 2,6-Dinitrotoluene	0.29253	0.28657	0.28657	0.010	-2.03658	20.00000	Averaged		
43 2,4-Dinitrophenol	3.00000	2.68681	0.04622	0.050	-10.43966	20.00000	Quadratic	*	JR
44 Dibenzofuran	1.64607	1.63139	1.63139	0.010	-0.89211	20.00000	Averaged		
45 4-Nitrophenol	3.00000	2.56833	0.09084	0.050	-14.38906	20.00000	Quadratic		
46 2,4-Dinitrotoluene	1.23166	1.20729	1.20729	0.010	-1.97829	20.00000	Averaged		
47 2,3,4,6-Tetrachlorophenol	0.35217	0.34533	0.34533	0.010	-1.94380	20.00000	Averaged		
52 4-Nitroaniline	0.13638	0.10166	0.10166	0.010	-25.45836	20.00000	Averaged	*	JWS
53 4,6-Dinitro-2-Methylphenol	3.00000	2.74128	0.06768	0.010	-8.62391	20.00000	Quadratic		
54 N-Nitrosodiphenylamine	0.69818	0.67726	0.67726	0.010	-2.99700	20.01000	Averaged		
56 Hexachlorobenzene	0.25038	0.23805	0.23805	0.010	-4.92432	20.00000	Averaged		
57 Atrazine	0.18343	0.16513	0.16513	0.010	-9.97686	20.00000	Averaged		
58 Pentachlorophenol	3.00000	2.74351	0.09728	0.010	-8.54959	20.01000	Quadratic		
67 Butylbenzylphthalate	0.89183	0.85967	0.85967	0.010	-3.60673	20.00000	Averaged		
68 Benzo(a)anthracene	1.04192	0.92382	0.92382	0.010	-11.33518	20.00000	Averaged		
71 3,3'-Dichlorobenzidine	1.00000	0.73616	0.17089	0.010	-26.38438	20.00000	Quadratic	*	JWS
73 Di-n-octylphthalate	1.46816	1.18297	1.18297	0.010	-19.42498	20.01000	Averaged		

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Cert No E87604

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : NTR Vieques East CTO-037 PI-21 **SDG:** SG2441
Lab ID : WG122786-2 **Analytical Date:** 04/17/13 09:13
Lab File ID : G8448.D **Instrument ID:** GCMS-G
Initial Calibration Date(s): 04/15/13 12:11 04/15/13 16:29 **Column ID:**

Compound	RRF/Amount	RF1	CCAL RRF1	Min	%D/ %Drift	Max %D/ %Drift	Curve Type	
74 Benzo(b)fluoranthene	1.00000	0.91031	1.01458	0.010	-8.96863	20.00000	Linear	
75 Benzo(k)fluoranthene	2.06804	2.17641	2.17641	0.010	5.24040	20.00000	Averaged	
76 Benzo(a)pyrene	1.00000	1.01412	1.28665	0.010	1.41198	20.01000	Linear	
78 Indeno(1,2,3-cd)pyrene	0.51478	0.31325	0.31325	0.010	-39.14764	20.00000	Averaged	*
79 Dibenzo(a,h)anthracene	0.59207	0.44083	0.44083	0.010	-25.54467	20.00000	Averaged	*
26 2-Methylnaphthalene-D10	0.55595	0.55523	0.55523	0.010	-0.12857	20.00000	Averaged	
31 2,4-Dibromophenol	0.30568	0.29462	0.29462	0.010	-3.61693	20.00000	Averaged	
48 Fluorene-D10	1.00000	0.98051	0.94984	0.010	-1.94919	20.00000	Linear	
65 Pyrene-D10	1.24159	1.25343	1.25343	0.010	0.95381	20.00000	Averaged	

JWJ 5/05

* = Compound out of QC criteria

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Form 5
Semivolatile Organic Instrument Performance Check

Lab Name : Katahdin Analytical Services
Project : NTR Vieques East CTO-037 PI-21
Lab File ID : GD202.D
Instrument ID : GCMS-G

SDG : SG2441
Date Analyzed : 22-APR-13
Time Analyzed : 11:43

m/e	Ion Abundance Criteria	% Relative Abundance		
51	30.0 - 60.0% of mass 198	34.4		
68	Less than 2.0% of mass 69	0.7	1.79	1
69	Less than 100.0% of mass 198	36.7		
70	Less than 2.0% of mass 69	0.2	0.55	1
127	40.0 - 60.0% of mass 198	56.2		
197	Less than 1.0% of mass 198	0.0		
198	Base Peak, 100% relative abundance	100		
199	5.0 - 9.0% of mass 198	6.9		
275	10.0 - 30.0% of mass 198	22.6		
365	1.0 - 100.0% of mass 198	2.7		
441	0.0 - 100.0% of mass 443	8.5	72.93	2
442	40.0 - 100.0% of mass 198	61.6		
443	17.0 - 23.0% of mass 442	11.7	19.02	3

1-Value is % mass 69 2-Value is % mass 443
3-Value is % mass 442

This check applies to the following samples, LCS, MS, MSD and standards:

Client Sample ID	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
Continuing Calibrati	WG122980-2	G8466.D	04/22/13	12:01
Method Blank Sample	WG122803-1	G8468.D	04/22/13	13:33
VEP21-EB01-041113	SG2441-13	G8469.D	04/22/13	14:16
Laboratory Control S	WG122803-2	G8470.D	04/22/13	14:59
Laboratory Control S	WG122803-3	G8471.D	04/22/13	15:42
VEP21-SB02-011H	SG2441-11	G8472.D	04/22/13	16:24
VEP21-SS04-0001	SG2441-4	G8473.D	04/22/13	17:07
Matrix Spike	WG122732-4	G8474.D	04/22/13	17:49
Matrix Spike Duplica	WG122732-5	G8475.D	04/22/13	18:30
VEP21-SB04-011H	SG2441-9	G8476.D	04/22/13	19:12

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Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : NTR Vieques East CTO-037 PI-21 **SDG:** SG2441
Lab ID : WG122980-2 **Analytical Date:** 04/22/13 12:01
Lab File ID : G8466.D **Instrument ID:** GCMS-G
Initial Calibration Date(s): 04/15/13 12:11 04/15/13 16:29 **Column ID:**

Compound	RRF/Amount	RF1	CCAL RRF1	Min	%D/ %Drift	Max %D/ %Drift	Curve Type		
2 1,4-Dioxane	0.48047	0.52840	0.52840	0.010	9.97667	20.00000	Averaged		
3 Benzaldehyde	0.47682	0.52348	0.52348	0.010	9.78643	20.00000	Averaged		
5 Bis(2-Chloroethyl)ether	1.13450	1.22545	1.22545	0.010	8.01662	20.00000	Averaged		
6 2-Chlorophenol	1.29365	1.54302	1.54302	0.010	19.27591	20.00000	Averaged		
8 2-Methylphenol	1.06890	1.13530	1.13530	0.010	6.21238	20.00000	Averaged		
9 2,2'-Oxybis(1-chloropropane	1.28422	1.29319	1.29319	0.010	0.69904	20.00000	Averaged		
11 N-Nitroso-di-n-propylamine	1.00000	1.10341	0.96317	0.050	10.34142	20.00000	Quadratic		
12 3&4-Methylphenol	1.26066	1.50721	1.50721	0.010	19.55739	20.00000	Averaged		
13 Hexachloroethane	1.00000	1.37351	0.62149	0.010	37.35138	20.00000	Linear	*	JVJ
14 Nitrobenzene	0.28524	0.32618	0.32618	0.010	14.35551	20.00000	Averaged		
15 Isophorone	1.00000	0.91278	0.49013	0.010	-8.72204	20.00000	Linear		
16 2-Nitrophenol	0.14138	0.18263	0.18263	0.010	29.17590	20.01000	Averaged	*	JVJ
17 2,4-Dimethylphenol	0.29919	0.33919	0.33919	0.010	13.36874	20.00000	Averaged		
18 bis(2-Chloroethoxy)methane	0.34097	0.37460	0.37460	0.010	9.86488	20.00000	Averaged		
19 2,4-Dichlorophenol	0.25519	0.28695	0.28695	0.010	12.44349	20.01000	Averaged		
21 Naphthalene	0.95794	1.05800	1.05800	0.010	10.44488	20.00000	Averaged		
22 4-Chloroaniline	0.35161	0.34478	0.34478	0.010	-1.94114	20.00000	Averaged		
23 Hexachlorobutadiene	0.15096	0.15649	0.15649	0.010	3.66340	20.01000	Averaged		
25 4-Chloro-3-Methylphenol	0.24544	0.26418	0.26418	0.010	7.63372	20.01000	Averaged		
27 2-Methylnaphthalene	0.62216	0.68913	0.68913	0.010	10.76552	20.00000	Averaged		
30 Hexachlorocyclopentadiene	0.20475	0.22340	0.22340	0.050	9.10529	20.00000	Averaged		
32 2,4,6-Trichlorophenol	0.35522	0.38020	0.38020	0.010	7.03075	20.01000	Averaged		
33 2,4,5-Trichlorophenol	0.43463	0.45800	0.45800	0.010	5.37556	20.00000	Averaged		
35 1,1'-Biphenyl	1.58096	1.77885	1.77885	0.010	12.51680	20.00000	Averaged		
36 2-Nitroaniline	0.25036	0.29191	0.29191	0.010	16.59924	20.00000	Averaged		
38 2,6-Dinitrotoluene	0.29253	0.31820	0.31820	0.010	8.77608	20.00000	Averaged		
43 2,4-Dinitrophenol	3.00000	3.11864	0.05589	0.050	3.95467	20.00000	Quadratic		
44 Dibenzofuran	1.64607	1.78025	1.78025	0.010	8.15160	20.00000	Averaged		
45 4-Nitrophenol	3.00000	3.11279	0.11296	0.050	3.75981	20.00000	Quadratic		
46 2,4-Dinitrotoluene	1.23166	1.27560	1.27560	0.010	3.56719	20.00000	Averaged		
47 2,3,4,6-Tetrachlorophenol	0.35217	0.37376	0.37376	0.010	6.13100	20.00000	Averaged		
52 4-Nitroaniline	0.13638	0.15171	0.15171	0.010	11.24324	20.00000	Averaged		
53 4,6-Dinitro-2-Methylphenol	3.00000	3.19893	0.08128	0.010	6.63095	20.00000	Quadratic		
54 N-Nitrosodiphenylamine	0.69818	0.88686	0.88686	0.010	27.02426	20.01000	Averaged	*	JVJ
56 Hexachlorobenzene	0.25038	0.27031	0.27031	0.010	7.95884	20.00000	Averaged		
57 Atrazine	0.18343	0.18149	0.18149	0.010	-1.05617	20.00000	Averaged		
58 Pentachlorophenol	3.00000	3.09607	0.11234	0.010	3.20229	20.01000	Quadratic		
67 Butylbenzylphthalate	0.89183	1.10045	1.10045	0.010	23.39273	20.00000	Averaged	*	JVJ
68 Benzo(a)anthracene	1.04192	1.18169	1.18169	0.010	13.41484	20.00000	Averaged		
71 3,3'-Dichlorobenzidine	1.00000	0.85048	0.20559	0.010	-14.95219	20.00000	Quadratic		
73 Di-n-octylphthalate	1.46816	1.93449	1.93449	0.010	31.76213	20.01000	Averaged	*	JVJ

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Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : NTR Vieques East CTO-037 PI-21 **SDG:** SG2441
Lab ID : WG122980-2 **Analytical Date:** 04/22/13 12:01
Lab File ID : G8466.D **Instrument ID:** GCMS-G
Initial Calibration Date(s): 04/15/13 12:11 04/15/13 16:29 **Column ID:**

Compound	RRF/Amount	RF1	CCAL RRF1	Min	%D/ %Drift	Max %D/ %Drift	Curve Type	
74 Benzo(b)fluoranthene	1.00000	1.10619	1.26878	0.010	10.61884	20.00000	Linear	
75 Benzo(k)fluoranthene	2.06804	2.24376	2.24376	0.010	8.49681	20.00000	Averaged	
76 Benzo(a)pyrene	1.00000	1.07976	1.37399	0.010	7.97624	20.01000	Linear	
78 Indeno(1,2,3-cd)pyrene	0.51478	0.49335	0.49335	0.010	-4.16300	20.00000	Averaged	
79 Dibenzo(a,h)anthracene	0.59207	0.62199	0.62199	0.010	5.05230	20.00000	Averaged	
26 2-Methylnaphthalene-D10	0.55595	0.59614	0.59614	0.010	7.22969	20.00000	Averaged	
31 2,4-Dibromophenol	0.30568	0.33811	0.33811	0.010	10.61017	20.00000	Averaged	
48 Fluorene-D10	1.00000	1.05912	1.02047	0.010	5.91199	20.00000	Linear	
65 Pyrene-D10	1.24159	1.49886	1.49886	0.010	20.72091	20.00000	Averaged	*

*** = Compound out of QC criteria**

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YES NO N/A

ACTION: Circle errors in red.

ACTION: If errors are large, call lab for explanation/resubmittal, make any necessary corrections and document effect(s) in the data assessments.

15.0 Internal Standards (Form VIII)

15.1 Are the internal standard areas (Form VIII) of every sample and blank within the upper and lower limits (-50% to + 100%) for each continuing calibration? [ ] ✓ ___

ACTION: List each outlying internal standard below.

Sample ID	IS #	Area	LowerLimit	Upper Limit
See attached form -				
		No qual		

(Attach additional sheets if necessary.)

Note: Check Table 5, 8270D-41 for associated analytes.

ACTION: i. If the internal standard area count is outside the upper or lower limit, flag with "J" all positive results and non-detects (U values) quantitated with this internal standard.

ii. Non-detects associated with IS > 100% should not be qualified.

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Form 8
Internal Standard Area and RT Summary

Lab Name : Katahdin Analytical Services
Project : NTR Vieques East CTO-037 PI-:
Lab ID : WG122735-4
Lab File ID : G8433.D

SDG: SG2441
Analytical Date: 04/15/13 12:11
Instrument ID: GCMS-G

		PHENANTHRENE-D10			CHRYSENE-D12			PERYLENE-D12		
		Area	#	RT	Area	#	RT	Area	#	RT
	Std .	50390		19.47	29545		25.76	21413		28.91
	Upper Limit	100780		19.97	59090		26.26	42826		29.41
	Lower Limit	25195		18.97	14772.5		25.26	10706.5		28.41
Client Sample ID	Lab Sample ID									
Continuing Calibrati	WG122786-2	47129		19.47	25851		25.77	15890		28.93
Method Blank Sample	WG122732-1	35285		19.47	16061		25.78	7896	*	28.92
Laboratory Control S	WG122732-2	46642		19.47	26598		25.77	17432		28.91
Laboratory Control S	WG122732-3	49093		19.47	27074		25.78	18558		28.91
VEP21-SS01-0001	SG2441-1	64574		19.47	38431		25.76	22781		28.91
VEP21-SS01P-0001	SG2441-2	55777		19.47	33064		25.76	21979		28.91
VEP21-SS03-0001	SG2441-3	68585		19.47	38654		25.76	22690		28.91
VEP21-SB01-011H	SG2441-5	65053		19.47	36899		25.76	21799		28.91
VEP21-SS05-0001	SG2441-6	74574		19.47	42901		25.76	26219		28.91
VEP21-SS02-0001	SG2441-7	76321		19.47	43342		25.77	25472		28.91
VEP21-SB03-0102	SG2441-8	75441		19.47	43859		25.77	26047		28.92
VEP21-SB05-011H	SG2441-10	77792		19.47	37993		25.76	20432		28.91
Continuing Calibrati	WG122980-2	68212		19.47	32927		25.78	17419		28.93
Method Blank Sample	WG122803-1	81858		19.47	39661		25.78	23137		28.91
VEP21-EB01-041113	SG2441-13	77929		19.47	34515		25.77	11468		28.93
Laboratory Control S	WG122803-2	56857		19.47	24473		25.78	14364		28.93
Laboratory Control S	WG122803-3	46998		19.47	16924		25.78	9450	*	28.92
VEP21-SB02-011H	SG2441-11	67605		19.47	28033		25.77	17739		28.91
VEP21-SS04-0001	SG2441-4	80407		19.47	38100		25.77	22184		28.91
Matrix Spike	WG122732-4	83514		19.47	38960		25.77	21903		28.91
Matrix Spike Duplica	WG122732-5	83090		19.47	37605		25.77	23478		28.91
VEP21-SB04-011H	SG2441-9	92133		19.47	41399		25.77	21374		28.93

Area Upper Limit = +100% of internal standard area
Area Lower Limit = - 50% of internal standard area
RT Upper Limit = + 0.50 minutes of internal standard RT
RT Lower Limit = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

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	YES	NO	N/A
iii. If the IS area is below the lower limit (<50%), qualify all associated non-detects (U-values) "J". If extremely low area counts are reported (<25%) or if performance exhibits a major abrupt drop off, flag all associated non-detects as unusable (R).			
15.2 Are the retention times of all internal standards within 30 seconds of the associated calibration standard?	[✓]	___	___

ACTION: Professional judgement should be used to qualify data if the retention times differ by more than 30 seconds.

16.0 Laboratory Control Samples (LCS)

	YES	NO	N/A
16.1 Were any LCS samples run in order to verify analytes which failed criteria for spike recovery?	[✓]	___	___
16.2 Did the lab spike LCS sample spiked with the same analytes and the same concentrations as the matrix spike?	[✓]	___	___
16.3 Were the mean and standard deviation of all analytes within the QC acceptance ranges as shown in Table 6, 8270D-43?	[ ]	✓	___

ACTION: If the recovery of any analyte falls out of the designated range, the analytical results for that compound is suspect and should be qualified "J" in the unspiked samples. See attached form

17.0 Field Duplicates

	YES	NO	N/A
17.1 Were any field duplicates submitted for semivolatile analysis?	[✓]	___	___

Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : NTR Vieques East CTO-037 PI-21
Lab File ID : G8468.D
Instrument ID : GCMS-G
Matrix : AQ

SDG : SG2441
Lab Sample ID : WG122803-1
Date Extracted : 17-APR-13
Date Analyzed : 22-APR-13
Time Analyzed : 13:33

This Method Blank applies to the following samples, LCS, MS and MSD:

Client Sample ID	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
VEP21-EB01-041113	SG2441-13	G8469.D	04/22/13	14:16
Laboratory Control S	WG122803-2	G8470.D	04/22/13	14:59
Laboratory Control S	WG122803-3	G8471.D	04/22/13	15:42

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LCS/LCSD Recovery Report

LCS ID: WG122803-2
LCSD ID: WG122803-3
Project:
SDG: SG2441
Report Date: 03-MAY-13
LCS File ID: G8470.D

Received Date:
Extract Date: 17-APR-13
Extracted By: JMS
Extraction Method: SW846 3520
Lab Prep Batch: WG122803
LCSD File ID: G8471.D

Analysis Date: 22-APR-13
Analyst: JCG
Analysis Method: SW846 M8270D
Matrix: AQ
% Solids: NA

Compound	Spike Amt	LCS Conc	LCS Rec (%)	LCSD Conc	LCSD Rec (%)	Conc Units	RPD (%)	RPD Limit	Limits
2-Chlorophenol	4.00	2.64	66.0	2.32	58.0	ug/L	13	30	30-112
Naphthalene	2.00	1.62	81.0	1.53	76.5	ug/L	6	30	46-84
Hexachlorobutadiene	2.00	0.969	48.4	0.852	42.6*	ug/L	13	30	48-95
2-Methylnaphthalene	2.00	1.48	74.0	1.38	69.0	ug/L	7	30	51-114
Hexachlorobenzene	2.00	1.55	77.5	1.64	82.0	ug/L	6	30	62-90
Pentachlorophenol	4.00	2.53	63.2	1.94	48.5	ug/L	26	30	10-66
Benzo(a)anthracene	2.00	1.75	87.5	1.59	79.5	ug/L	10	30	70-110
Benzo(b)fluoranthene	2.00	1.68	84.0	1.49	74.5	ug/L	12	30	67-102
Benzo(k)fluoranthene	2.00	1.59	79.5	1.58	79.0	ug/L	1	30	68-103
Benzo(a)pyrene	2.00	1.65	82.5	1.58	79.0	ug/L	4	30	63-98
Indeno(1,2,3-cd)pyrene	2.00	1.35	67.5	1.36	68.0	ug/L	1	30	61-112
Dibenzo(a,h)anthracene	2.00	1.61	80.5	1.71	85.5	ug/L	6	30	66-108
1,1'-Biphenyl	4.00	1.60	40.0*	1.60	40.0*	ug/L	0	30	56-96
2,2'-Oxybis(1-Chloropropane)	2.00	0.884	44.2*	0.824	41.2*	ug/L	7	30	57-90
2,4,5-Trichlorophenol	4.00	2.88	72.0	2.27	56.8	ug/L	24	30	20-133
2,4,6-Trichlorophenol	4.00	2.80	70.0	2.36	59.0	ug/L	17	30	19-139
2,4-Dichlorophenol	4.00	3.01	75.2	2.70	67.5	ug/L	11	30	31-106
2,4-Dimethylphenol	4.00	2.20	55.0	1.87	46.8	ug/L	16	30	33-87
2,4-Dinitrophenol	4.00	2.78	69.5	2.07	51.8	ug/L	29	30	10-95
2,4-Dinitrotoluene	2.00	1.51	75.5	1.46	73.0	ug/L	3	30	48-95
2,6-Dinitrotoluene	2.00	1.50	75.0	1.40	70.0	ug/L	7	30	47-86
2-Methylphenol	4.00	2.55	63.8	2.37	59.2	ug/L	7	30	29-89
2-Nitroaniline	2.00	1.81	90.5	1.66	83.0	ug/L	9	30	54-105
2-Nitrophenol	4.00	3.71	92.8	3.13	78.2	ug/L	17	30	30-113
3,3'-Dichlorobenzidine	4.00	1.63	40.8	1.66	41.5	ug/L	2	30	10-118
4,6-Dinitro-2-Methylphenol	4.00	2.82	70.5	2.21	55.2	ug/L	24	30	10-77
4-Chloro-3-Methylphenol	4.00	3.15	78.8	2.88	72.0	ug/L	9	30	58-107
4-Chloroaniline	2.00	1.01	50.5	0.898	44.9	ug/L	12	30	38-122
3&4-Methylphenol	4.00	2.68	67.0	2.48	62.0	ug/L	8	30	31-78
4-Nitroaniline	2.00	1.89	94.5	1.90	95.0	ug/L	0	30	42-152
4-Nitrophenol	4.00	2.76	69.0	1.92	48.0	ug/L	36*	30	10-160
Atrazine	2.00	1.80	90.0	1.64	82.0	ug/L	9	30	66-126
Benzaldehyde	2.00	2.19	110.	2.22	111.	ug/L	1	30	10-122
Bis(2-Chloroethoxy)Methane	2.00	1.62	81.0	1.57	78.5	ug/L	3	30	53-93

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Katahdin
ANALYTICAL SERVICES

Cert No E87604

LCS/LCSD Recovery Report

LCS ID: WG122803-2
LCSD ID: WG122803-3
Project:
SDG: SG2441
Report Date: 03-MAY-13
LCS File ID: G8470.D

Received Date:
Extract Date: 17-APR-13
Extracted By: JMS
Extraction Method: SW846 3520
Lab Prep Batch: WG122803
LCSD File ID: G8471.D

Analysis Date: 22-APR-13
Analyst: JCG
Analysis Method: SW846 M8270D
Matrix: AQ
% Solids: NA

Compound	Spike Amt	LCS Conc	LCS Rec (%)	LCSD Conc	LCSD Rec (%)	Conc Units	RPD (%)	RPD Limit	Limits
Bis(2-Chloroethyl)Ether	2.00	1.36	68.0	1.31	65.5	ug/L	4	30	56-87
Butylbenzylphthalate	2.00	2.15	108.	2.21	110.	ug/L	3	30	30-119
Dibenzofuran	2.00	1.56	78.0	1.51	75.5	ug/L	3	30	56-98
Di-N-Octylphthalate	2.00	2.24	112.	1.98	99.0	ug/L	12	30	56-122
Hexachlorocyclopentadiene	2.00	0.312	15.6	0.266	13.3	ug/L	16	30	10-96
Hexachloroethane	2.00	0.816	40.8*	0.713	35.6*	ug/L	13	30	48-80 J/Q
Isophorone	2.00	1.45	72.5	1.30	65.0	ug/L	11	30	43-89
Nitrobenzene	2.00	1.81	90.5*	1.78	89.0	ug/L	2	30	43-89
N-Nitroso-Di-N-Propylamine	2.00	1.19	59.5	1.10	55.0	ug/L	8	30	43-86
N-Nitrosodiphenylamine	2.00	1.33	66.5	1.59	79.5	ug/L	18	30	48-82
2,3,4,6-Tetrachlorophenol	4.00	2.67	66.8	1.96	49.0	ug/L	31*	30	10-101
1,4-Dioxane	2.00	1.32	66.0	1.40	70.0	ug/L	6	30	10-93
2-Methylnaphthalene-D10			61.7		58.2				43-92
Fluorene-D10			72.0		71.5				29-101
Pyrene-D10			101.		108.				53-166
2,4-Dibromophenol			78.2		71.8				10-130

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Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : NTR Vieques East CTO-037 PI-21
Lab File ID : G8449.D
Instrument ID : GCMS-G
Matrix : AQ

SDG : SG2441
Lab Sample ID : WG122732-1
Date Extracted : 15-APR-13
Date Analyzed : 17-APR-13
Time Analyzed : 09:55

This Method Blank applies to the following samples, LCS, MS and MSD:

Client Sample ID	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
Laboratory Control S	WG122732-2	G8453.D	04/17/13	12:46
Laboratory Control S	WG122732-3	G8454.D	04/17/13	13:28
VEP21-SS01-0001	SG2441-1	G8457.D	04/17/13	15:36
VEP21-SS01P-0001	SG2441-2	G8458.D	04/17/13	16:19
VEP21-SS03-0001	SG2441-3	G8459.D	04/17/13	17:01
VEP21-SB01-011H	SG2441-5	G8460.D	04/17/13	17:44
VEP21-SS05-0001	SG2441-6	G8461.D	04/17/13	18:26
VEP21-SS02-0001	SG2441-7	G8462.D	04/17/13	19:07
VEP21-SB03-0102	SG2441-8	G8463.D	04/17/13	19:49
VEP21-SB05-011H	SG2441-10	G8464.D	04/17/13	20:31
VEP21-SB02-011H	SG2441-11	G8472.D	04/22/13	16:24
VEP21-SS04-0001	SG2441-4	G8473.D	04/22/13	17:07
Matrix Spike	WG122732-4	G8474.D	04/22/13	17:49
Matrix Spike Duplica	WG122732-5	G8475.D	04/22/13	18:30
VEP21-SB04-011H	SG2441-9	G8476.D	04/22/13	19:12

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Katahdin
ANALYTICAL SERVICES

Cert No E87604

LCS/LCSD Recovery Report

LCS ID: WG122732-2
LCSD ID: WG122732-3
Project:
SDG: SG2441
Report Date: 03-MAY-13
LCS File ID: G8453.D

Received Date:
Extract Date: 15-APR-13
Extracted By: JMS
Extraction Method: SW846 3540
Lab Prep Batch: WG122732
LCSD File ID: G8454.D

Analysis Date: 17-APR-13
Analyst: JCG
Analysis Method: SW846 M8270D
Matrix: SL
% Solids: NA

Compound	Spike Amt	LCS Conc	LCS Rec (%)	LCSD Conc	LCSD Rec (%)	Conc Units	RPD (%)	RPD Limit	Limits	
bis(2-Chloroethyl)ether	66.7	48.6	72.9*	47.4	71.1*	ug/Kgdrywt	2	30	30-70	J*
2-Chlorophenol	133.	88.1	66.2	85.2	64.1	ug/Kgdrywt	3	30	38-80	
2-Methylphenol	133.	76.7	57.7	74.8	56.2	ug/Kgdrywt	2	30	30-85	
3&4-Methylphenol	133.	94.6	71.1	75.4	56.7	ug/Kgdrywt	22	30	29-94	
n-Nitroso-di-n-propylamine	66.7	44.3	66.4	42.6	63.9	ug/Kgdrywt	4	30	28-76	
Nitrobenzene	66.7	50.0	75.0	48.7	73.0	ug/Kgdrywt	3	30	15-107	
2,4-Dimethylphenol	133.	42.4	31.9	44.2	33.2	ug/Kgdrywt	4	30	10-113	
2,4-Dichlorophenol	133.	86.3	64.9	84.5	63.5	ug/Kgdrywt	2	30	39-114	
Naphthalene	66.7	48.3	72.4	45.5	68.2	ug/Kgdrywt	6	30	10-129	
2-Methylnaphthalene	66.7	42.4	63.6	41.6	62.4	ug/Kgdrywt	2	30	10-152	
Hexachlorocyclopentadiene	66.7	19.3	28.9	18.4	27.6	ug/Kgdrywt	5	30	10-128	
2,4,6-Trichlorophenol	133.	95.8	72.0	94.8	71.3	ug/Kgdrywt	1	30	26-104	
2,4,5-Trichlorophenol	133.	92.5	69.5	92.7	69.7	ug/Kgdrywt	0	30	28-104	
4-Nitrophenol	133.	103.	77.4	105.	78.9	ug/Kgdrywt	2	30	10-150	
2,4-Dinitrotoluene	66.7	48.5	72.7	49.6	74.4	ug/Kgdrywt	2	30	29-124	
4,6-Dinitro-2-methylphenol	133.	62.5	47.0	72.6	54.6	ug/Kgdrywt	15	30	10-140	
Hexachlorobenzene	66.7	52.0	78.0	50.0	75.0	ug/Kgdrywt	4	30	36-84	
Atrazine	66.7	61.9	92.8	62.8	94.2	ug/Kgdrywt	1	30	48-132	
Pentachlorophenol	133.	78.6	59.1	84.4	63.4	ug/Kgdrywt	7	30	10-94	
3,3'-Dichlorobenzidine	133.	35.1	26.4	39.8	29.9	ug/Kgdrywt	12	30	10-64	
Benzo(a)anthracene	66.7	53.1	79.6	55.4	83.0	ug/Kgdrywt	4	30	48-100	
Benzo(b)Fluoranthene	66.7	52.0	78.0	52.6	78.9	ug/Kgdrywt	1	30	53-100	
Benzo(k)fluoranthene	66.7	56.9	85.3	56.9	85.3	ug/Kgdrywt	0	30	49-96	
Benzo(a)pyrene	66.7	58.6	87.8	59.2	88.8	ug/Kgdrywt	1	30	61-101	
Indeno(1,2,3-cd)pyrene	66.7	37.0	55.5	38.5	57.7	ug/Kgdrywt	4	30	50-105	
Dibenzo(a,h)anthracene	66.7	53.9	80.8	55.3	82.9	ug/Kgdrywt	2	30	55-105	
2,4-Dinitrophenol	133.	27.3	20.5	46.6	35.0	ug/Kgdrywt	52* ✓	30	10-143	
n-Nitrosodiphenylamine	66.7	40.9	61.3	40.8	61.2	ug/Kgdrywt	0	30	26-82	
Benzaldehyde	66.7	41.7	62.5	43.8	65.7	ug/Kgdrywt	5	30	10-150	
2,2'-Oxybis(1-Chloropropane)	66.7	34.1	51.1	32.7	49.0	ug/Kgdrywt	4	30	35-90	
Hexachloroethane	66.7	47.9	71.8*	46.9	70.3*	ug/Kgdrywt	2	30	30-70	J*
Isophorone	66.7	41.8	62.7	41.4	62.1	ug/Kgdrywt	1	30	22-108	
2-Nitrophenol	133.	103.	77.4	103.	77.4	ug/Kgdrywt	0	30	15-111	
Bis(2-Chloroethoxy)Methane	66.7	47.3	70.9	46.5	69.7	ug/Kgdrywt	2	30	19-109	

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* no qual - no ⊕ for these compds

Katahdin
ANALYTICAL SERVICES

Cert No E87604

LCS/LCSD Recovery Report

LCS ID: WG122732-2
LCSD ID: WG122732-3
Project:
SDG: SG2441
Report Date: 03-MAY-13
LCS File ID: G8453.D

Received Date:
Extract Date: 15-APR-13
Extracted By: JMS
Extraction Method: SW846 3540
Lab Prep Batch: WG122732
LCSD File ID: G8454.D

Analysis Date: 17-APR-13
Analyst: JCG
Analysis Method: SW846 M8270D
Matrix: SL
% Solids: NA

Compound	Spike Amt	LCS Conc	LCS Rec (%)	LCSD Conc	LCSD Rec (%)	Conc Units	RPD (%)	RPD Limit	Limits
4-Chloroaniline	66.7	26.6	39.9	27.9	41.8	ug/Kgdrywt	5	30	10-50
Hexachlorobutadiene	66.7	47.3	70.9	44.9	67.3	ug/Kgdrywt	5	30	10-127
4-Chloro-3-Methylphenol	133.	92.6	69.6	93.4	70.2	ug/Kgdrywt	1	30	30-124
1,1'-Biphenyl	66.7	51.5	77.2	50.4	75.6	ug/Kgdrywt	2	30	23-109
2-Nitroaniline	66.7	51.7	77.5	50.3	75.4	ug/Kgdrywt	3	30	32-118
2,6-Dinitrotoluene	66.7	43.5	65.2	41.0	61.5	ug/Kgdrywt	6	30	27-98
Dibenzofuran	66.7	49.6	74.4	47.2	70.8	ug/Kgdrywt	5	30	28-102
4-Nitroaniline	66.7	54.8	82.2	54.4	81.6	ug/Kgdrywt	1	30	26-137
Butylbenzylphthalate	66.7	56.0	84.0	61.8	92.6	ug/Kgdrywt	10	30	37-128
Di-N-Octylphthalate	66.7	40.8	61.2	47.5	71.2	ug/Kgdrywt	15	30	45-127
2,3,4,6-Tetrachlorophenol	133.	87.1	65.5	89.9	67.6	ug/Kgdrywt	3	30	28-86
1,4-Dioxane	66.7	46.9	70.3	44.6	66.9	ug/Kgdrywt	5	30	30-150
2-Methylnaphthalene-D10			65.5		63.8				19-94
Fluorene-D10			69.9		67.7				20-96
Pyrene-D10			85.1		89.0				31-128
2,4-Dibromophenol			67.6		66.2				20-116

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YES NO N/A

ACTION: Compare the reported results for field duplicates and calculate the relative percent difference.

ACTION: Any gross variation between field duplicate results must be addressed in the reviewer narrative. However, if large differences exist, identification of field duplicates should be confirmed by contacting the sampler.

VEP21-SS01-0001
VEP21-SS01P-0001 > no ⊕ results above the LOD - no qual

Initial Calibration Date: 4/15/2013

RRF and %RSD Calculations:

Compound Name: 2-methylphenol
Lab Value: 1.007

Area of Compound	198439
Area of Internal STD	19715
Conc. of Internal STD	0.8
Conc. of Compound	8
Calculated RRF	1.007

Compound Name: benzo(k)fluoranthene
Lab Value: 7.47

RRF of STD 1	2.11613
RRF of STD 2	2.26364
RRF of STD 3	2.14823
RRF of STD 4	2.11553
RRF of STD 5	1.90643
RRF of STD 6	1.85828
Calculated % RSD	7.47

Continuing Calibration File ID: 4/17/2013

RRF and %D Calculations:

Compound Name: 4-nitroaniline
Lab Value: 0.102

Area of Compound	3812
Area of Internal STD	29999
Conc. of Internal STD	0.8
Conc. of Compound	1
Calculated RRF	0.102

Compound Name: 2-methylnaphthalene
Lab Value: 3.65

Average RRF	0.62216
Calibration Check RRF	0.59944
Calculated % D	3.65

YES NO N/A

E - The concentration of this analyte exceeds the calibration range of the instrument.

A - Indicates a Tentatively Identified Compound (TIC) is a suspected adol-condensation product.

X,Y,Z- Laboratory defined flags. The data reviewer must change these qualifiers during validation so that the data user may understand their impact on the data.

I. PACKAGE COMPLETENESS AND DELIVERABLES

CASE NUMBER: SG2441 LAB: Katahdin

SITE NAME: NTR Vieques East PI-21

1.0 Data Completeness and Deliverables

1.1 Has all data been submitted in CLP deliverable format? [✓] ___ ___

ACTION: If not, note the effect on review of the data in the data assessment narrative.

2.0 Cover Letter, SDG Narrative

2.1 Is a laboratory narrative or cover letter present? [✓] ___ ___

2.2 Are case number and SDG number(s) contained in the narrative or cover letter? [✓] ___ ___

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YES NO N/A

II. SEMIVOLATILE ANALYSES

1.0 Traffic Reports and Laboratory Narrative

1.1 Are the Traffic Report Forms present for all samples? ✓ ___ ___

ACTION: If no, contact lab for replacement of missing or illegible copies.

1.2 Do the Traffic Reports or Lab Narrative indicate any problems with sample receipt, condition of samples, analytical problems or special notations affecting the quality of the data? ___ ✓ ___

ACTION: If any sample analyzed as a soil, other than TCLP, contains 50%-90% water, all data should be flagged as estimated ("J"). If a soil sample, other than TCLP, contains more than 90% water, all non-detects data are qualified as unusable (R), and detects are flagged "J".

ACTION: If samples were not iced, or if the ice was melted upon arrival at the laboratory and the cooler temperature was elevated (10°C), flag all positive results "J" and all non-detects "UJ". temp 0.9-5.2

Sampled 4/11/13 Extr 4/15-17/13
Rec'd 4/15/13 Analy 4/17-22/13

2.0 Holding Times

2.1 Have any semivolatile technical holding times, determined from date of collection to date of extraction, been exceeded? ___ ✓ ___

Continuous extraction of water samples for semivolatile analysis must be started within **7** days of the date of collection. Soil/sediment samples must be extracted within **14** days of collection. Extracts must be analyzed within

YES NO N/A

40 days of the date of extraction.

Table of Holding Time Violations

Sample ID	Sample Matrix	Date Sampled	Date Lab Received	(See Traffic Report) Date Extracted	Date Analyzed

ACTION: If technical holding times are exceeded, flag all positive results as estimated ("J") and sample quantitation limits as estimated ("UJ"), and document in the narrative that holding times were exceeded.

If analyses were done more than 14 days beyond holding time, either on the first analysis or upon re analysis, the reviewer must use professional judgement to determine the reliability of the data and the effects of additional storage on the sample results. At a minimum, all results should be qualified "J", but the reviewer may determine that non-detect data are unusable ("R"). If holding times are exceeded by more than 28 days, all non-detect data are unusable (R).

	YES	NO	N/A
3.0 Surrogate Recovery (Form II/Equivalent)			
3.1 Have the semi volatile surrogate recoveries been listed on CLP Surrogate Recovery forms (Form II) for each of the following matrices:			
a. Low Water	[✓]	___	___
b. Low/Med Soil	[✓]	___	___
3.2 If so, are all the samples listed on the appropriate Surrogate Recovery Summary forms for each matrix:			
a. Low Water	[✓]	___	___
b. Low/Med Soil	[✓]	___	___
ACTION: If CLP deliverables are unavailable, document the effect(s) in data assessments. In some cases the lab may have to be contacted to obtain the data necessary to complete the validation.			
3.3 Were outliers marked correctly with an asterisk?	[✓]	___	___
ACTION: Circle all outliers in red.			
3.4 Were two or more base neutral OR acid surrogate recoveries out of specification for any sample or method blank (Reviewer should use lab in house recovery limits. Use surrogate recovery limits from USEPA National Functional Guidlines January 2005 page 130, if in house limits are not available. See Method 8000B-43 or 80000C-24).	[ ]	✓	___
Note: Examine lab in house limits for reasonableness.			
If yes, were samples re-analyzed?	[ ]	___	✓

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Katahdin
ANALYTICAL SERVICES

Cert No E87604

Form 2
System Monitoring Compound Recovery

Lab Name: Katahdin Analytical Services **Project:** NTR Vieques East CTO-037 PI-21 **Matrix:** AQ
Lab Code: KAS **SDG:** SG2441

Client Sample ID	Lab Sample ID	Col. ID	2FBP	#	2FP	#	NBZ	#	PHL	#	TBP	#	TPH	#
VEP21-EB01-041113	SG2441-13		81.4		50.5		83.0		69.2		57.3		105.	
Method Blank Sample	WG122802-1		85.1		79.0		91.7		91.3		90.0		110.	
Laboratory Control S	WG122802-2		90.8		55.0		80.8		73.8		97.3		122.	
Laboratory Control S	WG122802-3		80.4		29.3		73.3		38.0		39.9	*	105.	

		QC Limits
2FBP	2-FLUOROBIPHENYL	50-110
2FP	2-FLUOROPHENOL	20-110
PHL	PHENOL-D6	10-115
TPH	TERPHENYL-D14	50-135
NBZ	NITROBENZENE-D5	40-110
TBP	2,4,6-TRIBROMOPHENOL	40-125

= Column to be used to flag recovery limits.
* = Values outside of contract required QC limits.
D= System Monitoring Compound diluted out.

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Katahdin
ANALYTICAL SERVICES

Cert No E87604

Form 2
System Monitoring Compound Recovery

Lab Name: Katahdin Analytical Services **Project:** NTR Vieques East CTO-037 PI-21 **Matrix:** SL
Lab Code: KAS **SDG:** SG2441

Client Sample ID	Lab Sample ID	Col. ID	2FBP	#	2FP	#	NBZ	#	PHL	#	TBP	#	TPH	#
VEP21-SS01-0001	SG2441-1		77.9		61.6		63.0		67.7		71.3		108.	
VEP21-SB05-011H	SG2441-10		76.7		58.4		61.4		66.8		70.8		114.	
VEP21-SB02-011H	SG2441-11		73.6		55.6		61.5		63.4		57.1		117.	
VEP21-SS01P-0001	SG2441-2		73.9		54.0		60.6		62.3		58.7		104.	
VEP21-SS03-0001	SG2441-3		85.1		71.6		72.9		79.6		78.8		122.	
VEP21-SS04-0001	SG2441-4		74.0		59.4		59.9		63.9		74.4		113.	
VEP21-SB01-011H	SG2441-5		78.4		61.4		63.1		67.9		78.7		116.	
VEP21-SS05-0001	SG2441-6		81.5		65.2		69.7		73.9		72.5		115.	
VEP21-SS02-0001	SG2441-7		72.4		58.3		59.1		63.5		71.8		114.	
VEP21-SB03-0102	SG2441-8		74.4		53.1		58.2		61.8		59.4		116.	
VEP21-SB04-011H	SG2441-9		77.6		59.0		62.7		67.4		68.0		120.	
Method Blank Sample	WG122731-1		71.7		62.6		63.7		64.3		63.6		107.	
Laboratory Control S	WG122731-2		99.2		73.4		77.7		76.9		104.		136.	*
Laboratory Control S	WG122731-3		78.2		57.4		61.6		60.2		82.9		109.	
Matrix Spike	WG122731-4		78.0		55.2		59.9		61.0		86.3		113.	
Matrix Spike Duplica	WG122731-5		75.3		53.4		57.5		59.0		88.9		122.	

		QC Limits
TPH	TERPHENYL-D14	30-125
NBZ	NITROBENZENE-D5	35-100
PHL	PHENOL-D6	40-100
2FP	2-FLUOROPHENOL	35-105
TBP	2,4,6-TRIBROMOPHENOL	35-125
2FBP	2-FLUOROBIPHENYL	45-105

= Column to be used to flag recovery limits.
* = Values outside of contract required QC limits.
D= System Monitoring Compound diluted out.

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	YES	NO	N/A
Were method blanks re-analyzed?	[ ]	___	✓

ACTION: If all surrogate recoveries are > 10% but two within the base-neutral or acid fraction do not meet method specifications, <u>for the affected fraction only (i.e. either base-neutral or acid compounds):</u>

1. Flag all positive results as estimated ("J").

2. Flag all non-detects as estimated detection limits ("UJ") when recoveries are less than the lower acceptance limit.

3. If recoveries are greater than the upper acceptance limit, do not qualify non-detects.

If any base-neutral <u>or</u> acid surrogate has a recovery of < 10%:

1. Positive results for the fraction with < 10% surrogate recovery are qualified with "J".

2. Non-detects for that fraction should be qualified as unusable (R) .

NOTE: Professional judgement should be used to qualify data that have method blank surrogate recoveries out of specification in both original and reanalyses. Check the internal standard areas.

3.5 Are there any transcription/calculation errors between raw data and Form II?	___	✓	___

ACTION: If large errors exist, call lab for explanation/resubmittal, make any necessary corrections and document

YES NO N/A

effect in data assessments.

4.0 Matrix Spikes (Form III/Equivalent)

4.1 Have the semivolatile Matrix Spike and Matrix Spike Duplicate/or duplicate unspiked Sample recoveries been listed on the Recovery Form (Form III)? [✓] ___ ___

NOTE: Method 3500B/page 4 states the spiking compounds:

Base/neutrals	Acids
1,2,4-Trichlorobenzene	Pentachlorophenol
Acenaphthene	Phenol
2,4-Dinitrotoluene	2-Chlorophenol
Pyrene	4-Chloro-3-methylphenol
N-Nitroso-di-n-propylamine	4-Nitrophenol
1,4-Dichlorobenzene	

Note: Some projects may require the spiking of specific compounds of interest.

Note: See Method 8270D-sec 8.4.2 for deciding on whether to prepare and analyze duplicate samples or a martix spike/matrix spike duplicate. If samples are expected to contain target analytes, then laboratory may use one matrix spike and a duplicate analysis of an unspiked field sample. If samples are not expected to contain target analytes, laboratory should use a matrix spike and matrix spike duplicate pair.

4.2 Were matrix spikes analyzed at the required frequency for each of the following matrices:

a. Low Water [ ] ___ ___

b. Low Solid [✓] ___ ___

c. Med Solid [ ] ___ ___

YES NO N/A

ACTION: If any matrix spike data are missing, take the action specified in 3.2 above. It may be necessary to contact the lab to obtain the required data.

NOTE: If the data has not been reported on CLP equivalent form, then the laboratory must provide the information necessary to evaluate the spike recoveries in the MS and MSD. The required data which should have been provided by the lab include the analytes and concentrations used for spiking, background concentrations of the spiked analytes (i.e., concentrations in unspiked sample), methods and equations used to calculate the QC acceptance criteria for the spiked analytes, percent recovery data for all spiked analytes.

The data reviewer must verify that all reported equations and percent recoveries are correct before proceeding to the next section.

4.3 Were matrix spikes performed at concentration equal to 100ug/L for acid compounds, and 200ug/l for base compounds (Method 3500B-4), or those specified in project plan. ✓ ___ ___

4.4 How many semivolatile spike recoveries are outside Laboratory in house MS/MSD recovery limits (use recovery limits values in Method 8270D-43&44 Table 6 if in house values not available).

Water

____ out of ____

Solids

2 out of 44

Katahdin
ANALYTICAL SERVICES

Cert No E87604

MS/MSD Recovery Report

MS ID: WG122731-4
MSD ID: WG122731-5
Sample ID: SG2441-4
Client ID: VEP21-SS04-0001
Project:
SDG: SG2441
MS File ID: N8157.D

Received Date:
Extract Date: 15-APR-13
Extracted By: JMS
Extraction Method: SW846 3540
Lab Prep Batch: WG122731
Report Date: 24-APR-13
MSD File ID: N8158.D

Analysis Date: 17-APR-13
Analyst: JCG
Analysis Method: SW846 8270D
Matrix: SL
% Solids: 89.

Compound	MS Spike	MSD Spike	Conc Units	Samp Conc	MS Conc	MSD Conc	MS Rec (%)	MSD Rec (%)	RPD (%)	RPD Limit	Limits
Phenol	3640	3710	ug/Kgdrywt	U260	2100	2100	58.0	55.8	2	30	40-100
2-Chloronaphthalene	1820	1860	ug/Kgdrywt	U260	770	760	42.5*	40.8*	2	30	45-105 J/UJ
Dimethyl phthalate	1820	1860	ug/Kgdrywt	U260	1600	1700	89.6	90.6	3	30	50-110
3-Nitroaniline	1820	1860	ug/Kgdrywt	U650	980	1100	53.9	58.8	10	30	25-110
Diethylphthalate	1820	1860	ug/Kgdrywt	U260	1700	1800	92.9	98.1	7	30	50-115
4-Chlorophenyl-phenylether	1820	1860	ug/Kgdrywt	U260	1500	1600	83.0	84.6	4	30	45-110
4-Bromophenyl-phenylether	1820	1860	ug/Kgdrywt	U260	1400	1600	79.2	83.5	7	30	45-115
Carbazole	1820	1860	ug/Kgdrywt	U260	1600	1600	85.8	88.9	6	30	45-115
Di-n-butylphthalate	1820	1860	ug/Kgdrywt	U260	1700	1800	91.8	98.6	9	30	55-110
Bis(2-ethylhexyl)phthalate	1820	1860	ug/Kgdrywt	U260	2000	2000	108.	109.	3	30	45-125
Acetophenone	1820	1860	ug/Kgdrywt	U260	1200	1100	63.8	60.4	4	30	35-95
Caprolactam	1820	1860	ug/Kgdrywt	U260	980	1000	54.1	55.5	4	30	10-81
Acenaphthylene	1820	1860	ug/Kgdrywt	U260	1200	1200	64.3	63.6	1	30	45-105
Acenaphthene	1820	1860	ug/Kgdrywt	U260	1400	1400	78.1	78.2	2	30	45-110
Fluorene	1820	1860	ug/Kgdrywt	U260	1500	1600	82.4	83.5	3	30	50-110
Fluoranthene	1820	1860	ug/Kgdrywt	U260	1400	1500	77.0	81.9	8	30	55-115
Pyrene	1820	1860	ug/Kgdrywt	U260	1800	2000	102.	110.	10	30	45-125
Chrysene	1820	1860	ug/Kgdrywt	U260	1600	1700	90.2	93.8	6	30	55-110
Phenanthrene	1820	1860	ug/Kgdrywt	U260	1600	1700	86.3	89.5	6	30	50-110
Anthracene	1820	1860	ug/Kgdrywt	U260	1500	1600	82.4	86.2	6	30	55-105
Benzo(g,h,i)perylene	1820	1860	ug/Kgdrywt	U260	1300	1400	70.4	74.4	8	30	40-125
1,2,4,5-Tetrachlorobenzene	1820	1860	ug/Kgdrywt	U260	1300	1200	69.3	65.8	3	30	37-97
2-Fluorophenol							55.2	53.4			35-105
Phenol-d6							61.0	59.0			40-100
Nitrobenzene-d5							59.9	57.5			35-100
2-Fluorobiphenyl							78.0	75.3			45-105
2,4,6-Tribromophenol							86.3	88.9			35-125
Terphenyl-d14							113.	122.			30-125

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YES NO N/A

4.5 How many RPD's for matrix spike and matrix spike duplicate recoveries are outside QC limits?

Water

____ out of ____

Solids

0 out of 22

ACTION: Circle all outliers with red pencil.

ACTION: No action is taken on MS/MSD data alone. However, using informed professional judgement, the data reviewer may use the matrix spike and matrix spike duplicate results in conjunction with other QC criteria to determine the need for some qualification of the data.

4.6 Was a Laboratory Control Sample (LCS) analyzed with each analytical batch? [✓] ___ ___

NOTE: When the results of the matrix spike analysis indicate a potential problem due to the sample matrix itself, the LCS results are used to verify that the laboratory can perform the analysis in a clean matrix.

5.0 Blanks (Form IV/Equivalent)

5.1 Is the Method Blank Summary (Form IV) present? [✓] ___ ___

5.2 Frequency of Analysis:

Has a reagent/method blank analysis been reported per 20 samples of similar matrix, or concentration level, and for each extraction batch? [✓] ___ ___

5.3 Has a method blank been analyzed either after

	YES	NO	N/A
the calibration standard or at any other time during the analytical shift for each GC/MS system used ?	✓		

ACTION: If any method blank data are missing, call lab for explanation/resubmittal. If not available, use professional judgement to determine if the associated sample data should be qualified.

5.4 Chromatography: review the blank raw data - chromatograms (RICs), quant reports or data system printouts and spectra.

	YES	NO	N/A
Is the chromatographic performance (baseline stability) for each instrument acceptable for the semivolatiles?	✓		

ACTION: Use professional judgement to determine the effect on the data.

6.0 Contamination

NOTE: "Water blanks", "drill blanks" and "distilled water blanks" are validated like any other sample and are not used to qualify the data. Do not confuse them with the other QC blanks discussed below.

	YES	NO	N/A
6.1 Do any method/instrument/reagent blanks have positive results for target analytes and/or TICs? When applied as described below, the contaminant concentration in these blanks are multiplied by the sample dilution factor and corrected for percent moisture where necessary.		✓	
6.2 Do any field/rinse/ blanks have positive results for target analytes and/or TICs (if required, see section 10 below)?		✓	

YES NO N/A

ACTION: Prepare a list of the samples associated with each of the contaminated blanks. (Attach a separate sheet.)

NOTE: All field blank results associated to a particular group of samples (may exceed one per case) must be used to qualify data. Blanks may not be qualified because of contamination in another blank. Field Blanks must be qualified for outlying surrogates, poor spectra, instrument performance or calibration QC problems.

ACTION: Follow the directions in the table below to qualify sample results due to contamination. Use the largest value from all the associated blanks. If gross contamination exists, all data in the associated samples should be qualified as unusable (R).

YES NO N/A

Blank Action for Semivolatile Analyses

Blank Type	Blank Result	Sample Result	Action for Samples
Method, Field	Detects	Not detected	No qualification required
	< CRQL *	< CRQL	Report CRQL value with a U
		≥ CRQL	No qualification required
	= CRQL *	< CRQL	Report CRQL value with a U
		≥ CRQL	No qualification required
	> CRQL *	< CRQL	Report CRQL value with a U
		≥ CRQL and < blank contamination	Report concentration of sample with a U
		≥ CRQL and ≥ blank contamination	No qualification required

NOTE: Analytes qualified "U" for blank contamination are still considered as "hits" when qualifying for calibration criteria.

NOTE: If the laboratory did not report TIC analyses, check the project plans to verify whether or not it was required.

6.3 Are there field/rinse/equipment blanks associated with every sample? ✓ ___ ___

ACTION: For low level samples, note in data assessment that there is no associated field/rinse/equipment blank. Exception: samples taken from a drinking water tap do not have associated field blanks.

6.4 Was a instrument blank analyzed after each sample/dilution which contained a target compound

	YES	NO	N/A
that exceeded the initial calibration range.	[ ]	___	✓
6.5 Does the instrument blank have positive results for target analytes and/or TICs?	___	[ ]	✓

Note: Use professional judgement to determine if carryover occurred and qualify analytes accordingly.

7.0 GC/MS Apparatus and Materials

	YES	NO	N/A
7.1 Did the lab use the proper gas chromatographic column for analysis of semivolatiles by Method 8270D? Check raw data, instrument logs or contact the lab to determine what type of column was used. The method requires the use of 30 m x 0.25 mm ID (or 0.32 mm ID), silicone-coated, fused silica, capillary column.	[✓]	___	___

ACTION: If the specified column, or equivalent, was not used, document the effects in the data assessment. Use professional judgement to determine the acceptability of the data.

8.0 GC/MS Instrument Performance Check (Form V/Equivalent)

	YES	NO	N/A
8.1 Are the GC/MS Instrument Performance Check Forms (Form V) present for decafluorotriphenylphosphine (DFTPP)?	[✓]	___	___

NOTE: The performance solution should also contain 4,4-DDT, pentachlorophenol, and benzidine to verify injection port inertness and column performance. The degradation of DDT to DDE and DDD must be less than 20% total and the response of pentachlorophenol and benzidine should be within normal ranges for these compounds (based upon lab experience) and show no peak degradation or tailing before samples are analyzed. (see section 5.5

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	YES	NO	N/A
page 8270D-12).			
8.2 Are the enhanced bar graph spectrum and mass/charge (m/z) listing for the DFTPP provided for each twelve hour shift?	✓		
8.3 Has an instrument performance check solution been analyzed for every twelve hours of sample analysis per instrument?	✓		

ACTION: List date, time, instrument ID, and sample analyses for which no associated GC/MS tuning data are available.

DATE	TIME	INSTRUMENT	SAMPLE NUMBERS

ACTION: If lab cannot provide missing data, reject ("R") all data generated outside an acceptable twelve hour calibration interval.

ACTION: If mass assignment is in error, flag all associated sample data as unusable (R).

8.4 Have the ion abundances been normalized to m/z 198?	✓		
8.5 Have the ion abundance criteria been met for each instrument used?	✓		

ACTION: List all data which do not meet ion abundance criteria (attach a separate sheet).

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	YES	NO	N/A
ACTION: If ion abundance criteria are not met, take action specified in section 3.2			
8.6 Are there any transcription/calculation errors between mass lists and Form Vs? (Check at least two values but if errors are found, check more.)	___	✓	___
8.7 Have the appropriate number of significant figures (two) been reported?	✓	___	___
ACTION: If large errors exist, call lab for explanation/resubmittal, make necessary corrections and document effect in data assessments.			
8.8 Are the spectra of the mass calibration compound acceptable?	✓	___	___
ACTION: Use professional judgement to determine whether associated data should be accepted, qualified, or rejected.			
9.0 Target Analytes			
9.1 Are the Organic Analysis Data Sheets (Form I) present with required header information on each page, for each of the following:			
a. Samples and/or fractions as appropriate	✓	___	___
b. Matrix spikes and matrix spike duplicates	✓	___	___
c. Blanks	✓	___	___
9.2 Has any special cleanup, such as GPC, been performed on all soil/sediment sample extracts (see section 7.2, page 8270D-14)?	___	✓	___

	YES	NO	N/A
ACTION: If data suggests that extract cleanup was not performed, use professional judgement. Make note in the data assessment narrative.			
9.3 Are the Reconstructed Ion Chromatograms, mass spectra for the identified compounds, and the data system printouts (Quant Reports) included in the sample package for each of the following?			
a. Samples and/or fractions as appropriate	[✓]	___	___
b. Matrix spikes and matrix spike duplicates (Mass spectra not required)	[✓]	___	___
c. Blanks	[✓]	___	___
ACTION: If any data are missing, take action specified in 3.2 above.			
9.4 Are the response factors shown in the Quant Report?	[✓]	___	___
9.5 Is chromatographic performance acceptable with respect to:			
Baseline stability?	[✓]	___	___
Resolution?	[✓]	___	___
Peak shape?	[✓]	___	___
Full-scale graph (attenuation)?	[✓]	___	___
Other:_____	[ ]	___	___
ACTION: Use professional judgement to determine the acceptability of the data.			
9.6 Are the lab-generated standard mass spectra of identified semivolatile compounds present for			

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	YES	NO	N/A
each sample?	✓		

ACTION: If any mass spectra are missing, take action specified in 3.2 above. If the lab does not generate their own standard spectra, make a note in the data assessment narrative. If spectra are missing, reject all positive data.

	YES	NO	N/A
9.7 Is the RRT of each reported compound within 0.06 RRT units of the standard RRT in the continuing calibration?	✓		
9.8 Are all ions present in the standard mass spectrum at a relative intensity greater than 10% (of the most abundant ion) also present in the sample mass spectrum?	✓		
9.9 Do the relative intensities of the characteristic ions in the sample agree within ± 30% of the corresponding relative intensities in the reference spectrum?	✓		

ACTION: Use professional judgement to determine acceptability of data. If it is determined that incorrect identifications were made, all such data should be rejected (R), flagged "N" (Presumptive evidence of the presence of the compound) or changed to not detected (U) at the calculated detection limit. In order to be positively identified, the data must comply with the criteria listed in 9.7, 9.8, and 9.9.

ACTION: When sample carry-over is a possibility, professional judgement should be used to determine if instrument cross-contamination has affected any positive compound identification.

	YES	NO	N/A

10.0 Tentatively Identified Compounds (TIC)

10.1 If Tentatively Identified Compounds were required for this project, are all Form Is, Part B present; and do listed TICs include scan number or retention time, estimated concentration and "JN" qualifier?

no TICs

NOTE: Review sampling reports to determine if the lab was required to identify non target analytes (refer to section 7.6.2,page 8270D-21).

10.2 Are the mass spectra for the tentatively identified compounds and associated "best match" spectra included in the sample package for each of the following:	[ ]	___	✓
a. Samples and/or fractions as appropriate	[ ]	___	✓
b. Blanks	[ ]	___	✓

ACTION: If any TIC data are missing, take action specified in 3.2 above.

ACTION: Add "JN" qualifier only to analytes identified by CAS #.

10.3 Are any target compounds from one fraction listed as TIC compounds in another (e.g., an acid compound listed as a base neutral TIC)?	___	[ ]	✓

ACTION: i. Flag with "R" any target compound listed as a TIC.

ii. Make sure all rejected compounds are properly reported in the other fraction.

10.4 Are all ions present in the reference mass spectrum with a relative intensity greater than 10% (of the most abundant ion) also present in the

	YES	NO	N/A
sample mass spectrum?	[ ]	___	✓
10.5 Do TIC and "best match" standard relative ion intensities agree within ± 20%?	[ ]	___	✓

ACTION: Use professional judgement to determine acceptability of TIC identifications. If it is determined that an incorrect identification was made, change the identification to "unknown" or to some less specific identification (example: "C3 substituted benzene") as appropriate and remove "JN". Also, when a compound is not found in any blank, but is a suspected artifact of a common laboratory contaminant, the result should be qualified as unusable, "R."

11.0 Compound Quantitation and Reported Detection Limits

	YES	NO	N/A
11.1 Are there any transcription/calculation errors in Form I results? Check at least two positive values. Verify that the correct internal standard, quantitation ion, and RRF were used to calculate Form I result. Were any errors found?	___	✓	___

NOTE: Structural isomers with similar mass spectra, but insufficient GC resolution (i.e. percent valley between the two peaks > 25%) should be reported as isomeric pairs. The reviewer should check the raw data to ensure that all such isomers were included in the quantitation (i.e., add the areas of the two coeluting peaks to calculate the total concentration).

	YES	NO	N/A
11.2 Are the method detection limits adjusted to reflect sample dilutions and, for soils, sample moisture?	✓	___	___

YES NO N/A

ACTION: If errors are large, call lab for explanation/resubmittal, make any necessary corrections and document effect in data assessments.

ACTION: When a sample is analyzed at more than one dilution, the lowest detection limits are used (unless a QC exceedance dictates the use of the higher detection limit from the diluted sample data). Replace concentrations that exceed the calibration range in the original analysis by crossing out the "E" and it's associated value on the original Form I (if present) and substituting the data from the analysis of the diluted sample. Specify which Form I is to be used, then draw a red " X" across the entire page of all Form I's that should not be used, including any in the summary package.

12.0 Standards Data (GC/MS)

12.1 Are the Reconstructed Ion Chromatograms, and data system printouts (Quant, Reports) present for initial and continuing calibration? [✓] ___ ___

ACTION: If any calibration standard data are missing, take action specified in 3.2 above.

13.0 GC/MS Initial Calibration (Form VI/Equivalent)

13.1 Is the Initial Calibration Form (Form VI/ Equivalent) present and complete for the semivolatile fraction? [✓] ___ ___

ACTION: If any calibration forms or standard row data are missing, take action specified in 3.2 above.

13.2 Are all base neutral or acid RRFs > 0.050? [✓] ___ ___

YES NO N/A

Check the **average RRFs** of the four System Performance Check Compounds (SPCCs): N-nitroso-di-n-propylamine, hexachlorocyclopentadiene, 2,4-dinitrophenol, and 4-nitrophenol. These compounds must have **average RRFs** greater than or equal to 0.05 before running samples and should not show any peak tailing.

ACTION: Circle all outliers in red.

ACTION: For any target analyte with **average RRF <0.05**

1. "R" all non-detects;

2. "J" all positive results.

13.3 Are response factors for base neutral or acid target analytes stable over the concentration range of the calibration (% Relative standard deviation [%RSD] < 20.0%)? [✓] ___ ___

NOTE: The % RSD for each individual Calibration Check Compound (CCC, Method 8270D-40 see Table 4) must be less than 30% before analysis can begin. If grater 30%, the lab must clean and recalibrate the instrument.

CALIBRATION CHECK COMPOUNDS

Base/Neutral Fraction	Acid Fraction
Acenaphthene	4-Chloro-3-methylphenol
1,4-Dichlorobenzene	2,4-Dichlorophenol
Hexachlorobutadiene	2-Nitrophenol
Diphenylamine	Phenol
Di-n-octyl phthalate	Pentachlorophenol
Fluoranthene	2,4,6-Trichlorophenol

YES NO N/A

Benzo(a)pyrene

ACTION: If the %RSD for any CCC >30% and no corrective action taken, then "J" qualify all positive hits and "UJ" qualify all non-detects.

ACTION: Circle all outliers in red.

ACTION: If the % RSD is ≥ 20.0%, qualify positive results for that analyte "J" and non-detects using professional judgement. When RSD > 90%, flag all non- detect results for that analyte "R," unusable. Alternatively, the lab should calculate first or second order regression fit of the calibration curve and select the fit which introduces the least amount of error.

NOTE: Analytes previously qualified "U" due to blank contamination are still considered as "hits" when qualifying for calibration criteria.

13.4 Did the laboratory calculate the calibration curve by the least squares regression fit? ___ [✓] ___

13.5 Are there any transcription/calculation errors in the reporting of average response factors (RRF) or % RSD? (Check at least two values but if errors are found, check more.) ___ [✓] ___

ACTION: Circle Errors in red.

ACTION: If errors are large, call lab for explanation/resubmittal, make any necessary corrections and note errors in data assessments.

13.5 Do the target compounds for this SDG include Pesticides? [ ] ___ [✓]

	YES	NO	N/A
13.6 If the pesticide compounds include DDT, was the percent breakdown of DDT to DDD and DDE greater than 20%?	___	[ ]	✓

ACTION: If DDT percent breakdown exceeds 20%:

i. Qualify all positive results for DDT with "J". If DDT was not detected, but DDD and DDE results are positive, qualify the quantitation limit for DDT as unusable, "R".

ii. Qualify all positive results for DDD and DDE as presumptively present at an approximate concentration "JN".

14.0 GC/MS Calibration Verification (Form VII/Equivalent)

14.1 Are the Calibration Verification Forms (Form VII) present and complete for all compounds of interest?	✓	___	___
14.2 Has a calibration verification standard been analyzed for every twelve hours of sample analysis per instrument?	✓	___	___

ACTION: List below all sample analyses that were not within twelve hours of a calibration verification analysis for each instrument used.

_____

_____

_____

ACTION: If any forms are missing or no calibration verification standard has been analyzed within twelve hours of every sample analysis,

	YES	NO	N/A
call lab for explanation/resubmittal. If continuing calibration data are not available, flag all associated sample data as unusable ("R").			
14.3 Do any of the SPCCs have an RRF <0.05?	___	[✓]	___
If YES, make a note in data assessment if the lab did not take corrective action specified in section 7.4.4, page 8270D-18.	[ ]	✓	___
14.4 Do any of the CCCs have a %D between the initial and continuing RRF which exceeds 20.0%?			
ACTION: If yes, make a note in data assessment.			
14.5 Do any semivolatile compounds have a % Difference (% D) between the initial and continuing RRF which exceeds 20.0%?	___	[✓]	___
ACTION: Circle all outliers in red.			
ACTION: Qualify both positive results and non-detects for the outlier compound(s) as estimated (J). When %D is above 90%, qualify all non-detects for that analyte as "R", unusable.			
14.6 Do any semivolatile compounds have a RRF < 0.05?	___	[ ] ✓	___
ACTION: Circle all outliers in red.			
ACTION: If RRF < 0.05, qualify as unusable ("R") associated non-detects and "J" associated positive values.			
14.7 Are there any transcription/calculation errors in the reporting of average response factors (RRF) or percent difference (%D) between initial and continuing RRFs? (Check at least two values but if errors are found, check more).	___	[✓]	___

YES NO N/A

ACTION: Circle errors in red.

ACTION: If errors are large, call lab for explanation/resubmittal, make any necessary corrections and document effect(s) in the data assessments.

15.0 Internal Standards (Form VIII)

15.1 Are the internal standard areas (Form VIII) of every sample and blank within the upper and lower limits (-50% to + 100%) for each continuing calibration? ✓ ___ ___

ACTION: List each outlying internal standard below.

Sample ID	IS #	Area	LowerLimit	Upper Limit

(Attach additional sheets if necessary.)

Note: Check Table 5, 8270D-41 for associated analytes.

ACTION: i. If the internal standard area count is outside the upper or lower limit, flag with "J" all positive results and non-detects (U values) quantitated with this internal standard.

ii. Non-detects associated with IS > 100% should not be qualified.

	YES	NO	N/A
iii. If the IS area is below the lower limit (<50%), qualify all associated non-detects (U-values) "J". If extremely low area counts are reported (<25%) or if performance exhibits a major abrupt drop off, flag all associated non-detects as unusable (R).			
15.2 Are the retention times of all internal standards within 30 seconds of the associated calibration standard?	[✓]	___	___

ACTION: Professional judgement should be used to qualify data if the retention times differ by more than 30 seconds.

16.0 Laboratory Control Samples (LCS)

	YES	NO	N/A
16.1 Were any LCS samples run in order to verify analytes which failed criteria for spike recovery?	[✓]	___	___
16.2 Did the lab spike LCS sample spiked with the same analytes and the same concentrations as the matrix spike?	[✓]	___	___
16.3 Were the mean and standard deviation of all analytes within the QC acceptance ranges as shown in Table 6, 8270D-43?	[ ]	[✓]	___

ACTION: If the recovery of any analyte falls out of the designated range, the analytical results for that compound is suspect and should be qualified "J" in the unspiked samples.

17.0 Field Duplicates

	YES	NO	N/A
17.1 Were any field duplicates submitted for semivolatile analysis?	[✓]	___	___

Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : NTR Vieques East CTO-037 PI-21
Lab File ID : N8182.D
Instrument ID : GCMS-N
Matrix : AQ

SDG : SG2441
Lab Sample ID : WG122802-1
Date Extracted : 17-APR-13
Date Analyzed : 22-APR-13
Time Analyzed : 10:30

This Method Blank applies to the following samples, LCS, MS and MSD:

Client Sample ID	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
VEP21-EB01-041113	SG2441-13	N8183.D	04/22/13	11:13
Laboratory Control S	WG122802-2	N8184.D	04/22/13	11:56
Laboratory Control S	WG122802-3	N8185.D	04/22/13	12:39

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ANALYTICAL SERVICES

Cert No E87604

LCS/LCSD Recovery Report

LCS ID: WG122802-2
LCSD ID: WG122802-3
Project:
SDG: SG2441
Report Date: 24-APR-13
LCS File ID: N8184.D

Received Date:
Extract Date: 17-APR-13
Extracted By: JMS
Extraction Method: SW846 3520
Lab Prep Batch: WG122802
LCSD File ID: N8185.D

Analysis Date: 22-APR-13
Analyst: JCG
Analysis Method: SW846 8270D
Matrix: AQ
% Solids: NA

Compound	Spike Amt	LCS Conc	LCS Rec (%)	LCSD Conc	LCSD Rec (%)	Conc Units	RPD (%)	RPD Limit	Limits
Phenol	100.	65.9	65.9	34.5	34.5	ug/L	62*	30	0-115
2-Chloronaphthalene	50.0	22.7	45.4*	20.3	40.6*	ug/L	11	30	50-105 J/UJ
Dimethyl phthalate	50.0	51.8	104.	44.0	88.0	ug/L	16	30	25-125
Acenaphthylene	50.0	38.1	76.2	33.6	67.2	ug/L	12	30	50-105
3-Nitroaniline	50.0	39.1	78.2	38.6	77.2	ug/L	1	30	20-125
Acenaphthene	50.0	46.3	92.6	41.3	82.6	ug/L	11	30	45-110
Diethylphthalate	50.0	52.5	105.	44.2	88.4	ug/L	17	30	40-120
Fluorene	50.0	48.9	97.8	42.1	84.2	ug/L	15	30	50-110
4-Chlorophenyl-phenylether	50.0	49.2	98.4	42.7	85.4	ug/L	14	30	50-110
4-Bromophenyl-phenylether	50.0	47.4	94.8	41.4	82.8	ug/L	14	30	50-115
Phenanthrene	50.0	51.0	102.	44.0	88.0	ug/L	15	30	50-115
Anthracene	50.0	49.8	99.6	42.3	84.6	ug/L	16	30	55-110
Carbazole	50.0	52.1	104.	44.7	89.4	ug/L	15	30	50-115
Di-n-butylphthalate	50.0	52.1	104.	43.5	87.0	ug/L	18	30	55-115
Fluoranthene	50.0	52.5	105.	45.4	90.8	ug/L	14	30	55-115
Pyrene	50.0	57.0	114.	48.7	97.4	ug/L	16	30	50-130
Chrysene	50.0	52.6	105.	45.8	91.6	ug/L	14	30	55-110
Bis(2-ethylhexyl)phthalate	50.0	55.2	110.	47.4	94.8	ug/L	15	30	40-125
Benzo(g,h,i)perylene	50.0	52.1	104.	43.0	86.0	ug/L	19	30	40-125
Acetophenone	50.0	41.0	82.0	36.4	72.8	ug/L	12	30	49-102
Caprolactam	50.0	31.6	63.2	43.3	86.6*	ug/L	31*	30	10-86
1,2,4,5-Tetrachlorobenzene	50.0	38.7	77.4	34.8	69.6	ug/L	11	30	30-150
2-Fluorophenol			55.0		29.3				20-110
Phenol-d6			73.8		38.0				10-115
Nitrobenzene-d5			80.8		73.3				40-110
2-Fluorobiphenyl			90.8		80.4				50-110
2,4,6-Tribromophenol			97.3		39.9*				40-125
Terphenyl-d14			122.		105.				50-135

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ANALYTICAL SERVICES

Cert No E87604

Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : NTR Vieques East CTO-037 PI-21
Lab File ID : N8150.D
Instrument ID : GCMS-N
Matrix : SL

SDG : SG2441
Lab Sample ID : WG122731-1
Date Extracted : 15-APR-13
Date Analyzed : 17-APR-13
Time Analyzed : 14:56

This Method Blank applies to the following samples, LCS, MS and MSD:

Client Sample ID	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
Laboratory Control S	WG122731-2	N8151.D	04/17/13	15:39
Laboratory Control S	WG122731-3	N8152.D	04/17/13	16:22
VEP21-SS01-0001	SG2441-1	N8153.D	04/17/13	17:05
VEP21-SS01P-0001	SG2441-2	N8154.D	04/17/13	17:48
VEP21-SS03-0001	SG2441-3	N8155.D	04/17/13	18:31
VEP21-SS04-0001	SG2441-4	N8156.D	04/17/13	19:14
Matrix Spike	WG122731-4	N8157.D	04/17/13	19:56
Matrix Spike Duplica	WG122731-5	N8158.D	04/17/13	20:38
VEP21-SB01-011H	SG2441-5	N8159.D	04/17/13	21:21
VEP21-SS05-0001	SG2441-6	N8160.D	04/17/13	22:04
VEP21-SS02-0001	SG2441-7	N8161.D	04/17/13	22:46
VEP21-SB03-0102	SG2441-8	N8162.D	04/17/13	23:29
VEP21-SB05-011H	SG2441-10	N8163.D	04/18/13	00:11
VEP21-SB02-011H	SG2441-11	N8164.D	04/18/13	00:54
VEP21-SB04-011H	SG2441-9	N8165.D	04/18/13	01:36

Only qualified out in both LCS and LCSD

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Katahdin
ANALYTICAL SERVICES

Cert No E87604

LCS/LCSD Recovery Report

LCS ID: WG122731-2
LCSD ID: WG122731-3
Project:
SDG: SG2441
Report Date: 24-APR-13
LCS File ID: N8151.D

Received Date:
Extract Date: 15-APR-13
Extracted By: JMS
Extraction Method: SW846 3540
Lab Prep Batch: WG122731
LCSD File ID: N8152.D

Analysis Date: 17-APR-13
Analyst: JCG
Analysis Method: SW846 8270D
Matrix: SL
% Solids: NA

Compound	Spike Amt	LCS Conc	LCS Rec (%)	LCSD Conc	LCSD Rec (%)	Conc Units	RPD (%)	RPD Limit	Limits
Phenol	3330	2340	70.3	1840	55.2	ug/Kgdrywt	24	30	40-100
2-Chloronaphthalene	1670	906.	54.2	691.	41.4*	ug/Kgdrywt	27	30	45-105
Dimethyl phthalate	1670	1890	113.*	1510	90.4	ug/Kgdrywt	22	30	50-110
3-Nitroaniline	1670	1220	73.0	880.	52.7	ug/Kgdrywt	32*	30	25-110
Diethylphthalate	1670	1990	119.*	1590	95.2	ug/Kgdrywt	22	30	50-115
4-Chlorophenyl-phenylether	1670	1740	104.	1370	82.0	ug/Kgdrywt	24	30	45-110
4-Bromophenyl-phenylether	1670	1690	101.	1310	78.4	ug/Kgdrywt	25	30	45-115
Carbazole	1670	1810	108.	1410	84.4	ug/Kgdrywt	25	30	45-115
Di-n-butylphthalate	1670	2140	128.*	1590	95.2	ug/Kgdrywt	29	30	55-110
Bis(2-ethylhexyl)phthalate	1670	2240	134.*	1740	104.	ug/Kgdrywt	25	30	45-125
Acetophenone	1670	1360	81.4	1070	64.1	ug/Kgdrywt	24	30	35-95
Caprolactam	1670	911.	54.6	693.	41.5	ug/Kgdrywt	27	30	10-81
Acenaphthylene	1670	1450	86.8	1050	62.9	ug/Kgdrywt	32*	30	45-105
Acenaphthene	1670	1620	97.0	1280	76.6	ug/Kgdrywt	23	30	45-110
Fluorene	1670	1730	104.	1360	81.4	ug/Kgdrywt	24	30	50-110
Fluoranthene	1670	1850	111.	1400	83.8	ug/Kgdrywt	28	30	55-115
Pyrene	1670	2070	124.	1650	98.8	ug/Kgdrywt	22	30	45-125
Chrysene	1670	2010	120.*	1560	93.4	ug/Kgdrywt	25	30	55-110
Phenanthrene	1670	1830	110.	1430	85.6	ug/Kgdrywt	24	30	50-110
Anthracene	1670	1910	114.*	1380	82.6	ug/Kgdrywt	32*	30	55-105
Benzo(g,h,i)perylene	1670	1800	108.	1380	82.6	ug/Kgdrywt	26	30	40-125
1,2,4,5-Tetrachlorobenzene	1670	1440	86.2	1130	67.7	ug/Kgdrywt	24	30	37-97
2-Fluorophenol			73.4		57.4				35-105
Phenol-d6			76.9		60.2				40-100
Nitrobenzene-d5			77.7		61.6				35-100
2-Fluorobiphenyl			99.2		78.2				45-105
2,4,6-Tribromophenol			104.		82.9				35-125
Terphenyl-d14			136.*		109.				30-125

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YES NO N/A

ACTION: Compare the reported results for field duplicates and calculate the relative percent difference.

ACTION: Any gross variation between field duplicate results must be addressed in the reviewer narrative. However, if large differences exist, identification of field duplicates should be confirmed by contacting the sampler.

VEP21-SS01-0001
VEP21-SS01D-0001 > no ⊕

Initial Calibration Date: 3/6/2013

RRF and %RSD Calculations:

Compound Name: phenol
Lab Value: 1.310

Area of Compound	1729281
Area of Internal STD	422480
Conc. of Internal STD	40
Conc. of Compound	125
Calculated RRF	1.310

Compound Name: fluorene
Lab Value: 13.6

RRF of STD 1	1.435
RRF of STD 2	1.35419
RRF of STD 3	1.2455
RRF of STD 4	1.17782
RRF of STD 5	1.07457
RRF of STD 6	1.00119
Calculated % RSD	13.55

Continuing Calibration File ID: 4/17/2013

RRF and %D Calculations:

Compound Name: chrysene
Lab Value: 0.932

Area of Compound	1350223
Area of Internal STD	1159137
Conc. of Internal STD	40
Conc. of Compound	50
Calculated RRF	0.932

Compound Name: phenanthrene
Lab Value: 4.26

Average RRF	0.95767
Calibration Check RRF	0.91687
Calculated % D	4.26

PACKAGE COMPLETENESS AND DELIVERABLES

CASE NUMBER: _____ SDG# SG2441
LAB: Katahdin Analytical Svcs. SITE: NTR Vieques east CTO-037 P1-21

1.0 Data Completeness and Deliverables	YES	NO	N/A
1.1 Has all the data been submitted in CLP deliverable format?	[✓]	___	___
1.2 Have any missing deliverables been received and added to the data package?	[ ]	___	✓

ACTION: Call lab for explanation/resubmittal of any missing deliverables. If lab cannot provide them, note the effect on review of the data in the reviewer narrative.

2.0 Cover Letter, SDG Narrative			
2.1 Is a laboratory narrative or cover letter present?	[✓]	___	___
2.2 Are the case number and/or SDG number contained in the narrative or cover letter?	[✓]	___	___

3.0 Data Validation Checklist			
3.1 Does this data package contain:			
Water data? 1 Rinse blank	[✓]	___	___
Waste data?	[ ]	___	___
Soil/solid data?	[✓]	___	___

ORGANOCHLORINE PESTICIDE

	YES	NO	N/A
1.0 Traffic Reports and Laboratory Narrative			
1.1 Are traffic report and chain-of-custody forms present for all samples?	[✓]		
ACTION: If no, contact lab for replacement of missing or illegible copies.			
1.2 Do the traffic reports, chain-of-custody forms or SDG narrative indicate any problems with sample receipt, condition of the samples, analytical problems or special circumstances affecting the quality of the data?		[✓]	
ACTION: If any sample analyzed as a soil, other than than TCLP, contains 50%-90% water, all data should be qualified as estimated, "J." If a soil sample, other than TCLP, contains more than 90% water, all non detects are qualified as unusable, "R", and positive results flagged "J".			
ACTION: If samples were not iced or if the ice was melted upon arrival at the laboratory and the temperature of the cooler was elevated (> 10° C), flag all positive results "J" and all non-detects "UJ".			
2.0 Holding Times			
2.1 Have any organochlorine pesticide technical holding times, determined from date of collection to date of extraction, been exceeded?		[✓]	

Water and waste samples for organochlorine pesticide analysis must be extracted within 7 days of the date of collection. Extracts must be analyzed within 40 days of the date of extraction Soils and solid samples must be extracted within 14 days of collection and analyzed within 40 days of extraction.

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ACTION: Qualify sample results according to Table 1.

Table 1. Holding Time Criteria

Matrix	Preserved	Criteria	Action	
			Detected compounds	Non-detected compounds
Aqueous	No	≤ 7 days (extraction) ≤ 40 days (analysis)	J*	UJ*
	No	> 7 days (extraction) > 40 days (analysis)	J*	UJ
	Yes	≤ 7 days (extraction) ≤ 40 days (analysis)	No qualification	
	Yes	> 7 days (extraction) > 40 days (analysis)	J	UJ
	Yes/No	> 28 days (gross exceedance)	J	R
Non-aqueous	No	≤ 14days (extraction) ≤ 40 days (analysis)	J*	UJ*
	No	> 14days (extraction) >40 days (analysis)	J	UJ
	Yes	≤ 14days (extraction) ≤ 40 days (analysis)	No qualification	
	Yes	> 14days (extraction) > 40 days (analysis)	J	UJ
	Yes/No	> 28 days (gross exceedance)	J	R

* only if cooler temperature exceeds 10°C; no action required if cooler temperature < 10°C.

YES NO N/A

3.0 Surrogate Recovery (Form II/Equivalent)

3.1 Were the recoveries of tetrachloro-m-xylene (TCMX) and decachlorobiphenyl (DCB) presented on CLP Surrogate Recovery Summary forms (Form II), or equivalent, for each of the following matrices?

a. Water/Waste [✓] ___ ___

b. Soil/Solid [ ] ✓ ✓

3.2 Are all the pesticide samples listed on the appropriate surrogate recovery form for each of the following matrices?

a. Water [✓] ___ ___

b. Waste [ ] ___ ✓

c. Soil/Solid [✓] ___ ___

ACTION: Call lab for explanation/resubmittals. If missing deliverables are unavailable, document the effect in the data assessment.

3.3 Are all recovery limits for the surrogates TCMX and DCB between 30-150% for all samples, including MS and MSDs, LCSs and all blanks? [ ] ✓ ___

SAP Limits

Note: Reviewer shall use lab in-house recover limits if available. In-house criteria should be examined for reasonableness.

I agree with SAP addendum limits that were published.

ACTION: Circle all outliers in red. Follow surrogate action Table 2.

3.5 Were surrogate retention times (RT) within the windows established during the initial 5-point analysis? [✓] ___ ___

ACTION: Follow surrogate action, Table 2 below.

Form 2
System Monitoring Compound Recovery

Lab Name: Katahdin Analytical Services **Project:** NTR Vieques East CTO-037 PI-21 **Matrix:** SL
Lab Code: KAS **SDG:** SG2441

Client Sample ID	Lab Sample ID	Col. ID	DCB #	TCX #	
VEP21-SS01-0001	SG2441-1	A	83.3	61.2 *	JUJ
VEP21-SS01-0001	SG2441-1	B	85.2	60.3 *	
VEP21-SB05-011H	SG2441-10	A	93.8	68.8 *	JUJ variable
VEP21-SB05-011H	SG2441-10	B	91.7	232 *	
VEP21-SB02-011H	SG2441-11	A	88.8	72.3	
VEP21-SB02-011H	SG2441-11	B	87.8	74.0	
VEP21-SS01P-0001	SG2441-2	A	90.4	65.3 *	JUJ
VEP21-SS01P-0001	SG2441-2	B	92.2	65.2 *	
VEP21-SS03-0001	SG2441-3	A	86.3	67.7 *	JUJ
VEP21-SS03-0001	SG2441-3	B	78.9	68.7 *	
VEP21-SS04-0001	SG2441-4	A	93.0	68.4 *	JUJ
VEP21-SS04-0001	SG2441-4	B	93.7	65.5 *	
VEP21-SB01-011H	SG2441-5	A	93.3	73.4	
VEP21-SB01-011H	SG2441-5	B	94.6	69.7 *	NQ - only 1 of 4 out
VEP21-SS05-0001	SG2441-6	A	95.4	72.5	
VEP21-SS05-0001	SG2441-6	B	93.9	68.1 *	NQ - only 1 of 4 out
VEP21-SS02-0001	SG2441-7	A	85.4	64.0 *	JUJ
VEP21-SS02-0001	SG2441-7	B	83.3	60.2 *	
VEP21-SB03-0102	SG2441-8	A	90.1	72.1	
VEP21-SB03-0102	SG2441-8	B	92.2	98.5	
VEP21-SB04-011H	SG2441-9	A	89.6	63.6 *	JUJ
VEP21-SB04-011H	SG2441-9	B	91.8	59.3 *	
Method Blank Sample	WG122756-1	A	91.0	64.1 *	> No Qual
Method Blank Sample	WG122756-1	B	90.8	65.8 *	
Laboratory Control S	WG122756-2	A	91.6	70.4	
Laboratory Control S	WG122756-2	B	91.0	72.5	
Laboratory Control S	WG122756-3	A	86.6	62.6 *	NQ Quals
Laboratory Control S	WG122756-3	B	85.7	64.9 *	
Matrix Spike	WG122756-4	A	81.4	63.2 *	
Matrix Spike	WG122756-4	B	82.0	58.5 *	
Matrix Spike Duplica	WG122756-5	A	91.0	66.9 *	
Matrix Spike Duplica	WG122756-5	B	88.9	60.0 *	
Laboratory Control S	WG122756-6	A	86.0	65.6 *	
Laboratory Control S	WG122756-6	B	86.5	68.3 *	

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Form 2
System Monitoring Compound Recovery

Lab Name: Katahdin Analytical Services **Project:** NTR Vieques East CTO-037 PI-21 **Matrix:** SL
Lab Code: KAS **SDG:** SG2441

		QC Limits
TCX	TETRACHLORO-M-XYLENE	70-125
DCB	DECACHLOROBIPHENYL	55-130

= Column to be used to flag recovery limits.
* = Values outside of contract required QC limits.
D= System Monitoring Compound diluted out

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Problem Identification (Person discovering problem) Name: Jennifer Prescott Date: 4/30/13

Affected Method: 8081 3540

☐ LCS Failure	☐ Prep Error	☐ ICAL Failure	☐ Discrepancy between results
☐ Blank Contamination	☐ Hold Time Missed	☐ Independent Std Failure	☐ Chromatographic Interference
☐ Poor Precision (RPD)	☒ Surrogate Failure	☐ CV Failure	☐ Internal Standard Failure
☐ Sample out of clock	☐ Tune Failure	☐ Matrix Spike Failure	☐ Sample Contamination
☐ Retention Time Window	☐ Lab Accident	☐ Spiking Error	☐ Other

Details: Low TCX on both channels. High TCX for -10 is due to coeluting peak. Samples have small hits for DDT series

Lab limits 44-99 DoD QSM version 5.0 - Draft 42-129

Work Orders/Samples Affected →	SG2441-1 → 4, 9, 10				
Client	CH2MHILL				
Requirements and/or Procedures Not Met: Project QAPP(Q) / Method(M) / SOP(S) / DoD QSM(D) / Client (C) / Other:	D				
Significance of Non-Conforming Work:	---	---	---	---	---
Corrective Action can be taken within holding time					
Corrective Action cannot be taken within holding time	X 4/25				
Non-Conformance not related to holding time					
Approval of Significance (Dept. Mgr., Ops. Mgr. or QAO) – Initials & Date	PL 4-30-13				
Client Contacted: PM initials & Date	JP 4/30/13				
Corrective Action:	---	---	---	---	---
Reanalyze with compliant QC					
Re-Extract/Re-Prep					
Report non-compliance w/Cover Letter/Narrative and/or flagging	✓				
Date Corrective Action Completed					
By Whom?					
Re-analysis or Re-extraction results indicate?					
Approval of Corrective Action (Dept. Mgr., Ops. Mgr. or QAO) – Initials & Date					

Is Further Corrective Action including root cause analysis warranted (i.e.recurring problems)?

By Whom? Date:

Form QA-007 Revision 1 – 9/22/09

Jennifer Prescott

From: Peter Lemay [plemay@katahdinlab.com]
Sent: Wednesday, May 01, 2013 8:19 AM
To: Jennifer Prescott
Subject: FW: COC for samples received 4/15-NTR Vieques East CTO-037 PI-21-SG2441

FYI

Pete

From: Jennifer Obrin [mailto:jobrin@katahdinlab.com]
Sent: Wednesday, May 01, 2013 7:01 AM
To: 'Peter Lemay'
Subject: FW: COC for samples received 4/15-NTR Vieques East CTO-037 PI-21-SG2441

From: Michael.Zamboni@CH2M.com [mailto:Michael.Zamboni@CH2M.com]
Sent: Tuesday, April 30, 2013 4:02 PM
To: jobrin@katahdinlab.com; Juliana.Dean@ch2m.com; John.Swenfurth@CH2M.com
Cc: Michael.Zamboni@CH2M.com
Subject: RE: COC for samples received 4/15-NTR Vieques East CTO-037 PI-21-SG2441

Hi Jennifer,

Please refer to Worksheet #28-3 of the ancient tome (Final Preliminary Site Inspection/ Expanded Site Inspection, 7 Consent Order Sites and 16 PI/PAOC Sites, Former Vieques Naval Training Range, Vieques, Puerto Rico (CH2M HILL, 2009)). First of all, the acceptance limits are Katahdin statistical limits (specifically 42-104% for TCX). You have updated your limits but anyway it seems like there is no work plan exceedance here. Furthermore the corrective action is "No CA will be taken when one surrogate is within criteria. If surrogates are outside high and sample is <QL no CA taken. (3) If surrogates are outside low the affected samples are reextracted and reanalyzed.". Reference to QL means LOQ according to the PI-21 addendum. So there is no corrective action since one surrogate is within specification.

For that high TCX recovery, please examine whether VEP21-SB05-011H has any detections for PESTs. If not, then don't worry about it. If there are any detections, please examine whether there is obvious chromatographic interference present which I think you're saying there is. If so, then reanalysis may not be necessary as per current DoD QSM v. 4.1 . Long story short, I think you only need to take an action if there is a potential high bias on associated detected results.

Please let me know if you have any questions about this.

Thanks,
Mike Z.

From: Jennifer Obrin [mailto:jobrin@katahdinlab.com]
Sent: Tuesday, April 30, 2013 3:06 PM
To: Zamboni, Michael/WDC; Dean, Juliana/VBO; Swenfurth, John/TPA
Subject: RE: COC for samples received 4/15-NTR Vieques East CTO-037 PI-21-SG2441

Good Afternoon,

The lab has come to me with a non-conformance regarding the Pesticide analysis for SG2441, project Vieques CTO-037 PI-21. The Pesticide batch had low TCX on both channels. The TCX was barely out of the DoD acceptance limits of 70-125 as you can see on the attachment. As a side note, the TCX would have past using our lab limits (44-99) and the DoD QSM version 5 draft limits (42-129) that has not been implemented as of yet. There was a high TCX result for SG2441-10 due to a coeluting peak. The samples have small hits for the DDT series. The extraction hold time on these samples was 4/25 so re-extraction will not be done within holding time. Please let me know how you would like the lab to proceed.

From: Jennifer Obrin [mailto:jobrin@katahdinlab.com]
Sent: Monday, April 15, 2013 12:45 PM
To: 'Michael.Zamboni@CH2M.com'; 'Juliana.Dean@ch2m.com'; 'John.Swenfurth@CH2M.com'
Subject: COC for samples received 4/15-NTR Vieques East CTO-037 PI-21-SG2441

Please find attached the COC for samples received 4/15 for the project NTR Vieques East CTO-037 PI-21 under the work order SG2441. Please let me know if you have any questions.

Have a great day!

Jennifer Obrin
Federal Programs Project Manager
Katahdin Analytical Services
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No virus found in this message.
Checked by AVG - www.avg.com
Version: 2013.0.3272 / Virus Database: 3162/6287 - Release Date: 04/30/13

No virus found in this incoming message.
Checked by AVG - www.avg.com
Version: 9.0.932 / Virus Database: 3164.1.1/5787 - Release Date: 04/30/13 11:32:00

YES NO N/A

Table 2. Surrogate Recovery Criteria

Criteria	Action	
	Detected Target Compounds	Non-detected Target Compounds
%R > 200%	J	Use professional judgement
150% < %R ≤ 200%	J	No qualification
30% ≤ %R ≤ 150%	No qualification	
10% ≤ %R < 30%	J	UJ
%R < 10% (sample dilution not a factor)	J	R
%R < 10% (sample dilution is a factor)	Use professional judgement	
RT out of RT window	Use professional judgement	
RT within RT window	No qualification	

3.6 Are there any transcription/calculation errors between raw data and Form II? [ ] ✓ ___

ACTION: If large errors exist, call lab for explanation/resubmittal. Make any necessary corrections and document the effect in data assessments.

4.0 Laboratory Control Sample(LCS)

4.1 Is the LCS prepared, extracted, analyzed, and reported once for every 20 field samples. [ ] ___ ___

ACTION: If any Laboratory Control Sample data are missing, call the lab for explanation /resubmittals. Make note in the data assessment.

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YES NO N/A

4.2 Were Laboratory Control Samples analyzed at the required concentration for all analytes of interest as specified ~~in Table 3 below.~~ in Site SAP. [✓] ___ ___

Note: Use lab in-house criteria, if available.

Table 3. LCS Spiking Criteria

LCS Spike Compound	Spiking solution ug/l	Amount spiked to 100ml aqueous sample or 30g soil sample ml	Recovery Limits (%)
gamma-BHC	0.05	1	50-120
Heptachor epoxide	0.05	1	50-120
Dieldrin	0.01	1	30-130
4,4'-DDE	0.01	1	50-150
Endrin	0.01	1	50-120
Endosulfan sulfate	0.01	1	50-120
gamma-Chloradane	0.05	1	30-130
Tetrachloro-m-xylene(surrogate)	0.20	3	30-150
Decachlorobiphenyl (surrogate)	0.40	3	30-150

Note: The LCS might be spiked with the same analytes at the same concentration as the matrix spike.

ACTION: If Laboratory Control Samples were not analyzed at the required concentration or the required frequency, make note in the data assessment and use professional judgement to determined the affect on the data.

4.3 Do average recovery for each analyte meet the corresponding QC acceptance criteria listed ~~in table above?~~ in Site SAP. [ ] [✓] ___

see following page for comments

Katahdin
ANALYTICAL SERVICES

Cert No E87604

LCS/LCSD Recovery Report

LCS ID: WG122756-2
LCSD ID: WG122756-3
Project:
SDG: SG2441
Report Date: 08-MAY-13
LCS File ID: 1GE00100.D

Received Date:
Extract Date: 16-APR-13
Extracted By: JH
Extraction Method: SW846 3540
Lab Prep Batch: WG122756
LCSD File ID: 1GE00101.D

Analysis Date: 07-MAY-13
Analyst: JLP
Analysis Method: SW846 8081B
Matrix: SL
% Solids: NA

Compound	Spike Amt	LCS Conc	LCS Rec (%)	LCSD Conc	LCSD Rec (%)	Conc Units	RPD (%)	RPD Limit	Limits
alpha-BHC	3.34	2.89	86.5	2.65	79.3	ug/Kgdrywt	9	30	60-125
gamma-BHC	3.34	3.07	91.9	2.80	83.8	ug/Kgdrywt	9	30	65-125
Heptachlor	3.34	3.01	90.1	2.68	80.2	ug/Kgdrywt	12	30	50-140
Aldrin	3.34	3.04	91.0	2.77	82.9	ug/Kgdrywt	9	30	45-140
beta-BHC	3.34	2.96	88.6	2.80	83.8	ug/Kgdrywt	6	30	60-125
delta-BHC	3.34	3.64	109.	3.32	99.4	ug/Kgdrywt	9	30	55-130
Heptachlor Epoxide	3.34	3.30	98.8	3.09	92.5	ug/Kgdrywt	6	30	65-130
Endosulfan I	3.34	3.00	89.8	2.87	85.9	ug/Kgdrywt	4	30	15-135
Gamma-Chlordane	3.34	3.19	95.5	3.01	90.1	ug/Kgdrywt	6	30	65-125
Alpha-Chlordane	3.34	3.33	99.7	3.23	96.7	ug/Kgdrywt	0	30	65-120
4,4'-DDE	3.34	3.25	97.3	3.07	91.9	ug/Kgdrywt	6	30	70-125
Dieldrin	3.34	3.32	99.4	3.05	91.3	ug/Kgdrywt	8	30	65-125
Endrin	3.34	2.95	88.3	1.60	47.9*	ug/Kgdrywt	59*	30	60-135
4,4'-DDD	3.34	3.29	98.5	2.98	89.2	ug/Kgdrywt	10	30	30-135
Endosulfan II	3.34	3.24	97.0	3.08	92.2	ug/Kgdrywt	5	30	35-140
4,4'-DDT	3.34	3.31	99.1	3.02	90.4	ug/Kgdrywt	9	30	45-140
Endrin Aldehyde	3.34	3.15	94.3	3.12	93.4	ug/Kgdrywt	1	30	35-145
Endosulfan Sulfate	3.34	3.43	103.	2.95	88.3	ug/Kgdrywt	15	30	60-135
Methoxychlor	3.34	3.07	91.9	2.61	78.1	ug/Kgdrywt	16	30	55-145
Endrin Ketone	3.34	3.36	100.	3.48	104.	ug/Kgdrywt	4	30	65-135
Tetrachloro-M-Xylene			72.5		64.9*				70-125
Decachlorobiphenyl			91.6		86.6				55-130

Endrin was recovered low in only the LCSD. This was responsible for the high RPD. MS/MSD recoveries for Endrin were acceptable in both spike aliquots. Therefore Endrin was not qualified in these field samples

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YES NO N/A

ACTION: For LCS % recovery not meeting the required recovery, follow the required action in Table 4 below.

Table 4. LCS Recovery Criteria

Criteria	Action	
	Detected Associated Compounds	Non-Detected Compounds
%R > Upper Acceptance Limit	J	No qualification
%R < ~~Upper~~ Lower Acceptance Limit	J	R
Lower Acceptance Limit ≤ %R ≤ Upper Acceptance Limit	No qualifications	

5.0 Matrix Spikes (Form III/Equivalent) VEP21-SS04-0001

5.1 Are all data for matrix spike and matrix duplicate or matrix spike duplicate (MS/MD or MS/MSD) present and complete for each matrix? ☑ ___ ___

NOTE: For soil and waste samples showing detectable amounts of organics, the lab may substitute replicate samples in place of the matrix spike (see page 8000B-40, section 8.5.3).

5.2 Have MS/MD or MS/MSD results been summarized on Form III/Equivalent? ☑ ___ ___

ACTION: If any data are missing take action as specified in section 3.2 above.

5.3 Were matrix spikes analyzed at the required frequency for each of the following matrices? (One MS/MD, MS/MSD or laboratory replicate must be performed for every 20 samples of similar matrix or concentration level. Laboratories analyzing one to ten samples per month are required to analyze at least one MS per month [page 8000B-39, section 8.5.])

	YES	NO	N/A
a. Water VEP21-SS04-0001	[ ]	___	✓
b. Waste	[ ]	___	✓
c. Soil/Solid	[✓]	___	___

ACTION: If any MS/MD, MS/MSD or replicate data are missing, take the action specified in 3.2 above.

5.4 We Were Matrix Spike Samples analyzed at the required concentration for all analytes of interest as specified ~~in Table 5 below.~~ client site specific SAP [✓] ___ ___

Note: Spiking analytes may differ from those in Table 5. Check QA project plan or task order.

Table 5. Matrix Spiking Criteria

Matrix Spike Compound	Spiking solution ug/l	Amount spiked to 100ml aqueous sample or 30g soil sample ml
gamma-BHC	0.05	1
Heptachor	0.05	1
Aldrin	0.05	1
Dieldrin	1.0	1
Endrin	1.0	1
4,4'-DDT	1.0	1

Note: For aqueous organic extractable, the spike concentration should be:

1) For regulatory compliance monitoring - the regulatory concentration limit or 1 to 5 times the expected background concentration, whichever is higher;

2) For all other aqueous samples - the larger of either 1 to 5 x times the expected background

Katahdin
ANALYTICAL SERVICES

Cert No E87604

MS/MSD Recovery Report

MS ID: WG122756-4
MSD ID: WG122756-5
Sample ID: SG2441-4
Client ID: VEP21-SS04-0001
Project:
SDG: SG2441
MS File ID: 1GE00103.D

Received Date:
Extract Date: 16-APR-13
Extracted By: JH
Extraction Method: SW846 3540
Lab Prep Batch: WG122756
Report Date: 08-MAY-13
MSD File ID: 1GE00104.D

Analysis Date: 07-MAY-13
Analyst: JLP
Analysis Method: SW846 8081B
Matrix: SL
% Solids: 89.

Compound	MS Spike	MSD Spike	Conc Units	Samp Conc	MS Conc	MSD Conc	MS Rec (%)	MSD Rec (%)	RPD (%)	RPD Limit	Limits
alpha-BHC	3.31	3.58	ug/Kgdrywt	U0.18	2.4	3.1	73.4	85.6	23	30	60-125
gamma-BHC	3.31	3.58	ug/Kgdrywt	U0.18	2.6	3.2	78.5	88.9	20	30	65-125
Heptachlor	3.31	3.58	ug/Kgdrywt	U0.18	2.6	3.1	77.9	87.8	20	30	50-140
Aldrin	3.31	3.58	ug/Kgdrywt	U0.18	2.5	3.0	76.1	84.2	18	30	45-140
beta-BHC	3.31	3.58	ug/Kgdrywt	U0.18	2.6	3.2	79.7	88.1	18	30	60-125
delta-BHC	3.31	3.58	ug/Kgdrywt	U0.18	3.4	4.3	102.	120.	23	30	55-130
Heptachlor Epoxide	3.31	3.58	ug/Kgdrywt	U0.18	2.8	3.4	83.9	95.6	21	30	65-130
Endosulfan I	3.31	3.58	ug/Kgdrywt	U0.18	2.7	3.1	80.3	87.5	16	30	15-135
Gamma-Chlordane	3.31	3.58	ug/Kgdrywt	U0.18	2.7	3.3	82.1	93.4	20	30	65-125
Alpha-Chlordane	3.31	3.58	ug/Kgdrywt	U0.18	3.2	3.6	97.2	99.3	10	30	65-120
4,4'-DDE	3.31	3.58	ug/Kgdrywt	0.79	3.6	4.2	85.1	96.2	16	30	70-125
Dieldrin	3.31	3.58	ug/Kgdrywt	U0.36	2.7	3.3	82.4	92.3	19	30	65-125
Endrin	3.31	3.58	ug/Kgdrywt	U0.36	2.6	3.0	79.4	84.2	13	30	60-135
4,4'-DDD	3.31	3.58	ug/Kgdrywt	JJ0.26	2.9	3.6	88.2	102.	22	30	30-135
Endosulfan II	3.31	3.58	ug/Kgdrywt	U0.36	2.8	3.5	85.1	98.4	22	30	35-140
4,4'-DDT	3.31	3.58	ug/Kgdrywt	JJ0.92	3.7	4.4	94.6	108.	18	30	45-140
Endrin Aldehyde	3.31	3.58	ug/Kgdrywt	U0.36	2.8	3.3	84.5	93.4	18	30	35-145
Endosulfan Sulfate	3.31	3.58	ug/Kgdrywt	U0.36	3.3	4.2	99.3	117.	24	30	60-135
Methoxychlor	3.31	3.58	ug/Kgdrywt	U1.8	2.8	3.4	84.8	95.6	20	30	55-145
Endrin Ketone	3.31	3.58	ug/Kgdrywt	U0.36	3.2	4.1	96.0	114.	24	30	65-135
Tetrachloro-M-Xylene							63.2*	66.9*			70-125
Decachlorobiphenyl							82.0	91.0			55-130

see Form II for notes

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YES NO N/A

concentration, or the same as the QC check sample concentration (see section 4 above);

3) For soil/solid and waste samples - the recommended concentration is 20 times the estimated quantitation limit (EQL).

No action is taken based on MS or replicate data alone. However, using informed professional judgement, the data reviewer may use the matrix spike or laboratory replicate results in conjunction with other QC criteria and determine the need for some qualification of the data. In some instances it may be determined that only the replicate or spiked samples are affected. Alternatively, the data may suggest that the laboratory is having a systematic problem with one or more analytes, thereby affecting all associated samples.

5.5 Do average recovery for each analyte meet the corresponding QC acceptance criteria listed in ~~Table 6 below.~~ all SAP o lab criteria were met. [✓] ___ ___

Note: Use lab in-house criteria, if available.

Table 6. Matrix Spike Recovery Criteria

Compound	% Recovery Water	RPD Water	% Recovery Soil	RPD Soil
gamma-BHC	56-123	0-15	46-127	0-50
Heptachor	40-13	0-20	35-130	0-31
Aldrin	40-120	0-22	34-132	0-43
Dieldrin	52-126	0-18	31-134	0-38
Endrin	56-121	0-21	42-139	0-45
4,4'-DDT	38-127	0-27	23-134	0-50

NOTE: The actual number of MS analytes depends on the number analytes being measured (e.g., total number of MS plus MSD compounds). If only chlordane or toxaphene are the analytes of

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YES NO N/A

interest, the spiked sample should contain the most representative multi-component analyte.

ACTION: Follow the matrix spike actions (Table 7) for pesticide analyses.

Table 7. Matrix Spike Qualifying Criteria

Criteria	Action	
	Detected Associated Compounds	Non-Detected Compounds
%R or RPD > Upper Acceptance Limit	J	No qualification
20% R ≤ %R < Lower Acceptance Limit	J	UJ
%R < 20%	J	Use professional judgement
Lower Acceptance Limit ≤ %R; RPD ≤ Upper Acceptance Limit	No qualifications	

Note: When the results of the matrix spike analyses indicates a potential problem due to the sample matrix itself, the LCS results are used to verify the laboratory can perform analyses in a clean matrix.

6.0 Blanks (Form IV/Equivalent)

6.1 Was reagent blank data reported on Method Blank Summary form(s) (Form IV)?

6.2 Frequency of Analysis: Has a reagent blank been analyzed for every 20 (or less) samples of similar matrix or concentration or each extraction batch? [✓] ___ ___

Note: Method blank should be analyzed, either after the calibration standard or at any other time during the analytical shift.

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YES NO N/A

ACTION: If any blank data are missing, take action as specified above (section 3.2). If blank data is not available, reject (R) all associated positive data. However, using professional judgement, the data reviewer may substitute field blank data for missing method blank data.

6.3 Chromatography: review the blank raw data - chromatograms, quant reports or data system printouts.

Is the chromatographic performance (baseline stability) for each instrument acceptable for pesticides? ☑ ___ ___

ACTION: Use professional judgement to determine the effect on the data.

7.0 Contamination

calibration blanks were not provided in dp but all other blanks were clean

NOTE: "Water blanks", "distilled water blanks" and "drilling water blanks" are validated like any other sample and are not used to qualify the data. Do not confuse them with the other QC blanks discussed below.

7.1 Do any method/instrument/reagent/cleanup blanks have positive results for organochlorine pesticides? When applied as described below, the contaminant concentration in these blanks are multiplied by the sample Dilution Factor and corrected for % moisture when necessary. ___ ☑ ___

7.2 Do any field/rinse blanks have positive organochlorine pesticide results? ___ ☑ ___

ACTION: Prepare a list of the samples associated with each of the contaminated blanks. (Attach a separate sheet.)

NOTE: All field blank results associated to a particular group of samples (may exceed one per case or one per day) may be used to qualify data. Blanks may not be qualified because of contamination in

222

YES NO N/A

another blank. Field blanks must be qualified for surrogate, or calibration QC problems.

ACTION: Follow the directions in Table 8 below to qualify sample results due to contamination. Use the largest value from all the associated blanks.

Table 8. Blank Contamination Criteria

Blank Type	Blank Result	Sample Result	Action for Samples
Method, Clean up, Instrument, Field	Detects	Not detected	No qualification
	< CRQL	< CRQL	Report CRQL value with a U
		≥ CRQL	No qualification
	> CRQL	< CRQL	Report CRQL value with a U
		≥ CRQL and < blank contamination	Report the concentration for the sample with a U
		≥ CRQL and ≥ blank contamination	No qualification
	= CRQL	< CRQL	Report CRQL value with a U
		≥ CRQL	No qualification
	Gross contamination	Detects	Qualify results as unusable R

Note: Analytes qualified "U" for blank contamination are treated as "hits" when qualifying the calibration criteria.

Note: When applied as described in Table 8 above, the contaminant concentration in the blank is multiplied by the sample dilution factor.

NOTE: If gross blank contamination exists(e.g., saturated peaks, "hump-o-grams", "junk peaks"), all affected positive compounds in the associated samples should be qualified as unusable "R", due to interference.

YES NO N/A

Non-detected pesticide target compounds do not require qualification unless the contamination is so high that it interferes with the analyses of non-detected compounds.

7.3 Are there field/rinse/equipment blanks associated with every sample? [✓] ___ ___

VEP21-EB01-041113 - clean

ACTION: For low level samples, note in data assessment that there is no associated field/rinse/equipment blank. Exception: samples taken from a drinking water tap do not have associated field blanks.

8.0 Gas Chromatography with Electron Capture Detector (GC/ECD) Instrument Performance Check (CLP Form VI and Form VII Equivalent)

8.1 Was the proper gas chromatographic column used for the analysis of organochlorine pesticides? Check raw data, instrument logs, or contact the lab to determine what type of columns were used. (See Method 8081B-8, section 4.2) [✓] ___ ___

8.2 If capillary columns were used, were they both wide bore (.53 mm ID) fused silica GC columns, such as DB-608 and DB-1701 or equivalent. Indicate the specific type of column used for:

Dual column system

column 1: ZB multi-residue-1 OD 0.53

column 2: ZB multi-residue-2 OD 0.53

ACTION: Note any changes to the suggested materials in section 8.1 above in the data assessment. Also note the impact (positive or negative) such changes have on the analytical results.

9.0 Calibration and GC Performance

9.1 Are the following Gas Chromatograms and Data Systems Printouts for both columns present for all samples, blanks, MS, replicates?

a. DDT/endrin breakdown check [✓] ___ ___

	YES	NO	N/A
b. toxaphene	[✓]	___	___
c. technical chlordane	[ ]	___	✓
d. 5 pt. initial calibration standards	[✓]	___	___
e. calibration verification standards	[✓]	___	___
f. LCS	[✓]	___	___
g. Method blanks	[✓]	___	___

ACTION: If no, take action specified in 3.2 above.

9.2 Has a DDT/endrin breakdown check standard (at the mid-concentration level) been analyzed at the beginning of each analytical sequence on both columns (page 8081B-24, section 8.2.3)?	[✓]	___	___

ACTION: If no, take action as specified in 3.2 above.

9.3 Has the individual % breakdown exceeded 20.0% on either column for:

- 4,4' - DDT?	___	[✓]	___
- endrin?	___	[✓]	___

ACTION: If any % breakdown has failed the QC criteria in the breakdown check standard, qualify all sample analyses in the entire analytical sequence as described below.

a. If 4,4'-DDT breakdown is greater than 20.%:

i. Qualify all positive results for DDT with 'J". If DDT was not detected, but DDD and DDE are positive, then qualify the quantitation limit for DDT as unusable ("R").

ii. Qualify positive results for DDD and DDE as presumptively present at an approximated quantity ("NJ").

YES NO N/A

b. If endrin breakdown is greater than 20.0%:

i. Qualify all positive results for endrin with "J". If endrin was not detected, but endrin aldehyde and endrin ketone are positive, then qualify the quantitation limit for endrin as unusable ("R").

ii. Qualify positive results for endrin ketone and endrin aldehyde as presumptively present at an approximated quantity ("NJ").

9.4 Are data summary forms (containing calibration factors or response factors) for the initial 5 pt. calibration and daily calibration verification standards present and complete for each column and each analytical sequence? [✓] ___ ___

NOTE: If internal standard calibration procedure is used (page 8000B-16, section 7.4.2.2), then response factors must be used for %RSD calculations and compound quantitation. If, external standard calibration procedures are used (page 8000B-16, section 7.4.2.1), then calibration factors must be used.

ACTION: If any data are missing or it cannot be determined how the laboratory calculated calibration factors or response factors, contact the lab for explanation/resubmittals. Make necessary corrections and note any problems in the data assessment.

9.5 Are there any transcription/calculation errors between raw data and data summary forms. ___ [✓] ___

ACTION: If large errors exist, call lab for explanation/resubmittal, make necessary corrections and document the effect in data assessments.

9.6 Are standard retention time (RT) windows for each analyte of interest presented on modified CLP summary forms? [ ] ✓ ___ ___

RTW not presented on forms. However Quant pages contain RT, EXP RT, DLT RT columns to track system stability.

YES NO N/A

ACTION: If any data are missing, or it cannot be determined how RT windows were calculated, call the lab for explanation/resubmittals. Note any problems in the data assessment.

NOTE: Retention time windows for all pesticides are established using retention times from three calibration standards analyzed during the entire analytical sequence (page 8081B-15, section 7.4.6).

A 72 hr. sequence is not required with this method, however, the method states that best results are obtained using retention times which span the entire sequence; i.e., using the mid level from the 5 pt. calibration, one of the mid-concentration standards analyzed during mid-sequence and one analyzed at the end.

9.7 Were RT windows on the confirmation column established using three standards as described above? [ ] ✓ ___

NOTE: RT windows for the confirmation column should be established using a 3 pt. calibration, preferably spanning the entire analytical sequence as described in 9.6 above. If RT windows on one column are tighter than the other, this may result in false negatives when attempting to identify compounds in the samples.

Dual column system - RT windows were developed in accordance with lab SOP & current methodology

ACTION: Note potential problems, if any, in the data assessment.

9.8 Do all standard retention times in each level of the initial 5 pt. calibrations for pesticides fall within the windows established during the initial calibration sequence?

[✓] ___ ___

ACTION: i. If no, all samples in the entire analytical sequence are potentially affected. Check to see if three standards, spanning the entire sequence were used to obtained RT windows. If the lab used three standards from the 5 pt., RT windows

YES NO N/A

may be too tight. If so, RT windows should be recalculated as per page 8081B-15, section 7.4.6.2

ii. Alternatively, check to see if the chromatograms contain peaks within an expanded window surrounding the expected retention times.

If no peaks are found and the surrogates are visible, non-detects are valid. If peaks are present but cannot be discerned through pattern recognition or by using revised RT windows, qualify all positive results and non-detects as unusable, "R".

ACTION: For toxaphene and chlordane, the RT may be outside the RT window, but these analytes may still be identified from their individual patterns.

9.9 Has the linearity criteria for the initial calibration standards been satisfied for both columns? (% RSD must be < allowable limits* for all analytes). ☑ ___ ___

ACTION: If no, follow the actions in Table 9 below.

Table 9. Initial Calibration Linearity Criteria

Criteria	Criteria	
	Detected Associated Compounds	Non-Detected Associated Compounds
% RSD exceeds allowable limits*	J	No qualification
% RSD within allowable limits*	NO qualifications	

* %RSD ≤ 20% for single component compounds except alpha-BHC and delta-BHC.
%RSD ≤ 25% for alpha-BHC and delta-BHC
%RSD ≤ 30% for Toxaphene peaks
%RSD ≤ 30% for surrogates(tetrachloro-m-xylene and decachlorobiphenyl).

9.10 Has a calibration verification standard containing all analytes of interest been analyzed on each

	YES	NO	N/A
working day, prior to sample analyses (pages 8081B-15, sections 7.5.2)?	[✓]	___	___
9.11 Has a calibration verification standard also been analyzed after every 10 samples and at the end of each analytical sequence (page 8081B-15, section 7.5.2)?	[✓]	___	___

ACTION: If no, take action as specified in section 3.2 above.

9.12 Has no more than 12 hours elapsed from the injection of the opening CCV and the end of the analytical sequence (closing CCV). Has no more than 72 hours elapsed from the injection of the sample with a Toxaphene detection and the Toxaphene CCV?	[✓]	___	___

ACTION: See Table 10 below.

9.13 Has the percent difference (%D) exceeded ± 20% for any organochlorine pesticide analyte in any calibration verification standard?	✓	[ ]	___
9.14 Has a new 5 pt. calibration curve been generated for those analytes which failed in the calibration verification standard (page 8081B-16, section 7.5.2.2), and all samples which followed the out-of-control standard (page 8081B-16, section 7.5.2.3) reinjected?	[ ]	___	✓

See next pages for flags as required

ACTION: If the %D for any analyte exceeded the ± 20% criterion and the instrument was not recalibrated for those analytes, see table below.

9.15 Have <u>daily</u> retention time windows been properly calculated for each analyte of interest (page 8081B-16, section 7.5.3)), using RTs from the associated mid concentration standard and standard deviation from the initial calibration)?	[✓]	___	___

Retention times were properly adjusted based on lab SOP & current methodology as necessary.

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Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : NTR Vieques East CTO-037 PI-21 **SDG:** SG2441
Lab ID : WG123754-16 **Analytical Date:** 05/07/13 19:15
Lab File ID : 1GE00110.D **Instrument ID:** GC01
Initial Calibration Date(s): 05/07/13 10:34 05/07/13 15:46 **Column ID:** A

Compound	RRF/Amount	RF0.050	CCAL RRF0.050	Min	%D/ %Drift	Max %D/ %Drift	Curve Type		
5 alpha-BHC	17789004	21484560	21484560	0.001	20.77438	20.00000	Averaged	*	NQ
6 gamma-BHC	15635935	18839800	18839800	0.001	20.49039	20.00000	Averaged	*	
7 beta-BHC	6719235	7736180	7736180	0.001	15.13483	20.00000	Averaged		
8 delta-BHC	8602446	10150740	10150740	0.001	17.99830	20.00000	Averaged		
9 Heptachlor	14981417	17532020	17532020	0.001	17.02511	20.00000	Averaged		
10 Aldrin	13561250	16451880	16451880	0.001	21.31536	20.00000	Averaged	*	NQ
13 Heptachlor Epoxide	11932470	14138160	14138160	0.001	18.48477	20.00000	Averaged		
15 gamma-Chlordane	11724334	14113460	14113460	0.001	20.37750	20.00000	Averaged	*	NQ
17 alpha-Chlordane	10719080	13179400	13179400	0.001	22.95272	20.00000	Averaged	*	
19 4,4'-DDE	11312316	13319740	13319740	0.001	17.74548	20.00000	Averaged		
20 Endosulfan I	10212309	12396000	12396000	0.001	21.38293	20.00000	Averaged	*	NQ
21 Dieldrin	11340670	13676240	13676240	0.001	20.59464	20.00000	Averaged	*	
23 Endrin	10353006	12258480	12258480	0.001	18.40503	20.00000	Averaged		
24 4,4'-DDD	8286154	9584900	9584900	0.001	15.67369	20.00000	Averaged		
26 Endosulfan II	9185738	10727300	10727300	0.001	16.78212	20.00000	Averaged		
27 4,4'-DDT	7842315	9320240	9320240	0.001	18.84552	20.00000	Averaged		
28 Endrin Aldehyde	6381106	7577480	7577480	0.001	18.74869	20.00000	Averaged		
29 Methoxychlor	4193437	4554920	4554920	0.001	8.62021	20.00000	Averaged		
32 Endosulfan sulfate	5494203	6420400	6420400	0.001	16.85772	20.00000	Averaged		
33 Endrin Ketone	8205216	9955580	9955580	0.001	21.33233	20.00000	Averaged	*	NQ
4 Tetrachloro-m-Xylene	12272955	14362020	14362020	0.001	17.02169	20.00000	Averaged		
34 Decachlorobiphenyl	6250486	6788200	6788200	0.001	8.60276	20.00000	Averaged		

*** = Compound out of QC criteria**

1, 2, 3 & 4 assoc

* all non-compliance due to an increase in response - no + results for non-compliant compounds so no qnals were required.

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Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : NTR Vieques East CTO-037 PI-21 **SDG:** SG2441
Lab ID : WG123754-17 **Analytical Date:** 05/07/13 19:15
Lab File ID : 1GE00110.D **Instrument ID:** GC01
Initial Calibration Date(s): 05/07/13 10:34 05/07/13 15:46 **Column ID:** B

Compound	RRF/Amount	RF0.050	CCAL RRF0.050	Min	%D/ %Drift	Max %D/ %Drift	Curve Type		
5 alpha-BHC	35162290	42130120	42130120	0.001	19.81620	20.00000	Averaged		
6 gamma-BHC	31135795	37130580	37130580	0.001	19.25367	20.00000	Averaged		
7 beta-BHC	13488630	15586420	15586420	0.001	15.55229	20.00000	Averaged		
8 delta-BHC	16953485	20333520	20333520	0.001	19.93711	20.00000	Averaged		
9 Heptachlor	28780144	33576640	33576640	0.001	16.66599	20.00000	Averaged		
10 Aldrin	26618421	31839640	31839640	0.001	19.61506	20.00000	Averaged		
13 Heptachlor Epoxide	23319396	27093260	27093260	0.001	16.18337	20.00000	Averaged		
15 gamma-Chlordane	22944173	26885520	26885520	0.001	17.17799	20.00000	Averaged		
17 alpha-Chlordane	21271480	25384680	25384680	0.001	19.33669	20.00000	Averaged		
19 4,4'-DDE	22903859	26833820	26833820	0.001	17.15851	20.00000	Averaged		
20 Endosulfan I	20472630	23834940	23834940	0.001	16.42344	20.00000	Averaged		
21 Dieldrin	21666322	25932820	25932820	0.001	19.69184	20.00000	Averaged		
23 Endrin	19196728	23167580	23167580	0.001	20.68504	20.00000	Averaged	*	NQ
24 4,4'-DDD	15976792	18421340	18421340	0.001	15.30062	20.00000	Averaged		
26 Endosulfan II	16958549	19954680	19954680	0.001	17.66738	20.00000	Averaged		
27 4,4'-DDT	15263751	17873480	17873480	0.001	17.09756	20.00000	Averaged		
28 Endrin Aldehyde	12214853	14666500	14666500	0.001	20.07103	20.00000	Averaged	*	NQ
29 Methoxychlor	7929836	8761940	8761940	0.001	10.49333	20.00000	Averaged		
32 Endosulfan sulfate	10884626	12422000	12422000	0.001	14.12427	20.00000	Averaged		
33 Endrin Ketone	14928487	18181500	18181500	0.001	21.79064	20.00000	Averaged	*	NQ
4 Tetrachloro-m-Xylene	23822769	27846960	27846960	0.001	16.89220	20.00000	Averaged		
34 Decachlorobiphenyl	12077323	13019320	13019320	0.001	7.79971	20.00000	Averaged		

*** = Compound out of QC criteria**

See note * previous page

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Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : NTR Vieques East CTO-037 PI-21 **SDG:** SG2441
Lab ID : WG123797-3 **Analytical Date:** 05/08/13 08:22
Lab File ID : 1GE00123.D **Instrument ID:** GC01
Initial Calibration Date(s): 05/07/13 10:34 05/07/13 15:46 **Column ID:** A

Compound	RRF/Amount	RF0.050	CCAL RRF0.050	Min	%D/ %Drift	Max %D/ %Drift	Curve Type	
5 alpha-BHC	17789004	18552440	18552440	0.001	4.29162	20.00000	Averaged	
6 gamma-BHC	15635935	16091760	16091760	0.001	2.91524	20.00000	Averaged	
7 beta-BHC	6719235	6721100	6721100	0.001	0.02775	20.00000	Averaged	
8 delta-BHC	8602446	10335660	10335660	0.001	20.14793	20.00000	Averaged	* NQ
9 Heptachlor	14981417	15603720	15603720	0.001	4.15383	20.00000	Averaged	
10 Aldrin	13561250	13551500	13551500	0.001	-0.07190	20.00000	Averaged	
13 Heptachlor Epoxide	11932470	12050320	12050320	0.001	0.98764	20.00000	Averaged	
15 gamma-Chlordane	11724334	11270960	11270960	0.001	-3.86695	20.00000	Averaged	
17 alpha-Chlordane	10719080	10200640	10200640	0.001	-4.83661	20.00000	Averaged	
19 4,4'-DDE	11312316	11151160	11151160	0.001	-1.42460	20.00000	Averaged	
20 Endosulfan I	10212309	10336760	10336760	0.001	1.21864	20.00000	Averaged	
21 Dieldrin	11340670	11021040	11021040	0.001	-2.81844	20.00000	Averaged	
23 Endrin	10353006	10362060	10362060	0.001	0.08745	20.00000	Averaged	
24 4,4'-DDD	8286154	8310040	8310040	0.001	0.28827	20.00000	Averaged	
26 Endosulfan II	9185738	8885500	8885500	0.001	-3.26853	20.00000	Averaged	
27 4,4'-DDT	7842315	8011280	8011280	0.001	2.15453	20.00000	Averaged	
28 Endrin Aldehyde	6381106	5811820	5811820	0.001	-8.92144	20.00000	Averaged	
29 Methoxychlor	4193437	4336460	4336460	0.001	3.41064	20.00000	Averaged	
32 Endosulfan sulfate	5494203	5704260	5704260	0.001	3.82325	20.00000	Averaged	
33 Endrin Ketone	8205216	7899760	7899760	0.001	-3.72271	20.00000	Averaged	
4 Tetrachloro-m-Xylene	12272955	12669180	12669180	0.001	3.22844	20.00000	Averaged	
34 Decachlorobiphenyl	6250486	6250560	6250560	0.001	0.00118	20.00000	Averaged	

*** = Compound out of QC criteria**

↑ in response - no + for S-BNC

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Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : NTR Vieques East CTO-037 PI-21 **SDG:** SG2441
Lab ID : WG123797-5 **Analytical Date:** 05/08/13 08:44
Lab File ID : 1GE00124.D **Instrument ID:** GC01
Initial Calibration Date(s): 05/07/13 10:34 05/07/13 15:46 **Column ID:** A

Compound	RRF/Amount	RF0.050	CCAL RRF0.050	Min	%D/ %Drift	Max %D/ %Drift	Curve Type	
18 Toxaphene(4)	1.00000	0.72821	175655	0.001	-27.17909	20.00000	Linear	*
18 Toxaphene(3)	1.00000	0.73663	191115	0.001	-26.33672	20.00000	Linear	*
18 Toxaphene(1)	1.00000	0.78898	83970	0.001	-21.10168	20.00000	Linear	*
18 Toxaphene(2)	1.00000	0.83324	147170	0.001	-16.67609	20.00000	Linear	
18 Toxaphene(6)	1.00000	0.83337	201994	0.001	-16.66339	20.00000	Linear	
18 Toxaphene(7)	1.00000	0.84230	139541	0.001	-15.76974	20.00000	Linear	
18 Toxaphene(5)	1.00000	0.85881	280158	0.001	-14.11883	20.00000	Linear	
18 Toxaphene(9)	1.00000	0.88296	140351	0.001	-11.70404	20.00000	Linear	
18 Toxaphene(8)	1.00000	0.94286	311163	0.001	-5.71373	20.00000	Linear	

NQ ↓

*** = Compound out of QC criteria**

* No Quals Required. - most peaks are within criteria - avg < 20%

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Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : NTR Vieques East CTO-037 PI-21 **SDG:** SG2441
Lab ID : WG123797-6 **Analytical Date:** 05/08/13 08:44
Lab File ID : 1GE00124.D **Instrument ID:** GC01
Initial Calibration Date(s): 05/07/13 10:34 05/07/13 15:46 **Column ID:** B

Compound	RRF/Amount	RF0.050	CCAL RRF0.050	Min	%D/ %Drift	Max %D/ %Drift	Curve Type		
18 Toxaphene(1)	1.00000	0.79364	239539	0.001	-20.63617	20.00000	Linear	*	NQ
18 Toxaphene(2)	1.00000	0.82758	356746	0.001	-17.24202	20.00000	Linear		
18 Toxaphene(4)	1.00000	0.83705	222997	0.001	-16.29490	20.00000	Linear		
18 Toxaphene(3)	1.00000	0.85601	260142	0.001	-14.39892	20.00000	Linear		
18 Toxaphene(6)	1.00000	0.91070	206681	0.001	-8.93026	20.00000	Linear		
18 Toxaphene(5)	1.00000	0.91567	568178	0.001	-8.43251	20.00000	Linear		
18 Toxaphene(7)	1.00000	0.95094	318426	0.001	-4.90572	20.00000	Linear		
18 Toxaphene(8)	1.00000	0.95964	544626	0.001	-4.03644	20.00000	Linear		
18 Toxaphene(9)	1.00000	1.25420	353246	0.001	25.41978	20.00000	Linear	*	NQ

*** = Compound out of QC criteria**

See note * previous page

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Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : NTR Vieques East CTO-037 PI-21 **SDG:** SG2441
Lab ID : WG123797-7 **Analytical Date:** 05/08/13 11:45
Lab File ID : 1GE00134.D **Instrument ID:** GC01
Initial Calibration Date(s): 05/07/13 10:34 05/07/13 15:46 **Column ID:** A

Compound	RRF/Amount	RF0.025	CCAL RRF0.025	Min	%D/ %Drift	Max %D/ %Drift	Curve Type	
5 alpha-BHC	17789004	18974080	18974080	0.001	6.66184	20.00000	Averaged	
6 gamma-BHC	15635935	16807760	16807760	0.001	7.49443	20.00000	Averaged	
7 beta-BHC	6719235	6739120	6739120	0.001	0.29594	20.00000	Averaged	
8 delta-BHC	8602446	10980280	10980280	0.001	27.64138	20.00000	Averaged	* NQ
9 Heptachlor	14981417	15966320	15966320	0.001	6.57416	20.00000	Averaged	
10 Aldrin	13561250	14318600	14318600	0.001	5.58466	20.00000	Averaged	
13 Heptachlor Epoxide	11932470	12748720	12748720	0.001	6.84058	20.00000	Averaged	
15 gamma-Chlordane	11724334	12316920	12316920	0.001	5.05433	20.00000	Averaged	
17 alpha-Chlordane	10719080	11683480	11683480	0.001	8.99704	20.00000	Averaged	
19 4,4'-DDE	11312316	11564720	11564720	0.001	2.23123	20.00000	Averaged	
20 Endosulfan I	10212309	11030640	11030640	0.001	8.01318	20.00000	Averaged	
21 Dieldrin	11340670	12117040	12117040	0.001	6.84589	20.00000	Averaged	
23 Endrin	10353006	10967320	10967320	0.001	5.93368	20.00000	Averaged	
24 4,4'-DDD	8286154	8318320	8318320	0.001	0.38819	20.00000	Averaged	
26 Endosulfan II	9185738	9791280	9791280	0.001	6.59219	20.00000	Averaged	
27 4,4'-DDT	7842315	8310360	8310360	0.001	5.96820	20.00000	Averaged	
28 Endrin Aldehyde	6381106	6722280	6722280	0.001	5.34662	20.00000	Averaged	
29 Methoxychlor	4193437	4265640	4265640	0.001	1.72181	20.00000	Averaged	
32 Endosulfan sulfate	5494203	6237080	6237080	0.001	13.52111	20.00000	Averaged	
33 Endrin Ketone	8205216	8936320	8936320	0.001	8.91023	20.00000	Averaged	
4 Tetrachloro-m-Xylene	12272955	12689080	12689080	0.001	3.39058	20.00000	Averaged	
34 Decachlorobiphenyl	6250486	6558320	6558320	0.001	4.92496	20.00000	Averaged	

*** = Compound out of QC criteria**

* ↓ in response - no + for S-BNC

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Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : NTR Vieques East CTO-037 PI-21 **SDG:** SG2441
Lab ID : WG123797-8 **Analytical Date:** 05/08/13 11:45
Lab File ID : 1GE00134.D **Instrument ID:** GC01
Initial Calibration Date(s): 05/07/13 10:34 05/07/13 15:46 **Column ID:** B

Compound	$\overline{RRF}$/Amount	RF0.025	CCAL RRF0.025	Min	%D/ %Drift	Max %D/ %Drift	Curve Type	
5 alpha-BHC	35162290	38669160	38669160	0.001	9.97338	20.00000	Averaged	
6 gamma-BHC	31135795	34240960	34240960	0.001	9.97297	20.00000	Averaged	
7 beta-BHC	13488630	14401240	14401240	0.001	6.76577	20.00000	Averaged	
8 delta-BHC	16953485	22683680	22683680	0.001	33.79951	20.00000	Averaged	* NQ
9 Heptachlor	28780144	31103400	31103400	0.001	8.07243	20.00000	Averaged	
10 Aldrin	26618421	28798080	28798080	0.001	8.18854	20.00000	Averaged	
13 Heptachlor Epoxide	23319396	25386680	25386680	0.001	8.86508	20.00000	Averaged	
15 gamma-Chlordane	22944173	25098280	25098280	0.001	9.38847	20.00000	Averaged	
17 alpha-Chlordane	21271480	23229240	23229240	0.001	9.20369	20.00000	Averaged	
19 4,4'-DDE	22903859	23304360	23304360	0.001	1.74862	20.00000	Averaged	
20 Endosulfan I	20472630	21870200	21870200	0.001	6.82653	20.00000	Averaged	
21 Dieldrin	21666322	23561320	23561320	0.001	8.74628	20.00000	Averaged	
23 Endrin	19196728	20596800	20596800	0.001	7.29328	20.00000	Averaged	
24 4,4'-DDD	15976792	16249400	16249400	0.001	1.70627	20.00000	Averaged	
26 Endosulfan II	16958549	17961120	17961120	0.001	5.91189	20.00000	Averaged	
27 4,4'-DDT	15263751	16138320	16138320	0.001	5.72971	20.00000	Averaged	
28 Endrin Aldehyde	12214853	12800840	12800840	0.001	4.79733	20.00000	Averaged	
29 Methoxychlor	7929836	8167000	8167000	0.001	2.99078	20.00000	Averaged	
32 Endosulfan sulfate	10884626	12487520	12487520	0.001	14.72622	20.00000	Averaged	
33 Endrin Ketone	14928487	16211920	16211920	0.001	8.59721	20.00000	Averaged	
4 Tetrachloro-m-Xylene	23822769	25754840	25754840	0.001	8.11019	20.00000	Averaged	
34 Decachlorobiphenyl	12077323	12606000	12606000	0.001	4.37743	20.00000	Averaged	

*** = Compound out of QC criteria**

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YES NO N/A

ACTION: If no, take action specified in section 3.2 above or recalculate RT windows using the procedure outlined in method 8081B-16, section 7.5.3.

9.16 Do all standard retention times for each mid concentration standard fall within the windows established during the initial calibration sequence? [ ] ___ ✓

RT stable & verified by S-RT on quant pages.

9.17 Do all standard retention times for each mid-concentration standard (analyzed after every 10 samples) fall within the <u>daily</u> RT windows (page 8081B-16, section 7.5.3)? [✓] ___ ___

ACTION: If the answer to either 9.15 or 9.16 above is no, check the chromatograms of all samples which followed the last in-control standard. All samples analyzed after the last in-control standard must be re-injected, if initial analysis indicated the presence of the specific analyte that exceeded the retention time criteria (page 8081B-18, section 7.5.7.). If samples were not re-analyzed, document under Contract Non-compliance in the Data Assessment.

Reviewer has two options to determine how to qualify questionable sample data. First option is to determine if possible peaks are present within daily retention time window. If no possible peaks are found, non-detects are valid. If possible peaks are found (or interference), qualify positive hits as presumptively present "NJ" and non-detects are rejected "R". Second option is to use the ratio of the retention time of the analyte over the retention time of either surrogate. The passing criteria is ± 0.06 RRT units of the RRT of the standard component. Reject "R" all questionable analytes exceeding criteria, and "NJ" all other positive hits.

For any multi-response analytes, retention time windows should be used but analyst and reviewer should rely primarily on pattern recognition or use option 2 specified in paragraph above.

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Initial Calibration Date: 5/7/13, instrument gc01, column B

RRF and %RSD Calculations:

Compound Name: 4,4'-DDT in level 4

Lab Value: 16183460.0000

Area of Compound	809173
Conc. of Compound	0.05
Calculated CF	16183460.000

Compound Name: 4,4'-DDT

Lab Value: 8.86

CF of STD 1	14001200.000
CF of STD 2	13799800.000
CF of STD 3	14348840.000
CF of STD 4	16183460.000
CF of STD 5	16538520.000
CF of STD 6	16710688.000
CF of STD 7	
CF of STD 8	
Calculated % RSD	8.86

Continuing Calibration File ID: WG123797-8, File ID 1GE00134.D

RRF and %D Calculations:

Compound Name: 4,4'-DDD

Lab Value: 16249400.0000

Area of Compound	406235
Conc. of Compound	0.025
Calculated CF	16249400.000

Compound Name: 4,4'-DDD

Lab Value: 1.7

Average CF	15976792.000
CF of CCV	16249400
Calculated % D	-1.7

YES NO N/A

See Table 10 below.

Table 10. CCV Criteria

Criteria	Action	
	Detected Associated Compounds	Non-Detected Associated Compounds
RT out of RT window	Use professional judgement	
%D not within +/- 20%	J	UJ
Time elapsed greater than section 9.12 criteria.	R	
%D, time elapsed, RT are all within acceptable limits.	No qualifications	

9.18 Are there any transcription/calculation errors between raw data and data summary forms? ___ ✓ ___

ACTION: If large errors exists, call lab for explanation/resubmittal, make any necessary corrections and document the effect in data assessments under "Conclusions".

10.0 Analytical Sequence Check (Form VIII-PEST/Equivalent)

10.1 Have all samples been listed on CLP Form VIII or equivalent, and are separate forms present for each column? ✓ ___ ___

ACTION: If no, take action specified in 3.2 above.

10.2 Was the proper analytical sequence followed for each initial calibration and subsequent analyses? ✓ ___ ___

ACTION: If no, use professional judgement to determine the severity of the effect on the data and qualify it

YES NO N/A

accordingly. Generally, the effect is negligible unless the sequence was grossly altered or the calibration was also out of limits.

11.0 Extraction Method Cleanup Efficiency Verification (Form IX/Equivalent)

11.1 Method 8081B permits a variety of extraction techniques to be used for sample preparation. Which extraction procedure was used?

1. Aqueous samples:

   1. Separatory funnel (Method 3510) _____

   2. Continuous liquid-liquid extraction (Method 3520) _____

   3. Solid phase extraction (Method 3535) _____

   4. Other _____

2. Solid samples:

   1. Soxhlet (Method 3540) ✓

   2. Automated Soxhlet (Method 3541) _____

   3. Pressurized fluid (Method 3545) _____

   4. Microwave extraction (Method 3546) _____

   5. Ultrasonic extraction (Method 3550) _____

   6. Supercritical fluid (Method 3562) _____

   7. Other _____

11.2 Is Form IX - Pest-1/Equivalent present and complete for each lot of Florisil/Cartridges used? (Florisil Cleanup, Method 3620A, is required for all organochlorine pesticide extracts.) [ ] ___ ✓

YES NO N/A

ACTION: If no, take action specified in 3.2 above. If data suggests that florisil cleanup was not performed, make note in the reviewer narrative.

NOTE: Method 3620A uses Florisil, while the SOW/CLP allows for Florisil cartridges. Method 3620A does not list which pesticides and surrogate(s) to use to verify column efficiency. The reviewer must check project plan to verify method used as well as the correct pesticide list. If not stated or available, use the CLP listing or accept what the laboratory used.

11.3 Are all samples listed on modified CLP Pesticide Florisil/Cartridge Check Form? [ ] ___ ✓

ACTION: If no, take action specified in 3.2 above.

11.4 If GPC Cleanup was performed, is Form IX - Pest-2/ Equivalent present? GPC was performed [ ] ✓ ___

ACTION: If GPC was not performed and sample results indicate significant sulfur interference, make note in the data assessment.

not CLP - not conc by factor of 5

NOTE: GPC cleanup is not required and is optional. The reviewer should check Project Plan to verify requirement.

11.5 Were the same compounds on Form IX used to check the efficiency of the cleanup procedures? [ ] ___ ✓

11.6 Are percent recoveries (% R) of the pesticide and surrogate compounds used to check the efficiency of the cleanup procedures within QC limits listed on Form IX:

80-120% for florisil cartridge check? [ ] ___ ✓

80-110% for GPC calibration? [ ] ___ ✓

YES NO N/A

Qualify only the analyte(s) which fail the recovery criteria as follows:

ACTION: If % R are < 80%, qualify positive results "J" and quantitation limits "UJ". Non-detects should be qualified "R" if zero %R was obtained for pesticide compounds. Qualify positive results "J" (estimated).

NOTE: If 2,4,5-trichlorophenol was used to measure the efficiency of the Florisil cleanup and the recovery was > 5%, sample data should be evaluated for potential interferences.

12.0 Pesticide Identification

12.1 Has CLP Form X, showing retention time data for positive results on the two GC columns, been completed for every sample in which a pesticide was detected? [✓] ___ ___

ACTION: If no, take action specified in 3.2 above, or compile a list comparing the retention times for all sample hits on the two columns.

12.2 Are there any transcription/calculation errors between raw data and data summary forms (initial calibration summaries, calibration verification summaries, analytical sequence summaries, GPC and Florisil cleanup verification forms)? ___ [✓] ___

ACTION: If large errors exist, call lab for explanation/resubmittal, make necessary corrections and note error in the data assessment.

12.3 Are retention times (RT) of sample compounds within the established RT windows for both analyses? [✓] ___ ___

Note: Confirmation can be supported by other qualitative techniques such as GC/MS (Method 8270), or GC/AED (Method 8085) if sensitivity permits.

YES NO N/A

ACTION: Qualify as unusable (R) all positive results which were not confirmed by second GC column analysis. Also qualify "R", unusable, all positive results not within RT windows unless associated standard compounds are similarly biased. The reviewer should use professional judgement to assign an appropriate quantitation limit.

12.4 Check chromatograms for false negatives, especially if RT windows on each column were established differently (see section 9.7 above). Also check for false negatives among the multiple peak compounds toxaphene and chlordane. Were there any false negatives? ___ [✓] ___

ACTION: Use professional judgement to decide if the compound should be reported. If there is reason to believe that peaks outside retention RT windows should be reported, make corrections to data summary forms (Form I) and note in data assessment.

12.5 Was GC/MS confirmation used as the second column Confirmation? (This is not required). [ ] ___ ___ ✓

12.6 Is the percent difference (%D) calculated for the positive sample results on the two GC columns ~~<25.0%~~? 40% difference was used per the analytical method [✓] ___ ___

NOTE: The method 8081B requires quantitation from one column. The second column is to confirm the presence of an analyte. Calibration for the Confirmation column is a one point calibration. It is the reviewer's responsibility to verify from the project plan what the lab was required to report. If the lab was required to report concentrations from both columns, continue with validation for % Difference. If required, but not reported, either contact the lab for results or calculate the concentrations from the calibration. If not required, skip this section. Document actions in Data Assessment.

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Form 10
Pesticide Identification Summary

Lab Name : Katahdin Analytical Services
Project : NTR Vieques East CTO-037 PI-21

SDG : SG2441
Lab Sample ID : SG2441-1
Client Sample ID : VEP21-SS01-0001

Column A
Instrument ID : GC01
Date Analyzed : 05/07/13
Time Analyzed : 17:48

Column B
Instrument ID : GC01
Date Analyzed : 05/07/13
Time Analyzed : 17:48

Analyte	Column	RT	Concentration	RPD
4,4'-DDE	A	6.98	.232	
	B	7	.285	20.5
4,4'-DDT	A	8.18	.236	
	B	8.21	.301	24.2

JAC
6/10/13

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Cert No E87604

Form 10
Pesticide Identification Summary

Lab Name : Katahdin Analytical Services
Project : NTR Vieques East CTO-037 PI-21

SDG : SG2441
Lab Sample ID : SG2441-2
Client Sample ID : VEP21-SS01P-0001

Column A	Column B
Instrument ID : GC01	**Instrument ID :** GC01
Date Analyzed : 05/07/13	**Date Analyzed :** 05/07/13
Time Analyzed : 18:05	**Time Analyzed :** 18:05

Analyte	Column	RT	Concentration	RPD
4,4'-DDT	A	8.18	.13	
	B	8.21	.37	96 NJ

value > LOD

JK 6/10/13

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Form 10
Pesticide Identification Summary

Lab Name : Katahdin Analytical Services
Project : NTR Vieques East CTO-037 PI-21

SDG : SG2441
Lab Sample ID : SG2441-3
Client Sample ID : VEP21-SS03-0001

Column A
Instrument ID : GC01
Date Analyzed : 05/07/13
Time Analyzed : 18:23

Column B
Instrument ID : GC01
Date Analyzed : 05/07/13
Time Analyzed : 18:23

Analyte	Column	RT	Concentration	RPD
4,4'-DDE	A	6.97	.525	
	B	6.97	.522	.6
4,4'-DDD	A	7.74	.133	
	B	7.84	.123	7.8
4,4'-DDT	A	8.18	.392	
	B	8.21	.537	31.2

NQ

JMC 6/10/13

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Form 10
Pesticide Identification Summary

Lab Name : Katahdin Analytical Services
Project : NTR Vieques East CTO-037 PI-21

SDG : SG2441
Lab Sample ID : SG2441-4
Client Sample ID : VEP21-SS04-0001

Column A
Instrument ID : GC01
Date Analyzed : 05/07/13
Time Analyzed : 18:40

Column B
Instrument ID : GC01
Date Analyzed : 05/07/13
Time Analyzed : 18:40

Analyte	Column	RT	Concentration	RPD	
4,4'-DDE	A	6.98	.74		
	B	7	.79	6.5	
4,4'-DDD	A	7.74	.167		
	B	7.86	.257	42.5	J
4,4'-DDT	A	8.17	.525		
	B	8.21	.916	54.3	J

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Form 10
Pesticide Identification Summary

Lab Name : Katahdin Analytical Services
Project : NTR Vieques East CTO-037 PI-21

SDG : SG2441
Lab Sample ID : SG2441-5
Client Sample ID : VEP21-SB01-011H

Column A
Instrument ID : GC01
Date Analyzed : 05/07/13
Time Analyzed : 19:49

Column B
Instrument ID : GC01
Date Analyzed : 05/07/13
Time Analyzed : 19:49

Analyte	Column	RT	Concentration	RPD	
4,4'-DDE	A	6.98	.504		
	B	7	.568	11.9	
4,4'-DDD	A	7.74	.194		
	B	7.84	.304	44.2	J
4,4'-DDT	A	8.18	.315		
	B	8.21	.525	50	J

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Form 10
Pesticide Identification Summary

Lab Name : Katahdin Analytical Services
Project : NTR Vieques East CTO-037 PI-21

SDG : SG2441
Lab Sample ID : SG2441-6
Client Sample ID : VEP21-SS05-0001

Column A	Column B
Instrument ID : GC01	**Instrument ID :** GC01
Date Analyzed : 05/07/13	**Date Analyzed :** 05/07/13
Time Analyzed : 20:07	**Time Analyzed :** 20:07

Analyte	Column	RT	Concentration	RPD
4,4'-DDT	A	8.17	.205	
	B	8.21	.277	29.9

NQ

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Form 10
Pesticide Identification Summary

Lab Name : Katahdin Analytical Services
Project : NTR Vieques East CTO-037 Pl-21

SDG : SG2441
Lab Sample ID : SG2441-8
Client Sample ID : VEP21-SB03-0102

Column A
Instrument ID : GC01
Date Analyzed : 05/07/13
Time Analyzed : 20:41

Column B
Instrument ID : GC01
Date Analyzed : 05/07/13
Time Analyzed : 20:41

Analyte	Column	RT	Concentration	RPD
4,4'-DDE	A	6.98	.622	
	B	7	.687	9.9
4,4'-DDD	A	7.74	.682	
	B	7.84	.545	22.3
4,4'-DDT	A	8.18	.621	
	B	8.21	1.36	74.6 J

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Form 10
Pesticide Identification Summary

Lab Name : Katahdin Analytical Services
Project : NTR Vieques East CTO-037 PI-21

SDG : SG2441
Lab Sample ID : SG2441-9
Client Sample ID : VEP21-SB04-011H

Column A
Instrument ID : GC01
Date Analyzed : 05/07/13
Time Analyzed : 20:59

Column B
Instrument ID : GC01
Date Analyzed : 05/07/13
Time Analyzed : 20:59

Analyte	Column	RT	Concentration	RPD
4,4'-DDE	A	6.98	1.23	
	B	7	1.23	0
4,4'-DDD	A	7.74	.182	
	B	7.84	.164	10.4
4,4'-DDT	A	8.18	1.02	
	B	8.21	1.26	21.1

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Form 10
Pesticide Identification Summary

Lab Name : Katahdin Analytical Services
Project : NTR Vieques East CTO-037 PI-21

SDG : SG2441
Lab Sample ID : SG2441-10
Client Sample ID : VEP21-SB05-011H

Column A
Instrument ID : GC01
Date Analyzed : 05/07/13
Time Analyzed : 21:16

Column B
Instrument ID : GC01
Date Analyzed : 05/07/13
Time Analyzed : 21:16

Analyte	Column	RT	Concentration	RPD
4,4'-DDE	A	6.98	.266	
	B	7	.353	28.1
4,4'-DDT	A	8.18	.198	
	B	8.21	1.35	148.8 NJ

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Form 10
Pesticide Identification Summary

Lab Name : Katahdin Analytical Services
Project : NTR Vieques East CTO-037 PI-21

SDG : SG2441
Lab Sample ID : SG2441-11
Client Sample ID : VEP21-SB02-011H

Column A
Instrument ID : GC01
Date Analyzed : 05/07/13
Time Analyzed : 21:33

Column B
Instrument ID : GC01
Date Analyzed : 05/07/13
Time Analyzed : 21:33

Analyte	Column	RT	Concentration	RPD
4,4'-DDD	A	7.74	.0523	
	B	7.84	.06	13.7
4,4'-DDT	A	8.18	.111	
	B	8.21	.189	52

J

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YES NO N/A

ACTION: If the reviewer finds neither column shows interference for the positive hits, the data should be qualified as follows:

per method

% Difference	Qualifier
0-~~25%~~ 40	none
40 ~~26~~-70%	"J"
71-100%	"NJ"
101-200% (No Interference)	"R"
101-200% (Interference detected) "NJ"	
>50% (Pesticide vale is <CRQL)	"U"
>201%	"R"

Note: The lower of the two values is reported on Form I. If using professional judgement, the reviewer determines that the higher result was more acceptable, the reviewer should replace the value and indicate the reason for the change in the data assessment.

13.0 Compound Quantitation and Reported Detection Limits

13.1 Are there any transcription/calculation errors in Form I results? Check at least two positive values. Were any errors found? __ N __

NOTE: Single-peak pesticide results can be checked for rough agreement between quantitative results obtained on the two GC columns. The reviewer should use professional judgement to decide whether a much larger concentration obtained on one column versus the other indicates the presence of an interfering compound. If an interference is suspected, the lower of the two values should be reported and qualified according to section 12.6 above. This necessitates a determination of an estimated concentration on the confirmation column. The narrative should indicate that the presence of interferences has led to the quantitation of the second column confirmation results.

SAMPLE CALCULATION

Sample ID: VEP21-SB05-011H
Standard ID: ICAL 5/7/13 on GC01 - column B
Compound: 4,4'-DDT
Concentration: 1.4 ug/Kg

	Water (ug/L)	Soil (ug/Kg)
Area of Compound		288320
CF of Compound		15263751
Final Volume		2
Dilution Factor		1
Split Factor		1
Injection Volume		1
Weight of Sample	na	30.2
Initial Volume of Sample		NA
Conversion Factor (g to kg)		1000
Percent Solids Factor		0.92859
Concentration	#DIV/0!	1.34714

adjusted LODs checked

DDT $0.33\ ug/kg \cdot \frac{30\ g}{30.2\ g} \cdot \frac{1}{0.92859}$

$= 0.35\ ug/kg$ ✓

YES NO N/A

13.2 Are the EDLs (Estimated Detection Limits) adjusted to reflect sample dilutions and, for soils, % moisture? [✓] ___ ___

ACTION: If errors are large, call lab for explanation/resubmittal, make any necessary corrections and document effect in data assessments.

ACTION: When a sample is analyzed at more than one dilution, the lowest EDLs are used (unless a QC exceedance dictates the use of the higher EDL data from the diluted sample analysis). Replace concentrations that exceed the calibration range in the original analysis by crossing out the value on the original Form I and substituting it with data from the analysis of diluted sample. Specify which Form I is to be used, then draw a red "X" across the entire page of all Form I's that should not be used, including any in the summary package.

ACTION: EDLs affected by large, off-scale peaks should be qualified as unusable, "R". If the interference is on-scale, the reviewer can provide a modified EDL flagged "UJ" for each affected compound.

14.0 Chromatogram Quality

14.1 Were baselines stable? [✓] ___ ___

14.2 Were any electropositive displacement (negative peaks) or unusual peaks seen? ✓ [ ] ___

Slight negative peaks noted - no impact on data quality.

ACTION: Note all system performance problems in the data assessment.

15.0 Field Duplicates

15.1 Were any field duplicates submitted for organochlorine pesticide analysis? [✓] ___ ___

ACTION: Compare the reported results for field duplicates and calculate the relative percent difference.

ACTION: Any gross variation between field duplicate results must be addressed in the reviewer narrative. However, if large differences exist, the identity of the field duplicates is questionable. An attempt should be made to determine the proper identification of field duplicates.

SS01 / SS01P

DDE 0.28 ug/kg / NC (LOD 0.36) NQ

DDT 0.30 / 0.37 21% NQ

Yes NO N/A

PACKAGE COMPLETENESS AND DELIVERABLES

CASE NUMBER: _____ SDG# SG2441

LAB: Katahdin Analytical SITE: NTR Vieques CTO-37 PI21

1.0 Data Completeness and Deliverables

1.1 Has all the data been submitted in CLP deliverable format? [✓] ___ ___

1.2 Have any missing deliverables been received and added to the data package? [ ] ___ ✓

ACTION: Call lab for explanation/resubmittal of any missing deliverables. If lab cannot provide them, note the effect on review of the data in the reviewer narrative.

2.0 Cover Letter, SDG Narrative

2.1 Is a laboratory narrative or cover letter present? [✓] ___ ___

2.2 Are the case number and/or SDG number contained in the narrative or cover letter? [✓] ___ ___

3.0 Data Validation Checklist

3.1 Does this data package contain:

Water data? QC Blank ✓ ___

Waste data? ___ ✓

Soil/solid data? ✓ ___

POLYCHLORINATED BIPHENYLS

1.0 Traffic Reports and Laboratory Narrative

1.1 Are traffic report and chain-of-custody forms present for all samples? [✓] ___ ___

Yes NO N/A

ACTION: If no, contact lab for replacement of missing or illegible copies.

1.2 Do the traffic reports, chain-of-custody forms or SDG narrative indicate any problems with sample receipt, condition of the samples, analytical problems or special circumstances affecting the quality of the data? ___ ✓ ___

ACTION: If any sample analyzed as a soil, other than TCLP, contains 50%-90% water, all data should be qualified as estimated, "J." If a soil sample, other than TCLP, contains more than 90% water, non detects shall be qualified as unusable, "R."

ACTION: If samples were not iced or if the ice was melted upon arrival at the laboratory and the temperature of the cooler was elevated (> 10° C), flag all positive results "J" and all non-detects "UJ".

2.0 Holding Times

2.1 Have any PCB technical holding times, determined from date of collection to date of extraction, been exceeded? ___ ✓ ___

Water and waste samples for PCB analysis must be extracted within 7 days of the date of collection. Extracts must be analyzed within 40 days of the date of extraction. Soils and solid samples must be extracted within 14 days of collection and analyzed within 40 days of extraction.

ACTION: If technical holding times are exceeded, flag all positive results as estimated, "J," and sample quantitation limits "UJ" and document in the narrative that holding times were exceeded. If analyses were done more than 14 days beyond holding time, either on the first analysis or upon re-analysis, the reviewer must use professional judgement to determine the reliability of the data and the effects of additional storage on the sample results. At a minimum, all the data should at least be

Yes NO N/A

qualified "J", but the reviewer may determine that non-detects are unusable,"R." (Table 1)

Table 1. Holding Time Criteria

Matrix	Preserved	Criteria	Action	
			Detected compounds	Non-detected compounds
Aqueous	No	≤ 7 days(extraction) ≤ 40 days(analysis)	J*	UJ*
	No	> 7 days(extraction) > 40 days(analysis)	J	UJ
	Yes	≤ 7 days(extraction) ≤ 40 days(analysis)	No qualification	
	Yes	> 7 days(extraction) > 40 days(analysis)	J	UJ
	Yes/No	> 28 days (gross exceedance)	J	R
Non-aqueous	No	≤ 14days(extraction) ≤ 40 days (analysis)	J*	UJ*
	No	> 14days(extraction) >40 days(analysis)	J	UJ
	Yes	≤ 14days(extraction) ≤ 40 days(analysis)	No qualification	
	Yes	> 14days(extraction) > 40 days(analysis)	J	UJ
	Yes/No	> 28 days(gross exceedance)	J	R

* only if cooler temperature exceeds 10°C; no action required if cooler temperature < 10°C.

3.0 Surrogate Recovery (Form II/Equivalent)

3.1 Were the recoveries of tetrachloro-m-xylene (TCMX) and decachlorobiphenyl (DCB) presented on CLP Surrogate Recovery Summary forms (Form II), or equivalent, for each of the following matrices?

a. Water/Waste ☑ ___ ___

	Yes	NO	N/A
b. Soil/Solid	[✓]		

3.2 Are all the PCB samples listed on the appropriate surrogate recovery form for each of the following matrices?

a. Water	[✓]		
b. Waste	[ ]		✓
c. Soil/Solid	[✓]		

ACTION: Call lab for explanation/resubmittals. If missing deliverables are unavailable, document the effect in the data assessment.

3.3 Are all recovery limits for the surrogates TCMX and DCB between ~~30-150%~~ for all samples, including MS and MSDs, LCSs and all blanks? — per SAP [ ] ✓ ___

Flags as noted on Form 2

Note: Reviewer shall use lab in-house recovery limits, if available. In-house criteria should be examined for reasonableness.

ACTION: Circle all outliers in red. Follow surrogate criteria, Table 2.

Note: DCB is used when PCBs are determined as Aroclors. DCB is the internal standard when determining PCB congeners and TCMX the surrogate.

3.4 Were surrogate retention times (RT) within the windows established during the initial 5-point analysis?* Surrogate RTs were stable [✓] ___ ___ *

ACTION: Follow surrogate criteria, Table 2.

Table 2. Surrogate Recovery Criteria

Criteria	Action	
	Detected Target Compounds	Non-detected Target Compounds
%R > 200%	J	Use professional judgement

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Form 2
System Monitoring Compound Recovery

Lab Name: Katahdin Analytical Services **Project:** NTR Vieques East CTO-037 PI-21 **Matrix:** SL
Lab Code: KAS **SDG:** SG2441

Client Sample ID	Lab Sample ID	Col. ID	DCB	#	TCX	#	
VEP21-SS01-0001	SG2441-1	B	62.2		57.8		
VEP21-SS01-0001	SG2441-1	A	62.8		53.1	*	NQ only 1 out on 1 column
VEP21-SB05-011H	SG2441-10	B	66.0		225.	*	NQ no + results in sample
VEP21-SB05-011H	SG2441-10	A	66.3		66.8		
VEP21-SB02-011H	SG2441-11	B	64.1		70.0		
VEP21-SB02-011H	SG2441-11	A	65.7		67.4		
VEP21-SS01P-0001	SG2441-2	B	67.8		60.7		
VEP21-SS01P-0001	SG2441-2	A	70.2		60.6		
VEP21-SS03-0001	SG2441-3	B	61.0		66.7		
VEP21-SS03-0001	SG2441-3	A	64.5		65.8		
VEP21-SS04-0001	SG2441-4	B	68.5		63.0		
VEP21-SS04-0001	SG2441-4	A	70.8		67.8		
VEP21-SB01-011H	SG2441-5	B	69.2		64.2		
VEP21-SB01-011H	SG2441-5	A	69.2		64.1		
VEP21-SS05-0001	SG2441-6	B	67.2		65.2		
VEP21-SS05-0001	SG2441-6	A	67.7		67.2		
VEP21-SS02-0001	SG2441-7	B	60.6		58.8		
VEP21-SS02-0001	SG2441-7	A	63.0		59.5		
VEP21-SB03-0102	SG2441-8	B	66.4		73.0		
VEP21-SB03-0102	SG2441-8	A	65.6		62.7		
VEP21-SB04-011H	SG2441-9	B	65.0		57.9		
VEP21-SB04-011H	SG2441-9	A	65.2		62.5		
Method Blank Sample	WG122757-1RA	B	65.3		58.4		
Method Blank Sample	WG122757-1RA	A	70.7		53.9	*	NQ
Laboratory Control S	WG122757-2RA	B	70.0		71.8		
Laboratory Control S	WG122757-2RA	A	71.9		70.0		
Laboratory Control S	WG122757-3RA	B	69.7		64.0		
Laboratory Control S	WG122757-3RA	A	74.8		61.6		
Matrix Spike	WG122757-4	B	70.8		70.8		
Matrix Spike	WG122757-4	A	73.7		66.6		
Matrix Spike Duplica	WG122757-5	B	64.5		54.4	*	NQ
Matrix Spike Duplica	WG122757-5	A	67.1		66.4		

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Form 2
System Monitoring Compound Recovery

Lab Name: Katahdin Analytical Services **Project:** NTR Vieques East CTO-037 PI-21 **Matrix:** SL
Lab Code: KAS **SDG:** SG2441

		QC Limits
DCB	DECACHLOROBIPHENYL	60-125
TCX	TETRACHLORO-M-XYLENE	56-115

= Column to be used to flag recovery limits.
* = Values outside of contract required QC limits.
D= System Monitoring Compound diluted out.

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Katahdin
ANALYTICAL SERVICES

Cert No E87604

Form 2
System Monitoring Compound Recovery

Lab Name: Katahdin Analytical Services **Project:** NTR Vieques East CTO-037 PI-21 **Matrix:** AQ
Lab Code: KAS **SDG:** SG2441

Client Sample ID	Lab Sample ID	Col. ID	DCB	#	TCX	#
VEP21-EB01-041113	SG2441-13	B	26.3	*	63.1	
VEP21-EB01-041113	SG2441-13	A	28.6	*	62.8	
Method Blank Sample	WG122792-1	B	25.1	*	66.4	
Method Blank Sample	WG122792-1	A	26.6	*	67.2	
Laboratory Control S	WG122792-2	B	31.6	*	61.2	*
Laboratory Control S	WG122792-2	A	33.3	*	61.4	*
Laboratory Control S	WG122792-3	B	37.2	*	66.5	
Laboratory Control S	WG122792-3	A	39.2	*	66.7	

J/UJ
NQ

		QC Limits
TCX	TETRACHLORO-M-XYLENE	62-111
DCB	DECACHLOROBIPHENYL	40-135

= Column to be used to flag recovery limits.
* = Values outside of contract required QC limits.
D= System Monitoring Compound diluted out.

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Yes NO N/A

150% < %R ≤ 200%	J	No qualification
30% ≤ %R ≤ 150%	No qualification	
10% ≤ %R < 30%	J	UJ
%R < 10% (sample dilution not a factor)	J	R
%R < 10% (sample dilution is a factor)	Use professional judgement	
RT out of RT window	Use professional judgement	
RT within RT window	No qualification	

3.6 Are there any transcription/calculation errors between raw data and Form II? [ ] ✓ ___

ACTION: If large errors exist, call lab for explanation/resubmittal. Make any necessary corrections and document the effect in data assessments.

4.0 Laboratory Control Sample (LCS)

4.1 Are raw data and percent recoveries present for all Laboratory Control samples as required by Method 8000B (section 8.5) and Method 8082A (section 8.4.2)? [ ] ✓ ___ ___

Verify that QC check samples were extracted and analyzed by the same procedures used for the actual samples.

ACTION: If any Laboratory Control Sample data are missing, call the lab for explanation/ resubmittals. Make note in the data assessment.

NOTE: For aqueous samples, an additional QC check sample must be prepared and analyzed when any analyte in a matrix spike fails the required acceptance criteria (see section 5.3 below).

Yes NO N/A

The additional QC check sample must contain each analyte that failed in the MS analysis.

Note: When the results for matrix spike analysis indicates a problem due to sample matrix effects, the LCS results are used to verify the laboratory can perform the analysis in a clean sample.

4.2 Were Laboratory Control Samples analyzed at the required concentration as specified ~~in Method 8000B(sec 8.5)~~ for all analytes as specified in Table 3. Client Specific SAP [✓] ___ ___

Note: Use lab in-house criteria, if available.

ACTION: If Laboratory Control Samples were not analyzed at the required concentration or the required frequency, make note in the data assessment and use professional judgement to determined the affect on the data.

4.3 Were the LCS recoveries within the percent recoveries as specified ~~in Table 3.~~ Client Specific SAP [✓] ___ ___

Table 3. LCS Criteria

Compound	% Recovery
Aroclor 1016	50-150
Aroclor 1260	50-150
Tetrachloro-m-xylene (surrogate)	30-150
decachlorobiphenyl (surrogate)	30-150

4.4 If no, were Laboratory Control Samples re-analyzed? [ ] ___ [✓]

ACTION: If QC check samples were not re-analyzed, or a general system problem is indicated by repeated failure to meet the QC acceptance criteria specified in the method, make note in the data assessment and use Table 4 recovery actions criteria.

Yes NO N/A

Table 4. LCS Recovery Actions

Criteria	Action	
	Detected Associated Compounds	Non-Detected Compounds
%R > Upper Acceptance Limit	J	No qualification
%R < Lower Acceptance Limit	J	R
Lower Acceptance Limit ≤ %R ≤ Upper Acceptance Limit	No qualifications	

5.0 Matrix Spikes (Form III/Equivalent) VEP21-SS04-0001

5.1 Are all data for one matrix spike and matrix duplicate (unspiked) pair (MS/Dup) or matrix spike/matric spike duplicate (MS/MSD)present and complete for each matrix (Method 8082A Section 8.4.1)? [✓] ___ ___

NOTE: For soil and waste samples showing detectable amounts of target analytes, the lab may substitute replicate samples in place of the matrix spike (see Method 8000B-40, section 8.5.3).

5.2 Have MS/Dup or MS/MSD results been summarized on modified CLP Form III? [✓] ___ ___

ACTION: If any data are missing take action as specified in section 3.2 above.

5.3 Were matrix spikes analyzed at the required frequency for each of the following matrices? (One MS/Dup, MS/MSD must be performed for every 20 samples of similar matrix or concentration level. Laboratories analyzing one to ten samples per month are required to analyze at least one MS per month (Method 8000B-39 (section 8.5)).

a. Water [ ] ___ ✓

	Yes	NO	N/A
b. Waste	[ ]	___	✓
c. Soil/Solid	[✓]	___	___

ACTION: If any MS/Dup or MS/MSD data are missing, take the action specified in 3.2 above.

5.4 Were ~~Laboratory Control Samples~~ MS/MSD analyzed for all analytes as specified in ~~Table 5,~~ or did the lab use the optional QC acceptance criteria i.e., in-house criteria? [✓] ___ ___

List the criteria used and make note in data assessment.

Criteria used ~~1260 - 60-130~~ 1016 - 40-140 client specific SAP & in-house limits

Table 5. MS/MSD Criteria

Compound	Percent Recovery QC Limits	RPD
Aroclor 1016	29-135	0-15
Aroclor 1260	29-135	0-20

5.5 Was the matrix spike prepared at the proper spike concentration? (Method 8000B, section 8.5.1-8.5.2) Per current methodology & lab SOP [✓] ___ ___

For aqueous organic extractable, the spike concentration should be prepared according options in: Method 8000B-40, (section 8.5.1 and 8.5.2).

5.6 Were the matrix spike and matrix spike duplicate recovery and RPD limits met as specified in Table 5. Note: No qualification of the data is necessary on MS and MSD data alone. Use professional judgement to use the MS and MSD results in conjunction with other QC criteria to determine the need for some qualification of the data. If any MS and MSD, percent recovery, or RPD results in the Arcolor fraction is out of specification (Table 5), qualify data to include the consideration of the existence interference in the raw data. In some instances it may be determined that only the replicate or spiked samples are affected. Alternatively, the data may suggest that the laboratory is having a systematic problem with one or more analytes, thereby affecting all associated samples. Use professional judgement to determine the need for qualifications of detects of non-spiked compounds.

Yes NO N/A

[✓] ___ ___

Table 6. MS/MSD Actions for Analysis

Criteria	Action	
	Detected Associated Compounds	Non-Detected Compounds
%R or RPD > Upper Acceptance Limit	J	No qualification
20% ≤ %R < Lower Acceptance Limit	J	UJ
%R < 20%	J	Use professional judgement
Lower Acceptance Limit ≤ %R ≤ Upper Acceptance Limit	No qualifications	

6.0 Blanks (Form IV/Equivalent)

6.1 Was reagent blank data reported on CLP equivalent Method Blank Summary form(s) (Form IV)? [✓] ___ ___

6.2 Frequency of Analysis: Has a reagent blank been analyzed for every 20 (or less) samples of similar matrix or concentration or each extraction batch? [✓] ___ ___

Note: Method blank should be analyzed, either after the calibration standard or at any time during the analytical shift.

ACTION: If any blank data are missing, take action as specified above (section 3.2) . If blank data is not available, reject (R) all associated positive data. However, using professional judgement, the data reviewer may substitute field blank data for missing method blank data.

6.3 Chromatography: review the blank raw data - chromatograms, quant reports or data system

Yes NO N/A

printouts.

Is the chromatographic performance (baseline stability) for each instrument acceptable for PCBs? [✓] ___ ___

7.0 Contamination

NOTE: "Water blanks", "distilled water blanks" and "drilling water blanks" are validated like any other sample and are not used to qualify the data. Do not confuse them with the other QC blanks discussed below.

7.1 Do any method/instrument/reagent/cleanup blanks have positive results for PCBs? When applied as described below, the contaminant concentration in these blanks are multiplied by the sample Dilution Factor and corrected for % moisture when necessary. ___ [✓] ___

7.2 Do any field/rinse blanks have positive PCB results? ___ [✓] ___

ACTION: Prepare a list of the samples associated with each of the contaminated blanks. (Attach a separate sheet.)

NOTE: All field blank results associated to a particular group of samples (may exceed one per case or one per day) may be used to qualify data. Blanks may not be qualified because of contamination in another blank. Field blanks must be qualified for surrogate, or calibration QC problems.

ACTION: Follow the directions in Table 7 below to qualify sample results due to contamination. Use the largest value from all the associated blanks.

Table 7. Blank Contamination Criteria

Blank Type	Blank Result	Sample Result	Action for Samples

Yes NO N/A

Method, Clean up, Instrument, Field	Detects	Not detected	No qualification
	< CRQL	< CRQL	Report CRQL value with a U
		≥ CRQL	No qualification
	> CRQL	< CRQL	Report CRQL value with a U
		≥ CRQL and < blank contamination	Report the concentration for the sample with a U
		≥ CRQL and ≥ blank contamination	No qualification
	= CRQL	< CRQL	Report CRQL value with a U
		≥ CRQL	No qualification
	Gross contamination	Detects	Qualify results as unusable R

Note: Analytes qualified "U" for blank contamination are treated as "hits" when qualifying for calibration criteria.

Note: When applied as described in Table 7 above, the contaminant concentration in the blank is multiplied by the sample dilution factor.

NOTE: If gross blank contamination exists(e.g., saturated peaks, "hump-o-grams," "junk" peaks), all affected positive compounds in the associated samples should be qualified as unusable "R", due to interference. Non-detected pesticide target compounds do not require qualification unless the contamination is so high that it interferes with the analyses of non-detected compounds.

7.3 Are there field/rinse/equipment blanks associated with every sample? VEP21-EB01-041113 ☑ ___ ___

ACTION: For low level samples, note in data assessment that there is no associated field/rinse/equipment blank. Exception: samples taken from a drinking water tap do not have associated field blanks.

Yes NO N/A

8.0 Gas Chromatography with Electron Capture Detector (GC/ECD) Instrument Performance Check (CLP Form VI and Form VII Equivalent)

8.1 Was the proper gas chromatographic capillary column used for the analysis of PCBs? [✓] ___ ___

Action: Check raw data, instrument logs, or contact the lab to determine what type of columns were used. (Method 8082, section 4.2)

8.2 Indicate the specific type of narrow bore or wide bore (.53 mm ID, fused silica GC columns, such as DB-608 and DB-1701 or equivalent).

column 1: ZB Multiresidue-1 OD 0.53

column 2: ZB Multiresidue-2 OD 0.53

ACTION: Note any changes to the suggested materials in section 8.1 above in the data assessment. Also note the impact (positive or negative) such changes have on the analytical results.

9.0 Calibration and GC Performance

9.1 Are the following Gas Chromatograms and Data Systems Printouts for both columns present for all samples, blanks, MS, replicates?

a. Samples [✓] ___ ___

b. All blanks [✓] ___ ___

c. Matrix spike samples [✓] ___ ___

d. 5 pt. initial calibration standards [✓] ___ ___

e. calibration verification standards [✓] ___ ___

f. Laboratory Control samples (LCS) [✓] ___ ___

ACTION: If no, take action specified in 3.2 above.

9.2 Are data summary forms (containing calibration factors or response factors) for the initial 5

Yes NO N/A

pt. calibration and daily calibration verification standards present and complete for each column and each analytical sequence? [✓] ___ ___

Note: Calibration Aroclor mixtures other than 1016/1260 may be used (as per approved project QA plan)

NOTE: If internal standard calibration procedure is used (Method 8000B-15(section 7.4.2.2)), then response factors must be used for %RSD calculations and compound quantitation. If, external standard calibration procedures are used (Method 8000B-16 (section 7.4.2.1)), then calibration factors must be used. The internal standard approach is highly recommended for PCB congener analysis.

ACTION: If any data are missing or it cannot be determined how the laboratory calculated calibration factors or response factors, contact the lab for explanation/resubmittals. Make necessary corrections and note any problems in the data assessment.

9.3 Are there any transcription/calculation errors between raw data and data summary forms? ___ [✓] ___

ACTION: If large errors exist, call lab for explanation/resubmittal, make necessary corrections and document the effect in data assessments.

9.4 Are standard retention time (RT) windows for each PCB peak of interest presented on modified CLP summary forms? NO RTW presented. Each Quant page has RT Exp RT & Det RT columns. [ ] [✓] ___

ACTION: If any data are missing, or it cannot be determined how RT windows were calculated, call the lab for explanation/resubmittals. Note any problems in the data assessment.

NOTE: Retention time windows for all PCBs are established using retention times from three calibration standards analyzed during the entire analytical sequence (Method 8000B, section 7.6). Best results are obtained

Yes NO N/A

using retention times which span the entire sequence; i.e., using the calibration verification/continuing calibration standards analyzed every 12 hours.

9.5 Were RT windows on the confirmation column established using three standards as described above? [ ] ___ ✓

NOTE: RT windows for the confirmation column should be established using a 3 pt. calibration, preferably spanning the entire analytical sequence as described in 9.4 above. If RT windows on one column are tighter than the other, this may result in false negatives when attempting to identify compounds in the samples.

dual column system

ACTION: Note potential problems, if any, in the data assessment.

9.6 Do all standard retention times in each level of the initial 5 pt. calibrations for PCBs fall within the windows established during the initial calibration sequence? RT stable throughout sequence [ ] ___ ✓

ACTION i: If no, all samples in the entire analytical sequence are potentially affected. Check to see if three standard spanning the entire sequence were used to obtained RT windows. If the lab used three standards from the 5 pt., RT windows may be too tight. If so, RT windows should be recalculated as per Method 8081B-15 (section 7.4.6).

ii. Alternatively, check to see if the chromatograms contain peaks within an expanded window surrounding the expected retention times.

If no peaks are found and the surrogates are visible, non-detects are valid. If peaks are present but cannot be discerned through pattern recognition or by using revised RT windows, qualify all positive results and non-detects as unusable, "R".

9.7 Has the linearity criteria for the initial calibration standards been satisfied for both

Yes NO N/A

columns? (% RSD for the calibration factors (CFs) for the three to five major peaks of each of the Aroclor compounds must be < 20.0%). [✓] ___ ___

ACTION: If no, follow Table 8 criteria.

6 pt curves for all but AR1262 & AR1268
Single pt for those 2

Table 8. Initial Calibration CF Action for Aroclor Analysis

Criteria	Action	
	Detected Associated Compounds	Non-Detected Associated Compounds
% RSD > 20%	J	UJ
% RSD within allowable limits	No qualifications	

9.8 Does the calibration verification/continuing calibration standard contain the PCB peaks of interest, analyzed on each working day, prior to sample analyses (Method 8082, sections 7.6.2)? [✓] ___ ___

9.9 Has a calibration verification/continuing calibration standard been analyzed after every 10 samples and at the end of each analytical sequence (Method 8082A, section 7.6.2). [✓] ___ ___

ACTION: If no, take action as specified in section 3.2 above.

9.10 Has the percent difference (%D) between the Calibration Factor (CF) of each of the three to five peaks used to identify the Aroclor in the CCV and the CF from these peaks in the initial calibration exceeded ± 15%. ✓ ___ [ ] ___

see following for necessary flags - more required

9.11 Has a new 5 pt. initial calibration curve been generated for those PCB analytes which failed in the calibration verification/continuing calibration standard (8000B, section 7.7.3), and all samples which followed the out-of-control

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Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : NTR Vieques East CTO-037 PI-:
SDG: SG2441
Lab ID : WG123511-10
Analytical Date: 05/01/13 15:27
Lab File ID : 7GD360.D
Instrument ID: GC07
Initial Calibration Date(s): 04/29/13 10:40 04/30/13 08:48
Column ID: B

Compound	RRF/Amount	RF1	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type	
5 Aroclor-1016(3)	1804166	1558136	0.001	-13.63678	20.00000	Averaged	
5 Aroclor-1016(1)	761529	684034	0.001	-10.17629	20.00000	Averaged	
5 Aroclor-1016(5)	820929	687199	0.001	-16.29008	20.00000	Averaged	
5 Aroclor-1016(4)	960423	815152	0.001	-15.12575	20.00000	Averaged	
5 Aroclor-1016(2)	984007	882311	0.001	-10.33489	20.00000	Averaged	
9 Aroclor-1260(4)	1426432	1066091	0.001	-25.26168	20.00000	Averaged	<-
9 Aroclor-1260(5)	1586870	1180887	0.001	-25.58390	20.00000	Averaged	<-
9 Aroclor-1260(1)	1597010	1256372	0.001	-21.32973	20.00000	Averaged	<-
9 Aroclor-1260(3)	1767613	1274634	0.001	-27.88951	20.00000	Averaged	<-
9 Aroclor-1260(2)	1882971	1427780	0.001	-24.17407	20.00000	Averaged	<-
2 Tetrachloro-m-xylene	50656478	45443700	0.001	-10.29045	20.00000	Averaged	
12 Decachlorobiphenyl	27790753	21477000	0.001	-22.71890	20.00000	Averaged	<-

ave > 20% but NQ *

*** = Compound out of QC criteria**

* Column A is acceptable

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Cert No E87604

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : NTR Vieques East CTO-037 PI-:
Lab ID : WG123511-14
Lab File ID : 7GD371.D
Initial Calibration Date(s): 04/29/13 10:40 04/30/13 08:48

SDG: SG2441
Analytical Date: 05/01/13 21:42
Instrument ID: GC07
Column ID: B

Compound	RRF/Amount	RF0.250	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type	
5 Aroclor-1016(3)	1804166	1634828	0.001	-9.38596	20.00000	Averaged	
5 Aroclor-1016(1)	761529	750588	0.001	-1.43677	20.00000	Averaged	
5 Aroclor-1016(5)	820929	736512	0.001	-10.28311	20.00000	Averaged	
5 Aroclor-1016(4)	960423	888520	0.001	-7.48661	20.00000	Averaged	
5 Aroclor-1016(2)	984007	937804	0.001	-4.69540	20.00000	Averaged	
9 Aroclor-1260(4)	1426432	1103068	0.001	-22.66941	20.00000	Averaged	<-
9 Aroclor-1260(5)	1586870	1199528	0.001	-24.40919	20.00000	Averaged	<-
9 Aroclor-1260(1)	1597010	1338224	0.001	-16.20440	20.00000	Averaged	
9 Aroclor-1260(3)	1767613	1406268	0.001	-20.44252	20.00000	Averaged	<-
9 Aroclor-1260(2)	1882971	1534564	0.001	-18.50303	20.00000	Averaged	
2 Tetrachloro-m-xylene	50656478	47313800	0.001	-6.59872	20.00000	Averaged	
12 Decachlorobiphenyl	27790753	22879400	0.001	-17.67262	20.00000	Averaged	

avg 20.4 but NQ *

*** = Compound out of QC criteria**

all samples associated
Column A is acceptable

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Yes NO N/A

calibration verification/standard continuing calibration Standard? [ ] ___ ✓

ACTION: If the %D for any analyte exceeded the ± ~~15%~~ 20% criterion and the instrument was not recalibrated for those analytes, qualify positive results for all associated samples (those which followed the out-of-control standard) "J" and sample quantitation limits "UJ". (see Table 9)

9.12 Have retention time (RT) windows been properly calculated for each analyte of interest (Method 8000B, section 7.6), using RTs from the associated calibration verification/continuing standard? [✓] * ___

* RT not submitted - updated per method as necessary

ACTION: If no, take action specified in section 3.2 above

9.13 Do all standard retention times for each calibration verification/continuing calibration standard fall within the windows established during the initial calibration sequence? RTs stable [ ] ___ ✓

9.14 Do all standard retention times for each mid-concentration standard (analyzed after every 10 samples) fall within the <u>daily</u> RT windows. [✓] ___ ___

ACTION: For any multi-response analytes, retention time windows should be used but analyst and reviewer should rely primarily on pattern recognition or use paragraph B below. If the answer to either 9.13 or 9.14 above is no, check the chromatograms of all samples which followed the last in-control standard. If samples were not re-analyzed, all samples analyzed after the last in-control standard must be evaluated using professional judgement.

(A) For non-detected target compounds, check to see if the sample chromatograms contain any peaks that are close to the expected RT window of the Arcolor of interest. If no peaks are present, no qualification of data is necessary. If peaks are present close th RT window of the Aroclor of interest, qualify the non-detected values as presumptively present "N".

Initial Calibration Date: 4/29/13, Instrument gc07 column a

RRF and %RSD Calculations:

Compound Name: AR1260 peak 2 in level 2

Lab Value: 7285340.0000

Area of Compound	728534
Conc. of Compound	0.1
Calculated CF	7285340.000

Compound Name: AR1260 Peak 2

Lab Value: 5.7

CF of STD 1	7818660.000
CF of STD 2	7285340.000
CF of STD 3	7020328.000
CF of STD 4	7259452.000
CF of STD 5	6969736.000
CF of STD 6	6592550.000
CF of STD 7	
CF of STD 8	
Calculated % RSD	5.72

Continuing Calibration File ID: 5-1-13, 1527 column a

RRF and %D Calculations:

Compound Name: AR1260 Peak 4

Lab Value: 1103068.0000

Area of Compound	275767
Conc. of Compound	0.25
Calculated CF	1103068.000

Compound Name: AR1260 Peak 4

Lab Value: -22.7

Average CF	1426432.000
CF of CCV	1103068
Calculated % D	22.7

Yes NO N/A

(B) For detected compounds in the affected samples, if peaks within the RT window, no qualification necessary. If peaks are close to the expected RT window of the Aroclor of interest, the reviewer can examine the data package for the presence of three or more standards the Aroclor of interest that were run within the analytical sequence during which the sample was analyzed. If three or more such standards are present, the RT window can be reevaluated using the Mean Retention Times of the standards. If the peaks in the affectd sample fall within the revised window, qualify the detected target compounds "NJ". If the reviewer cannot do anything with the data to resolve the problem of concern, qualify all non-detects as unusable "R". (Table 9)

9.15 Has no more than 12 hours elapsed from the injection of the opening CCV and the end of the analytical sequence sequence (closing CCV). (Table 9) [✓] ___ ___

Table 9. CCV Criteria

Criteria	Action	
	Detected Associated Compounds	Non-Detected Associated Compounds
RT out of RT window	Use professional judgement (Sec 9.14)	
%D not within +/- 15%	J	UJ
Time elapsed greater than section 9.15 criteria.	R	
%D, time elapsed, RT are all within acceptable limits.	No qualifications	

9.16 Are there any transcription/calculation errors between raw data and data summary forms? ___ [✓] ___

ACTION: If large errors exists, call lab for explanation/resubmittal, make any necessary corrections and document the effect in data assessments under "Conclusions".

10.0 Analytical Sequence Check (Form VIII-PEST/Equivalent)

10.1 Have all samples been listed on CLP Form VIII or equivalent, and are separate forms present for each column? [✓] ___ ___

Yes NO N/A

ACTION: If no, take action specified in 3.2 above.

10.2 Was the proper analytical sequence followed for each initial calibration and subsequent analyses? [✓] ___ ___

ACTION: If no, use professional judgement to determine the severity of the effect on the data and qualify it accordingly. Generally, the effect is negligible unless the sequence was grossly altered or the calibration was also out of limits.

10.3 Were the TCMX/DCB surrogate RTs for the samples within the mean surrogate RT from the initial calibration? [✓] ___ ___

RT Stable

Action: If no, see "Action" in section 9.14 above

11.0 Extraction Techniques for Sample Preparation

Method 8082A permits a variety of extraction techniques to be used for sample preparation. Check which extraction procedure was used?

1. Aqueous samples:

   1. Separatory funnel (Method 3510) [ ] ___ ✓
   2. Continuous liquid-liquid extraction (Method 3520) [ ] ___ ___
   3. Solid phase extraction (Method 3535) [ ] ___ ___
   4. Other [ ] ___ ___

2. Solid samples:

   1. Soxhlet (Method 3540) [✓] ___ ___
   2. Automated Soxhlet (Method 3541) [ ] ___ ✓
   3. Pressurized fluid (Method 3545) [ ] ___ ___
   4. Microwave extraction (Method 3546) [ ] ___ ___
   5. Ultrasonic extraction (Method 3550) [ ] ___ ___

Yes NO N/A

6. Supercritical fluid (Method 3562) [ ] ___ ___

7. Other [ ] ___ ___

11.1 Extract Cleanup - Efficiency Verification (Form IX/Equivalent)

11.1.1 Method 8082 (section 7.2) references method 3660 (sulfur) and 3665A (sulfuric acid) to use for cleaning extracts. Were one or both method used? [ ] ___ ___

ACTION: If no, take action specified in 3.2 above. If data suggests cleanup was not performed, make note in the data assessment.

NOTE: Method 3620A, Florisil, may be used per approved project QA plan. The method does not list which analytes and surrogate(s) to use to verify column efficiency. The reviewer must check project plan to verify method used as well as the correct PCB list. If not stated or available, use the CLP listing or accept what the laboratory used.

11.2 Are all samples listed on modified CLP PCBs Florisil/Cartridge Check Form? [ ] ___ ___

ACTION: If no, take action specified in 3.2 above.

11.3 Was GPC Cleanup (method 3640A) performed? [ ] ___ ___

NOTE: GPC cleanup is not required and is optional. The reviewer should check Project Plan to verify requirement.

11.4 Were the same PCB analytes used in calibration used to check the efficiency of the cleanup procedures? not CLP [ ] ___ ___

11.5 Are percent recoveries (% R) of the PCBs and surrogate compounds used to check the efficiency of the cleanup procedures within lab's in-house QC limits (use 70-130% if not available). [ ] ___ ___

Yes NO N/A

70-130% for GPC calibration? [ ] ___ ___

Qualify only the analyte(s) which fail the recovery criteria as follows:

ACTION: If % R are < 70%, qualify positive results "J" and quantitation limits "UJ". Non-detects should be qualified "R" if zero %R was obtained for PCBs. Use professional judgement to qualify positive results if recoveries are greater than the upper limit.

12.0 PCB Identification

12.1 Has CLP Form X or equivalent, showing retention time data for positive results on the two GC columns, been completed for every sample in which a PCB was detected? [ ] ___ ___

ACTION: If no, take action specified in 3.2 above, or compile a list comparing the retention times for all sample hits on the two columns. NO + results

12.2 Are there any transcription/calculation errors between raw data and data summary forms (initial calibration summaries, calibration verification summaries, analytical sequence summaries, GPC and cleanup verification forms)? ___ [✓] ___

ACTION: If large errors exist, call lab for explanation/resubmittal, make necessary corrections and note error in the data assessment.

12.3 Are retention times (RT) of sample compounds within the established RT windows for both columns/analyses? [ ] ___ ___

ACTION: Qualify as unusable (R) all positive results which were not confirmed by second GC column analysis. Also qualify "R", unusable, all positive results not within RT windows unless associated standard compounds are similarly biased. The reviewer should use professional judgement to assign an appropriate quantitation limit.

SAMPLE CALCULATION

Sample ID: VEP21-SS04-0001MS
Standard ID: ICAL 4/29/13
Compound: AR1260
Concentration: 26 ug/Kg (sum of 5 peaks)
Calculation shows Peak 1: 22.3 ug/Kg

	Water (ug/L)	Soil (ug/Kg)
Area of Compound		1720111
CF of Compound		4959761
Final Volume		2
Dilution Factor		1
Split Factor		1
Injection Volume		1
Weight of Sample	na	34.8
Initial Volume of Sample		NA
Conversion Factor		1000
Percent Solids Factor		0.8924
Concentration	#DIV/0!	22.33505

Peak #	Concentration
1	22.3
2	25
3	26.3
4	26.4
5	28.7
Total	**25.74**

Yes NO N/A

12.4 Check chromatograms for false negatives, especially if RT windows on each column were established differently.
Were there any false negatives? ___ [✓] ___

ACTION: Use professional judgement to decide if the compound should be reported. If there is reason to believe that peaks outside retention RT windows should be reported, make corrections to data summary forms (Form I) and note in data assessment.

12.5 Was GC/MS confirmation provided when sample concentration was sufficient (> 10 ug/ml) in the final extract? [ ] ___ ___ ✓

ACTION: Indicate with red pencil which Form I results were confirmed by GC/MS and also note in data assessment. GC/MS confirmation is an option, see section 7.10 of Method 8082A-20. If GC/MS confirmation is not available, follow action in section 3.2.

12.6 Is the percent difference (%D) calculated for the positive sample results on the two GC columns <25.0%? [ ] ___ ___ ✓

NOTE: The method requires quantitation from one column. The second column is to confirm the presence of an analyte. It is the reviewer's responsibility to verify from the project plan what the lab was required to report. If the lab was required to report concentrations from both columns, continue with validation for % Difference. If required, but not reported, either contact the lab for results or calculate the concentrations from the calibration. If not required, skip this section. Document actions in Data Assessment.

ACTION: If the reviewer finds neither column shows interference for the positive hits, the data should be qualified as follows:

% Difference	Qualifier

Yes NO N/A

0-25%	none
26-70%	"J"
71-100%	"NJ"
101-200% (No Interference)	"R"
101-200% (Interference detected)	"NJ"
>50% (PCBs value is <CRQL)	"U"
>200%	"R"

Note: The lower of the two values is reported on Form I. If using professional judgement,the reviewer determines that he higher result was more acceptable, the reviewer should replace the value and indicate the reason for the change in the data assessment.

13.0 Compound Quantitation and Reported Detection Limits

13.1 Are there any transcription/calculation errors in Form I results? Check at least two positive values. Were any errors found? ___ [✓] ___

NOTE: Single-peak PCBs results can be checked for rough agreement between quantitative results obtained on the two GC columns. The reviewer should use professional judgement to decide whether a much larger concentration obtained on one column versus the other indicates the presence of an interfering compound. If an interference is suspected, the lower of the two values should be reported and qualified according to section 12.6 above. This necessitates a determination of an estimated concentration on the confirmation column. The narrative should indicate that the presence of interferences has led to the quantitation of the second column confirmation results.

13.2 Are the EDLs (Estimated Detection Limits) adjusted to reflect sample dilutions and, for soils, % moisture? [✓] ___ ___

ACTION: If errors are large, call lab for explanation/resubmittal, make any necessary corrections and document effect in data assessments.

Yes NO N/A

ACTION: When a sample is analyzed at more than one dilution, the lowest EDLs are used (unless a QC exceedance dictates the use of the higher EDL data from the diluted sample analysis). Replace concentrations that exceed the calibration range in the original analysis by crossing out the value on the original Form I and substituting it with data from the analysis of diluted sample. Specify which Form I is to be used, then draw a red "X" across the entire page of all Form I's that should not be used, including any in the summary package

ACTION: EDLs affected by large, off-scale peaks should be qualified as unusable, "R". If the interference is on-scale, the reviewer can provide a modified EDL flagged "UJ" for each affected compound.

14.0 Chromatogram Quality

14.1 Were baselines stable? [✓] ___ ___

14.2 Were any electropositive displacement (negative peaks) or unusual peaks seen? ___ [✓] ___

ACTION: Note all system performance problems in the data assessment.

slight neg. displacement only noted in blks -

15.0 Field Duplicates

15.1 Were any field duplicates submitted for PCB analysis? [✓] ___ ___

ACTION: Compare the reported results for field duplicates and calculate the relative percent difference.

ACTION: Any gross variation between field duplicate results must be addressed in the reviewer narrative. However, if large differences exist, the identity of the field duplicates is questionable. An attempt should be made

Yes NO N/A

to determine the proper identification of field duplicates.

SDG SG2441

	YES	NO	N/A
A.I.I **Contract Compliance Screening Report**			
Present?	[ ]		✓
ACTION: If no, contact RSCC/PO.			
A.I.2 **Record of Communication (from RSCC)**			
Present?	[ ]		✓
ACTION: If no, request from the RSCC.			
A.1.3 **Sampling Trip Report**			
Present and complete?	[ ]		✓
ACTION: If no, contact RSCC/PO.			
A.I.4 **Chain of Custody/Sample Traffic Report**			
Present?	[✓]		
Legible?	[✓]		
Signature of sample custodian present?	[✓]		
ACTION: If no, contact RSCC/WAM/PO.			
A.I.5 **Cover Page**			
Present?	[✓]		
Is the Cover Page properly filled in and the verbatim signed by the lab manager or the manager's designee?	[ ]		
Do the sample identification numbers on the Cover Page agree with sample Identification numbers on:			
(a) Traffic Report Sheet?	[ ]		✓

	YES	NO	N/A
(b) Form I's?	[✓]	___	___
Is the number of samples on the Cover Page the same as the number of samples on the Traffic Report sheet and the Regional Record of Communication (ROC) for the data Case?	[___]	___	___

ACTION:
If no for any of the above, prepare Telephone Record Log and contact RSCC/PO for re-submittal of the corrected Cover Page from the laboratory.

A.1.6 **SDG Narrative, DC-1 & DC-2 Form**

	YES	NO	N/A
Is the SDG Narrative present?	[✓]	___	___
Is Sample Log-In Sheet(Form DC-1) present and complete?	[___]	___	✓
Is Complete SDG Inventory Sheet(Form DC-2) present and complete?	[___]	___	✓

ACTION:
If no, write in the Contract-Problems/ Non-Compliance Section of the Data Review Narrative.

A.1.7 **Form I to XV**

A.1.7.1 Are all the Form I through Form XV labeled with:

	YES	NO	N/A
Laboratory Name?	[✓]	___	___
Laboratory Code?	[___]	✓	___
RAS/Non-RAS Case No.?	[___]	✓	___
SDG No.?	[✓]	___	___

	YES	NO	N/A
Contract No.?	[ ]	✓	

ACTION:
If no for any of the above, note under Contract Problem/Non-Compliance Section of the "Data Review Narrative" and contact PO for corrected Form(s) from the laboratory.

A.1.7.2 After comparing values on Forms I-IX against the raw data, do any computation/ transcription errors exceed 10% of the reported values on the Forms for:

	YES	NO	N/A
(a) all analytes analyzed by ICP-AES?		[ ]	✓
(b) all analytes analyzed by ICP-MS?		[✓]	
(c) Mercury?		[✓]	
(d) Cyanide?		[✓]	

ACTION:
If yes, prepare Telephone Record Log and contact CLP PO/TOPO for the corrected data from the laboratory.

A.1.8 Raw Data

Data shall not be validated without the hard/electronic copies of the associated raw data for samples and QC samples.

A.1.8.1 Digestion/Distillation Log

	YES	NO	N/A
Digestion Log for ICP-AES (Form XII)present?	[ ]		✓
Digestion Log for ICP-MS (Form XII) present?	[✓]		
Digestion Log for mercury (Form XII) present?	[✓]		
Distillation Log for cyanide (Form XII) present?	[✓]		

Are pH values for metals and

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	YES	NO	N/A
cyanide reported for each aqueous sample?	[✓]	_	_
Are percent solids calculations present for soils/sediments?	[_]	✓	✓
Are preparation dates present on the sample preparation logs/bench sheets?	[✓]	_	_

NOTE:
Digestion/Distillation log must include weights, volumes, and dilutions used to obtain the reported results.

A.1.8.2 Is the analytical instrument real-time printouts present for:

	YES	NO	N/A
ICP-AES?	[_]	_	✓
ICP-MS?	[✓]	_	_
Mercury?	[✓]	_	_
Cyanide?	[✓]	_	_

Are all laboratory bench sheets and instrument raw data printouts necessary to support all sample analyses and QC operations:

	YES	NO	N/A
Legible?	[✓]	_	_
Properly labeled?	[✓]	_	_

Are all field samples, QC samples and field QC samples present on:

	YES	NO	N/A
Digestion/Distillation log?	[✓]	_	_
Instrument Printouts?	[✓]	_	_

ACTION:
If no for any of the above questions in Section A.1.8.1 and Section A.1.8.2, write Telephone Record Log and contact TOPO/PO for re-submittal from the laboratory.

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	YES	NO	N/A

A.1.9 **Technical Holding Times**: (Aqueous and soil samples)

(Examine sample Traffic Reports and digestion/distillation logs to determine the holding time from the sample collection date to the sample preparation date.)

		YES	NO	N/A
A.1.9.1	Cyanide distillation(14 days)exceeded?		[✓]	
	Mercury analysis(28 days) exceeded?		[✓]	
	Other Metals analysis(180 days)exceeded?		[✓]	

ACTION:
If yes, reject (R) and red-line non-detects and flag as estimated (J)results ≥ MDL even if sample(s) was preserved properly.

NOTE:
In addition to qualifying the data, a list of all samples and analytes which exceeded the holding times must be prepared. Report for each sample the number of days that were exceeded. (Subtract the sample collection date from the sample preparation date). Attach this list to the data review narrative.

		YES	NO	N/A
A.1.9.2	Is pH of aqueous samples for:			
	Metals Analysis ≤ 2?	[✓]		
	Cyanide Analysis ≥ 12?	[✓]		

ACTION:
If no for any of the above, flag non-detects as "R" and detects as "J".

		YES	NO	N/A
A.1.9.3	Is the cooler temperature ≤ 10 C°?	[✓]		

ACTION:
If cooler temperature is >10 °C , flag non-detects as "UJ" and detects as "J".

A.1.10 **Final Data Correctness - Form I**

A.1.10.1 Are Form I's for all samples

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CH2M HILL VIEQUES CTO-37 PI-21 METALS CALCULATIONS

SDG SG2441

ICP-MS	
SAMPLE ID	VEP21-SS04-0001
ANALYTE	chromium
Lab Value CONCENTRATION (mg/Kg)	14.7
AMOUNT FROM RAW DATA (ug/ml)	29.42
SAMPLE SIZE (g)	1.12
FINAL VOLUME (ml)	0.1
DILUTION FACTOR	5
DRYNESS FACTOR	0.892
CONVERSION FACTOR (ug/g TO mg/Kg)	1
CALCULATED CONCENTRATION (mg/Kg)	14.724

CVAA	
SAMPLE ID	VEP21-SS01-0001
ANALYTE	mercury
Lab Value CONCENTRATION (mg/Kg)	0.006
AMOUNT FROM RAW DATA (ug/L)	0.039
SAMPLE SIZE (g)	0.66
FINAL VOLUME (L)	0.1
DILUTION FACTOR	1
DRYNESS FACTOR	1
CONVERSION FACTOR (ug/g to mg/Kg)	1
CALCULATED CONCENTRATION (ug/Kg)	0.00591

	YES	NO	N/A
present and complete?	[✓]	___	___

ACTION:
If no, prepare Telephone Record Log and contact CLP PO/TOPO for submittal from the laboratory.

A.1.10.2 Verify there are no calculation and transcription errors in the results reported on Form I's. Circle on each Form I all results that are incorrect.

Is the calculation error less than 10% of the correct result?	[✓]	___	___
Are results on Form I's reported in correct units (ug/L for aqueous and MG/KG for soils)?	[✓]	___	___
Are results on Form I'S reported by correct significant figures?	[✓]	___	___
Are soil sample results on Form I's corrected for percent solids?	[✓]	___	___
Are all "less than MDL" values reported by the ~~CRQLs~~ LOD's and coded with "U"?	[✓]	___	___
Are values less than the ~~CRQLs~~ LOD's but greater than or equal to the MDLs flagged with "J"?	[✓]	___	___
Are appropriate contractual quality control and Method qualifiers used?	[✓]	___	___

ACTION:
If no for any of the above questions, prepare Telephone Record Log, and contact CLP PO/TOPO for corrected data.

A.1.10.3 Do EPA sample identification numbers and the corresponding laboratory sample identification numbers match on the Cover Page, Form I's and in the raw data? [✓] ___ ___

Was a brief physical description

	YES	NO	N/A
of the samples before and after digestion given on the Form I's?	[___]	✓	✓
Was any sample result outside the mercury/cyanide calibration range or the ICP-AES/ICP-MS linear range diluted and noted on the Form I?	[___]	___	✓

ACTION:
If no for any of the above, note under the Contract-Problem/Non-Compliance Section of the Data Review Narrative.

A.1.11 **Initial Calibration**

	YES	NO	N/A
A.1.11.1 Is a record of at least 2 point (A blank and a standard)calibration present for ICP-AES analysis?	[___]	___	✓
Is a record of at least 2 point (a blank and a standard)calibration present for ICP-MS analysis?	[✓]	___	___
Is a record of at least 5 point calibration (a blank & 4 standards)present for Hg analysis?	[✓]	___	___
Is a record of at least 4 point calibration (a blank & 4 standards)present for cyanide?	[✓]	___	___

ACTION:
If incomplete or no initial calibration was performed, reject (R) and red-line the associated data (detects & non-detects).

	YES	NO	N/A
Is one initial calibration standard at the CRQL level for cyanide and mercury?	[✓]	___	___

ACTION:
If no, write in the Contract Problem/ Non-Compliance Section of the Data Review Narrative.

	YES	NO	N/A
A.1.11.2 Is the curve correlation coefficient $\geq$ 0.995 for:			

		YES	NO	N/A
	Mercury Analysis?	[✓]	___	___
	Cyanide Analysis?	[✓]	___	___
	ICP-AES(more than 2 point Calib.)?	[___]	___	✓
	ICP-MS (more than 2 point calib.)?	[✓]	___	___

ACTION:
If no, qualify the associated sample results ≥ MDL as estimated "J" and non-detects as "UJ".

NOTE:
The correlation coefficient shall be calculated by the data validator using standard concentrations and the corresponding instrument response (e.g. absorbance, peak area, peak height, etc.).

A.1.12 **Initial and Continuing Calibration Verification- Form IIA**

A.1.12.1	Present and complete for every metal and cyanide?	[✓]	___	___
	Present and complete for ICP-AES and ICP-MS when both these methods were used for the same analyte?	[✓]	___	___

ACTION:
If no for any of the above, prepare a Telephone Record Log and contact PO/TOPO for re-submittal from the laboratory.

A.1.12.2	Was a Continuing Calibration Verification performed every 10 samples or every 2 hours whichever is more frequent?	[✓]	___	___

ACTION:
If no for any of the above, write in the Contract-Problem/Non-Compliance Section of the Data Review Narrative.

A.1.12.3	Was an ICV or a mid-range standard distilled and analyzed with each batch of cyanide samples?	[✓]	___	___

	YES	NO	N/A

ACTION:
If no for any of the above, write in the Contract-Problem/Non-Compliance Section of the Data Review Narrative and qualify results ≥ MDL as estimated (J).

A.1.12.2 Circle on each Form IIA all percent recoveries that are outside the contract windows.

Are ICV/CCVs within control limits for:

	YES	NO	N/A
Metals - 90-110%R?	[✓]	___	___
Hg - 80-120%R?	[✓]	___	___
Cyanide - 85-115%R?	[✓]	___	___

ACTION:
If no, qualify all samples between a previous technically acceptable CCV standard and a subsequent technically acceptable CCV standard as follows as follows:

Qualify as estimated (J) all detects and non-detects, if the ICV/CCV %R is between 75-89%(65-79% for Hg; 70-84% for CN). Qualify only positive results(≥ MDL) as "J" if the ICV/CCV %R is between 111-125%(121-135% for Hg;116-130% for CN). Reject (R) and red-line only
detects if the recovery is greater than 125% (135% for Hg; 130% for CN). Reject (R) and red-line all associated results (hits and non-detects)if the recovery is less than 75%(65% for Hg;70% for CN).

NOTE:
For ICV that does not fall within the acceptance limits, qualify all samples reported from the analytical run.

A.1.12.3 Was the distilled ICV or mid-range standard for cyanide within acceptance limits (85-115%)? [✓] ___ ___

ACTION:
If no, Qualify all cyanide results ≥ MDL as "J".

A.1.13 **CRQL Standard Analysis - Form IIB**

A.1.13.1 For each ICP-AES run, was a CRI

	YES	NO	N/A
(CRQL or MDL when MDL > CRQL) standard analyzed? (Note:CRI is not required for Al, Ba, Ca, Fe, Mg, Na and K.)	[___]	✓	___
For each ICP-MS run, was a CRI (CRQL or MDL when MDL > CRQL) standard analyzed for each mass/isotope used for the analysis?	[___]	___	___
For each mercury run, was a CRQL standard analyzed?	[___]	___	___
For each cyanide run, was a CRQL standard analyzed?	[___]	___	___

PQL Stds were run

ACTION:
If no for any of the above, write this deficiency in the Contract Problems/ Non-Compliance Section of the Data Review Narrative, inform CLP PO and flag results in the affected ranges (detects <2xCRQL)as J and non-detects UJ.

The affected ranges are:
ICP-AES Analysis - *True Value ± CRQL
ICP-MS Analysis - *True Value ± CRQL
Mercury Analysis - *True Value ± CRQL
Cyanide Analysis - *True Value ± CRQL
* True value of the CRQL Standard

A.1.13.2 Was a CRQL standard analyzed after the ICV/ICB, before the final CCV/CCB and once every 20 analytical samples in the analytical run for each analysis? [___] ✓ ✓

ACTION:
If no, write in the Contract Problem/ Non-Compliance Section of the "Data Review Narrative".

A.1.13.3 Circle on each Form IIB all percent recoveries that are outside the acceptance windows.

2C

PQL STANDARD FOR AA AND ICP

Lab Name: Katahdin Analytical Services **SDG Name:** SG2441

Concentration Units: ug/L

SAMPLE: PQL

File: JGD17A Apr 17, 2013 17:27

Analyte	TRUE	FOUND	% R	
ALUMINUM	60.0	59.81	99.7	
ANTIMONY	0.2	0.23	115.0	
ARSENIC	1.0	1.05	105.0	
BARIUM	0.4	0.45	112.5	
BERYLLIUM	0.2	0.21	105.0	
CADMIUM	0.2	0.21	105.0	
CALCIUM	20.0	15.40	77.0 •	NQ
CHROMIUM	1.0	0.99	99.0	
COPPER	0.6	0.64	106.7	
IRON	20.0	13.65	68.3 •	NQ
LEAD	0.2	0.21	105.0	
MAGNESIUM	20.0	20.35	101.8	
MANGANESE	0.4	0.44	110.0	
MOLYBDENUM	1.0	1.11	111.0	
NICKEL	0.4	0.45	112.5	
POTASSIUM	200.0	196.60	98.3	
SELENIUM	1.0	1.17	117.0	
SILVER	0.2	0.22	110.0	
SODIUM	200.0	209.60	104.8	
THALLIUM	0.2	0.21	105.0	
VANADIUM	1.0	1.02	102.0	
ZINC	2.0	2.12	106.0	

2C

PQL STANDARD FOR AA AND ICP

Lab Name: Katahdin Analytical Services **SDG Name:** SG2441

Concentration Units: ug/L

SAMPLE: PQL

File: JGD19A Apr 19, 2013 13:04

Analyte	TRUE	FOUND	% R
ALUMINUM	60.0	58.38	97.3
ANTIMONY	0.2	0.22	110.0
ARSENIC	1.0	0.97	97.0
BARIUM	0.4	0.42	105.0
BERYLLIUM	0.2	0.20	100.0
CADMIUM	0.2	0.20	100.0
CALCIUM	20.0	20.92	104.6
CHROMIUM	1.0	1.06	106.0
COBALT	0.2	0.21	105.0
COPPER	0.6	0.63	105.0
IRON	20.0	16.41	82.0
LEAD	0.2	0.22	110.0
MAGNESIUM	20.0	20.12	100.6
MOLYBDENUM	1.0	1.09	109.0
NICKEL	0.4	0.39	97.5
POTASSIUM	200.0	187.50	93.8
SELENIUM	1.0	1.09	109.0
SILVER	0.2	0.22	110.0
SODIUM	200.0	206.90	103.5
THALLIUM	0.2	0.21	105.0
VANADIUM	1.0	0.93	93.0
ZINC	2.0	2.09	104.5

SAMPLE: PQL

File: JGD19A Apr 19, 2013 14:49

Analyte	TRUE	FOUND	% R
ALUMINUM	60.0	60.82	101.4
ANTIMONY	0.2	0.22	110.0
ARSENIC	1.0	1.02	102.0
BARIUM	0.4	0.43	107.5
BERYLLIUM	0.2	0.21	105.0
CADMIUM	0.2	0.22	110.0
CALCIUM	20.0	15.18	75.9 • NQ
CHROMIUM	1.0	1.07	107.0
COBALT	0.2	0.20	100.0
COPPER	0.6	0.64	106.7
IRON	20.0	13.84	69.2 • NQ
LEAD	0.2	0.22	110.0
MAGNESIUM	20.0	21.00	105.0
MOLYBDENUM	1.0	1.05	105.0
NICKEL	0.4	0.47	117.5
POTASSIUM	200.0	202.70	101.3
SELENIUM	1.0	1.12	112.0
SILVER	0.2	0.22	110.0
SODIUM	200.0	214.80	107.4
THALLIUM	0.2	0.22	110.0
VANADIUM	1.0	1.00	100.0
ZINC	2.0	2.02	101.0

2C

PQL STANDARD FOR AA AND ICP

Lab Name: Katahdin Analytical Services **SDG Name:** SG2441

Concentration Units: ug/L

SAMPLE: PQL

File: JGD19A Apr 19, 2013 16:08

Analyte	TRUE	FOUND	% R
ALUMINUM	60.0	60.83	101.4
ANTIMONY	0.2	0.23	115.0
ARSENIC	1.0	1.08	108.0
BARIUM	0.4	0.44	110.0
BERYLLIUM	0.2	0.20	100.0
CADMIUM	0.2	0.22	110.0
CALCIUM	20.0	16.83	84.1
CHROMIUM	1.0	1.09	109.0
COBALT	0.2	0.22	110.0
COPPER	0.6	0.64	106.7
IRON	20.0	10.73	53.6* NQ
LEAD	0.2	0.22	110.0
MAGNESIUM	20.0	20.95	104.7
MOLYBDENUM	1.0	1.12	112.0
NICKEL	0.4	0.45	112.5
POTASSIUM	200.0	202.40	101.2
SELENIUM	1.0	1.03	103.0
SILVER	0.2	0.22	110.0
SODIUM	200.0	213.10	106.5
THALLIUM	0.2	0.20	100.0
VANADIUM	1.0	0.81	81.0
ZINC	2.0	2.12	106.0

2C

PQL STANDARD FOR AA AND ICP

Lab Name: Katahdin Analytical Services **SDG Name:** SG2441

Concentration Units: ug/L

SAMPLE: PQL

File: JGE01B May 01, 2013 18:13

Analyte	TRUE	FOUND	% R
ALUMINUM	60.0	62.05	103.4
CALCIUM	20.0	15.69	78.5 *
IRON	20.0	21.08	105.4
MAGNESIUM	20.0	20.63	103.1
MANGANESE	0.4	0.42	105.0
MOLYBDENUM	1.0	1.04	104.0
POTASSIUM	200.0	202.60	101.3
SODIUM	200.0	202.10	101.1

NQ

	YES	NO	N/A
Is the CRQL standard within control limits for:			
Metals(ICP-AES/ICP-MS)- 70 - 130%?	[ ]	✓	
Mercury- 70 - 130%?	[✓]		
Cyanide - 70 - 130%?	[✓]		

ACTION:
If no, flag detects <2xCRQL as "J" and non-detects as "UJ" if the CRQL standard recovery is between 50-69%. Flag(J) only detects <2xCRQL if the recovery is between 131% and ≤180%. If the recovery is less than 50%, reject(R) and red-line non-detects and detects < 2xCRQL, and flag (J) detects between 2xCRQL and ICV/CCV. Reject and red-line only detects <2xCRQL and flag (J)detects ≥ 2xCRQL but < ICV/CCV if the recovery is > 180%.

Ca & Fe slightly low in several - NQ results in samples >> LOQ.

NOTE:
1. Qualify all field samples analyzed between a previous technically acceptable analysis of the CRQL standard and a subsequent acceptable analysis of the CRQL standard
2. Flag (J) or reject (R) only the final sample results on Form I's when **Sample raw data** are within the affected ranges and the CRQL standard is outside the acceptance windows.
3. The samples and the CRQL standard must be analyzed in the same analytical run.

A.1.14 **Initial and Continuing Calibration Blanks - Form III**

A.1.14.1 Present and complete for all the instruments used for the metals and cyanide analyses?	[✓]		
Was an initial Calibration Blank analyzed after ICV?	[✓]		
Was a continuing Calibration Blank analyzed after every CCV and every 10 samples or every 2 hours, whichever is more frequent?	[✓]		
Were the ICB & CCB values ≥ MDL but < CRQL reported on Form III and flagged "J" by			

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		YES	NO	N/A
	using MDLs from direct analysis(Preparation Method "NP1")? (Check Form III against the raw data)	[✓]	___	___
	ACTION: If no, inform CLP PO/TOPO and make a note in the Contract-Problems/Non-Compliance Section of the "Data Review Narrative".			
A.1.14.2	Circle with red pencil on each Form III all Calib. Blank values that are: ≥ MDL but ≤ CRQL; > CRQL			
A.1.14.2.1	When MDL < CRQL, is any Calib. Blank value ≥ MDL but ≤ CRQL?	✓	[___]	___
	ACTION: If yes, change sample results ≥ MDL but ≤ CRQL to the CRQL with a "U". Do not qualify non-detects.			
A.1.14.2.2	When MDL < CRQL, is any Calib. Blank value > CRQL?	___	[✓]	___
	ACTION: If yes, reject (R) and red line the associated sample results > CRQL but <ICB/CCB Blank Result. Flag as "J" detects > ICB/CCB blank value but < 10xICB/CCB value. Change the sample results ≥ MDL but ≤ the CRQL to CRQL with a "U".			
A.1.14.2.3	Is any Calibration Blank value below the negative CRQL?	___	[✓]	___
	ACTION: If yes, flag (J) as estimated all associated sample results ≥ CRQL but <10xCRQL.			

LOD is action limit for action due to blank contamination.

NOTE:

1. For ICB that does not meet the technical QC Criteria, apply the action to all samples

3A

INITIAL AND CONTINUING CALIBRATION BLANKS

Lab Name: Katahdin Analytical Services **SDG Name:** SG2441

Concentration Units: ug/L

SAMPLE: ICB

File: JGD17A Apr 17, 2013 17:24

Analyte	Result	C
ALUMINUM	0.470	U
ANTIMONY	0.018	J
ARSENIC	0.144	J
BARIUM	0.020	U
BERYLLIUM	0.007	J
CADMIUM	0.008	U
CALCIUM	-3.482	J NQ
CHROMIUM	-0.086	J ↓
COPPER	0.020	U
IRON	-4.503	J NQ
LEAD	0.020	U
MAGNESIUM	0.820	U
MANGANESE	0.040	U
MOLYBDENUM	0.275	J NA
NICKEL	0.021	J
POTASSIUM	-10.020	J NQ
SELENIUM	0.203	J see MB
SILVER	0.003	U
SODIUM	5.840	U
THALLIUM	0.006	J *
VANADIUM	0.090	U
ZINC	0.060	U

SAMPLE: CCB

File: JGD17A Apr 17, 2013 17:41

Analyte	Result	C
ALUMINUM	0.844	J NQ
ANTIMONY	0.026	J NQ
ARSENIC	0.140	U
BARIUM	0.020	U
BERYLLIUM	0.004	J NQ
CADMIUM	0.008	U
CALCIUM	3.370	U
CHROMIUM	-0.071	J NQ
COPPER	0.022	J NQ
IRON	-3.853	J NQ
LEAD	0.020	U
MAGNESIUM	1.655	J NQ
MANGANESE	0.040	U
~~MOLYBDENUM~~	~~0.918~~	~~B~~
NICKEL	0.020	U
POTASSIUM	-6.948	J NQ
SELENIUM	0.264	J see MB
SILVER	-0.005	J NQ
SODIUM	7.451	J NQ
THALLIUM	0.003	U
VANADIUM	-0.113	J NQ
ZINC	0.060	U

SAMPLE: CCB

File: JGD17A Apr 17, 2013 18:20

Analyte	Result	C
ALUMINUM	0.770	J NQ
ANTIMONY	0.021	J NQ
ARSENIC	0.140	U
BARIUM	0.020	U
BERYLLIUM	0.002	J NQ
CADMIUM	0.008	U
CALCIUM	-4.647	J NQ
CHROMIUM	-0.074	J ↓
COPPER	0.020	U
IRON	3.780	U
LEAD	0.020	U
MAGNESIUM	1.252	J NQ
MANGANESE	0.040	U
~~MOLYBDENUM~~	~~0.163~~	~~J~~
NICKEL	0.020	U
POTASSIUM	-9.609	J NQ
SELENIUM	0.150	U
SILVER	0.003	U
SODIUM	5.840	U
THALLIUM	0.003	U
VANADIUM	0.090	U
ZINC	0.060	U

* U @ LOD in associated

3A

INITIAL AND CONTINUING CALIBRATION BLANKS

Lab Name: Katahdin Analytical Services **SDG Name:** SG2441

Concentration Units: ug/L

SAMPLE: CCB

File: JGD17A Apr 17, 2013 19:01

Analyte	Result	C
ALUMINUM	0.470	U
ANTIMONY	0.033	J NQ
ARSENIC	0.140	U
BARIUM	0.020	U
BERYLLIUM	0.002	U
CADMIUM	0.008	U
CALCIUM	-8.097	J NQ
CHROMIUM	0.040	U
COPPER	0.020	U
IRON	4.390	J NQ
LEAD	0.020	U
MAGNESIUM	0.926	J NQ
MANGANESE	0.053	J
~~MOLYBDENUM~~	~~0.117~~	~~J~~
NICKEL	0.020	U
POTASSIUM	-17.630	J NQ
SELENIUM	0.175	J NQ
SILVER	0.003	U
SODIUM	5.840	U
THALLIUM	0.003	U
VANADIUM	0.095	J NQ
ZINC	0.060	U

SAMPLE: CCB

File: JGD17A Apr 17, 2013 19:42

Analyte	Result	C
ALUMINUM	0.470	U
ANTIMONY	0.032	J NQ
ARSENIC	0.140	U
BARIUM	0.021	J NQ
BERYLLIUM	0.002	U
CADMIUM	0.008	U
CALCIUM	-6.660	J NQ
CHROMIUM	0.040	U
COPPER	0.022	J NQ
IRON	3.780	U
LEAD	0.020	U
MAGNESIUM	0.820	U
MANGANESE	0.049	J NQ
~~MOLYBDENUM~~	~~0.226~~	~~J~~
NICKEL	0.022	J NQ
POTASSIUM	5.820	U
SELENIUM	0.150	U
SILVER	0.003	U
SODIUM	26.870	J NQ
THALLIUM	0.003	U
VANADIUM	0.090	U
ZINC	0.060	U

3A

INITIAL AND CONTINUING CALIBRATION BLANKS

Lab Name: Katahdin Analytical Services **SDG Name:** SG2441

Concentration Units: ug/L

SAMPLE: ICB

File: JGD19A Apr 19, 2013 13:00

Analyte	Result	C
ALUMINUM	0.470	U
ANTIMONY	0.022	J NQ
ARSENIC	0.140	U
BARIUM	0.020	U
BERYLLIUM	0.005	J NQ
CADMIUM	0.008	U
CALCIUM	3.370	U
CHROMIUM	0.040	U
COBALT	0.007	U
COPPER	0.020	U
IRON	3.780	U
LEAD	0.020	U
MAGNESIUM	0.820	U
~~MOLYBDENUM~~	~~0.283~~	~~J~~
NICKEL	0.020	U
POTASSIUM	5.820	U
SELENIUM	0.150	U
SILVER	0.003	U
SODIUM	5.840	U
THALLIUM	0.007	J *
VANADIUM	-0.129	J NQ
ZINC	0.118	J

SAMPLE: CCB

File: JGD19A Apr 19, 2013 13:17

Analyte	Result	C
ALUMINUM	1.341	J
ANTIMONY	0.023	J
ARSENIC	0.140	U
BARIUM	0.020	U
BERYLLIUM	0.003	J
CADMIUM	0.008	U
CALCIUM	3.370	U
CHROMIUM	0.040	U
COBALT	-0.010	J
COPPER	0.020	U
IRON	-11.620	J
LEAD	0.020	U
MAGNESIUM	3.102	J
~~MOLYBDENUM~~	~~0.966~~	~~B~~
NICKEL	0.020	U
POTASSIUM	-6.103	J
SELENIUM	0.227	J
SILVER	0.003	U
SODIUM	10.380	J
THALLIUM	0.008	J
VANADIUM	0.090	U
ZINC	0.082	J

SAMPLE: CCB

File: JGD19A Apr 19, 2013 13:56

Analyte	Result	C
ALUMINUM	0.470	U
ANTIMONY	0.026	J
ARSENIC	-0.153	J
BARIUM	0.031	J
BERYLLIUM	0.002	U
CADMIUM	0.008	U
CALCIUM	3.370	U
CHROMIUM	0.040	U
COBALT	-0.009	J
COPPER	0.020	U
IRON	-13.280	B
LEAD	0.020	U
MAGNESIUM	0.820	U
~~MOLYBDENUM~~	~~0.225~~	~~J~~
NICKEL	0.020	U
POTASSIUM	5.820	U
SELENIUM	0.150	U
SILVER	0.003	U
SODIUM	26.300	J
THALLIUM	0.003	U
VANADIUM	0.090	U
ZINC	0.170	J

none associated

*U @ LOD in associated

3A

INITIAL AND CONTINUING CALIBRATION BLANKS

Lab Name: Katahdin Analytical Services **SDG Name:** SG2441

Concentration Units: ug/L

SAMPLE: CCB

File: JGD19A Apr 19, 2013 16:35

Analyte	Result	C
ALUMINUM	0.470	J
ANTIMONY	0.019	J
ARSENIC	0.184	J
BARIUM	0.020	U
BERYLLIUM	0.002	U
CADMIUM	0.008	U
CALCIUM	3.370	U
CHROMIUM	0.040	U
COBALT	0.011	J
COPPER	0.020	U
IRON	3.780	U
LEAD	0.020	U
MAGNESIUM	0.820	U
~~MOLYBDENUM~~	~~0.109~~	~~J~~
NICKEL	-0.028	J
POTASSIUM	5.820	U
SELENIUM	0.150	U
SILVER	0.003	U
SODIUM	5.840	U
THALLIUM	0.003	U
VANADIUM	-0.105	J
ZINC	0.079	J

SAMPLE: CCB

File: JGD19A Apr 19, 2013 17:16

Analyte	Result	C	
ALUMINUM	0.778	J	NQ
ANTIMONY	0.007	J	↓
ARSENIC	0.140	U	
BARIUM	0.020	U	
BERYLLIUM	0.002	U	
CADMIUM	0.008	U	
CALCIUM	3.370	U	
CHROMIUM	0.040	U	
COBALT	0.007	U	
COPPER	0.020	U	
IRON	3.780	U	
LEAD	0.020	U	
MAGNESIUM	0.820	U	
~~MOLYBDENUM~~	~~0.117~~	~~J~~	
NICKEL	0.020	U	
POTASSIUM	5.820	U	
SELENIUM	0.150	U	
SILVER	0.003	U	
SODIUM	5.840	U	see ICV
THALLIUM	0.003	J	NQ
VANADIUM	0.090	U	
ZINC	0.120	J	NQ

SAMPLE: CCB

File: JGD19A Apr 19, 2013 17:59

Analyte	Result	C	
ALUMINUM	3.013	J	NQ
ANTIMONY	0.027	J	↓
ARSENIC	0.140	U	
BARIUM	0.027	J	NQ
BERYLLIUM	0.002	U	
CADMIUM	0.008	U	
CALCIUM	3.370	U	
CHROMIUM	0.040	U	
COBALT	0.007	U	
COPPER	0.020	U	
IRON	4.062	J	NQ
LEAD	0.020	U	
MAGNESIUM	2.178	J	NQ
~~MOLYBDENUM~~	~~0.131~~	~~J~~	
NICKEL	0.020	U	
POTASSIUM	5.820	U	
SELENIUM	0.161	J	see MRL
SILVER	0.003	U	
SODIUM	5.840	U	
THALLIUM	0.004	J	see ICV
VANADIUM	0.090	U	
ZINC	0.148	J	NQ

none associated

3A

INITIAL AND CONTINUING CALIBRATION BLANKS

Lab Name: Katahdin Analytical Services **SDG Name:** SG2441

Concentration Units: ug/L

SAMPLE: CCB

File: JGD19A Apr 19, 2013 18:42

Analyte	Result	C	
ALUMINUM	0.869	J	NQ
ANTIMONY	0.021	J	↓
ARSENIC	0.140	U	
BARIUM	0.025	J	NQ
BERYLLIUM	0.002	U	
CADMIUM	0.008	U	
CALCIUM	-5.617	J	NQ
CHROMIUM	0.040	U	
COBALT	0.007	U	
COPPER	-0.024	J	NQ
IRON	3.780	U	
LEAD	0.020	U	
MAGNESIUM	1.040	J	NQ
~~MOLYBDENUM~~	~~0.122~~	~~J~~	
NICKEL	0.020	U	
POTASSIUM	5.820	U	
SELENIUM	0.150	U	
SILVER	0.003	U	
SODIUM	5.840	U	
THALLIUM	0.003	U	
VANADIUM	0.090	U	
ZINC	0.149	J	NQ

SAMPLE: CCB

File: JGD19A Apr 19, 2013 19:09

Analyte	Result	C	
ALUMINUM	0.470	U	
ANTIMONY	0.014	J	NQ
ARSENIC	0.140	U	
BARIUM	0.020	U	
BERYLLIUM	0.002	U	
CADMIUM	0.008	U	
CALCIUM	3.370	U	
CHROMIUM	0.056	J	NQ
COBALT	0.007	U	
COPPER	-0.023	J	NQ
IRON	5.234	J	↓
LEAD	0.020	U	
MAGNESIUM	0.820	U	
~~MOLYBDENUM~~	~~0.111~~	~~J~~	
NICKEL	0.020	U	
POTASSIUM	5.820	U	
SELENIUM	0.150	U	
SILVER	0.003	U	
SODIUM	13.840	J	NQ
THALLIUM	0.004	J	↓
VANADIUM	-0.278	J	
ZINC	0.060	U	

3A

INITIAL AND CONTINUING CALIBRATION BLANKS

Lab Name: Katahdin Analytical Services **SDG Name:** SG2441

Concentration Units: ug/L

SAMPLE: ICB

File: JGE01B May 01, 2013 18:09

Analyte	Result	C
ALUMINUM	0.470	U
CALCIUM	-3.441	J NQ
IRON	3.780	U
MAGNESIUM	0.820	U
MANGANESE	0.040	U
~~MOLYBDENUM~~	~~0.157~~	~~J~~
POTASSIUM	5.820	U
SODIUM	5.840	U

SAMPLE: CCB

File: JGE01B May 01, 2013 18:26

Analyte	Result	C
ALUMINUM	0.470	U
CALCIUM	3.370	U
IRON	4.072	J NQ
MAGNESIUM	0.820	U
MANGANESE	0.040	U
~~MOLYBDENUM~~	~~0.658~~	~~B~~
POTASSIUM	19.530	J NQ
SODIUM	14.850	J

SAMPLE: CCB

File: JGE01B May 01, 2013 19:07

Analyte	Result	C
ALUMINUM	0.470	U
CALCIUM	5.237	J NQ
IRON	5.506	J
MAGNESIUM	0.820	U
MANGANESE	0.040	U
~~MOLYBDENUM~~	~~0.088~~	~~J~~
POTASSIUM	20.720	J NQ
SODIUM	5.840	U

3A

INITIAL AND CONTINUING CALIBRATION BLANKS

Lab Name: Katahdin Analytical Services **SDG Name:** SG2441

Concentration Units: ug/L

SAMPLE: CCB

File: JGE01B May 01, 2013 19:48

Analyte	Result	C	
ALUMINUM	2.490	J	NQ
CALCIUM	8.323	J	↓
IRON	11.610	J	NQ
MAGNESIUM	1.494	J	↓
MANGANESE	0.101	J	NQ
~~MOLYBDENUM~~	~~0.043~~	~~J~~	
POTASSIUM	20.390	J	NQ
SODIUM	5.840	U	

SAMPLE: CCB

File: JGE01B May 01, 2013 20:30

Analyte	Result	C	
ALUMINUM	0.578	J	NQ
CALCIUM	3.370	U	
IRON	8.720	J	NQ
MAGNESIUM	0.820	U	
MANGANESE	0.074	J	NQ
~~MOLYBDENUM~~	~~0.051~~	~~J~~	
POTASSIUM	7.615	J	NQ
SODIUM	5.840	U	

SAMPLE: CCB

File: JGE01B May 01, 2013 21:11

Analyte	Result	C	
ALUMINUM	0.470	U	
CALCIUM	-4.450	J	NQ
IRON	7.527	J	↓
MAGNESIUM	0.820	U	
MANGANESE	0.060	J	NQ
~~MOLYBDENUM~~	~~0.065~~	~~J~~	
POTASSIUM	5.951	J	NQ
SODIUM	5.840	U	

	YES	NO	N/A

reported from the analytical run.
2. For CCBs that do not meet the technical QC criteria, apply the action to all samples analyzed between a previous technically acceptable analysis of CCB and a subsequent technically acceptable analysis of the CCB in the analytical run.,

A.1.15 **Preparation Blank - FORM III**

NOTE: The Preparation Blank for mercury is the same as the calibration blank.

A.1.15.1 Was one Preparation Blank prepared with and analyzed for:

	YES	NO	N/A
Each Sample Delivery Group (SDG)?	[✓]	___	___
Each batch of the SDG samples digested/distilled?	[✓]	___	___
Each matrix type?	[✓]	___	___
All instruments used for metals and cyanide analyses?	[✓]	___	___

ACTION:
If no for any of the above, flag as estimated (J) all the associated positive data <10xMDL for which the Preparation Blank was not analyzed.

NOTE:
If only one blank was analyzed for more than 20 samples, then the first 20 samples analyzed are not estimated(J), but all additional samples must be qualified (J).

A.1.15.2 Circle with red pencil on each Form III all Prep. Blank values that are:

$\geq$ MDL but $\leq$ CRQL, and

> CRQL

A.1.15.2.1 When MDL < CRQL, is any preparation blank value $\geq$ MDL but $\leq$ CRQL? ✓ [___] ___

ACTION:
If yes, change sample result $\geq$ MDL

	YES	NO	N/A
but ≤ CRQL to CRQL with a "U". LOD is action limit for results assoc with blk contamination >MDL but <LOD			
A.1.15.2.2 When the MDL ≤ ~~CRQL~~ LOD, is any Preparation Blank value greater than its ~~CRQL~~ LOD?	✓	[ ]	
If yes, is the Prep. Blank value greater than the value of the associated Field Blank collected and analyzed with the SDG samples?		[✓]	
If yes, is the lowest concentration of that analyte in the associated samples less than 10 times the Preparation Blank value?		[✓]	

ACTION:
If yes, reject (R) and red-line all associated sample results greater than the CRQL but less than the Prep.Blank value. Flag as "J" detects > Prep. Blank value but <10xPrep.Blank. If the sample result ≥ MDL but ≤ CRQL, replace it with CRQL-U.

If the Prep. Blank value is less than the same analyte value in the Field Blank, do not qualify the sample results due to the Prep. Blank criteria.

NOTE:
Convert soil sample result to mg/Kg on wet weight basis to compare with the soil Prep. Blank result on Form III.

A.1.15.2.3 Is the Prep. Blank concentration below the negative CRQL?		[✓]	

ACTION:
If yes, flag (J) all associated sample results less than 10xCRQL. Qualify non-detects as estimated (UJ).

A.1.15.2.4 When the MDL is greater than the CRQL, is the preparation blank concentration on Form III greater than two times the MDL?		[ ]	✓

ACTION:

3P

PREPARATION BLANKS

Lab Name: Katahdin Analytical Services **Sample ID:** PBSGD16IMS1

Matrix: SOIL **SDG Name:** SG2441

QC Batch ID: GD16IMS1

Concentration Units : mg/Kgdrywt

Analyte		RESULT	C	
ALUMINUM		1.283	J	NQ all > AL
ANTIMONY		0.050	U	
ARSENIC		0.258	J	NQ all > LOD
BARIUM		0.044	J	NQ all > LOD
BERYLLIUM		0.020	U	
CADMIUM		0.020	U	
CALCIUM		8.555	J	NQ all > LOD
CHROMIUM		0.305	J	
COBALT		0.005	J	
COPPER		0.137	J	
IRON		6.0	U	
LEAD	>LOD	0.066	J	NQ all > 10X 0.066
MAGNESIUM		2.434	J	NQ all >> LOD
MANGANESE		0.066	J	
NICKEL		0.104	J	
POTASSIUM		6.640	J	NQ all >> LOD
SELENIUM		0.040	J	U @ LOD in all
SILVER		0.040	U	
SODIUM		10.395	J	NQ all >> LOD
THALLIUM		0.040	U	
VANADIUM		0.257	J	NQ all > LOD
ZINC		0.487	J	

3P

PREPARATION BLANKS

Lab Name: Katahdin Analytical Services **Sample ID:** PBWGD17HGW2

Matrix: WATER **SDG Name:** SG2441

QC Batch ID: GD17HGW2

Concentration Units : ug/L

Analyte	RESULT	C	
MERCURY	-0.020	J	NQ

3P

PREPARATION BLANKS

Lab Name: Katahdin Analytical Services **Sample ID:** PBWGD17IMW2

Matrix: WATER **SDG Name:** SG2441

QC Batch ID: GD17IMW2

Concentration Units : ug/L

Analyte	RESULT	C
ALUMINUM	14.375	J
ANTIMONY	0.075	J
ARSENIC	4.0	U
BARIUM	1.0	U
BERYLLIUM	0.20	U
CADMIUM	0.045	J
CALCIUM	80	U
CHROMIUM	1.773	J
COBALT	0.30	U
COPPER	0.352	J
IRON	108.900	
LEAD	0.293	J
MAGNESIUM	17.380	J
MANGANESE	1.794	J
NICKEL	0.213	J
POTASSIUM	-50.650	J
SELENIUM	0.496	J
SILVER	0.40	U
SODIUM	28.715	J
THALLIUM	0.40	U
VANADIUM	2.104	J
ZINC	4.656	J

No Quals - QC blank only was associated

		YES	NO	N/A
	If yes, reject (R) and red-line all positive sample results with sample raw data less than 10 times the Preparation Blank value.			
A.1.16	**ICP-AES/ICP-MS Interference Check Sample (ICS)- Form IV** **NOTE**: Not required for CN, Hg, Al, Ca, Fe and Mg.			
A.1.16.1	Present and complete?	[✓]	___	___
	Was ICS analyzed at the beginning and end of each analytical run, and once for every 20 analytical samples?	[✓]	___	___
	Was ICS analyzed at the beginning of the ICP-MS analytical run?	[✓]	___	___
	ACTION: If no, flag as estimated (J) all sample results.			
A.1.16.2	**ICP-AES Method**			
A.1.16.2.1	**ICSA Solution**: For ICP-AES, are the ICSA "Found" analyte values within the control limits ± of CRQL of the true/established mean value?	DAC 6/12/13 [✓]	___	✓
	If no for any of the above, is the sample concentration of Al, Ca, Fe, or Mg in the same units (ug/L or MG/KG) greater than or equal to its respective concentration in the ICSA Solution on Form IV?	[___]	___	✓
	ACTION: If yes, apply the following action to all samples analyzed between a previous technically acceptable analysis of the ICS and a subsequent technically acceptable analysis of the ICS in the analytical run: Flag (J) as estimated only sample results ≥MDL			

	YES	NO	N/A
for which the ICSA "Found' value is greater than (True value+CRQL). Do not qualify non-detects. If the ICSA "Found" value is less than (True value-CRQL), flag non-detects as "UJ" and detects as "J".			
A.1.16.2.3 **ICSAB Solution**			
For ICP-AES, are all analyte results in ICSAB within the control limits of 80-120 of the true/established mean value?	[___]	___	✓
If no for any of the above, is the sample concentration of Al, Ca, Fe, or Mg in the same units (ug/L or MG/KG) greater than or equal to its respective concentration in the ICSAB Solution on Form IV?	[___]	___	✓

ACTION:
If yes, apply the followirg action to all samples analyzed between a previous technically acceptable analysis of the ICS and a subsequent technically acceptable analysis of the ICS in the analytical run:

Flag (J) as estimated those associated sample results ≥ MDL for which the ICSAB analyte recovery is greater than 120% but ≤ 150%. If the ICSAB recovery falls within 50-79%, qualify sample results ≥ MDL as "J" and non-detects as "UJ". Reject (R) and red-line all sample results (detects & non-detects) for which the ICSAB analyte recovery is less than 50%. If the recovery is above 150%, reject (R) and red-line only positive results.

A.1.16.3 **ICP-MS Method**

A.1.16.3.1 **ICSA Solution:**

For ICP-MS, are the ICSA "Found" analyte values within the control limits of ±CRQL of the true/established mean value?	[✓]	___	___

ACTION:
If no, apply the following action to all samples reported from the analytical run:

Flag (J) as estimated only sample results ≥ MDL if the ICSA "Found" value is greater than (True value+CRQL). Do not qualify non-detects. If the ICSA "Found" value is less than (True value-CRQL), flag the associated sample detects as "J" and non-detects as "UJ".

	YES	NO	N/A
A.1.16.3.3 **ICSAB Solution** For ICP-MS, are all analyte results in ICSAB within the control limits of 80-120% of the true/established mean value, whichever is greater?	[✓]	___	___

ACTION:
If no, apply the following action to all samples reported from the analytical run:

Flag (J) as estimated those associated sample results ≥ MDL for which the ICSAB analyte recovery is greater than 120% but ≤ 150%. If the ICSAB recovery falls within 50-79% flag (J) as estimated the associated sample results ≥ MDL. Reject (R) and red-line those all sample detects and non-detects for which the ICSAB analyte recovery is less than 50%. If the recovery is above 150%, reject (R) and red-line only detects (≥ MDL).

A.1.17 **Spiked Sample Recovery: Pre-Digestion/Pre-Distillation)-Form V A**
Note: Not required for Ca, Mg, K, and Na (both matrices); Al and Fe (soil only)

	YES	NO	N/A
A.1.17.1 Was Matrix Spike analysis performed:			
For each matrix type?	[✓]	___	___
For each SDG?	[___]	___	___
On one of the SDG samples?	[___]	___	___
For each concentration range (i.e., low, med., high)?	[___]	___	___
For each analytical Method (ICP-AES, ICP-MS, Hg, CN) used?	[___]	___	___
Was a spiked sample prepared and analyzed with the SDG samples?	[✓]	___	___

ACTION:
If no for any of the above, flag as estimated (J) all the positive data for which a spiked sample was not analyzed.

NOTE:
If more than one spiked sample were analyzed for one SDG, then qualify the associated data based on the worst spiked sample analysis.

		YES	NO	N/A
A.1.17.2	Was a field blank or PE sample used for the spiked sample analysis?	___	[✓]	___
	ACTION: If yes, flag (J) as estimated positive data of the associated SDG samples for which field blank or PE sample was used for the spiked sample analysis.			
A.1.17.3	Circle on each Form VA all spike recoveries that are outside the control limits (75-125%) that have sample concentrations less than four times the added spike concentrations.			
	Are all recoveries within the control limits when sample concentrations are less than or equal to four times the spike concentrations?	[___]	✓	___
	NOTE: Disregard the out of control spike recoveries for analytes whose concentrations are greater than or equal to four times the spike added.			
	Are results outside the control limits (75-125%) flagged with Lab Qualifier "N" on Form I's and Form VA?	[✓]	___	___
	ACTION: If no for any of the above, write in the Contract - Problems/Non-Compliance Section of the Data Review Narrative.			
A.1.17.4	**Aqueous**			
	Are any spike recoveries:			✓
	(a) less than 30%?	___	[___]	___
	(b) between 30-74%?	___	[___]	___
	(c) between 126-150%?	___	[___]	___
	(d) greater than 150%?	___	[___]	___
	ACTION: If the matrix spike recovery is less than 30%, reject (R) and red-line all associated aqueous data (detects & non-detects). If between 30-74%, qualify all associated aqueous data ≥ MDL as "J" and non-detects			

	YES	NO	N/A
as "UJ". If between 126-150%, flag (J) all data ≥ MDL as "J". If greater than 150%, reject (R) and red-line all associated data ≥ MDL.			
(**NOTE**:Replace "N" with "J", "R" as appropriate.)			
A.1.17.5 **Soil/Sediment**			
Are any spike recoveries:			
(a) less than 10%?	___	[✓]	___
(b) between 10-74%?	✓	[___]	___
(c) between 126-200%?	___	[✓]	___
(d) greater than 200%?	___	[✓]	___
ACTION: If yes for any of the above, proceed as follows:			
If the matrix spike recovery is less than 10%,reject (R) and red-line all associated data (detects & non-detects); if between 10-74%,qualify all associated data ≥ MDL as "J" and non-detects as "UJ"; if between 126-200%, flag (J) all associated data ≥ MDL as "J" If greater than 200%, reject (R) and red-line all associated data ≥ MDL. (**NOTE**:Replace "N" with "J" or "R" as appropriate.)			
A.1.18 **Lab Duplicates) - Form VI**			
A.1.18.1 Was the lab duplicate analysis performed:			
For each SDG?	[✓]	___	___
On one of the SDG samples?	[___]	___	___
For each matrix type?	[___]	___	___
For each concentration range (low or med.)?	[___]	___	___
For each analytical Method (ICP-AES/ICP-MS,Hg,CN)Used?	[___]	___	___
Was a lab duplicate prepared and analyzed with the SDG samples?	[N]	___	___

Flags noted on next page

5A

SPIKE SAMPLE RECOVERY

Lab Name: Katahdin Analytical Services | **Client Field ID:** VEP21-SS04-0001S

Matrix: SOIL | **SDG Name:** SG2441

Percent Solids: 89.2 | **Lab Sample ID:** SG2441-004P

Concentration Units : mg/Kgdrywt

Analyte	Spiked Sample	C	Sample Result	C	Spike Added	%R	Q	Control Limits (%R) Low	High	M
ALUMINUM, TOTAL	21860.4489		20500.4970		185.22	734.2		80	120	MS
ANTIMONY, TOTAL	3.0260		0.3440		9.26	29.0	N	80	120	MS J1
ARSENIC, TOTAL	12.6643		3.1976		9.26	102.2		80	120	MS
BARIUM, TOTAL	256.8985		54.5279		185.22	109.3		80	120	MS
BERYLLIUM, TOTAL	4.9407		0.2158		4.63	102.0		80	120	MS
CADMIUM, TOTAL	23.7589		0.1086		23.15	102.2		80	120	MS
CALCIUM, TOTAL	23633.9189		21711.1168		231.52	830.5		80	120	MS
CHROMIUM, TOTAL	32.2095		14.7175		18.52	94.4		80	120	MS
COBALT, TOTAL	62.0483		13.9872		46.3	103.8		80	120	MS
COPPER, TOTAL	69.1329		45.8535		23.15	100.6		80	120	MS
IRON, TOTAL	32968.9465		31140.9452		92.61	1973.9		80	120	MS
LEAD, TOTAL	16.6326		7.6789		9.26	96.7		80	120	MS
MAGNESIUM, TOTAL	11914.1993		11515.8965		463.05	86.0		80	120	MS
MANGANESE, TOTAL	645.0245		565.7897		46.3	171.1		80	120	MS
MERCURY, TOTAL	0.1877		0.0122	J	0.16	109.7		80	120	CV
NICKEL, TOTAL	53.4356		7.7740		46.3	98.6		80	120	MS
POTASSIUM, TOTAL	2380.0616		1444.7398		926.09	101.0		80	120	MS
SELENIUM, TOTAL	9.3119		0.2750	J	9.26	97.6		80	120	MS
SILVER, TOTAL	4.6291		0.0171	J	4.63	99.6		80	120	MS
SODIUM, TOTAL	3230.2159		2695.3801		694.57	77.0	N	80	120	MS J1
THALLIUM, TOTAL	9.6638		0.0341	J	9.26	104.0		80	120	MS
VANADIUM, TOTAL	141.9702		85.8940		46.3	121.1	N NQ	80	120	MS
ZINC, TOTAL	82.4224		42.2917		46.3	86.7		80	120	MS

Comments:

SW allows 125%

all PDS recoveries are OK except for those out for abundance.

FORM V (Part 1) - IN

5A

SPIKE SAMPLE RECOVERY

Lab Name: Katahdin Analytical Services | **Client Field ID:** VEP21-SS04-0001S

Matrix: SOIL | **SDG Name:** SG2441

Percent Solids: 89.2 | **Lab Sample ID:** SG2441-004S

Concentration Units : mg/Kgdrywt

Analyte	Spiked Sample	C	Sample Result	C	Spike Added	%R	Q	Control Limits (%R) Low	High	M
ALUMINUM, TOTAL	22317.2681		20500.4970		198.33	916.0		80	120	MS
ANTIMONY, TOTAL	3.2194		0.3440		9.92	29.0	N	80	120	MS
ARSENIC, TOTAL	12.6536		3.1976		9.92	95.3		80	120	MS
BARIUM, TOTAL	258.8724		54.5279		198.33	103.0		80	120	MS
BERYLLIUM, TOTAL	5.1021		0.2158		4.96	98.5		80	120	MS
CADMIUM, TOTAL	24.8311		0.1086		24.79	99.7		80	120	MS
CALCIUM, TOTAL	25589.7402		21711.1168		247.91	1564.5		80	120	MS
CHROMIUM, TOTAL	33.4387		14.7175		19.83	94.4		80	120	MS
COBALT, TOTAL	65.4494		13.9872		49.58	103.8		80	120	MS
COPPER, TOTAL	66.5899		45.8535		24.79	83.6		80	120	MS
IRON, TOTAL	31014.1106		31140.9452		99.17	-127.9		80	120	MS
LEAD, TOTAL	18.7076		7.6789		9.92	111.2		80	120	MS
MAGNESIUM, TOTAL	11617.2760		11515.8965		495.83	20.4		80	120	MS
MANGANESE, TOTAL	590.0366		565.7897		49.58	48.9		80	120	MS
MERCURY, TOTAL	0.1990		0.0122	J	0.16	116.8		80	120	CV
NICKEL, TOTAL	57.3178		7.7740		49.58	99.9		80	120	MS
POTASSIUM, TOTAL	2475.1789		1444.7398		991.66	103.9		80	120	MS
SELENIUM, TOTAL	10.0852		0.2750	J	9.92	98.9		80	120	MS
SILVER, TOTAL	4.8606		0.0171	J	4.96	97.7		80	120	MS
SODIUM, TOTAL	3141.5732		2695.3801		743.74	60.0	N	80	120	MS
THALLIUM, TOTAL	10.3926		0.0341	J	9.92	104.4		80	120	MS
VANADIUM, TOTAL	139.3776		85.8940		49.58	107.9		80	120	MS
ZINC, TOTAL	88.4063		42.2917		49.58	93.0		80	120	MS

Comments:

5B

POST DIGEST SPIKE SAMPLE RECOVERY

Lab Name: Katahdin Analytical Services | **Client Field ID:** VEP21-SS04-0001S

Matrix: SOIL | **SDG Name:** SG2441

Percent Solids: 89.2 | **Lab Sample ID:** SG2441-004A

Concentration Units : ug/L

Analyte	Spiked Sample	C	Sample Result	C	Spike Added	%R	Q	Control Limits (%R) Low	High	M
ALUMINUM, TOTAL	41110.0000		40980.0000		600	21.7		75	125	MS
ANTIMONY, TOTAL	2.7560		0.6876		2	103.4		75	125	MS
ARSENIC, TOTAL	16.7900		6.3920		10	104.0		75	125	MS
BARIUM, TOTAL	111.6000		109.0000		4	65.0		75	125	MS
BERYLLIUM, TOTAL	2.5220		0.4314		2	104.5		75	125	MS
CADMIUM, TOTAL	2.3010		0.2170		2	104.2		75	125	MS
CALCIUM, TOTAL	43300.0000		43400.0000		200	-50.0		75	125	MS
CHROMIUM, TOTAL	39.5800		29.4200		10	101.6		75	125	MS
COBALT, TOTAL	30.0300		27.9600		2	103.5		75	125	MS
COPPER, TOTAL	95.2800		91.6600		6	60.3		75	125	MS
IRON, TOTAL	61060.0000		62250.0000		200	-595.0		75	125	MS
LEAD, TOTAL	17.1200		15.3500		2	88.5		75	125	MS
MAGNESIUM, TOTAL	23050.0000		23020.0000		200	15.0		75	125	MS
MANGANESE, TOTAL	1111.0000		1131.0000		4	-500.0		75	125	MS
MERCURY, TOTAL	0.9640		0.0850	J	1	87.9		75	125	CV
NICKEL, TOTAL	19.3400		15.5400		4	95.0		75	125	MS
POTASSIUM, TOTAL	4796.0000		2888.0000		2000	95.4		75	125	MS
SELENIUM, TOTAL	10.6900		0.5497	J	10	101.4		75	125	MS
SILVER, TOTAL	2.1690		0.0342	J	2	106.7		75	125	MS
SODIUM, TOTAL	7272.0000		5388.0000		2000	94.2		75	125	MS
THALLIUM, TOTAL	2.2710		0.0682	J	2	110.1		75	125	MS
VANADIUM, TOTAL	182.9000		171.7000		10	112.0		75	125	MS
ZINC, TOTAL	102.7000		84.5400		20	90.8		75	125	MS

Comments:

		YES	NO	N/A
	ACTION: If no for any of the above, flag (J) as estimated all the SDG sample results (detects & non-detects) for which the lab duplicate analysis was not performed.			
	NOTE: If more than one lab duplicate sample were analyzed for an SDG, then qualify the associated samples based on the worst lab duplicate analysis.			
A.1.18.2	Was a Field Blank or PE sample used for the Lab Duplicate analysis?	___	[✓]	___
	ACTION: If yes, flag as estimated (J) all SDG sample results (hits & non-detects) for which Field Blank or PE sample was used for duplicate analysis.			
A.1.18.3	Circle on each Form VI all values that are: RPD > 20%, or Absolute Difference > CRQL			
	Are all values within control limits (RPD ≤ 20% or absolute difference ≤ ±CRQL)?	[✓]	___	___
	If no, are all results outside the control limits flagged with an "*" (Lab Qualifier) on Form VI and on all Form I's?	[___]	___	✓
	ACTION: If no, write in the Contract-Problems/ Non-Compliance Section of the Data Review Narrative.			
	NOTE: The laboratory is not required to report on Form VI the RPD when both values are non-detects.			
A.1.18.4	**Aqueous**			
A.1.18.4.1	When sample and duplicate values are both ≥ 5xCRQL (substitute MDL for CRQL when MDL > CRQL),			

	YES	NO	N/A
is any RPD > 20% but < 100%?	___	[___]	✓
is any RPD ≥ 100%?	___	[___]	✓

ACTION:
If the RPD is > 20% but < 100%, flag (J) as estimated the associated sample data ≥ CRQL. If the RPD is ≥ 100%, reject (R) and red-line the associated sample data ≥ CRQL.

(**NOTE**: Replace "*" with "J" or "R" as appropriate.)

A.1.18.4.2 When the sample and/or duplicate value <5xCRQL (substitute MDL for CRQL when MDL >CRQL), is the absolute difference between sample and duplicate values:

> ± CRQL?	___	[___]	✓
> ± 2xCRQL?	___	[___]	✓

ACTION:
If the absolute difference is > CRQL, flag as estimated all the associated sample results ≥ MDL but < 5xCRQL as "J" and non-detects as "UJ". If the absolute difference is > 2xCRQL, reject (R) and red-line all the associated non-detects and detects ≥ MDL but < 5xCRQL.

NOTE:
1. Replace "*" with "J", "UJ" or "R" as appropriate.)
2. If one value is >CRQL and the other value is non-detect, calculate the absolute difference between the value > CRQL and the MDL, and use this difference to qualify sample results.

A.1.18.5 **Soil/Sediment**

VEP21-SS01-0001

A.1.18.5.1 When sample and duplicate values are both ≥ 5xCRQL (substitute MDL for CRQL when MDL > CRQL),

is any RPD ≥ 35% but < 120%?	___	[✓]	___
is any RPD ≥ 120%?	___	[✓]	___

ACTION:
If the RPD is ≥ 35% and < 120%, flag (J) as estimated the associated sample

		YES	NO	N/A
	data ≥ CRQL. If the RPD is ≥ 120%, reject (R)and red-line the associated sample data ≥ CRQL.			
A.1.18.5.2	When the sample and/or duplicate value <5xCRQL(substitute MDL for CRQL when MDL > CRQL), is the absolute difference between sample and duplicate:			
	> ± 2 x CRQL?	___	[✓]	___
	> ± 4 x CRQL	___	[✓]	___

ACTION:
If the absolute difference is > 2 x CRQL, flag all the associated sample results ≥ MDL but < 5xCRQL as "J" and non-detects as "UJ". If the absolute difference is > 4xCRQL, reject (R) and red-line all the associated non-detects and detects ≥ MDL but <5xCRQL.

NOTE:
1. Replace "*" with "J", "UJ" or "R" as appropriate.)
2. If one value is >CRQL and the other value is non-detect, calculate the absolute difference between the value > CRQL and the MDL, and use this difference to qualify sample results.

A.1.19 **Field Duplicates**

Aqueous Field Duplicates

A.1.19.1	Was an aqueous Field Duplicate pair collected and analyzed? (Check Sampling Trip Report)	[___]	___	✓

ACTION:
If yes, prepare a Form (Appendix A.4) for each aqueous Field Duplicate pair. Report the sample and Field Duplicate results on Appendix A.4 from their respective Form I's. Calculate and report RPD on Appendix A.4 when sample and its Field Duplicate values are both > 5xCRQL. Calculate and report the absolute difference on Appendix A.4 when at least one value (sample or duplicate) is <5xCRQL. Evaluate the aqueous Field Duplicate analysis in accordance with the

	YES	NO	N/A
QC criteria stated in Sections A.1.19.2 and A.1.19.3.			

NOTE:
1. Do not transfer "*" from Form I's to Appendix A.4.
2. Do not calculate RPD when both values are non-detects.
3. Substitute MDL for CRQL when MDL > CRQL.
4. If one value is >CRQL and the other value is non-detect, calculate the absolute difference between the value > CRQL and the MDL, and use this the criteria to qualify the results.

A.1.19.2 Circle all values on the Form (Appendix A.4) for Field Duplicates that have:

RPD ≥ 20% or

Difference > ± CRQL

When sample and duplicate values are both ≥5xCRQL (substitute MDL for CRQL when MDL > CRQL),

is any RPD ≥ 20%?	___	[___]	✓
is any RPD ≥ 100%?	___	[___]	✓

ACTION:
If the RPD is >20% but < 100%, flag (J) only the associated sample and its Field Duplicate results ≥ CRQL. If the RPD is ≥ 100%, reject(R) and red-line only the associated sample and its Field Duplicate result ≥ CRQL.

A.1.19.3 When the sample and/or duplicate value(s) <5xCRQL (substitute MDL for CRQL when MDL >CRQL), is the absolute difference between sample and duplicate:

> ± CRQL?	___	[___]	✓
> ± 2 x CRQL?	___	[___]	✓

ACTION:
If the absolute difference is > CRQL, flag detects ≥ MDL but < 5xCRQL as "J" and non-detects as "UJ". If the difference is > 2xCRQL, reject (R) and red-line non-detects

		YES	NO	N/A
	and results ≥ MDL but <5xCRQL of the sample and its Field Duplicate.			
	Soil/Sediment Field Duplicates			
A.1.19.4	Was a soil field duplicate pair collected and analyzed? (Check Sampling Trip Report)	[✓]	___	___

ACTION:
If yes, for each soil Field Duplicate pair proceed as follows:

Prepare Appendix A.4 for each Field Duplicate pair. Report on Appendix A.4 all sample and its Field Duplicate results in MG/KG from their respective Form I's. Calculate and report RPD when sample and its duplicate values are both greater than 5xCRQL. Calculate and report the absolute difference when at least one value (sample or duplicate) is < 5xCRQL. Evaluate the Field Duplicate analysis in accordance with the QC Criteria stated in Sections A.1.19.5 and A.1.19.6.

NOTE:
1. Do not transfer "*" from Form I's to Appendix A.4.
2. Do not calculate RPD when both values are non-detects.
3. Substitute MDL for CRQL when MDL > CRQL.
4. If one value is >CRQL and the other value is non-detect, calculate the absolute difference between the value > CRQL and the MDL, and apply the criteria to qualify the results.

A.1.19.5 Circle on each Appendix A.4 all values that have:

RPD ≥ 35%, or Difference > ± 2xCRQL
When sample and duplicate values are both ≥ 5xCRQL (substitute MDL for CRQL when MDL > CRQL),

SAP requires 30% as low end.

is any RPD ≥ ~~35%~~ 30 but < 120%?	___	[✓]	___
is any RPD ≥ 120%?	___	[✓]	___

ACTION:
If the RPD is ≥ 35% but < 120%,

FIELD DUPLICATE SAMPLE SUMMARY

Sample ID: VEP21-SS01-0001
Duplicate Sample ID: VEP21-SS01P-0001

Analyte	Sample Conc.	Dup. Sample Conc.	%RPD
aluminum	18600	20700	11
antimony	0.13	0.13	0
arsenic	3.3	4.1	22
barium	49	49.7	1
beryllium	0.19	0.23	19
cadmium	0.06	0.06	0
calcium	14700	15000	2
chromium	10.4	14	30
cobalt	13.7	15.4	12
copper	31.1	39	23
iron	31300	34300	9
lead	3.7	4.1	10
magnesium	12300	12600	2
manganese	731	693	5
mercury *	0.006	0.009	40
nickel	6.1	7.7	23
potassium	1870	1850	1
selenium *	0.11	0.19	53
silver	0.02	0.02	0
sodium	963	1100	13
thallium *	0.02	0.03	40
vanadium	87.6	109	22
zinc	37.9	35.6	6
cyanide			#DIV/0!

COMMENTS: No qualifications were required.
* both results < LOD and diference between the two were < LOD
Region II QC limits for flagging were used.

		YES	NO	N/A
	flag only the associated sample and its Field Duplicate results ≥ CRQL as "J". If the RPD is ≥ 120%, reject (R) and red-line only the sample and its Field Duplicate results ≥ CRQL.			
A.1.19.6	When the sample and/or duplicate value(s) <5xCRQL (substitute MDL for CRQL when MDL > CRQL), is the absolute difference between sample and Field Duplicate:			
	> ± 2 x CRQL?	___	[✓]	___
	> ± 4 x CRQL?	___	[✓]	___
	ACTION: If the absolute difference is > 2xCRQL, flag Sample and its Field Duplicate resuts ≥ MDL but <5xCRQL as "J" and non-detects as "UJ". If the difference is >4xCRQL, reject(R) and red-line non-detects and detects ≥ MDL but <5xCRQL of the sample and its Field Duplicate.			
A.1.20	**Laboratory Control Sample (LCS)- Form VII**			
A.1.20.1	Was one LCS prepared and analyzed for:			
	Each SDG?	[✓]	___	___
	Each matrix type?	[✓]	___	___
	Each batch samples digested/distilled?	[✓]	___	___
	For each Method(ICP-AES,ICP-MS,Hg,CN) used?	[✓]	___	___
	Was an LCS prepared and analyzed with the samples?	[✓]	___	___
	ACTION: If no for any of the above, prepare Telephone Record Log and contact CLP PO or TOPO for submittal of the LCS results. Flag (J) as estimated all the data for which an LCS was not analyzed.			
	NOTE: If only one LCS was analyzed for			

	YES	NO	N/A

more than 20 samples, then the first 20 samples analyzed are not flagged(J), but all additional samples must be qualified (J).

A.1.20.2 **Aqueous LCS**

Circle on each Form VII the LCS percent recoveries outside control limits 80-120%.

NOTE: 1.Use digested ICV as LCS for aqueous mercury
2.Use distilled ICV as LCS for aqueous cyanide

Is any LCS recovery:

Less than 50%?	___	[✓]	___
Between 50% and 79%?	___	[___]	___
Between 121% and 150%?	___	[___]	___
Greater than 150%?	___	[✓]	___

ACTION:
If the LCS recovery is less than 50%, reject (R) and red-line all associated sample data (detects & non-detects); for a recovery between 50-79%, flag detects as "J" all non-detects as "UJ". if the LCS recovery is between 121-150%, flag only detects as "J". if the recovery is greater than 150%, reject (R) and red-line all detects.

A.1.20.3 **Solid LCS**

If an analyte's MDL is equal to or greater than the true value of LCS, disregard the "Action" below for that analyte even though the LCS is out of control limits.

Is the LCS "Found" value greater than the Upper Control Limit reported on Form VII?	___	[✓]	___

ACTION:

		YES	NO	N/A
	If yes, flag (J) all the associated detects ≥ MDL as estimated (J).			
	Is the LCS "Found" value lower than the Lower Control Limit reported on Form VII?	___	[✓]	___
	ACTION: If yes, flag detects as "J" and non-dectes as "UJ".			
A.1.21	**ICP-AES/ICP-MS Serial Dilution - Form VIII** **NOTE**: Serial dilution analysis is required only when the initial concentration is equal to or greater than 50 x MDL.			
A.1.21.1	Was a Serial Dilution analysis performed:			
	For each SDG?	[✓]	___	___
	On one of the SDG samples?	[✓]	___	___
	For each matrix type?	[___]	✓	✓ H2O was rinse blank
	For each concentration range (low or med.)?	[___]	___	✓
	Was a Serial Dilution sample analyzed with the SDG samples?	[✓]	___	___
	ACTION: If no for any of the above, flag as estimated (J) detects ≥ MDL of all the SDG samples for which the ICP Serial Dilution Analysis was not performed.			
A.1.21.2	Was a Field Blank or PE sample used for the Serial Dilution Analysis?	___	[✓]	___
	ACTION: If yes, flag as estimated (J) detects ≥ MDL of all the SDG samples			
A.1.21.3	Circle on Form VIII the Percent Differences (%D) between sample results and its dilution results that are outside the control limits ± 10%			

		YES	NO	N/A
	when initial concentrations ≥ 50 x MDLs.			
	Are results outside the control limits flagged with an "E"(Lab Qualifier) on Form VIII and all Form I's?	[___]	___	✓
	ACTION: If no, write in the Contract-Problem/ Non-Compliance Section of the Data Review Narrative.			
A.1.21.4	Are any %D values:			
	> 10%?	___	[✓]	___
	≥ 100%?	___	[✓]	___
	ACTION: If the Percent Difference (%D) is greater than 10%, flag (J) as estimated all associated samples whose **raw data** ≥ MDL; if the %D is ≥ 100%, reject (R) and red-line all associated samples with **raw data** ≥ MDL.			
	(**NOTE**:Replace "E" with "J" or "R" as appropriate.)			
A.1.22	**Total/Dissolved or Inorganic/Total Analytes**	Soil field samples		
A.1.22.1	Were any analyses performed for dissolved as well as total analytes on the same sample(s)?	___	[___]	✓
	Were any analyses performed for inorganic as well as total analytes on the same sample(s)?	___	[___]	✓
	ACTION: If yes, prepare a Form (Appendix A.5) to compare the differences between dissolved (or inorganic) and total analyte concentrations. Compute each difference on Appendix A.5 as a percent of the total analyte only when both of the following conditions are fulfilled:			
	(1) The dissolved(or inorganic)concentration is greater than total concentration, and (2) greater than or equal to 5xMDL.			
A.1.22.2	Is any dissolved (or inorganic) concentration greater than its total concentration by more than 20%?	___	[___]	✓

		YES	NO	N/A
A.1.22.3	Is any dissolved(or inorganic) concentration greater than its total concentration by more than 50%?	___	[___]	✓
	ACTION: If the percent difference is greater than 20%, flag (J) both dissolved/inorganic and total concentrations as estimated. If the difference is more than 50%, reject (R) and red-line both the values.			
A.1.23	**Field Blank - Form I** **NOTE**: Designate "Field Blank" as such on Form I			
A.1.23.1	Was a Field/Rinsate Bank collected and analyzed with the SDG samples?	[✓]	___	___
	If yes, is any Field/Rinsate Blank absolute value of an analyte on Form I greater than its CRQL(or 2xMDL when MDL>CRQL)?	___	[✓]	___
	If yes, circle the Field Blank value on Form I that is greater than the CRQL, (or 2 x MDL when MDL > CRQL).			
	Is any Field Blank value greater than CRQL also greater than the Preparation Blank value?	___	[___]	✓
	If yes, is the Field Blank value (> CRQL and > the prep. blank value) already rejected due to other QC criteria?	[___]	___	✓

ACTION:
If the Field Blank value was not rejected, reject all associated sample data (except the Field Blank results) greater than the CRQL but less than the Field Blank value. Reject on Form I's the soil sample results whose raw values in ug/L in the instrument printout are greater than the CRQL but less than the Field Blank value in ug/L. Flag as "J" detects between the Field Blank value and 10xField Blank value. If the sample result > MDL but ≤ CRQL, replace it with CRQL-U.

If the Field Blank value is less than the

	YES	NO	N/A
Prep.Blank value, do not qualify the sample results due to the Field Blank criteria.			

NOTE:
1. Field Blank result previously rejected due to other criteria cannot be used to qualify field samples.
2. Do not use Rinsate Blank associated with soils to qualify water samples and vice versa.

A.1.24 **Verification of Instrumental Parameters - Form IX, XA, XB, XI**

A.1.24.1 Is verification report present for:

	YES	NO	N/A
Method Detection Limits (Form IX-Annually)?	[✓]		
ICP-AES Interelement Correction Factors (Form XA & XB -Quarterly)?	[✓]		
ICP-AES & ICP-MS Linear Ranges (Form XI-Quarterly)?	[✓]		

ACTION:
If no, contact CLP PO/TOPO for submittal from the laboratory.

A.1.24.2 **Method Detection Limits - Form IX**

A.1.24.2.1 Are MDLs present on Form IX for:

	YES	NO	N/A
All the analytes?	[✓]		
All the instruments used?	[✓]		
Digested and undigested samples and Calib.Blanks?	[✓]		
ICP-AES and ICP-MS when both instruments are used for the same analyte?	[ ]		✓

ACTION:
If no for any of the above, prepare Telephone Record Log and contact CLP PO/TOPO for submittal of the MDLs from the laboratory. Report to CLP PO and write in the Contract Problems/ Non-Compliance Section of the Data Review Narrative if the MDL concentration is not less than ½ CRQL.

		YES	NO	N/A
A.1.24.2.2	Is MDL greater than the CRQL for any analyte?	___	[✓]	___
	If yes, is the analyte concentration on Form I greater than 5 x MDL for the sample analyzed on the instrument whose MDL exceeds CRQL?	[___]	___	✓
	ACTION: If no, flag as estimated (J) all values less than five times MDL for the analyte whose MDL exceeds the CRQL.			
A.1.24.3	**Linear Ranges - Form XI**			
A.1.24.3.1	Was any sample result higher than the high linear range for ICP-AES or ICP-MS?	___	[✓]	___
	Was any sample result higher than the highest calibration standard for mercury or cyanide?	___	[✓]	___
	If yes for any of the above, was the sample diluted to obtain the result reported on Form I?	[___]	___	✓
	ACTION: If no, flag (J) as estimated the affected detects (≥ MDL) reported on Form I.			
A.1.25	**ICP-MS Tune Analysis - Form XIV**			
A.1.25.1	Was the ICP-MS instrument tuned prior to calibration?	[✓]	___	___
	ACTION: If no, reject (R) and red-line all sample data for which tuning was not performed.			
A.1.25.2	Was the tuning solution analyzed or scanned at least five times consecutively?	[✓]	___	___
	Were all the required isotopes spanning the analytical range present in the tuning solution?	[✓]	___	___
	Was the mass resolution within			

		YES	NO	N/A
	0.1 amu for each isotope in the tuning solution?	[✓]	___	___
	Was %RSD less than 5% for each isotope of each analyte in the tuning solution?	[✓]	___	___
	ACTION: If no for any of the above, qualify all results ≥ MDL associated with that Tune as estimated "J", and all non-detects associated with that Tune as "UJ".			
A.1.26	**ICP-MS Internal Standards - Form XV**			
A.1.26.1	Were the Internal Standards added to all the samples and all QC samples and calibration standards (except the Tuning Solution)?	[✓]	___	___
	Were all the target analyte masses bracketed by the masses of the five internal standards?	[✓]	___	___
	ACTION: If none of the Internal Standards was added to the samples, reject (R) and red-line all the associated sample data (detects & non-detects). If internal standards were used but did not cover all the analyte masses, reject (R) and red-line only the analyte results not bracketed by the internal standard masses.			
A.1.26.2	Was the intensity of an Internal Standard in each sample within 60-125% of the intensity of the same Internal Standard in the calibration blank?	[✓]	___	___
	If no, was the original sample diluted two fold, Internal Standard added and the sample re-analyzed?	[___]	___	✓
	Was the %RI for the two fold diluted sample within the acceptance limits (60-125%)?	[___]	___	✓
	ACTION: If no for any of the above, flag detects as "J" and non-detects "UJ" of all the analytes with atomic masses between the atomic mass of the internal standard lighter			

than the affected internal standard, and the atomic mass of the internal standard heavier than the affected internal standard.

A.1.27 **Percent Solids of Sediments**

A.1.27.1 Are percent solids in sediment(s):

< 50%? ___ [✓] ___

ACTION:
If yes, qualify as estimated (J) all detects and non-detects of a sample that has percent solids less than 50%(i.e.,moisture content greater than 50%).

NOTE:
Flag(J) only the sample results that were not previously flagged due to other QC criteria.

Inorganic Data Review Narrative

Case# _____ **Site:** _____ **Matrix: Soil** ____

SDG# _____ **Lab:** _____ **Water** ____

Sampling Team: _____ **Reviewer:** _____ **Other** _____

A.2.1 **Data Validation Flags:**
The following flags may have been applied in red by the data validator and must be considered by the data user.

J - This flag indicates the result qualified as **estimated**

R and Red-Line - A red-line drawn through a sample result indicates **unusable** value. The red-lined data are known to contain significant errors based on documented information and must not be used by the data user.

U - This data validation qualifier is applied to sample results ≥ MDL when associated blank is contaminated

Fully Usable Data - The results that do not carry "J" or "red-line" are fully **usable**.

A.2.2 **Laboratory Qualifiers:**
The CLP laboratory applies a contractual qualifier on all

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DataQual

Environmental Services, LLC

CH2M HILL
5701 Cleveland Street
Suite 200
Virginia Beach, VA 23462

June 10, 2013
SDG# SG2698, Katahdin
Vieques East, Puerto Rico- PI-21

Dear Ms. Dean,

The following Data Validation report is provided as requested for the parameters noted in the table below for SDG # SG2698. The data validation was performed in accordance with the SW-846 methods utilized by the laboratory, the Region II Standard Operating Procedures for the Validation of Organic Data Acquired Using SW-846 Method 8260B-Rev 2, August 2008-SOP HW-24 and professional judgment. All areas of concern are discussed in the body of the report and a summary of data qualifications is provided.

Sample ID	Lab ID	Matrix	VOA
VEP21-SS01A-0001	SG2698-1	soil	X
VEP21-SS01AP-0001	SG2698-2	soil	X
VEP21-SS03A-0001	SG2698-3	soil	X
VEP21-SS04A-0001	SG2698-4	soil	X
VEP21-SB01A-011H	SG2698-5	soil	X
VEP21-SS05A-0001	SG2698-6	soil	X
VEP21-SS02A-0001	SG2698-7	soil	X
VEP21-SB03A-0102	SG2698-8	soil	X
VEP21-SB04A-011H	SG2698-9	soil	X
VEP21-SB05A-011H	SG2698-10	soil	X
VEP21-SB02A-011H	SG2698-11	soil	X
VEP21-TB01-042313	SG2698-12	water	X
VEP21-EB01-042313	SG2698-13	water	X
VEP21-SS04A-0001 MS	SG2698-4MS	soil	X
VEP21-SS04A-0001 MSD	SG2698-4MSD	soil	X

The following quality control samples were provided with this SDG: sample VEP21-EB01-042313 - equipment blank, VEP-21-TB01-042313- trip blank and sample VEP21-SS01AP-0001- field duplicate of sample VEP21-SS01A-0001.

The samples were evaluated based on the following criteria:

- Data Completeness *
- Sample Condition *
- Technical Holding Times *
- GC/MS Tuning *
- Initial/Continuing Calibrations
- Blanks
- Internal Standards

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- Surrogate Recoveries
- Laboratory Control Samples
- Matrix Spike Recoveries
- Matrix Duplicate RPDs *
- Serial Dilutions *
- Field Duplicates *
- Identification/Quantitation
- Reporting Limits *
- Tentatively Identified Compounds NA

* - indicates that qualifications were not required based on this criteria

Overall Evaluation of Data/Potential Usability Issues

A summary of qualifications applied to the sample results are noted below for the fractions validated. Specific details regarding qualification of the data are addressed in the Specific Evaluation section of this narrative. If an issue is not addressed there were no actions required based on unmet quality criteria. When more than one qualifier is associated with a compound/analyte the validator has chosen the qualifier that best indicates possible bias in the results and flagged the data accordingly. However, information regarding all quality control issues is provided in the body of the report and on the qualification summary page. Please note that when a compound or analyte is flagged due to blank contamination the BL qualifier code takes precedence over all other qualifier codes except a code that explains rejected data.

VOA

Several sample compounds were qualified as estimated based on high %RSDs and %Ds which were exhibited in the initial and continuing calibrations.

Blank contamination was exhibited in the method and/or QC blanks that resulted in qualifications to the data.

Low internal standard area recoveries resulted in qualifications to the data.

Several samples exhibited non-compliant surrogate recoveries which resulted in qualifications to the data.

One of the laboratory control samples exhibited low recoveries; therefore results for that compound were qualified as estimated.

Due to non-compliant recoveries in the matrix spike and matrix spike duplicate, qualifications were added to the associated sample.

Specific Evaluation of Data

Data Completeness

The SDG was received complete and intact. Resubmissions were not required.

Technical Holding Times

According to chain of custody records, sampling was performed on 4/23/13 and samples were received on 4/24/13. All sample preparation and analysis was performed within Region II and/or method holding time requirements.

Initial/Continuing Calibration

VOA

Calibration standards exhibited %RSD, %D and RRFs that were non-compliant. A summary of these non-compliances and affected samples are noted in the following table. Sample results were qualified as indicated.

Calibration File	Compound(s)	RRF, %RSD, %D	Samples	Q Flag	Q Code
CC 4/30/13	cyclohexane	-22.03	VEP21-TB01-042313, VEP21-EB01-042313	J/UJ	CCL
IC 4/23/13	methylene chloride	43.56	all field samples	J/UJ	ICH
CC 4/24/13 CC 4/26/13	acetone	24.70/23.98	VEP21-SS01A-0001, VEP21-SS01AP-0001, VEP21-SB01A-011H, VEP21-SB02A-011H, VEP21-SS03A-0001RA, VEP21-SB04A-011HRA, VEP21-SB05A-011HRA	J/UJ	CCH
CC 4/25/13	chloromethane	-23.55	VEP21-SB03A-011H, VEP21-SS04A-0001, VEP21-SS05A-0001, VEP21-SS02A-0001RA	J/UJ	CCL

Blanks

The associated method and/or QC blanks exhibited contamination as noted in the following table. Compounds for which there was no action required, are not included in the following table.

Blank ID	Compound	Concentration	Reporting Limit
Method Blank WG123190-2	acetone	8.8 ug/Kg	12 ug/Kg
Method Blank WG123249-2	acetone	6.2	12

Associated samples and required qualifications are noted in the following table.

Sample ID	Compound	Q Flag	Qual Code
VEP21-SS04A-0001, VEP21-SB05A-011H	acetone	U at LOD	MBL

Internal Standards

VOA

The following samples exhibited non-compliant internal standard area recoveries for the standard listed in the table below; qualifications were applied to the associated compounds as noted. Samples were re-analyzed; however only the sample that was used is listed in the table below, refer to forms in the worksheets for all sample recoveries.

Sample ID	Non-compliant Internal Standard	Qualifier	Q Code
VEP21-SS01AP-0001 VEP21-SS05A-0001 VEP21-SS02A-0001RA VEP21-SS03A-0001RA VEP21-SB04A-011HRA	1,4-dichlorobenzene	J/UJ	ISL

Surrogates

VOA

The following samples exhibited non-compliant recoveries for the surrogate listed in the table below; qualifications were applied as noted. Samples were re-analyzed; however only the sample that was used is listed in the table below, refer to forms in the worksheets for all sample recoveries.

Sample ID	Non-compliant Surrogate	% Rec	QC Limits	Qualifier	Q Code
VEP21-SS01A-0001	p-bromofluorobenzene	76.8	85-120	J/UJ	SSL
VEP21-SS05A-0001		63.8			
VEP21-SS01AP-0001		59.7			
VEP21-SB01A-011H		66.8			
VEP21-SB02A-011H		65.9			
VEP21-SS04A-0001		64.9			
VEP21-SB05A-011HRA	p-bromofluorobenzene 1,2-dichloroethane-d4*	63.6 137	85-120 58-134		
VEP21-SS02A-0001RA	p-bromofluorobenzene dibromofluoromethane*	81.8 130	85-120 64-130		
VEP21-SB04A-011HRA	p-bromofluorobenzene toluene-d8	37.8 72.1	85-120 85-115		

**for information only, qualifications are based on low recovery of another surrogate associated with this sample*

Matrix Spike Recoveries

VOA

The matrix spike and matrix spike duplicate associated with sample VEP21-SB02A-011H exhibited non-compliant recoveries for the compounds listed in the table below, qualifications were applied as stated.

Sample ID	Compound	% MS Rec	% MSD Rec	QC Limits	Qualifier	Q Code
VEP21-SB02A-011H	1,4-dichlorobenzene	64.9	56.9	70-125	J/UJ	MSL
	1,2-dichlorobenzene	65.4	59.0	75-120		
	1,2,4-trichlorobenzene	32.9	27.2	65-130		
	1,2,3-trichlorobenzene	30.5	26	60.135		
	methyl acetate	13.1	11.4	72.133		

Laboratory Control Sample

VOA

The LCS associated with the samples listed in the table below exhibited non-compliant recovery for the compounds listed, qualifications were applied as stated.

Sample ID	Compound	% LCS Rec	QC Limits	Qualifier	Q Code
VEP21-SS01A-0001, VEP21-SS01AP-0001, VEP21-SB01A-011H, VEP21-SB02A-011H	acetone	163	20-160	J	BSL
VEP21-SS03A-0001RA, VEP21-SB04A-011HRA, VEP21-SB05-011HRA	acetone	180	20-160	J	BSL

Identification/Quantitation

VOA

The following samples were excluded, in favor of the initial or re-analysis, due to non-compliant surrogate and/or internal standard area recoveries: VEP21-SS01A-0001RA, VEP21-SS01AP-0001RA, VEP21-SB01AS-011HRA, VEP21-SS02A-0001, VEP21-SS03A-0001, VEP21-SS04A-0001DL, VEP21-SS04A-0001RA, VEP21-SB04A-011H, VEP21-SS05A-0001RA and VEP21-SB05A-011H.

A summary of qualifications required is provided on the following page. Please do not hesitate to contact DataQual ES with any questions regarding this validation report.

Sincerely,

Laura Maschhoff
President

Summary of Data Qualifications

VOA

Sample ID	Compound	Results	Q flag	Q Code
VEP21-TB01-042313, VEP21-EB01-042313	cyclohexane	+/-	J/UJ	CCL
all field samples	methylene chloride^	+/-	J/UJ	ICH
VEP21-SS01A-0001, VEP21-SS01AP-0001, VEP21-SB01A-011H, VEP21-SB02A-011H, VEP21-SS03A-0001RA, VEP21-SB04A-011HRA, VEP21-SB05A-011HRA	acetone ^	+/-	J/UJ	CCH
VEP21-SB03A-011H, VEP21-SS04A-0001, VEP21-SS05A-0001, VEP21-SS02A-0001RA	chloromethane^	+/-	J/UJ	CCL
VEP21-SS04A-0001, VEP21-SB05A-011H	acetone	+	U at LOD	MBL
VEP21-SS01AP-0001*, VEP21-SS05A-0001* VEP21-SS02A-0001RA*, VEP21-SS03A-0001RA VEP21-SB04A-011HRA*	all compounds associated with: 1,4-dichlorobenzene	+/-	J/UJ	ISL
VEP21-SS01A-0001, VEP21-SS05A-0001 VEP21-SS01AP-0001, VEP21-SB01A-011H VEP21-SB02A-011H, VEP21-SS04A-0001 VEP21-SB05A-011HRA, VEP21-SS02A-0001RA VEP21-SB04A-011HRA	all results	+/-	J/UJ	SSL
VEP21-SB02A-011H*	1,4-dichlorobenzene 1,2-dichlorobenzene 1,2,4-trichlorobenzene 1,2,3-trichlorobenzene methyl acetate	+/-	J/UJ	MSL
VEP21-SS01A-0001, VEP21-SS01AP-0001, VEP21-SB01A-011H, VEP21-SB02A-011H VEP21-SS03A-0001RA, VEP21-SB04A-011HRA, VEP21-SB05-011HRA	acetone	+	J	BSL
VEP21-SS01A-0001RA, VEP21-SS01AP-0001RA, VEP21-SB01A-011HRA, VEP21-SS02A-0001, VEP21-SS03A-0001, VEP21-SS04A-0001DL, VEP21-SS04A-0001RA, VEP21-SB04A-011H, VEP21-SS05A-0001RA, VEP21-SB05A-011H	all results	+/-	exclude	RE

**final qualifier due to non-compliant surrogate recoveries*
^unless qualified for surrogates

Glossary of Qualification Flags and Abbreviations

Qualification Flags (Q-Flags)

U	not detected above the reported sample quantitation limit
J	estimated value
UJ	reported quantitation limit is qualified as estimated
N	analyte has been tentatively identified
JN	analyte has been tentatively identified, estimated value
R	result is rejected; the presence or absence of the analyte cannot be verified

Method/Preparation/Field QC Blank Qualification Flags (Q-Flags)

Organic Methods

NA	The sample result for the blank contaminant is greater than the RL (2X sample RL for common laboratory contaminants) when the blank value is less than the RL. The sample result for the blank contaminant is not qualified with any blank qualifiers.
U*	The sample result for the blank contaminant is less than the RL (2X sample RL for common laboratory contaminants) but greater than the MDL when the blank value is less than the RL. The sample result for the blank contaminant is qualified as non-detect U at the reported concentration.
RL**	The sample result for the blank contaminant is less than the RL (2X sample RL for common laboratory contaminants) but greater than the MDL when the blank value is less than the RL. The sample result for the blank contaminant is changed to the RL and qualified as non-detect U.

* This guideline is used when the laboratory is reporting non-detects to the MDL. ** This guideline is used when the laboratory is reporting non-detects to the RL.

Inorganic Methods

ICB/CCB/PB Action:

No Action -	The sample result is greater than the RL and greater than ten times (10X) the blank value.
U -	The sample result is greater than or equal to the MDL but less than or equal to the RL, result is reported as non-detect at the RL* or at the reported concentration**, when the ICB/CCB/PB result is less or greater than the RL.

Glossary of Qualification Flags and Abbreviations, continued

R -	Sample result is greater than the RL and less than the ICB/CCB/PB value when the ICB/CCB/PB value is greater than the RL.
J -	Sample result is greater than the ICB/CCB/PB value but less than 10X the ICB/CCB/PB value when ICB/CCB/PB value is greater than the RL.
J/UJ -	Sample result is less than 10X RL when blank result is below the negative RL.

* This guideline is used when the laboratory is reporting non-detects to the MDL. ** This guideline is used when the laboratory is reporting non-detects to the RL.

Field QC Blank action:

Note – Use field blanks to qualify data only if field blank results are greater than prep blank results.

Do not use rinsate blank associated with soils to qualify water samples and vice versa.

No Action -	The sample result is greater than the RL and greater than ten times (10X) the blank value.
U -	The sample result is greater than or equal to the MDL but less than or equal to the RL, result is reported as non-detect at the RL* or at the reported concentration**, when the FB result is less or greater than the RL.
R -	Sample result is greater than the RL and less than the FB value when the FB value is greater than the RL.
J -	Sample result is greater than the FB value but less than 10X the FB value when FB value is greater than the RL.

* This guideline is used when the laboratory is reporting non-detects to the MDL. ** This guideline is used when the laboratory is reporting non-detects to the RL.

General Abbreviations

RL/LOD	reporting limit
PQL	practical quantitation limit
IDL	instrument detection limit
MDL	method detection limit
CRQL/LOQ	contract required quantitation limit
+	positive result
-	non-detect result

QUALIFIER CODE REFERENCE

Qualifier	Description
TN	Tune
BSL	Blank Spike/LCS - High Recovery
BSH	Blank Spike/LCS - Low Recovery
BD	Blank Spike/Blank Spike Duplicate (LCS/LCSD) Precision
BRL	Below Reporting Limit
ISL	Internal Standard - Low Recovery
ISH	Internal Standard - High Recovery
MSL	Matrix Spike and/or Matrix Spike Duplicate - Low Recovery
MSH	Matrix Spike and/or Matrix Spike Duplicate - High Recovery
MI	Matrix interference obscuring the raw data
MDP	Matrix Spike/Matrix Spike Duplicate Precision
2S	Second Source - Bad reproducibility between tandem detectors
SSL	Spiked Surrogate - Low Recovery
SSH	Spiked Surrogate - High Recovery
SD	Serial Dilution Reproducibility
ICL	Initial Calibration - Low Relative Response Factors (RRF)
ICH	Initial Calibration - High Relative Response Factors (RRF)
ICB	Initial Calibration - Bad Linearity or Curve Function
CCL	Continuing Calibration - Low Recovery or %Difference
CCH	Continuing Calibration - High Recovery or %Difference
LD	Lab Duplicate Reproducibility
HT	Holding Time
PD	Pesticide Degradation
2C	Second Column - Poor Dual Column Reproducibility
LR	Concentration Exceeds Linear Range
BL	Blank Contamination
RE	Redundant Result - due to Re-analysis or Re-extraction
DL	Redundant Result - due to Dilution
FD	Field Duplicate
OT	Other - explained in data validation report
%SOL	High moisture content

Katahdin
ANALYTICAL SERVICES

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Report of Analytical Results

Client: CH2MHill
Lab ID: SG2698-1
Client ID: VEP21-SS01A-0001
Project: NTR Vieques East CTO-037 I
SDG: SG2698
Lab File ID: T8136.D

Sample Date: 23-APR-13
Received Date: 24-APR-13
Extract Date: 24-APR-13
Extracted By: REC
Extraction Method: SW846 5035
Lab Prep Batch: WG123124

Analysis Date: 24-APR-13
Analyst: REC
Analysis Method: SW846 8260B
Matrix: SL
% Solids: 88.
Report Date: 09-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Dichlorodifluoromethane	U W SSV	5.5	ug/Kgdrywt	1	10	11.	1.0	5.5
Chloromethane	U	5.5	ug/Kgdrywt	1	10	11.	1.5	5.5
Vinyl Chloride	U	5.5	ug/Kgdrywt	1	10	11.	0.96	5.5
Bromomethane	U	5.5	ug/Kgdrywt	1	10	11.	1.2	5.5
Chloroethane	U	5.5	ug/Kgdrywt	1	10	11.	1.4	5.5
Trichlorofluoromethane	U	5.5	ug/Kgdrywt	1	10	11.	1.0	5.5
1,1-Dichloroethene	U	2.8	ug/Kgdrywt	1	5	5.5	1.0	2.8
Carbon Disulfide	U	2.8	ug/Kgdrywt	1	5	5.5	0.86	2.8
Freon-113	U	2.8	ug/Kgdrywt	1	5	5.5	0.99	2.8
Methylene Chloride	U	14	ug/Kgdrywt	1	25	28.	8.7	14.
Acetone	UL	14	ug/Kgdrywt	1	25	28.	5.6	14.
trans-1,2-Dichloroethene	U	2.8	ug/Kgdrywt	1	5	5.5	0.78	2.8
Methyl tert-butyl Ether	U	2.8	ug/Kgdrywt	1	5	5.5	1.2	2.8
1,1-Dichloroethane	U	2.8	ug/Kgdrywt	1	5	5.5	1.9	2.8
cis-1,2-Dichloroethene	U	2.8	ug/Kgdrywt	1	5	5.5	1.0	2.8
Chloroform	U	2.8	ug/Kgdrywt	1	5	5.5	0.38	2.8
Carbon Tetrachloride	U	2.8	ug/Kgdrywt	1	5	5.5	1.4	2.8
1,1,1-Trichloroethane	U	2.8	ug/Kgdrywt	1	5	5.5	0.46	2.8
2-Butanone	U	14	ug/Kgdrywt	1	25	28.	6.5	14.
Benzene	U	2.8	ug/Kgdrywt	1	5	5.5	1.0	2.8
Cyclohexane	U	2.8	ug/Kgdrywt	1	5	5.5	1.5	2.8
1,2-Dichloroethane	U	2.8	ug/Kgdrywt	1	5	5.5	1.1	2.8
Trichloroethene	U	2.8	ug/Kgdrywt	1	5	5.5	0.65	2.8
1,2-Dichloropropane	U	2.8	ug/Kgdrywt	1	5	5.5	1.5	2.8
Bromodichloromethane	U	2.8	ug/Kgdrywt	1	5	5.5	0.66	2.8
cis-1,3-Dichloropropene	U	2.8	ug/Kgdrywt	1	5	5.5	0.79	2.8
Toluene	U	2.8	ug/Kgdrywt	1	5	5.5	1.5	2.8
4-Methyl-2-Pentanone	U	14	ug/Kgdrywt	1	25	28.	6.5	14.
Tetrachloroethene	U	2.8	ug/Kgdrywt	1	5	5.5	1.3	2.8
trans-1,3-Dichloropropene	U	2.8	ug/Kgdrywt	1	5	5.5	0.95	2.8
1,1,2-Trichloroethane	U	2.8	ug/Kgdrywt	1	5	5.5	1.1	2.8
Dibromochloromethane	U	2.8	ug/Kgdrywt	1	5	5.5	1.1	2.8
1,2-Dibromoethane	U	2.8	ug/Kgdrywt	1	5	5.5	1.3	2.8
2-Hexanone	U	14	ug/Kgdrywt	1	25	28.	5.3	14.
Chlorobenzene	U	2.8	ug/Kgdrywt	1	5	5.5	0.56	2.8

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011

Katahdin
ANALYTICAL SERVICES

Cert No E87604

Report of Analytical Results

Client: CH2MHill
Lab ID: SG2698-1
Client ID: VEP21-SS01A-0001
Project: NTR Vieques East CTO-0371
SDG: SG2698
Lab File ID: T8136.D

Sample Date: 23-APR-13
Received Date: 24-APR-13
Extract Date: 24-APR-13
Extracted By: REC
Extraction Method: SW846 5035
Lab Prep Batch: WG123124

Analysis Date: 24-APR-13
Analyst: REC
Analysis Method: SW846 8260B
Matrix: SL
% Solids: 88.
Report Date: 09-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Ethylbenzene	U UJ SSL	2.8	ug/Kgdrywt	1	5	5.5	0.72	2.8
Xylenes (total)	U	8.2	ug/Kgdrywt	1	15	16.	1.4	8.2
Styrene	U	2.8	ug/Kgdrywt	1	5	5.5	0.56	2.8
Bromoform	U	2.8	ug/Kgdrywt	1	5	5.5	0.77	2.8
Isopropylbenzene	U	2.8	ug/Kgdrywt	1	5	5.5	1.0	2.8
1,1,2,2-Tetrachloroethane	U	2.8	ug/Kgdrywt	1	5	5.5	0.92	2.8
1,3-Dichlorobenzene	U	2.8	ug/Kgdrywt	1	5	5.5	0.68	2.8
1,4-Dichlorobenzene	U	2.8	ug/Kgdrywt	1	5	5.5	0.48	2.8
1,2-Dichlorobenzene	U	2.8	ug/Kgdrywt	1	5	5.5	0.86	2.8
1,2-Dibromo-3-Chloropropane	U	2.8	ug/Kgdrywt	1	5	5.5	1.6	2.8
1,2,4-Trichlorobenzene	U	2.8	ug/Kgdrywt	1	5	5.5	0.87	2.8
1,2,3-Trichlorobenzene	U	2.8	ug/Kgdrywt	1	5	5.5	0.84	2.8
Bromochloromethane	U	2.8	ug/Kgdrywt	1	5	5.5	1.0	2.8
M+P-Xylenes	U	5.5	ug/Kgdrywt	1	10	11.	1.9	5.5
O-Xylene	U	2.8	ug/Kgdrywt	1	5	5.5	1.4	2.8
Methyl Acetate	U	3.3	ug/Kgdrywt	1	5	5.5	3.0	3.3
Methylcyclohexane	U	2.8	ug/Kgdrywt	1	5	5.5	1.0	2.8
p-Bromofluorobenzene	*	76.8	%					
Toluene-D8		97.5	%					
1,2-Dichloroethane-D4		122.	%					
Dibromofluoromethane		118.	%					

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ANALYTICAL SERVICES

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Cert No E87604

Report of Analytical Results

Client: CH2MHill
Lab ID: SG2698-1RA
Client ID: VEP21-SS01A-0001
Project: NTR Vieques East CTO-0371
SDG: SG2698
Lab File ID: T8160.D

Sample Date: 23-APR-13
Received Date: 24-APR-13
Extract Date: 25-APR-13
Extracted By: REC
Extraction Method: SW846 5035
Lab Prep Batch: WG123190

Analysis Date: 25-APR-13
Analyst: REC
Analysis Method: SW846 8260B
Matrix: SL
% Solids: 88.
Report Date: 09-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Dichlorodifluoromethane	U X, RE	7.0	ug/Kgdrywt	1	10	14.	1.3	7.0
Chloromethane	U	7.0	ug/Kgdrywt	1	10	14.	2.0	7.0
Vinyl Chloride	U	7.0	ug/Kgdrywt	1	10	14.	1.2	7.0
Bromomethane	U	7.0	ug/Kgdrywt	1	10	14.	1.5	7.0
Chloroethane	U	7.0	ug/Kgdrywt	1	10	14.	1.8	7.0
Trichlorofluoromethane	U	7.0	ug/Kgdrywt	1	10	14.	1.3	7.0
1,1-Dichloroethene	U	3.5	ug/Kgdrywt	1	5	7.0	1.3	3.5
Carbon Disulfide	U	3.5	ug/Kgdrywt	1	5	7.0	1.1	3.5
Freon-113	U	3.5	ug/Kgdrywt	1	5	7.0	1.3	3.5
Methylene Chloride	U	18	ug/Kgdrywt	1	25	35.	11.	18.
Acetone	J	9.2	ug/Kgdrywt	1	25	35.	7.1	18.
trans-1,2-Dichloroethene	U	3.5	ug/Kgdrywt	1	5	7.0	0.99	3.5
Methyl tert-butyl Ether	U	3.5	ug/Kgdrywt	1	5	7.0	1.5	3.5
1,1-Dichloroethane	U	3.5	ug/Kgdrywt	1	5	7.0	2.4	3.5
cis-1,2-Dichloroethene	U	3.5	ug/Kgdrywt	1	5	7.0	1.3	3.5
Chloroform	U	3.5	ug/Kgdrywt	1	5	7.0	0.49	3.5
Carbon Tetrachloride	U	3.5	ug/Kgdrywt	1	5	7.0	1.8	3.5
1,1,1-Trichloroethane	U	3.5	ug/Kgdrywt	1	5	7.0	0.59	3.5
2-Butanone	U	18	ug/Kgdrywt	1	25	35.	8.3	18.
Benzene	U	3.5	ug/Kgdrywt	1	5	7.0	1.3	3.5
Cyclohexane	U	3.5	ug/Kgdrywt	1	5	7.0	2.0	3.5
1,2-Dichloroethane	U	3.5	ug/Kgdrywt	1	5	7.0	1.4	3.5
Trichloroethene	U	3.5	ug/Kgdrywt	1	5	7.0	0.83	3.5
1,2-Dichloropropane	U	3.5	ug/Kgdrywt	1	5	7.0	2.0	3.5
Bromodichloromethane	U	3.5	ug/Kgdrywt	1	5	7.0	0.84	3.5
cis-1,3-Dichloropropene	U	3.5	ug/Kgdrywt	1	5	7.0	1.0	3.5
Toluene	U	3.5	ug/Kgdrywt	1	5	7.0	2.0	3.5
4-Methyl-2-Pentanone	U	18	ug/Kgdrywt	1	25	35.	8.3	18.
Tetrachloroethene	U	3.5	ug/Kgdrywt	1	5	7.0	1.7	3.5
trans-1,3-Dichloropropene	U	3.5	ug/Kgdrywt	1	5	7.0	1.2	3.5
1,1,2-Trichloroethane	U	3.5	ug/Kgdrywt	1	5	7.0	1.4	3.5
Dibromochloromethane	U	3.5	ug/Kgdrywt	1	5	7.0	1.4	3.5
1,2-Dibromoethane	U	3.5	ug/Kgdrywt	1	5	7.0	1.7	3.5
2-Hexanone	U	18	ug/Kgdrywt	1	25	35.	6.7	18.
Chlorobenzene	U	3.5	ug/Kgdrywt	1	5	7.0	0.71	3.5

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Katahdin
ANALYTICAL SERVICES

Cert No E87604

Report of Analytical Results

Client: CH2MHill
Lab ID: SG2698-1RA
Client ID: VEP21-SS01A-0001
Project: NTR Vieques East CTO-037 I
SDG: SG2698
Lab File ID: T8160.D

Sample Date: 23-APR-13
Received Date: 24-APR-13
Extract Date: 25-APR-13
Extracted By: REC
Extraction Method: SW846 5035
Lab Prep Batch: WG123190

Analysis Date: 25-APR-13
Analyst: REC
Analysis Method: SW846 8260B
Matrix: SL
% Solids: 88.
Report Date: 09-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Ethylbenzene	U X RE	3.5	ug/Kgdrywt	1	5	7.0	0.91	3.5
Xylenes (total)	U	10	ug/Kgdrywt	1	15	21.	1.8	10.
Styrene	U	3.5	ug/Kgdrywt	1	5	7.0	0.71	3.5
Bromoform	U	3.5	ug/Kgdrywt	1	5	7.0	0.98	3.5
Isopropylbenzene	U	3.5	ug/Kgdrywt	1	5	7.0	1.3	3.5
1,1,2,2-Tetrachloroethane	U	3.5	ug/Kgdrywt	1	5	7.0	1.2	3.5
1,3-Dichlorobenzene	U	3.5	ug/Kgdrywt	1	5	7.0	0.87	3.5
1,4-Dichlorobenzene	U	3.5	ug/Kgdrywt	1	5	7.0	0.62	3.5
1,2-Dichlorobenzene	U	3.5	ug/Kgdrywt	1	5	7.0	1.1	3.5
1,2-Dibromo-3-Chloropropane	U	3.5	ug/Kgdrywt	1	5	7.0	2.1	3.5
1,2,4-Trichlorobenzene	U	3.5	ug/Kgdrywt	1	5	7.0	1.1	3.5
1,2,3-Trichlorobenzene	U	3.5	ug/Kgdrywt	1	5	7.0	1.1	3.5
Bromochloromethane	U	3.5	ug/Kgdrywt	1	5	7.0	1.3	3.5
M+P-Xylenes	U	7.0	ug/Kgdrywt	1	10	14.	2.4	7.0
O-Xylene	U	3.5	ug/Kgdrywt	1	5	7.0	1.8	3.5
Methyl Acetate	U	4.2	ug/Kgdrywt	1	5	7.0	3.8	4.2
Methylcyclohexane	U	3.5	ug/Kgdrywt	1	5	7.0	1.3	3.5
p-Bromofluorobenzene	*	77.2	%					
Toluene-D8		102.	%					
1,2-Dichloroethane-D4		128.	%					
Dibromofluoromethane		129.	%					

JAC 6/9/13

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Katahdin
ANALYTICAL SERVICES

Cert No E87604

Report of Analytical Results

Client: CH2MHill
Lab ID: SG2698-2
Client ID: VEP21-SS01AP-0001
Project: NTR Vieques East CTO-0371
SDG: SG2698
Lab File ID: T8137.D

Sample Date: 23-APR-13
Received Date: 24-APR-13
Extract Date: 24-APR-13
Extracted By: REC
Extraction Method: SW846 5035
Lab Prep Batch: WG123124

Analysis Date: 24-APR-13
Analyst: REC
Analysis Method: SW846 8260B
Matrix: SL
% Solids: 91.
Report Date: 09-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Dichlorodifluoromethane	U UJ SSL	7.0	ug/Kgdrywt	1	10	14.	1.3	7.0
Chloromethane	U	7.0	ug/Kgdrywt	1	10	14.	2.0	7.0
Vinyl Chloride	U	7.0	ug/Kgdrywt	1	10	14.	1.2	7.0
Bromomethane	U	7.0	ug/Kgdrywt	1	10	14.	1.5	7.0
Chloroethane	U	7.0	ug/Kgdrywt	1	10	14.	1.8	7.0
Trichlorofluoromethane	U	7.0	ug/Kgdrywt	1	10	14.	1.3	7.0
1,1-Dichloroethene	U	3.5	ug/Kgdrywt	1	5	7.0	1.3	3.5
Carbon Disulfide	U	3.5	ug/Kgdrywt	1	5	7.0	1.1	3.5
Freon-113	U	3.5	ug/Kgdrywt	1	5	7.0	1.3	3.5
Methylene Chloride	U	18	ug/Kgdrywt	1	25	35.	11.	18.
Acetone	JL J	12	ug/Kgdrywt	1	25	35.	7.1	18.
trans-1,2-Dichloroethene	U UJ	3.5	ug/Kgdrywt	1	5	7.0	0.99	3.5
Methyl tert-butyl Ether	U	3.5	ug/Kgdrywt	1	5	7.0	1.5	3.5
1,1-Dichloroethane	U	3.5	ug/Kgdrywt	1	5	7.0	2.4	3.5
cis-1,2-Dichloroethene	U	3.5	ug/Kgdrywt	1	5	7.0	1.3	3.5
Chloroform	U	3.5	ug/Kgdrywt	1	5	7.0	0.49	3.5
Carbon Tetrachloride	U	3.5	ug/Kgdrywt	1	5	7.0	1.8	3.5
1,1,1-Trichloroethane	U	3.5	ug/Kgdrywt	1	5	7.0	0.59	3.5
2-Butanone	U	18	ug/Kgdrywt	1	25	35.	8.3	18.
Benzene	U	3.5	ug/Kgdrywt	1	5	7.0	1.3	3.5
Cyclohexane	U	3.5	ug/Kgdrywt	1	5	7.0	2.0	3.5
1,2-Dichloroethane	U	3.5	ug/Kgdrywt	1	5	7.0	1.4	3.5
Trichloroethene	U	3.5	ug/Kgdrywt	1	5	7.0	0.83	3.5
1,2-Dichloropropane	U	3.5	ug/Kgdrywt	1	5	7.0	2.0	3.5
Bromodichloromethane	U	3.5	ug/Kgdrywt	1	5	7.0	0.84	3.5
cis-1,3-Dichloropropene	U	3.5	ug/Kgdrywt	1	5	7.0	1.0	3.5
Toluene	U	3.5	ug/Kgdrywt	1	5	7.0	2.0	3.5
4-Methyl-2-Pentanone	U	18	ug/Kgdrywt	1	25	35.	8.3	18.
Tetrachloroethene	U	3.5	ug/Kgdrywt	1	5	7.0	1.7	3.5
trans-1,3-Dichloropropene	U	3.5	ug/Kgdrywt	1	5	7.0	1.2	3.5
1,1,2-Trichloroethane	U	3.5	ug/Kgdrywt	1	5	7.0	1.4	3.5
Dibromochloromethane	U	3.5	ug/Kgdrywt	1	5	7.0	1.4	3.5
1,2-Dibromoethane	U	3.5	ug/Kgdrywt	1	5	7.0	1.7	3.5
2-Hexanone	U	18	ug/Kgdrywt	1	25	35.	6.7	18.
Chlorobenzene	U	3.5	ug/Kgdrywt	1	5	7.0	0.71	3.5

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ANALYTICAL SERVICES

Cert No E87604

Report of Analytical Results

Client: CH2MHill
Lab ID: SG2698-2
Client ID: VEP21-SS01AP-0001
Project: NTR Vieques East CTO-037 I
SDG: SG2698
Lab File ID: T8137.D

Sample Date: 23-APR-13
Received Date: 24-APR-13
Extract Date: 24-APR-13
Extracted By: REC
Extraction Method: SW846 5035
Lab Prep Batch: WG123124

Analysis Date: 24-APR-13
Analyst: REC
Analysis Method: SW846 8260B
Matrix: SL
% Solids: 91.
Report Date: 09-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Ethylbenzene	U WJ SSL	3.5	ug/Kgdrywt	1	5	7.0	0.91	3.5
Xylenes (total)	U	10	ug/Kgdrywt	1	15	21.	1.8	10.
Styrene	U	3.5	ug/Kgdrywt	1	5	7.0	0.71	3.5
Bromoform	U	3.5	ug/Kgdrywt	1	5	7.0	0.98	3.5
Isopropylbenzene	U	3.5	ug/Kgdrywt	1	5	7.0	1.3	3.5
1,1,2,2-Tetrachloroethane	U	3.5	ug/Kgdrywt	1	5	7.0	1.2	3.5
1,3-Dichlorobenzene	U	3.5	ug/Kgdrywt	1	5	7.0	0.87	3.5
1,4-Dichlorobenzene	U	3.5	ug/Kgdrywt	1	5	7.0	0.62	3.5
1,2-Dichlorobenzene	U	3.5	ug/Kgdrywt	1	5	7.0	1.1	3.5
1,2-Dibromo-3-Chloropropane	U	3.5	ug/Kgdrywt	1	5	7.0	2.1	3.5
1,2,4-Trichlorobenzene	U	3.5	ug/Kgdrywt	1	5	7.0	1.1	3.5
1,2,3-Trichlorobenzene	U	3.5	ug/Kgdrywt	1	5	7.0	1.1	3.5
Bromochloromethane	U	3.5	ug/Kgdrywt	1	5	7.0	1.3	3.5
M+P-Xylenes	U	7.0	ug/Kgdrywt	1	10	14.	2.4	7.0
O-Xylene	U	3.5	ug/Kgdrywt	1	5	7.0	1.8	3.5
Methyl Acetate	U	4.2	ug/Kgdrywt	1	5	7.0	3.8	4.2
Methylcyclohexane	U	3.5	ug/Kgdrywt	1	5	7.0	1.3	3.5
p-Bromofluorobenzene	*	59.7	%					
Toluene-D8		92.6	%					
1,2-Dichloroethane-D4		125.	%					
Dibromofluoromethane		122.	%					

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016

Katahdin
ANALYTICAL SERVICES

Cert No E87604

Report of Analytical Results

Client: CH2MHill
Lab ID: SG2698-2RA
Client ID: VEP21-SS01AP-0001
Project: NTR Vieques East CTO-0371
SDG: SG2698
Lab File ID: T8161.D

Sample Date: 23-APR-13
Received Date: 24-APR-13
Extract Date: 25-APR-13
Extracted By: REC
Extraction Method: SW846 5035
Lab Prep Batch: WG123190

Analysis Date: 25-APR-13
Analyst: REC
Analysis Method: SW846 8260B
Matrix: SL
% Solids: 91.
Report Date: 09-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Dichlorodifluoromethane	U XRE	6.5	ug/Kgdrywt	1	10	13.	1.2	6.5
Chloromethane	U	6.5	ug/Kgdrywt	1	10	13.	1.8	6.5
Vinyl Chloride	U	6.5	ug/Kgdrywt	1	10	13.	1.1	6.5
Bromomethane	U	6.5	ug/Kgdrywt	1	10	13.	1.4	6.5
Chloroethane	U	6.5	ug/Kgdrywt	1	10	13.	1.7	6.5
Trichlorofluoromethane	U	6.5	ug/Kgdrywt	1	10	13.	1.2	6.5
1,1-Dichloroethene	U	3.2	ug/Kgdrywt	1	5	6.5	1.2	3.2
Carbon Disulfide	U	3.2	ug/Kgdrywt	1	5	6.5	1.0	3.2
Freon-113	U	3.2	ug/Kgdrywt	1	5	6.5	1.2	3.2
Methylene Chloride	U	16	ug/Kgdrywt	1	25	32.	10.	16.
Acetone	J	16	ug/Kgdrywt	1	25	32.	6.6	16.
trans-1,2-Dichloroethene	U	3.2	ug/Kgdrywt	1	5	6.5	0.92	3.2
Methyl tert-butyl Ether	U	3.2	ug/Kgdrywt	1	5	6.5	1.4	3.2
1,1-Dichloroethane	U	3.2	ug/Kgdrywt	1	5	6.5	2.2	3.2
cis-1,2-Dichloroethene	U	3.2	ug/Kgdrywt	1	5	6.5	1.2	3.2
Chloroform	U	3.2	ug/Kgdrywt	1	5	6.5	0.46	3.2
Carbon Tetrachloride	U	3.2	ug/Kgdrywt	1	5	6.5	1.7	3.2
1,1,1-Trichloroethane	U	3.2	ug/Kgdrywt	1	5	6.5	0.55	3.2
2-Butanone	U	16	ug/Kgdrywt	1	25	32.	7.7	16.
Benzene	U	3.2	ug/Kgdrywt	1	5	6.5	1.2	3.2
Cyclohexane	U	3.2	ug/Kgdrywt	1	5	6.5	1.8	3.2
1,2-Dichloroethane	U	3.2	ug/Kgdrywt	1	5	6.5	1.3	3.2
Trichloroethene	U	3.2	ug/Kgdrywt	1	5	6.5	0.77	3.2
1,2-Dichloropropane	U	3.2	ug/Kgdrywt	1	5	6.5	1.8	3.2
Bromodichloromethane	U	3.2	ug/Kgdrywt	1	5	6.5	0.78	3.2
cis-1,3-Dichloropropene	U	3.2	ug/Kgdrywt	1	5	6.5	0.94	3.2
Toluene	U	3.2	ug/Kgdrywt	1	5	6.5	1.8	3.2
4-Methyl-2-Pentanone	U	16	ug/Kgdrywt	1	25	32.	7.7	16.
Tetrachloroethene	U	3.2	ug/Kgdrywt	1	5	6.5	1.6	3.2
trans-1,3-Dichloropropene	U	3.2	ug/Kgdrywt	1	5	6.5	1.1	3.2
1,1,2-Trichloroethane	U	3.2	ug/Kgdrywt	1	5	6.5	1.3	3.2
Dibromochloromethane	U	3.2	ug/Kgdrywt	1	5	6.5	1.3	3.2
1,2-Dibromoethane	U	3.2	ug/Kgdrywt	1	5	6.5	1.6	3.2
2-Hexanone	U	16	ug/Kgdrywt	1	25	32.	6.2	16.
Chlorobenzene	U	3.2	ug/Kgdrywt	1	5	6.5	0.66	3.2

JLC 6/19/13

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017

Katahdin
ANALYTICAL SERVICES

Cert No E87604

Report of Analytical Results

Client: CH2MHill
Lab ID: SG2698-2RA
Client ID: VEP21-SS01AP-0001
Project: NTR Vieques East CTO-037 I
SDG: SG2698
Lab File ID: T8161.D

Sample Date: 23-APR-13
Received Date: 24-APR-13
Extract Date: 25-APR-13
Extracted By: REC
Extraction Method: SW846 5035
Lab Prep Batch: WG123190

Analysis Date: 25-APR-13
Analyst: REC
Analysis Method: SW846 8260B
Matrix: SL
% Solids: 91.
Report Date: 09-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Ethylbenzene	U XRE	3.2	ug/Kgdrywt	1	5	6.5	0.84	3.2
Xylenes (total)	U	9.8	ug/Kgdrywt	1	15	20.	1.7	9.8
Styrene	U	3.2	ug/Kgdrywt	1	5	6.5	0.66	3.2
Bromoform	U	3.2	ug/Kgdrywt	1	5	6.5	0.91	3.2
Isopropylbenzene	U	3.2	ug/Kgdrywt	1	5	6.5	1.2	3.2
1,1,2,2-Tetrachloroethane	U	3.2	ug/Kgdrywt	1	5	6.5	1.1	3.2
1,3-Dichlorobenzene	U	3.2	ug/Kgdrywt	1	5	6.5	0.81	3.2
1,4-Dichlorobenzene	U	3.2	ug/Kgdrywt	1	5	6.5	0.57	3.2
1,2-Dichlorobenzene	U	3.2	ug/Kgdrywt	1	5	6.5	1.0	3.2
1,2-Dibromo-3-Chloropropane	U	3.2	ug/Kgdrywt	1	5	6.5	2.0	3.2
1,2,4-Trichlorobenzene	U	3.2	ug/Kgdrywt	1	5	6.5	1.0	3.2
1,2,3-Trichlorobenzene	U	3.2	ug/Kgdrywt	1	5	6.5	0.99	3.2
Bromochloromethane	U	3.2	ug/Kgdrywt	1	5	6.5	1.2	3.2
M+P-Xylenes	U	6.5	ug/Kgdrywt	1	10	13.	2.2	6.5
O-Xylene	U	3.2	ug/Kgdrywt	1	5	6.5	1.7	3.2
Methyl Acetate	U	3.9	ug/Kgdrywt	1	5	6.5	3.5	3.9
Methylcyclohexane	U	3.2	ug/Kgdrywt	1	5	6.5	1.2	3.2
p-Bromofluorobenzene	*	65.2	%					
Toluene-D8		95.7	%					
1,2-Dichloroethane-D4	*	136.	%					
Dibromofluoromethane		128.	%					

JAC 6/19/13

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018

Katahdin
ANALYTICAL SERVICES

Cert No E87604

Report of Analytical Results

Client: CH2MHill
Lab ID: SG2698-3
Client ID: VEP21-SB01A-011H
Project: NTR Vieques East CTO-0371
SDG: SG2698
Lab File ID: T8138.D

Sample Date: 23-APR-13
Received Date: 24-APR-13
Extract Date: 24-APR-13
Extracted By: REC
Extraction Method: SW846 5035
Lab Prep Batch: WG123124

Analysis Date: 24-APR-13
Analyst: REC
Analysis Method: SW846 8260B
Matrix: SL
% Solids: 90.
Report Date: 09-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Dichlorodifluoromethane	U LJ SSL	5.5	ug/Kgdrywt	1	10	11.	1.0	5.5
Chloromethane	U	5.5	ug/Kgdrywt	1	10	11.	1.5	5.5
Vinyl Chloride	U	5.5	ug/Kgdrywt	1	10	11.	0.96	5.5
Bromomethane	U	5.5	ug/Kgdrywt	1	10	11.	1.2	5.5
Chloroethane	U	5.5	ug/Kgdrywt	1	10	11.	1.4	5.5
Trichlorofluoromethane	U	5.5	ug/Kgdrywt	1	10	11.	1.0	5.5
1,1-Dichloroethene	U	2.8	ug/Kgdrywt	1	5	5.5	1.0	2.8
Carbon Disulfide	U	2.8	ug/Kgdrywt	1	5	5.5	0.86	2.8
Freon-113	U	2.8	ug/Kgdrywt	1	5	5.5	0.99	2.8
Methylene Chloride	U	14	ug/Kgdrywt	1	25	28.	8.7	14.
Acetone	UL	14	ug/Kgdrywt	1	25	28.	5.6	14.
trans-1,2-Dichloroethene	U	2.8	ug/Kgdrywt	1	5	5.5	0.78	2.8
Methyl tert-butyl Ether	U	2.8	ug/Kgdrywt	1	5	5.5	1.2	2.8
1,1-Dichloroethane	U	2.8	ug/Kgdrywt	1	5	5.5	1.9	2.8
cis-1,2-Dichloroethene	U	2.8	ug/Kgdrywt	1	5	5.5	1.0	2.8
Chloroform	U	2.8	ug/Kgdrywt	1	5	5.5	0.38	2.8
Carbon Tetrachloride	U	2.8	ug/Kgdrywt	1	5	5.5	1.4	2.8
1,1,1-Trichloroethane	U	2.8	ug/Kgdrywt	1	5	5.5	0.46	2.8
2-Butanone	U	14	ug/Kgdrywt	1	25	28.	6.5	14.
Benzene	U	2.8	ug/Kgdrywt	1	5	5.5	1.0	2.8
Cyclohexane	U	2.8	ug/Kgdrywt	1	5	5.5	1.5	2.8
1,2-Dichloroethane	U	2.8	ug/Kgdrywt	1	5	5.5	1.1	2.8
Trichloroethene	U	2.8	ug/Kgdrywt	1	5	5.5	0.65	2.8
1,2-Dichloropropane	U	2.8	ug/Kgdrywt	1	5	5.5	1.5	2.8
Bromodichloromethane	U	2.8	ug/Kgdrywt	1	5	5.5	0.66	2.8
cis-1,3-Dichloropropene	U	2.8	ug/Kgdrywt	1	5	5.5	0.79	2.8
Toluene	U	2.8	ug/Kgdrywt	1	5	5.5	1.5	2.8
4-Methyl-2-Pentanone	U	14	ug/Kgdrywt	1	25	28.	6.5	14.
Tetrachloroethene	U	2.8	ug/Kgdrywt	1	5	5.5	1.3	2.8
trans-1,3-Dichloropropene	U	2.8	ug/Kgdrywt	1	5	5.5	0.95	2.8
1,1,2-Trichloroethane	U	2.8	ug/Kgdrywt	1	5	5.5	1.1	2.8
Dibromochloromethane	U	2.8	ug/Kgdrywt	1	5	5.5	1.1	2.8
1,2-Dibromoethane	U	2.8	ug/Kgdrywt	1	5	5.5	1.3	2.8
2-Hexanone	U	14	ug/Kgdrywt	1	25	28.	5.3	14.
Chlorobenzene	U	2.8	ug/Kgdrywt	1	5	5.5	0.56	2.8

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019

Katahdin
ANALYTICAL SERVICES

Cert No E87604

Report of Analytical Results

Client: CH2MHill
Lab ID: SG2698-3
Client ID: VEP21-SB01A-011H
Project: NTR Vieques East CTO-037 1
SDG: SG2698
Lab File ID: T8138.D

Sample Date: 23-APR-13
Received Date: 24-APR-13
Extract Date: 24-APR-13
Extracted By: REC
Extraction Method: SW846 5035
Lab Prep Batch: WG123124

Analysis Date: 24-APR-13
Analyst: REC
Analysis Method: SW846 8260B
Matrix: SL
% Solids: 90.
Report Date: 09-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Ethylbenzene	U WJ SSL	2.8	ug/Kgdrywt	1	5	5.5	0.72	2.8
Xylenes (total)	U	8.2	ug/Kgdrywt	1	15	16.	1.4	8.2
Styrene	U	2.8	ug/Kgdrywt	1	5	5.5	0.56	2.8
Bromoform	U	2.8	ug/Kgdrywt	1	5	5.5	0.77	2.8
Isopropylbenzene	U	2.8	ug/Kgdrywt	1	5	5.5	1.0	2.8
1,1,2,2-Tetrachloroethane	U	2.8	ug/Kgdrywt	1	5	5.5	0.92	2.8
1,3-Dichlorobenzene	U	2.8	ug/Kgdrywt	1	5	5.5	0.68	2.8
1,4-Dichlorobenzene	U	2.8	ug/Kgdrywt	1	5	5.5	0.48	2.8
1,2-Dichlorobenzene	U	2.8	ug/Kgdrywt	1	5	5.5	0.86	2.8
1,2-Dibromo-3-Chloropropane	U	2.8	ug/Kgdrywt	1	5	5.5	1.6	2.8
1,2,4-Trichlorobenzene	U	2.8	ug/Kgdrywt	1	5	5.5	0.87	2.8
1,2,3-Trichlorobenzene	U	2.8	ug/Kgdrywt	1	5	5.5	0.84	2.8
Bromochloromethane	U	2.8	ug/Kgdrywt	1	5	5.5	1.0	2.8
M+P-Xylenes	U	5.5	ug/Kgdrywt	1	10	11.	1.9	5.5
O-Xylene	U	2.8	ug/Kgdrywt	1	5	5.5	1.4	2.8
Methyl Acetate	U	3.3	ug/Kgdrywt	1	5	5.5	3.0	3.3
Methylcyclohexane	U	2.8	ug/Kgdrywt	1	5	5.5	1.0	2.8
p-Bromofluorobenzene	*	66.8	%					
Toluene-D8		89.1	%					
1,2-Dichloroethane-D4		127.	%					
Dibromofluoromethane		120.	%					

JC 6/9/13

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020

Katahdin
ANALYTICAL SERVICES

Cert No E87604

Report of Analytical Results

Client: CH2MHill
Lab ID: SG2698-3RA
Client ID: VEP21-SB01A-011H
Project: NTR Vieques East CTO-037 I
SDG: SG2698
Lab File ID: T8162.D

Sample Date: 23-APR-13
Received Date: 24-APR-13
Extract Date: 25-APR-13
Extracted By: REC
Extraction Method: SW846 5035
Lab Prep Batch: WG123190

Analysis Date: 25-APR-13
Analyst: REC
Analysis Method: SW846 8260B
Matrix: SL
% Solids: 90.
Report Date: 09-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Dichlorodifluoromethane	U XRC	6.0	ug/Kgdrywt	1	10	12.	1.1	6.0
Chloromethane	U	6.0	ug/Kgdrywt	1	10	12.	1.7	6.0
Vinyl Chloride	U	6.0	ug/Kgdrywt	1	10	12.	1.0	6.0
Bromomethane	U	6.0	ug/Kgdrywt	1	10	12.	1.3	6.0
Chloroethane	U	6.0	ug/Kgdrywt	1	10	12.	1.6	6.0
Trichlorofluoromethane	U	6.0	ug/Kgdrywt	1	10	12.	1.1	6.0
1,1-Dichloroethene	U	3.0	ug/Kgdrywt	1	5	6.0	1.1	3.0
Carbon Disulfide	U	3.0	ug/Kgdrywt	1	5	6.0	0.94	3.0
Freon-113	U	3.0	ug/Kgdrywt	1	5	6.0	1.1	3.0
Methylene Chloride	U	15	ug/Kgdrywt	1	25	30.	9.5	15.
Acetone	J	14	ug/Kgdrywt	1	25	30.	6.1	15.
trans-1,2-Dichloroethene	U	3.0	ug/Kgdrywt	1	5	6.0	0.85	3.0
Methyl tert-butyl Ether	U	3.0	ug/Kgdrywt	1	5	6.0	1.3	3.0
1,1-Dichloroethane	U	3.0	ug/Kgdrywt	1	5	6.0	2.0	3.0
cis-1,2-Dichloroethene	U	3.0	ug/Kgdrywt	1	5	6.0	1.1	3.0
Chloroform	U	3.0	ug/Kgdrywt	1	5	6.0	0.42	3.0
Carbon Tetrachloride	U	3.0	ug/Kgdrywt	1	5	6.0	1.6	3.0
1,1,1-Trichloroethane	U	3.0	ug/Kgdrywt	1	5	6.0	0.50	3.0
2-Butanone	U	15	ug/Kgdrywt	1	25	30.	7.1	15.
Benzene	U	3.0	ug/Kgdrywt	1	5	6.0	1.1	3.0
Cyclohexane	U	3.0	ug/Kgdrywt	1	5	6.0	1.7	3.0
1,2-Dichloroethane	U	3.0	ug/Kgdrywt	1	5	6.0	1.2	3.0
Trichloroethene	U	3.0	ug/Kgdrywt	1	5	6.0	0.71	3.0
1,2-Dichloropropane	U	3.0	ug/Kgdrywt	1	5	6.0	1.7	3.0
Bromodichloromethane	U	3.0	ug/Kgdrywt	1	5	6.0	0.72	3.0
cis-1,3-Dichloropropene	U	3.0	ug/Kgdrywt	1	5	6.0	0.86	3.0
Toluene	U	3.0	ug/Kgdrywt	1	5	6.0	1.7	3.0
4-Methyl-2-Pentanone	U	15	ug/Kgdrywt	1	25	30.	7.1	15.
Tetrachloroethene	U	3.0	ug/Kgdrywt	1	5	6.0	1.4	3.0
trans-1,3-Dichloropropene	U	3.0	ug/Kgdrywt	1	5	6.0	1.0	3.0
1,1,2-Trichloroethane	U	3.0	ug/Kgdrywt	1	5	6.0	1.2	3.0
Dibromochloromethane	U	3.0	ug/Kgdrywt	1	5	6.0	1.2	3.0
1,2-Dibromoethane	U	3.0	ug/Kgdrywt	1	5	6.0	1.4	3.0
2-Hexanone	U	15	ug/Kgdrywt	1	25	30.	5.8	15.
Chlorobenzene	U	3.0	ug/Kgdrywt	1	5	6.0	0.61	3.0

QC 6/9/13

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021

Katahdin
ANALYTICAL SERVICES

Cert No E87604

Report of Analytical Results

Client: CH2MHill
Lab ID: SG2698-3RA
Client ID: VEP21-SB01A-011H
Project: NTR Vieques East CTO-037 I
SDG: SG2698
Lab File ID: T8162.D

Sample Date: 23-APR-13
Received Date: 24-APR-13
Extract Date: 25-APR-13
Extracted By: REC
Extraction Method: SW846 5035
Lab Prep Batch: WG123190

Analysis Date: 25-APR-13
Analyst: REC
Analysis Method: SW846 8260B
Matrix: SL
% Solids: 90.
Report Date: 09-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Ethylbenzene	U XLE	3.0	ug/Kgdrywt	1	5	6.0	0.78	3.0
Xylenes (total)	U	9.0	ug/Kgdrywt	1	15	18.	1.6	9.0
Styrene	U	3.0	ug/Kgdrywt	1	5	6.0	0.61	3.0
Bromoform	U	3.0	ug/Kgdrywt	1	5	6.0	0.84	3.0
Isopropylbenzene	U	3.0	ug/Kgdrywt	1	5	6.0	1.1	3.0
1,1,2,2-Tetrachloroethane	U	3.0	ug/Kgdrywt	1	5	6.0	1.0	3.0
1,3-Dichlorobenzene	U	3.0	ug/Kgdrywt	1	5	6.0	0.74	3.0
1,4-Dichlorobenzene	U	3.0	ug/Kgdrywt	1	5	6.0	0.53	3.0
1,2-Dichlorobenzene	U	3.0	ug/Kgdrywt	1	5	6.0	0.94	3.0
1,2-Dibromo-3-Chloropropane	U	3.0	ug/Kgdrywt	1	5	6.0	1.8	3.0
1,2,4-Trichlorobenzene	U	3.0	ug/Kgdrywt	1	5	6.0	0.95	3.0
1,2,3-Trichlorobenzene	U	3.0	ug/Kgdrywt	1	5	6.0	0.91	3.0
Bromochloromethane	U	3.0	ug/Kgdrywt	1	5	6.0	1.1	3.0
M+P-Xylenes	U	6.0	ug/Kgdrywt	1	10	12.	2.0	6.0
O-Xylene	U	3.0	ug/Kgdrywt	1	5	6.0	1.6	3.0
Methyl Acetate	U	3.6	ug/Kgdrywt	1	5	6.0	3.2	3.6
Methylcyclohexane	U	3.0	ug/Kgdrywt	1	5	6.0	1.2	3.0
p-Bromofluorobenzene	*	76.0	%					
Toluene-D8		104.	%					
1,2-Dichloroethane-D4		128.	%					
Dibromofluoromethane		126.	%					

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Katahdin
ANALYTICAL SERVICES

Cert No E87604

Report of Analytical Results

Client: CH2MHill
Lab ID: SG2698-4
Client ID: VEP21-SS02A-0001
Project: NTR Vieques East CTO-037 I
SDG: SG2698
Lab File ID: T8139.D

Sample Date: 23-APR-13
Received Date: 24-APR-13
Extract Date: 24-APR-13
Extracted By: REC
Extraction Method: SW846 5035
Lab Prep Batch: WG123124

Analysis Date: 24-APR-13
Analyst: REC
Analysis Method: SW846 8260B
Matrix: SL
% Solids: 98.
Report Date: 16-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Dichlorodifluoromethane	U XRE	7.0	ug/Kgdrywt	1	10	14.	1.3	7.0
Chloromethane	U	7.0	ug/Kgdrywt	1	10	14.	2.0	7.0
Vinyl Chloride	U	7.0	ug/Kgdrywt	1	10	14.	1.2	7.0
Bromomethane	U	7.0	ug/Kgdrywt	1	10	14.	1.5	7.0
Chloroethane	U	7.0	ug/Kgdrywt	1	10	14.	1.8	7.0
Trichlorofluoromethane	U	7.0	ug/Kgdrywt	1	10	14.	1.3	7.0
1,1-Dichloroethene	U	3.5	ug/Kgdrywt	1	5	7.0	1.3	3.5
Carbon Disulfide	U	3.5	ug/Kgdrywt	1	5	7.0	1.1	3.5
Freon-113	U	3.5	ug/Kgdrywt	1	5	7.0	1.3	3.5
Methylene Chloride	U	18	ug/Kgdrywt	1	25	35.	11.	18.
Acetone	JL	14	ug/Kgdrywt	1	25	35.	7.1	18.
trans-1,2-Dichloroethene	U	3.5	ug/Kgdrywt	1	5	7.0	0.99	3.5
Methyl tert-butyl Ether	U	3.5	ug/Kgdrywt	1	5	7.0	1.5	3.5
1,1-Dichloroethane	U	3.5	ug/Kgdrywt	1	5	7.0	2.4	3.5
cis-1,2-Dichloroethene	U	3.5	ug/Kgdrywt	1	5	7.0	1.3	3.5
Chloroform	U	3.5	ug/Kgdrywt	1	5	7.0	0.49	3.5
Carbon Tetrachloride	U	3.5	ug/Kgdrywt	1	5	7.0	1.8	3.5
1,1,1-Trichloroethane	U	3.5	ug/Kgdrywt	1	5	7.0	0.59	3.5
2-Butanone	U	18	ug/Kgdrywt	1	25	35.	8.3	18.
Benzene	U	3.5	ug/Kgdrywt	1	5	7.0	1.3	3.5
Cyclohexane	U	3.5	ug/Kgdrywt	1	5	7.0	2.0	3.5
1,2-Dichloroethane	U	3.5	ug/Kgdrywt	1	5	7.0	1.4	3.5
Trichloroethene	U	3.5	ug/Kgdrywt	1	5	7.0	0.83	3.5
1,2-Dichloropropane	U	3.5	ug/Kgdrywt	1	5	7.0	2.0	3.5
Bromodichloromethane	U	3.5	ug/Kgdrywt	1	5	7.0	0.84	3.5
cis-1,3-Dichloropropene	U	3.5	ug/Kgdrywt	1	5	7.0	1.0	3.5
Toluene	U	3.5	ug/Kgdrywt	1	5	7.0	2.0	3.5
4-Methyl-2-Pentanone	U	18	ug/Kgdrywt	1	25	35.	8.3	18.
Tetrachloroethene	U	3.5	ug/Kgdrywt	1	5	7.0	1.7	3.5
trans-1,3-Dichloropropene	U	3.5	ug/Kgdrywt	1	5	7.0	1.2	3.5
1,1,2-Trichloroethane	U	3.5	ug/Kgdrywt	1	5	7.0	1.4	3.5
Dibromochloromethane	U	3.5	ug/Kgdrywt	1	5	7.0	1.4	3.5
1,2-Dibromoethane	U	3.5	ug/Kgdrywt	1	5	7.0	1.7	3.5
2-Hexanone	U	18	ug/Kgdrywt	1	25	35.	6.7	18.
Chlorobenzene	U	3.5	ug/Kgdrywt	1	5	7.0	0.71	3.5

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Katahdin
ANALYTICAL SERVICES

Cert No E87604

Report of Analytical Results

Client: CH2MHill
Lab ID: SG2698-4
Client ID: VEP21-SS02A-0001
Project: NTR Vieques East CTO-037 1
SDG: SG2698
Lab File ID: T8139.D

Sample Date: 23-APR-13
Received Date: 24-APR-13
Extract Date: 24-APR-13
Extracted By: REC
Extraction Method: SW846 5035
Lab Prep Batch: WG123124

Analysis Date: 24-APR-13
Analyst: REC
Analysis Method: SW846 8260B
Matrix: SL
% Solids: 98.
Report Date: 16-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Ethylbenzene	U XLC	3.5	ug/Kgdrywt	1	5	7.0	0.91	3.5
Xylenes (total)	U	10	ug/Kgdrywt	1	15	21.	1.8	10.
Styrene	U	3.5	ug/Kgdrywt	1	5	7.0	0.71	3.5
Bromoform	U	3.5	ug/Kgdrywt	1	5	7.0	0.98	3.5
Isopropylbenzene	U	3.5	ug/Kgdrywt	1	5	7.0	1.3	3.5
1,1,2,2-Tetrachloroethane	U	3.5	ug/Kgdrywt	1	5	7.0	1.2	3.5
1,3-Dichlorobenzene	U	3.5	ug/Kgdrywt	1	5	7.0	0.87	3.5
1,4-Dichlorobenzene	U	3.5	ug/Kgdrywt	1	5	7.0	0.62	3.5
1,2-Dichlorobenzene	U	3.5	ug/Kgdrywt	1	5	7.0	1.1	3.5
1,2-Dibromo-3-Chloropropane	U	3.5	ug/Kgdrywt	1	5	7.0	2.1	3.5
1,2,4-Trichlorobenzene	U	3.5	ug/Kgdrywt	1	5	7.0	1.1	3.5
1,2,3-Trichlorobenzene	U	3.5	ug/Kgdrywt	1	5	7.0	1.1	3.5
Bromochloromethane	U	3.5	ug/Kgdrywt	1	5	7.0	1.3	3.5
M+P-Xylenes	U	7.0	ug/Kgdrywt	1	10	14.	2.4	7.0
O-Xylene	U	3.5	ug/Kgdrywt	1	5	7.0	1.8	3.5
Methyl Acetate	U	4.2	ug/Kgdrywt	1	5	7.0	3.8	4.2
Methylcyclohexane	U	3.5	ug/Kgdrywt	1	5	7.0	1.3	3.5
p-Bromofluorobenzene	*	69.4	%					
Toluene-D8	*	82.4	%					
1,2-Dichloroethane-D4	*	134.	%					
Dibromofluoromethane		126.	%					

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Katahdin
ANALYTICAL SERVICES

Cert No E87604

Report of Analytical Results

Client: CH2MHill
Lab ID: SG2698-4RA
Client ID: VEP21-SS02A-0001
Project: NTR Vieques East CTO-037 1
SDG: SG2698
Lab File ID: T8163.D

Sample Date: 23-APR-13
Received Date: 24-APR-13
Extract Date: 25-APR-13
Extracted By: REC
Extraction Method: SW846 5035
Lab Prep Batch: WG123190

Analysis Date: 25-APR-13
Analyst: REC
Analysis Method: SW846 8260B
Matrix: SL
% Solids: 98.
Report Date: 09-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Dichlorodifluoromethane	U	7.0	ug/Kgdrywt	1	10	14.	1.3	7.0
Chloromethane	U	7.0	ug/Kgdrywt	1	10	14.	2.0	7.0
Vinyl Chloride	U	7.0	ug/Kgdrywt	1	10	14.	1.2	7.0
Bromomethane	U	7.0	ug/Kgdrywt	1	10	14.	1.5	7.0
Chloroethane	U	7.0	ug/Kgdrywt	1	10	14.	1.8	7.0
Trichlorofluoromethane	U	7.0	ug/Kgdrywt	1	10	14.	1.3	7.0
1,1-Dichloroethene	U	3.5	ug/Kgdrywt	1	5	7.0	1.3	3.5
Carbon Disulfide	U	3.5	ug/Kgdrywt	1	5	7.0	1.1	3.5
Freon-113	U	3.5	ug/Kgdrywt	1	5	7.0	1.3	3.5
Methylene Chloride	U	18	ug/Kgdrywt	1	25	35.	11.	18.
Acetone	J	25	ug/Kgdrywt	1	25	35.	7.1	18.
trans-1,2-Dichloroethene	U	3.5	ug/Kgdrywt	1	5	7.0	0.99	3.5
Methyl tert-butyl Ether	U	3.5	ug/Kgdrywt	1	5	7.0	1.5	3.5
1,1-Dichloroethane	U	3.5	ug/Kgdrywt	1	5	7.0	2.4	3.5
cis-1,2-Dichloroethene	U	3.5	ug/Kgdrywt	1	5	7.0	1.3	3.5
Chloroform	U	3.5	ug/Kgdrywt	1	5	7.0	0.49	3.5
Carbon Tetrachloride	U	3.5	ug/Kgdrywt	1	5	7.0	1.8	3.5
1,1,1-Trichloroethane	U	3.5	ug/Kgdrywt	1	5	7.0	0.59	3.5
2-Butanone	U	18	ug/Kgdrywt	1	25	35.	8.3	18.
Benzene	U	3.5	ug/Kgdrywt	1	5	7.0	1.3	3.5
Cyclohexane	U	3.5	ug/Kgdrywt	1	5	7.0	2.0	3.5
1,2-Dichloroethane	U	3.5	ug/Kgdrywt	1	5	7.0	1.4	3.5
Trichloroethene	U	3.5	ug/Kgdrywt	1	5	7.0	0.83	3.5
1,2-Dichloropropane	U	3.5	ug/Kgdrywt	1	5	7.0	2.0	3.5
Bromodichloromethane	U	3.5	ug/Kgdrywt	1	5	7.0	0.84	3.5
cis-1,3-Dichloropropene	U	3.5	ug/Kgdrywt	1	5	7.0	1.0	3.5
Toluene	U	3.5	ug/Kgdrywt	1	5	7.0	2.0	3.5
4-Methyl-2-Pentanone	U	18	ug/Kgdrywt	1	25	35.	8.3	18.
Tetrachloroethene	U	3.5	ug/Kgdrywt	1	5	7.0	1.7	3.5
trans-1,3-Dichloropropene	U	3.5	ug/Kgdrywt	1	5	7.0	1.2	3.5
1,1,2-Trichloroethane	U	3.5	ug/Kgdrywt	1	5	7.0	1.4	3.5
Dibromochloromethane	U	3.5	ug/Kgdrywt	1	5	7.0	1.4	3.5
1,2-Dibromoethane	U	3.5	ug/Kgdrywt	1	5	7.0	1.7	3.5
2-Hexanone	U	18	ug/Kgdrywt	1	25	35.	6.7	18.
Chlorobenzene	U	3.5	ug/Kgdrywt	1	5	7.0	0.71	3.5

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ANALYTICAL SERVICES

Cert No E87604

Report of Analytical Results

Client: CH2MHill
Lab ID: SG2698-4RA
Client ID: VEP21-SS02A-0001
Project: NTR Vieques East CTO-037 I
SDG: SG2698
Lab File ID: T8163.D

Sample Date: 23-APR-13
Received Date: 24-APR-13
Extract Date: 25-APR-13
Extracted By: REC
Extraction Method: SW846 5035
Lab Prep Batch: WG123190

Analysis Date: 25-APR-13
Analyst: REC
Analysis Method: SW846 8260B
Matrix: SL
% Solids: 98.
Report Date: 09-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Ethylbenzene	U	3.5	ug/Kgdrywt	1	5	7.0	0.91	3.5
Xylenes (total)	U	10	ug/Kgdrywt	1	15	21.	1.8	10.
Styrene	U	3.5	ug/Kgdrywt	1	5	7.0	0.71	3.5
Bromoform	U	3.5	ug/Kgdrywt	1	5	7.0	0.98	3.5
Isopropylbenzene	U	3.5	ug/Kgdrywt	1	5	7.0	1.3	3.5
1,1,2,2-Tetrachloroethane	U	3.5	ug/Kgdrywt	1	5	7.0	1.2	3.5
1,3-Dichlorobenzene	U	3.5	ug/Kgdrywt	1	5	7.0	0.87	3.5
1,4-Dichlorobenzene	U	3.5	ug/Kgdrywt	1	5	7.0	0.62	3.5
1,2-Dichlorobenzene	U	3.5	ug/Kgdrywt	1	5	7.0	1.1	3.5
1,2-Dibromo-3-Chloropropane	U	3.5	ug/Kgdrywt	1	5	7.0	2.1	3.5
1,2,4-Trichlorobenzene	U	3.5	ug/Kgdrywt	1	5	7.0	1.1	3.5
1,2,3-Trichlorobenzene	U	3.5	ug/Kgdrywt	1	5	7.0	1.1	3.5
Bromochloromethane	U	3.5	ug/Kgdrywt	1	5	7.0	1.3	3.5
M+P-Xylenes	U	7.0	ug/Kgdrywt	1	10	14.	2.4	7.0
O-Xylene	U	3.5	ug/Kgdrywt	1	5	7.0	1.8	3.5
Methyl Acetate	U	4.2	ug/Kgdrywt	1	5	7.0	3.8	4.2
Methylcyclohexane	U	3.5	ug/Kgdrywt	1	5	7.0	1.3	3.5
p-Bromofluorobenzene	*	81.1	%					
Toluene-D8		102.	%					
1,2-Dichloroethane-D4	*	134.	%					
Dibromofluoromethane	*	130.	%					

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Katahdin
ANALYTICAL SERVICES

Cert No E87604

Report of Analytical Results

Client: CH2MHill
Lab ID: SG2698-5
Client ID: VEP21-SB02A-011H
Project: NTR Vieques East CTO-037 I
SDG: SG2698
Lab File ID: T8140.D

Sample Date: 23-APR-13
Received Date: 24-APR-13
Extract Date: 24-APR-13
Extracted By: REC
Extraction Method: SW846 5035
Lab Prep Batch: WG123124

Analysis Date: 24-APR-13
Analyst: REC
Analysis Method: SW846 8260B
Matrix: SL
% Solids: 95.
Report Date: 09-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Dichlorodifluoromethane	U	5.0	ug/Kgdrywt	1	10	10.	0.92	5.0
Chloromethane	U	5.0	ug/Kgdrywt	1	10	10.	1.4	5.0
Vinyl Chloride	U	5.0	ug/Kgdrywt	1	10	10.	0.87	5.0
Bromomethane	U	5.0	ug/Kgdrywt	1	10	10.	1.1	5.0
Chloroethane	U	5.0	ug/Kgdrywt	1	10	10.	1.3	5.0
Trichlorofluoromethane	U	5.0	ug/Kgdrywt	1	10	10.	0.91	5.0
1,1-Dichloroethene	U	2.5	ug/Kgdrywt	1	5	5.0	0.93	2.5
Carbon Disulfide	U	2.5	ug/Kgdrywt	1	5	5.0	0.78	2.5
Freon-113	U	2.5	ug/Kgdrywt	1	5	5.0	0.90	2.5
Methylene Chloride	U	12	ug/Kgdrywt	1	25	25.	7.9	12.
Acetone	ULMM	12	ug/Kgdrywt	1	25	25.	5.1	12.
trans-1,2-Dichloroethene	U	2.5	ug/Kgdrywt	1	5	5.0	0.71	2.5
Methyl tert-butyl Ether	U	2.5	ug/Kgdrywt	1	5	5.0	1.1	2.5
1,1-Dichloroethane	U	2.5	ug/Kgdrywt	1	5	5.0	1.7	2.5
cis-1,2-Dichloroethene	U	2.5	ug/Kgdrywt	1	5	5.0	0.91	2.5
Chloroform	U	2.5	ug/Kgdrywt	1	5	5.0	0.35	2.5
Carbon Tetrachloride	U	2.5	ug/Kgdrywt	1	5	5.0	1.3	2.5
1,1,1-Trichloroethane	U	2.5	ug/Kgdrywt	1	5	5.0	0.42	2.5
2-Butanone	U	12	ug/Kgdrywt	1	25	25.	5.9	12.
Benzene	U	2.5	ug/Kgdrywt	1	5	5.0	0.92	2.5
Cyclohexane	U	2.5	ug/Kgdrywt	1	5	5.0	1.4	2.5
1,2-Dichloroethane	U	2.5	ug/Kgdrywt	1	5	5.0	1.0	2.5
Trichloroethene	U	2.5	ug/Kgdrywt	1	5	5.0	0.59	2.5
1,2-Dichloropropane	U	2.5	ug/Kgdrywt	1	5	5.0	1.4	2.5
Bromodichloromethane	U	2.5	ug/Kgdrywt	1	5	5.0	0.60	2.5
cis-1,3-Dichloropropene	U	2.5	ug/Kgdrywt	1	5	5.0	0.72	2.5
Toluene	U	2.5	ug/Kgdrywt	1	5	5.0	1.4	2.5
4-Methyl-2-Pentanone	U	12	ug/Kgdrywt	1	25	25.	5.9	12.
Tetrachloroethene	U	2.5	ug/Kgdrywt	1	5	5.0	1.2	2.5
trans-1,3-Dichloropropene	U	2.5	ug/Kgdrywt	1	5	5.0	0.86	2.5
1,1,2-Trichloroethane	U	2.5	ug/Kgdrywt	1	5	5.0	0.97	2.5
Dibromochloromethane	U	2.5	ug/Kgdrywt	1	5	5.0	1.0	2.5
1,2-Dibromoethane	U	2.5	ug/Kgdrywt	1	5	5.0	1.2	2.5
2-Hexanone	U	12	ug/Kgdrywt	1	25	25.	4.8	12.
Chlorobenzene	U	2.5	ug/Kgdrywt	1	5	5.0	0.51	2.5

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Katahdin
ANALYTICAL SERVICES

Cert No E87604

Report of Analytical Results

Client: CH2MHill
Lab ID: SG2698-5
Client ID: VEP21-SB02A-011H
Project: NTR Vieques East CTO-037 1
SDG: SG2698
Lab File ID: T8140.D

Sample Date: 23-APR-13
Received Date: 24-APR-13
Extract Date: 24-APR-13
Extracted By: REC
Extraction Method: SW846 5035
Lab Prep Batch: WG123124

Analysis Date: 24-APR-13
Analyst: REC
Analysis Method: SW846 8260B
Matrix: SL
% Solids: 95.
Report Date: 09-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Ethylbenzene	U UJ SV	2.5	ug/Kgdrywt	1	5	5.0	0.65	2.5
Xylenes (total)	U	7.5	ug/Kgdrywt	1	15	15.	1.3	7.5
Styrene	U	2.5	ug/Kgdrywt	1	5	5.0	0.51	2.5
Bromoform	U	2.5	ug/Kgdrywt	1	5	5.0	0.70	2.5
Isopropylbenzene	U	2.5	ug/Kgdrywt	1	5	5.0	0.92	2.5
1,1,2,2-Tetrachloroethane	U	2.5	ug/Kgdrywt	1	5	5.0	0.84	2.5
1,3-Dichlorobenzene	UM	2.5	ug/Kgdrywt	1	5	5.0	0.62	2.5
1,4-Dichlorobenzene	UMM	2.5	ug/Kgdrywt	1	5	5.0	0.44	2.5
1,2-Dichlorobenzene	UMM	2.5	ug/Kgdrywt	1	5	5.0	0.78	2.5
1,2-Dibromo-3-Chloropropane	U	2.5	ug/Kgdrywt	1	5	5.0	1.5	2.5
1,2,4-Trichlorobenzene	UMM	2.5	ug/Kgdrywt	1	5	5.0	0.79	2.5
1,2,3-Trichlorobenzene	UMM	2.5	ug/Kgdrywt	1	5	5.0	0.76	2.5
Bromochloromethane	U	2.5	ug/Kgdrywt	1	5	5.0	0.91	2.5
M+P-Xylenes	UM	5.0	ug/Kgdrywt	1	10	10.	1.7	5.0
O-Xylene	U	2.5	ug/Kgdrywt	1	5	5.0	1.3	2.5
Methyl Acetate	UMM	3.0	ug/Kgdrywt	1	5	5.0	2.7	3.0
Methylcyclohexane	UM	2.5	ug/Kgdrywt	1	5	5.0	0.96	2.5
p-Bromofluorobenzene	*	65.9	%					
Toluene-D8		90.3	%					
1,2-Dichloroethane-D4		115.	%					
Dibromofluoromethane		118.	%					

JAC 6/19/13

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Katahdin
ANALYTICAL SERVICES

Cert No E87604

Report of Analytical Results

Client: CH2MHill
Lab ID: SG2698-6
Client ID: VEP21-SS03A-0001
Project: NTR Vieques East CTO-037 I
SDG: SG2698
Lab File ID: T8152.D

Sample Date: 23-APR-13
Received Date: 24-APR-13
Extract Date: 25-APR-13
Extracted By: REC
Extraction Method: SW846 5035
Lab Prep Batch: WG123190

Analysis Date: 25-APR-13
Analyst: REC
Analysis Method: SW846 8260B
Matrix: SL
% Solids: 91.
Report Date: 09-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Dichlorodifluoromethane	U XRE	7.0	ug/Kgdrywt	1	10	14.	1.3	7.0
Chloromethane	U	7.0	ug/Kgdrywt	1	10	14.	2.0	7.0
Vinyl Chloride	U	7.0	ug/Kgdrywt	1	10	14.	1.2	7.0
Bromomethane	U	7.0	ug/Kgdrywt	1	10	14.	1.5	7.0
Chloroethane	U	7.0	ug/Kgdrywt	1	10	14.	1.8	7.0
Trichlorofluoromethane	U	7.0	ug/Kgdrywt	1	10	14.	1.3	7.0
1,1-Dichloroethene	U	3.5	ug/Kgdrywt	1	5	7.0	1.3	3.5
Carbon Disulfide	U	3.5	ug/Kgdrywt	1	5	7.0	1.1	3.5
Freon-113	U	3.5	ug/Kgdrywt	1	5	7.0	1.3	3.5
Methylene Chloride	U	18	ug/Kgdrywt	1	25	35.	11.	18.
Acetone	J	13	ug/Kgdrywt	1	25	35.	7.1	18.
trans-1,2-Dichloroethene	U	3.5	ug/Kgdrywt	1	5	7.0	0.99	3.5
Methyl tert-butyl Ether	U	3.5	ug/Kgdrywt	1	5	7.0	1.5	3.5
1,1-Dichloroethane	U	3.5	ug/Kgdrywt	1	5	7.0	2.4	3.5
cis-1,2-Dichloroethene	U	3.5	ug/Kgdrywt	1	5	7.0	1.3	3.5
Chloroform	U	3.5	ug/Kgdrywt	1	5	7.0	0.49	3.5
Carbon Tetrachloride	U	3.5	ug/Kgdrywt	1	5	7.0	1.8	3.5
1,1,1-Trichloroethane	U	3.5	ug/Kgdrywt	1	5	7.0	0.59	3.5
2-Butanone	U	18	ug/Kgdrywt	1	25	35.	8.3	18.
Benzene	U	3.5	ug/Kgdrywt	1	5	7.0	1.3	3.5
Cyclohexane	U	3.5	ug/Kgdrywt	1	5	7.0	2.0	3.5
1,2-Dichloroethane	U	3.5	ug/Kgdrywt	1	5	7.0	1.4	3.5
Trichloroethene	U	3.5	ug/Kgdrywt	1	5	7.0	0.83	3.5
1,2-Dichloropropane	U	3.5	ug/Kgdrywt	1	5	7.0	2.0	3.5
Bromodichloromethane	U	3.5	ug/Kgdrywt	1	5	7.0	0.84	3.5
cis-1,3-Dichloropropene	U	3.5	ug/Kgdrywt	1	5	7.0	1.0	3.5
Toluene	U	3.5	ug/Kgdrywt	1	5	7.0	2.0	3.5
4-Methyl-2-Pentanone	U	18	ug/Kgdrywt	1	25	35.	8.3	18.
Tetrachloroethene	U	3.5	ug/Kgdrywt	1	5	7.0	1.7	3.5
trans-1,3-Dichloropropene	U	3.5	ug/Kgdrywt	1	5	7.0	1.2	3.5
1,1,2-Trichloroethane	U	3.5	ug/Kgdrywt	1	5	7.0	1.4	3.5
Dibromochloromethane	U	3.5	ug/Kgdrywt	1	5	7.0	1.4	3.5
1,2-Dibromoethane	U	3.5	ug/Kgdrywt	1	5	7.0	1.7	3.5
2-Hexanone	U	18	ug/Kgdrywt	1	25	35.	6.7	18.
Chlorobenzene	U	3.5	ug/Kgdrywt	1	5	7.0	0.71	3.5

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029

Katahdin
ANALYTICAL SERVICES

Cert No E87604

Report of Analytical Results

Client: CH2MHill
Lab ID: SG2698-6
Client ID: VEP21-SS03A-0001
Project: NTR Vieques East CTO-0371
SDG: SG2698
Lab File ID: T8152.D

Sample Date: 23-APR-13
Received Date: 24-APR-13
Extract Date: 25-APR-13
Extracted By: REC
Extraction Method: SW846 5035
Lab Prep Batch: WG123190

Analysis Date: 25-APR-13
Analyst: REC
Analysis Method: SW846 8260B
Matrix: SL
% Solids: 91.
Report Date: 09-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Ethylbenzene	U XRE	3.5	ug/Kgdrywt	1	5	7.0	0.91	3.5
Xylenes (total)	U	10	ug/Kgdrywt	1	15	21.	1.8	10.
Styrene	U	3.5	ug/Kgdrywt	1	5	7.0	0.71	3.5
Bromoform	U	3.5	ug/Kgdrywt	1	5	7.0	0.98	3.5
Isopropylbenzene	U	3.5	ug/Kgdrywt	1	5	7.0	1.3	3.5
1,1,2,2-Tetrachloroethane	U	3.5	ug/Kgdrywt	1	5	7.0	1.2	3.5
1,3-Dichlorobenzene	U	3.5	ug/Kgdrywt	1	5	7.0	0.87	3.5
1,4-Dichlorobenzene	U	3.5	ug/Kgdrywt	1	5	7.0	0.62	3.5
1,2-Dichlorobenzene	U	3.5	ug/Kgdrywt	1	5	7.0	1.1	3.5
1,2-Dibromo-3-Chloropropane	U	3.5	ug/Kgdrywt	1	5	7.0	2.1	3.5
1,2,4-Trichlorobenzene	U	3.5	ug/Kgdrywt	1	5	7.0	1.1	3.5
1,2,3-Trichlorobenzene	U	3.5	ug/Kgdrywt	1	5	7.0	1.1	3.5
Bromochloromethane	U	3.5	ug/Kgdrywt	1	5	7.0	1.3	3.5
M+P-Xylenes	U	7.0	ug/Kgdrywt	1	10	14.	2.4	7.0
O-Xylene	U	3.5	ug/Kgdrywt	1	5	7.0	1.8	3.5
Methyl Acetate	U	4.2	ug/Kgdrywt	1	5	7.0	3.8	4.2
Methylcyclohexane	U	3.5	ug/Kgdrywt	1	5	7.0	1.3	3.5
p-Bromofluorobenzene	*	65.0	%					
Toluene-D8		101.	%					
1,2-Dichloroethane-D4		130.	%					
Dibromofluoromethane	*	130.	%					

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030

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ANALYTICAL SERVICES

Cert No E87604

Report of Analytical Results

Client: CH2MHill
Lab ID: SG2698-6RA
Client ID: VEP21-SS03A-0001
Project: NTR Vieques East CTO-037 1
SDG: SG2698
Lab File ID: T8172.D

Sample Date: 23-APR-13
Received Date: 24-APR-13
Extract Date: 26-APR-13
Extracted By: REC
Extraction Method: SW846 5035
Lab Prep Batch: WG123249

Analysis Date: 26-APR-13
Analyst: REC
Analysis Method: SW846 8260B
Matrix: SL
% Solids: 91.
Report Date: 09-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Dichlorodifluoromethane	U	5.5	ug/Kgdrywt	1	10	11.	1.0	5.5
Chloromethane	U	5.5	ug/Kgdrywt	1	10	11.	1.5	5.5
Vinyl Chloride	U	5.5	ug/Kgdrywt	1	10	11.	0.96	5.5
Bromomethane	U	5.5	ug/Kgdrywt	1	10	11.	1.2	5.5
Chloroethane	U	5.5	ug/Kgdrywt	1	10	11.	1.4	5.5
Trichlorofluoromethane	U	5.5	ug/Kgdrywt	1	10	11.	1.0	5.5
1,1-Dichloroethene	U	2.8	ug/Kgdrywt	1	5	5.5	1.0	2.8
Carbon Disulfide	U	2.8	ug/Kgdrywt	1	5	5.5	0.86	2.8
Freon-113	U	2.8	ug/Kgdrywt	1	5	5.5	0.99	2.8
Methylene Chloride	~~U~~ UJ ICH	14	ug/Kgdrywt	1	25	28.	8.7	14.
Acetone	~~U~~ UJ CCH	14	ug/Kgdrywt	1	25	28.	5.6	14.
trans-1,2-Dichloroethene	U	2.8	ug/Kgdrywt	1	5	5.5	0.78	2.8
Methyl tert-butyl Ether	U	2.8	ug/Kgdrywt	1	5	5.5	1.2	2.8
1,1-Dichloroethane	U	2.8	ug/Kgdrywt	1	5	5.5	1.9	2.8
cis-1,2-Dichloroethene	U	2.8	ug/Kgdrywt	1	5	5.5	1.0	2.8
Chloroform	U	2.8	ug/Kgdrywt	1	5	5.5	0.38	2.8
Carbon Tetrachloride	U	2.8	ug/Kgdrywt	1	5	5.5	1.4	2.8
1,1,1-Trichloroethane	U	2.8	ug/Kgdrywt	1	5	5.5	0.46	2.8
2-Butanone	U	14	ug/Kgdrywt	1	25	28.	6.5	14.
Benzene	U	2.8	ug/Kgdrywt	1	5	5.5	1.0	2.8
Cyclohexane	U	2.8	ug/Kgdrywt	1	5	5.5	1.5	2.8
1,2-Dichloroethane	~~U~~ UJ ISL	2.8	ug/Kgdrywt	1	5	5.5	1.1	2.8
Trichloroethene	~~U~~	2.8	ug/Kgdrywt	1	5	5.5	0.65	2.8
1,2-Dichloropropane	~~U~~	2.8	ug/Kgdrywt	1	5	5.5	1.5	2.8
Bromodichloromethane	~~U~~	2.8	ug/Kgdrywt	1	5	5.5	0.66	2.8
cis-1,3-Dichloropropene	~~U~~	2.8	ug/Kgdrywt	1	5	5.5	0.79	2.8
Toluene	~~U~~	2.8	ug/Kgdrywt	1	5	5.5	1.5	2.8
4-Methyl-2-Pentanone	~~U~~	14	ug/Kgdrywt	1	25	28.	6.5	14.
Tetrachloroethene	U	2.8	ug/Kgdrywt	1	5	5.5	1.3	2.8
trans-1,3-Dichloropropene	~~U~~ UJ ISL	2.8	ug/Kgdrywt	1	5	5.5	0.95	2.8
1,1,2-Trichloroethane	~~U~~ UJ ISL	2.8	ug/Kgdrywt	1	5	5.5	1.1	2.8
Dibromochloromethane	U	2.8	ug/Kgdrywt	1	5	5.5	1.1	2.8
1,2-Dibromoethane	U	2.8	ug/Kgdrywt	1	5	5.5	1.3	2.8
2-Hexanone	U	14	ug/Kgdrywt	1	25	28.	5.3	14.
Chlorobenzene	U	2.8	ug/Kgdrywt	1	5	5.5	0.56	2.8

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031

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ANALYTICAL SERVICES

Cert No E87604

Report of Analytical Results

Client: CH2MHill
Lab ID: SG2698-6RA
Client ID: VEP21-SS03A-0001
Project: NTR Vieques East CTO-037 1
SDG: SG2698
Lab File ID: T8172.D

Sample Date: 23-APR-13
Received Date: 24-APR-13
Extract Date: 26-APR-13
Extracted By: REC
Extraction Method: SW846 5035
Lab Prep Batch: WG123249

Analysis Date: 26-APR-13
Analyst: REC
Analysis Method: SW846 8260B
Matrix: SL
% Solids: 91.
Report Date: 09-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Ethylbenzene	U	2.8	ug/Kgdrywt	1	5	5.5	0.72	2.8
Xylenes (total)	UL	8.2	ug/Kgdrywt	1	15	16.	1.4	8.2
Styrene	U	2.8	ug/Kgdrywt	1	5	5.5	0.56	2.8
Bromoform	U	2.8	ug/Kgdrywt	1	5	5.5	0.77	2.8
Isopropylbenzene	U	2.8	ug/Kgdrywt	1	5	5.5	1.0	2.8
1,1,2,2-Tetrachloroethane	U	2.8	ug/Kgdrywt	1	5	5.5	0.92	2.8
1,3-Dichlorobenzene	U	2.8	ug/Kgdrywt	1	5	5.5	0.68	2.8
1,4-Dichlorobenzene	U	2.8	ug/Kgdrywt	1	5	5.5	0.48	2.8
1,2-Dichlorobenzene	U	2.8	ug/Kgdrywt	1	5	5.5	0.86	2.8
1,2-Dibromo-3-Chloropropane	U	2.8	ug/Kgdrywt	1	5	5.5	1.6	2.8
1,2,4-Trichlorobenzene	U	2.8	ug/Kgdrywt	1	5	5.5	0.87	2.8
1,2,3-Trichlorobenzene	U	2.8	ug/Kgdrywt	1	5	5.5	0.84	2.8
Bromochloromethane	U	2.8	ug/Kgdrywt	1	5	5.5	1.0	2.8
M+P-Xylenes	U	5.5	ug/Kgdrywt	1	10	11.	1.9	5.5
O-Xylene	UL	2.8	ug/Kgdrywt	1	5	5.5	1.4	2.8
Methyl Acetate	U	3.3	ug/Kgdrywt	1	5	5.5	3.0	3.3
Methylcyclohexane	U	2.8	ug/Kgdrywt	1	5	5.5	1.0	2.8
p-Bromofluorobenzene		92.8	%					
Toluene-D8		114.	%					
1,2-Dichloroethane-D4		130.	%					
Dibromofluoromethane	*	130.	%					

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ANALYTICAL SERVICES

Cert No E87604

Report of Analytical Results

Client: CH2MHill
Lab ID: SG2698-7
Client ID: VEP21-SB03A-011H
Project: NTR Vieques East CTO-0371
SDG: SG2698
Lab File ID: T8153.D

Sample Date: 23-APR-13
Received Date: 24-APR-13
Extract Date: 25-APR-13
Extracted By: REC
Extraction Method: SW846 5035
Lab Prep Batch: WG123190

Analysis Date: 25-APR-13
Analyst: REC
Analysis Method: SW846 8260B
Matrix: SL
% Solids: 90.
Report Date: 09-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Dichlorodifluoromethane	U	5.5	ug/Kgdrywt	1	10	11.	1.0	5.5
Chloromethane	~~U~~ UJ CCV	5.5	ug/Kgdrywt	1	10	11.	1.5	5.5
Vinyl Chloride	U	5.5	ug/Kgdrywt	1	10	11.	0.96	5.5
Bromomethane	U	5.5	ug/Kgdrywt	1	10	11.	1.2	5.5
Chloroethane	U	5.5	ug/Kgdrywt	1	10	11.	1.4	5.5
Trichlorofluoromethane	U	5.5	ug/Kgdrywt	1	10	11.	1.0	5.5
1,1-Dichloroethene	U	2.8	ug/Kgdrywt	1	5	5.5	1.0	2.8
Carbon Disulfide	U	2.8	ug/Kgdrywt	1	5	5.5	0.86	2.8
Freon-113	U	2.8	ug/Kgdrywt	1	5	5.5	0.99	2.8
Methylene Chloride	~~U~~ UJ ICH	14	ug/Kgdrywt	1	25	28.	8.7	14.
Acetone	U	14	ug/Kgdrywt	1	25	28.	5.6	14.
trans-1,2-Dichloroethene	U	2.8	ug/Kgdrywt	1	5	5.5	0.78	2.8
Methyl tert-butyl Ether	U	2.8	ug/Kgdrywt	1	5	5.5	1.2	2.8
1,1-Dichloroethane	U	2.8	ug/Kgdrywt	1	5	5.5	1.9	2.8
cis-1,2-Dichloroethene	U	2.8	ug/Kgdrywt	1	5	5.5	1.0	2.8
Chloroform	U	2.8	ug/Kgdrywt	1	5	5.5	0.38	2.8
Carbon Tetrachloride	U	2.8	ug/Kgdrywt	1	5	5.5	1.4	2.8
1,1,1-Trichloroethane	U	2.8	ug/Kgdrywt	1	5	5.5	0.46	2.8
2-Butanone	U	14	ug/Kgdrywt	1	25	28.	6.5	14.
Benzene	U	2.8	ug/Kgdrywt	1	5	5.5	1.0	2.8
Cyclohexane	U	2.8	ug/Kgdrywt	1	5	5.5	1.5	2.8
1,2-Dichloroethane	U	2.8	ug/Kgdrywt	1	5	5.5	1.1	2.8
Trichloroethene	U	2.8	ug/Kgdrywt	1	5	5.5	0.65	2.8
1,2-Dichloropropane	U	2.8	ug/Kgdrywt	1	5	5.5	1.5	2.8
Bromodichloromethane	U	2.8	ug/Kgdrywt	1	5	5.5	0.66	2.8
cis-1,3-Dichloropropene	U	2.8	ug/Kgdrywt	1	5	5.5	0.79	2.8
Toluene	U	2.8	ug/Kgdrywt	1	5	5.5	1.5	2.8
4-Methyl-2-Pentanone	U	14	ug/Kgdrywt	1	25	28.	6.5	14.
Tetrachloroethene	U	2.8	ug/Kgdrywt	1	5	5.5	1.3	2.8
trans-1,3-Dichloropropene	U	2.8	ug/Kgdrywt	1	5	5.5	0.95	2.8
1,1,2-Trichloroethane	U	2.8	ug/Kgdrywt	1	5	5.5	1.1	2.8
Dibromochloromethane	U	2.8	ug/Kgdrywt	1	5	5.5	1.1	2.8
1,2-Dibromoethane	U	2.8	ug/Kgdrywt	1	5	5.5	1.3	2.8
2-Hexanone	U	14	ug/Kgdrywt	1	25	28.	5.3	14.
Chlorobenzene	U	2.8	ug/Kgdrywt	1	5	5.5	0.56	2.8

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ANALYTICAL SERVICES

Cert No E87604

Report of Analytical Results

Client: CH2MHill
Lab ID: SG2698-7
Client ID: VEP21-SB03A-011H
Project: NTR Vieques East CTO-037 I
SDG: SG2698
Lab File ID: T8153.D

Sample Date: 23-APR-13
Received Date: 24-APR-13
Extract Date: 25-APR-13
Extracted By: REC
Extraction Method: SW846 5035
Lab Prep Batch: WG123190

Analysis Date: 25-APR-13
Analyst: REC
Analysis Method: SW846 8260B
Matrix: SL
% Solids: 90.
Report Date: 09-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Ethylbenzene	U	2.8	ug/Kgdrywt	1	5	5.5	0.72	2.8
Xylenes (total)	U	8.2	ug/Kgdrywt	1	15	16.	1.4	8.2
Styrene	U	2.8	ug/Kgdrywt	1	5	5.5	0.56	2.8
Bromoform	U	2.8	ug/Kgdrywt	1	5	5.5	0.77	2.8
Isopropylbenzene	U	2.8	ug/Kgdrywt	1	5	5.5	1.0	2.8
1,1,2,2-Tetrachloroethane	U	2.8	ug/Kgdrywt	1	5	5.5	0.92	2.8
1,3-Dichlorobenzene	U	2.8	ug/Kgdrywt	1	5	5.5	0.68	2.8
1,4-Dichlorobenzene	U	2.8	ug/Kgdrywt	1	5	5.5	0.48	2.8
1,2-Dichlorobenzene	U	2.8	ug/Kgdrywt	1	5	5.5	0.86	2.8
1,2-Dibromo-3-Chloropropane	U	2.8	ug/Kgdrywt	1	5	5.5	1.6	2.8
1,2,4-Trichlorobenzene	U	2.8	ug/Kgdrywt	1	5	5.5	0.87	2.8
1,2,3-Trichlorobenzene	U	2.8	ug/Kgdrywt	1	5	5.5	0.84	2.8
Bromochloromethane	U	2.8	ug/Kgdrywt	1	5	5.5	1.0	2.8
M+P-Xylenes	U	5.5	ug/Kgdrywt	1	10	11.	1.9	5.5
O-Xylene	U	2.8	ug/Kgdrywt	1	5	5.5	1.4	2.8
Methyl Acetate	U	3.3	ug/Kgdrywt	1	5	5.5	3.0	3.3
Methylcyclohexane	U	2.8	ug/Kgdrywt	1	5	5.5	1.0	2.8
p-Bromofluorobenzene		98.6	%					
Toluene-D8	*	120.	%					
1,2-Dichloroethane-D4	*	142.	%					
Dibromofluoromethane	*	136.	%					

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034

Katahdin
ANALYTICAL SERVICES

Cert No E87604

Report of Analytical Results

Client: CH2MHill
Lab ID: SG2698-8
Client ID: VEP21-SS04A-0001
Project: NTR Vieques East CTO-0371
SDG: SG2698
Lab File ID: T8154.D

Sample Date: 23-APR-13
Received Date: 24-APR-13
Extract Date: 25-APR-13
Extracted By: REC
Extraction Method: SW846 5035
Lab Prep Batch: WG123190

Analysis Date: 25-APR-13
Analyst: REC
Analysis Method: SW846 8260B
Matrix: SL
% Solids: 85.
Report Date: 09-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Dichlorodifluoromethane	U UJ, SSL	7.5	ug/Kgdrywt	1	10	15.	1.4	7.5
Chloromethane	U	7.5	ug/Kgdrywt	1	10	15.	2.1	7.5
Vinyl Chloride	U	7.5	ug/Kgdrywt	1	10	15.	1.3	7.5
Bromomethane	U	7.5	ug/Kgdrywt	1	10	15.	1.6	7.5
Chloroethane	U	7.5	ug/Kgdrywt	1	10	15.	2.0	7.5
Trichlorofluoromethane	U	7.5	ug/Kgdrywt	1	10	15.	1.4	7.5
1,1-Dichloroethene	U	3.8	ug/Kgdrywt	1	5	7.5	1.4	3.8
Carbon Disulfide	U	3.8	ug/Kgdrywt	1	5	7.5	1.2	3.8
Freon-113	U	3.8	ug/Kgdrywt	1	5	7.5	1.4	3.8
Methylene Chloride	U	19	ug/Kgdrywt	1	25	38.	12.	19.
Acetone	UJ, SSL, ~~U, MDL~~	~~14~~ 19	ug/Kgdrywt	1	25	38.	7.6	19.
trans-1,2-Dichloroethene	U UJ SSL	3.8	ug/Kgdrywt	1	5	7.5	1.1	3.8
Methyl tert-butyl Ether	U	3.8	ug/Kgdrywt	1	5	7.5	1.6	3.8
1,1-Dichloroethane	U	3.8	ug/Kgdrywt	1	5	7.5	2.6	3.8
cis-1,2-Dichloroethene	U	3.8	ug/Kgdrywt	1	5	7.5	1.4	3.8
Chloroform	U	3.8	ug/Kgdrywt	1	5	7.5	0.52	3.8
Carbon Tetrachloride	U	3.8	ug/Kgdrywt	1	5	7.5	2.0	3.8
1,1,1-Trichloroethane	U	3.8	ug/Kgdrywt	1	5	7.5	0.63	3.8
2-Butanone	U	19	ug/Kgdrywt	1	25	38.	8.8	19.
Benzene	U	3.8	ug/Kgdrywt	1	5	7.5	1.4	3.8
Cyclohexane	U	3.8	ug/Kgdrywt	1	5	7.5	2.1	3.8
1,2-Dichloroethane	U	3.8	ug/Kgdrywt	1	5	7.5	1.5	3.8
Trichloroethene	U	3.8	ug/Kgdrywt	1	5	7.5	0.88	3.8
1,2-Dichloropropane	U	3.8	ug/Kgdrywt	1	5	7.5	2.1	3.8
Bromodichloromethane	U	3.8	ug/Kgdrywt	1	5	7.5	0.90	3.8
cis-1,3-Dichloropropene	U	3.8	ug/Kgdrywt	1	5	7.5	1.1	3.8
Toluene	U	3.8	ug/Kgdrywt	1	5	7.5	2.1	3.8
4-Methyl-2-Pentanone	U	19	ug/Kgdrywt	1	25	38.	8.8	19.
Tetrachloroethene	U	3.8	ug/Kgdrywt	1	5	7.5	1.8	3.8
trans-1,3-Dichloropropene	U	3.8	ug/Kgdrywt	1	5	7.5	1.3	3.8
1,1,2-Trichloroethane	U	3.8	ug/Kgdrywt	1	5	7.5	1.4	3.8
Dibromochloromethane	U	3.8	ug/Kgdrywt	1	5	7.5	1.5	3.8
1,2-Dibromoethane	U	3.8	ug/Kgdrywt	1	5	7.5	1.8	3.8
2-Hexanone	U	19	ug/Kgdrywt	1	25	38.	7.2	19.
Chlorobenzene	U	3.8	ug/Kgdrywt	1	5	7.5	0.76	3.8

1 Correction LM 061013

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Katahdin
ANALYTICAL SERVICES

Cert No E87604

Report of Analytical Results

Client: CH2MHill
Lab ID: SG2698-8
Client ID: VEP21-SS04A-0001
Project: NTR Vieques East CTO-037 I
SDG: SG2698
Lab File ID: T8154.D

Sample Date: 23-APR-13
Received Date: 24-APR-13
Extract Date: 25-APR-13
Extracted By: REC
Extraction Method: SW846 5035
Lab Prep Batch: WG123190

Analysis Date: 25-APR-13
Analyst: REC
Analysis Method: SW846 8260B
Matrix: SL
% Solids: 85.
Report Date: 09-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Ethylbenzene	U UJ SSL	3.8	ug/Kgdrywt	1	5	7.5	0.98	3.8
Xylenes (total)	U	11	ug/Kgdrywt	1	15	22.	2.0	11.
Styrene	U	3.8	ug/Kgdrywt	1	5	7.5	0.76	3.8
Bromoform	U	3.8	ug/Kgdrywt	1	5	7.5	1.0	3.8
Isopropylbenzene	U	3.8	ug/Kgdrywt	1	5	7.5	1.4	3.8
1,1,2,2-Tetrachloroethane	U	3.8	ug/Kgdrywt	1	5	7.5	1.3	3.8
1,3-Dichlorobenzene	U	3.8	ug/Kgdrywt	1	5	7.5	0.93	3.8
1,4-Dichlorobenzene	U	3.8	ug/Kgdrywt	1	5	7.5	0.66	3.8
1,2-Dichlorobenzene	U	3.8	ug/Kgdrywt	1	5	7.5	1.2	3.8
1,2-Dibromo-3-Chloropropane	U	3.8	ug/Kgdrywt	1	5	7.5	2.2	3.8
1,2,4-Trichlorobenzene	U	3.8	ug/Kgdrywt	1	5	7.5	1.2	3.8
1,2,3-Trichlorobenzene	U	3.8	ug/Kgdrywt	1	5	7.5	1.1	3.8
Bromochloromethane	U	3.8	ug/Kgdrywt	1	5	7.5	1.4	3.8
M+P-Xylenes	U	7.5	ug/Kgdrywt	1	10	15.	2.6	7.5
O-Xylene	U	3.8	ug/Kgdrywt	1	5	7.5	2.0	3.8
Methyl Acetate	U	4.5	ug/Kgdrywt	1	5	7.5	4.0	4.5
Methylcyclohexane	U	3.8	ug/Kgdrywt	1	5	7.5	1.4	3.8
p-Bromofluorobenzene	*	64.9	%					
Toluene-D8		96.0	%					
1,2-Dichloroethane-D4		130.	%					
Dibromofluoromethane		125.	%					

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Katahdin
ANALYTICAL SERVICES

Cert No E87604

Report of Analytical Results

Client: CH2MHill
Lab ID: SG2698-8DL
Client ID: VEP21-SS04A-0001
Project: NTR Vieques East CTO-037 1
SDG: SG2698
Lab File ID: F9636.D

Sample Date: 23-APR-13
Received Date: 24-APR-13
Extract Date: 07-MAY-13
Extracted By: REC
Extraction Method: SW846 5035
Lab Prep Batch: WG123768

Analysis Date: 07-MAY-13
Analyst: REC
Analysis Method: SW846 8260B
Matrix: SL
% Solids: 85.
Report Date: 09-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Dichlorodifluoromethane	U XRE	400	ug/Kgdrywt	1	10	800	74.	400
Chloromethane	U	400	ug/Kgdrywt	1	10	800	110	400
Vinyl Chloride	U	400	ug/Kgdrywt	1	10	800	70.	400
Bromomethane	J	170	ug/Kgdrywt	1	10	800	88.	400
Chloroethane	U	400	ug/Kgdrywt	1	10	800	100	400
Trichlorofluoromethane	U	400	ug/Kgdrywt	1	10	800	73.	400
1,1-Dichloroethene	U	200	ug/Kgdrywt	1	5	400	74.	200
Carbon Disulfide	U	200	ug/Kgdrywt	1	5	400	62.	200
Freon-113	U	200	ug/Kgdrywt	1	5	400	72.	200
Methylene Chloride	U	1000	ug/Kgdrywt	1	25	2000	630	1000
Acetone	U	1000	ug/Kgdrywt	1	25	2000	410	1000
trans-1,2-Dichloroethene	U	200	ug/Kgdrywt	1	5	400	57.	200
Methyl tert-butyl Ether	U	200	ug/Kgdrywt	1	5	400	88.	200
1,1-Dichloroethane	U	200	ug/Kgdrywt	1	5	400	140	200
cis-1,2-Dichloroethene	U	200	ug/Kgdrywt	1	5	400	73.	200
Chloroform	U	200	ug/Kgdrywt	1	5	400	28.	200
Carbon Tetrachloride	U	200	ug/Kgdrywt	1	5	400	100	200
1,1,1-Trichloroethane	U	200	ug/Kgdrywt	1	5	400	34.	200
2-Butanone	U	1000	ug/Kgdrywt	1	25	2000	470	1000
Benzene	U	200	ug/Kgdrywt	1	5	400	74.	200
Cyclohexane	U	200	ug/Kgdrywt	1	5	400	110	200
1,2-Dichloroethane	U	200	ug/Kgdrywt	1	5	400	80.	200
Trichloroethene	U	200	ug/Kgdrywt	1	5	400	47.	200
1,2-Dichloropropane	U	200	ug/Kgdrywt	1	5	400	110	200
Bromodichloromethane	U	200	ug/Kgdrywt	1	5	400	48.	200
cis-1,3-Dichloropropene	U	200	ug/Kgdrywt	1	5	400	58.	200
Toluene	U	200	ug/Kgdrywt	1	5	400	110	200
4-Methyl-2-Pentanone	U	1000	ug/Kgdrywt	1	25	2000	470	1000
Tetrachloroethene	U	200	ug/Kgdrywt	1	5	400	96.	200
trans-1,3-Dichloropropene	U	200	ug/Kgdrywt	1	5	400	69.	200
1,1,2-Trichloroethane	U	200	ug/Kgdrywt	1	5	400	78.	200
Dibromochloromethane	U	200	ug/Kgdrywt	1	5	400	80.	200
1,2-Dibromoethane	U	200	ug/Kgdrywt	1	5	400	96.	200
2-Hexanone	U	1000	ug/Kgdrywt	1	25	2000	380	1000
Chlorobenzene	U	200	ug/Kgdrywt	1	5	400	41.	200

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ANALYTICAL SERVICES

Cert No E87604

Report of Analytical Results

Client: CH2MHill
Lab ID: SG2698-8DL
Client ID: VEP21-SS04A-0001
Project: NTR Vieques East CTO-0371
SDG: SG2698
Lab File ID: F9636.D

Sample Date: 23-APR-13
Received Date: 24-APR-13
Extract Date: 07-MAY-13
Extracted By: REC
Extraction Method: SW846 5035
Lab Prep Batch: WG123768

Analysis Date: 07-MAY-13
Analyst: REC
Analysis Method: SW846 8260B
Matrix: SL
% Solids: 85.
Report Date: 09-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Ethylbenzene	U XRE	200	ug/Kgdrywt	1	5	400	52.	200
Xylenes (total)	U	600	ug/Kgdrywt	1	15	1200	100	600
Styrene	U	200	ug/Kgdrywt	1	5	400	41.	200
Bromoform	U	200	ug/Kgdrywt	1	5	400	56.	200
Isopropylbenzene	U	200	ug/Kgdrywt	1	5	400	74.	200
1,1,2,2-Tetrachloroethane	U	200	ug/Kgdrywt	1	5	400	67.	200
1,3-Dichlorobenzene	U	200	ug/Kgdrywt	1	5	400	50.	200
1,4-Dichlorobenzene	U	200	ug/Kgdrywt	1	5	400	35.	200
1,2-Dichlorobenzene	U	200	ug/Kgdrywt	1	5	400	62.	200
1,2-Dibromo-3-Chloropropane	U	200	ug/Kgdrywt	1	5	400	120	200
1,2,4-Trichlorobenzene	U	200	ug/Kgdrywt	1	5	400	63.	200
1,2,3-Trichlorobenzene	U	200	ug/Kgdrywt	1	5	400	61.	200
Bromochloromethane	U	200	ug/Kgdrywt	1	5	400	73.	200
M+P-Xylenes	U	400	ug/Kgdrywt	1	10	800	140	400
O-Xylene	U	200	ug/Kgdrywt	1	5	400	100	200
Methyl Acetate	L	520	ug/Kgdrywt	1	5	400	220	240
Methylcyclohexane	U	200	ug/Kgdrywt	1	5	400	77.	200
p-Bromofluorobenzene		107.	%					
Toluene-D8		100.	%					
1,2-Dichloroethane-D4		95.3	%					
Dibromofluoromethane		90.4	%					

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Report of Analytical Results

Client: CH2MHill
Lab ID: SG2698-8RA
Client ID: VEP21-SS04A-0001
Project: NTR Vieques East CTO-037 I
SDG: SG2698
Lab File ID: T8173.D

Sample Date: 23-APR-13
Received Date: 24-APR-13
Extract Date: 26-APR-13
Extracted By: REC
Extraction Method: SW846 5035
Lab Prep Batch: WG123249

Analysis Date: 26-APR-13
Analyst: REC
Analysis Method: SW846 8260B
Matrix: SL
% Solids: 85.
Report Date: 09-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Dichlorodifluoromethane	U XRE	7.0	ug/Kgdrywt	1	10	14.	1.3	7.0
Chloromethane	U	7.0	ug/Kgdrywt	1	10	14.	2.0	7.0
Vinyl Chloride	U	7.0	ug/Kgdrywt	1	10	14.	1.2	7.0
Bromomethane	U	7.0	ug/Kgdrywt	1	10	14.	1.5	7.0
Chloroethane	U	7.0	ug/Kgdrywt	1	10	14.	1.8	7.0
Trichlorofluoromethane	U	7.0	ug/Kgdrywt	1	10	14.	1.3	7.0
1,1-Dichloroethene	U	3.5	ug/Kgdrywt	1	5	7.0	1.3	3.5
Carbon Disulfide	U	3.5	ug/Kgdrywt	1	5	7.0	1.1	3.5
Freon-113	U	3.5	ug/Kgdrywt	1	5	7.0	1.3	3.5
Methylene Chloride	U	18	ug/Kgdrywt	1	25	35.	11.	18.
Acetone	EL	940	ug/Kgdrywt	1	25	35.	7.1	18
trans-1,2-Dichloroethene	U	3.5	ug/Kgdrywt	1	5	7.0	0.99	3.5
Methyl tert-butyl Ether	U	3.5	ug/Kgdrywt	1	5	7.0	1.5	3.5
1,1-Dichloroethane	U	3.5	ug/Kgdrywt	1	5	7.0	2.4	3.5
cis-1,2-Dichloroethene	U	3.5	ug/Kgdrywt	1	5	7.0	1.3	3.5
Chloroform	U	3.5	ug/Kgdrywt	1	5	7.0	0.49	3.5
Carbon Tetrachloride	U	3.5	ug/Kgdrywt	1	5	7.0	1.8	3.5
1,1,1-Trichloroethane	U	3.5	ug/Kgdrywt	1	5	7.0	0.59	3.5
2-Butanone		42	ug/Kgdrywt	1	25	35.	8.3	18.
Benzene	U	3.5	ug/Kgdrywt	1	5	7.0	1.3	3.5
Cyclohexane	U	3.5	ug/Kgdrywt	1	5	7.0	2.0	3.5
1,2-Dichloroethane	U	3.5	ug/Kgdrywt	1	5	7.0	1.4	3.5
Trichloroethene	U	3.5	ug/Kgdrywt	1	5	7.0	0.83	3.5
1,2-Dichloropropane	U	3.5	ug/Kgdrywt	1	5	7.0	2.0	3.5
Bromodichloromethane	U	3.5	ug/Kgdrywt	1	5	7.0	0.84	3.5
cis-1,3-Dichloropropene	U	3.5	ug/Kgdrywt	1	5	7.0	1.0	3.5
Toluene	U	3.5	ug/Kgdrywt	1	5	7.0	2.0	3.5
4-Methyl-2-Pentanone	U	18	ug/Kgdrywt	1	25	35.	8.3	18.
Tetrachloroethene	U	3.5	ug/Kgdrywt	1	5	7.0	1.7	3.5
trans-1,3-Dichloropropene	U	3.5	ug/Kgdrywt	1	5	7.0	1.2	3.5
1,1,2-Trichloroethane	U	3.5	ug/Kgdrywt	1	5	7.0	1.4	3.5
Dibromochloromethane	U	3.5	ug/Kgdrywt	1	5	7.0	1.4	3.5
1,2-Dibromoethane	U	3.5	ug/Kgdrywt	1	5	7.0	1.7	3.5
2-Hexanone	U	18	ug/Kgdrywt	1	25	35.	6.7	18.
Chlorobenzene	U	3.5	ug/Kgdrywt	1	5	7.0	0.71	3.5

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Katahdin
ANALYTICAL SERVICES

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Report of Analytical Results

Client: CH2MHill
Lab ID: SG2698-8RA
Client ID: VEP21-SS04A-0001
Project: NTR Vieques East CTO-037 1
SDG: SG2698
Lab File ID: T8173.D

Sample Date: 23-APR-13
Received Date: 24-APR-13
Extract Date: 26-APR-13
Extracted By: REC
Extraction Method: SW846 5035
Lab Prep Batch: WG123249

Analysis Date: 26-APR-13
Analyst: REC
Analysis Method: SW846 8260B
Matrix: SL
% Solids: 85.
Report Date: 09-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Ethylbenzene	U XLE	3.5	ug/Kgdrywt	1	5	7.0	0.91	3.5
Xylenes (total)	UL	10	ug/Kgdrywt	1	15	21.	1.8	10.
Styrene	U	3.5	ug/Kgdrywt	1	5	7.0	0.71	3.5
Bromoform	U	3.5	ug/Kgdrywt	1	5	7.0	0.98	3.5
Isopropylbenzene	U	3.5	ug/Kgdrywt	1	5	7.0	1.3	3.5
1,1,2,2-Tetrachloroethane	U	3.5	ug/Kgdrywt	1	5	7.0	1.2	3.5
1,3-Dichlorobenzene	U	3.5	ug/Kgdrywt	1	5	7.0	0.87	3.5
1,4-Dichlorobenzene	U	3.5	ug/Kgdrywt	1	5	7.0	0.62	3.5
1,2-Dichlorobenzene	U	3.5	ug/Kgdrywt	1	5	7.0	1.1	3.5
1,2-Dibromo-3-Chloropropane	U	3.5	ug/Kgdrywt	1	5	7.0	2.1	3.5
1,2,4-Trichlorobenzene	U	3.5	ug/Kgdrywt	1	5	7.0	1.1	3.5
1,2,3-Trichlorobenzene	U	3.5	ug/Kgdrywt	1	5	7.0	1.1	3.5
Bromochloromethane	U	3.5	ug/Kgdrywt	1	5	7.0	1.3	3.5
M+P-Xylenes	U	7.0	ug/Kgdrywt	1	10	14.	2.4	7.0
O-Xylene	UL	3.5	ug/Kgdrywt	1	5	7.0	1.8	3.5
Methyl Acetate	U	4.2	ug/Kgdrywt	1	5	7.0	3.8	4.2
Methylcyclohexane	U	3.5	ug/Kgdrywt	1	5	7.0	1.3	3.5
p-Bromofluorobenzene	*	61.4	%					
Toluene-D8		95.5	%					
1,2-Dichloroethane-D4	*	137.	%					
Dibromofluoromethane	*	131.	%					

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Katahdin
ANALYTICAL SERVICES

Cert No E87604

Report of Analytical Results

Client: CH2MHill
Lab ID: SG2698-9
Client ID: VEP21-SB04A-011H
Project: NTR Vieques East CTO-037 I
SDG: SG2698
Lab File ID: T8155.D

Sample Date: 23-APR-13
Received Date: 24-APR-13
Extract Date: 25-APR-13
Extracted By: REC
Extraction Method: SW846 5035
Lab Prep Batch: WG123190

Analysis Date: 25-APR-13
Analyst: REC
Analysis Method: SW846 8260B
Matrix: SL
% Solids: 88.
Report Date: 16-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Dichlorodifluoromethane	U XRE	7.0	ug/Kgdrywt	1	10	14.	1.3	7.0
Chloromethane	U	7.0	ug/Kgdrywt	1	10	14.	2.0	7.0
Vinyl Chloride	U	7.0	ug/Kgdrywt	1	10	14.	1.2	7.0
Bromomethane	U	7.0	ug/Kgdrywt	1	10	14.	1.5	7.0
Chloroethane	U	7.0	ug/Kgdrywt	1	10	14.	1.8	7.0
Trichlorofluoromethane	U	7.0	ug/Kgdrywt	1	10	14.	1.3	7.0
1,1-Dichloroethene	U	3.5	ug/Kgdrywt	1	5	7.0	1.3	3.5
Carbon Disulfide	U	3.5	ug/Kgdrywt	1	5	7.0	1.1	3.5
Freon-113	U	3.5	ug/Kgdrywt	1	5	7.0	1.3	3.5
Methylene Chloride	U	18	ug/Kgdrywt	1	25	35.	11.	18.
Acetone	U	18	ug/Kgdrywt	1	25	35.	7.1	18.
trans-1,2-Dichloroethene	U	3.5	ug/Kgdrywt	1	5	7.0	0.99	3.5
Methyl tert-butyl Ether	U	3.5	ug/Kgdrywt	1	5	7.0	1.5	3.5
1,1-Dichloroethane	U	3.5	ug/Kgdrywt	1	5	7.0	2.4	3.5
cis-1,2-Dichloroethene	U	3.5	ug/Kgdrywt	1	5	7.0	1.3	3.5
Chloroform	U	3.5	ug/Kgdrywt	1	5	7.0	0.49	3.5
Carbon Tetrachloride	U	3.5	ug/Kgdrywt	1	5	7.0	1.8	3.5
1,1,1-Trichloroethane	U	3.5	ug/Kgdrywt	1	5	7.0	0.59	3.5
2-Butanone	U	18	ug/Kgdrywt	1	25	35.	8.3	18.
Benzene	U	3.5	ug/Kgdrywt	1	5	7.0	1.3	3.5
Cyclohexane	U	3.5	ug/Kgdrywt	1	5	7.0	2.0	3.5
1,2-Dichloroethane	U	3.5	ug/Kgdrywt	1	5	7.0	1.4	3.5
Trichloroethene	U	3.5	ug/Kgdrywt	1	5	7.0	0.83	3.5
1,2-Dichloropropane	U	3.5	ug/Kgdrywt	1	5	7.0	2.0	3.5
Bromodichloromethane	U	3.5	ug/Kgdrywt	1	5	7.0	0.84	3.5
cis-1,3-Dichloropropene	U	3.5	ug/Kgdrywt	1	5	7.0	1.0	3.5
Toluene	U	3.5	ug/Kgdrywt	1	5	7.0	2.0	3.5
4-Methyl-2-Pentanone	U	18	ug/Kgdrywt	1	25	35.	8.3	18.
Tetrachloroethene	U	3.5	ug/Kgdrywt	1	5	7.0	1.7	3.5
trans-1,3-Dichloropropene	U	3.5	ug/Kgdrywt	1	5	7.0	1.2	3.5
1,1,2-Trichloroethane	U	3.5	ug/Kgdrywt	1	5	7.0	1.4	3.5
Dibromochloromethane	U	3.5	ug/Kgdrywt	1	5	7.0	1.4	3.5
1,2-Dibromoethane	U	3.5	ug/Kgdrywt	1	5	7.0	1.7	3.5
2-Hexanone	U	18	ug/Kgdrywt	1	25	35.	6.7	18.
Chlorobenzene	U	3.5	ug/Kgdrywt	1	5	7.0	0.71	3.5

JRC 6/19/13

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041

Katahdin
ANALYTICAL SERVICES

Cert No E87604

Report of Analytical Results

Client: CH2MHill
Lab ID: SG2698-9
Client ID: VEP21-SB04A-011H
Project: NTR Vieques East CTO-037 1
SDG: SG2698
Lab File ID: T8155.D

Sample Date: 23-APR-13
Received Date: 24-APR-13
Extract Date: 25-APR-13
Extracted By: REC
Extraction Method: SW846 5035
Lab Prep Batch: WG123190

Analysis Date: 25-APR-13
Analyst: REC
Analysis Method: SW846 8260B
Matrix: SL
% Solids: 88.
Report Date: 16-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Ethylbenzene	U XRE	3.5	ug/Kgdrywt	1	5	7.0	0.91	3.5
Xylenes (total)	U	10	ug/Kgdrywt	1	15	21.	1.8	10.
Styrene	U	3.5	ug/Kgdrywt	1	5	7.0	0.71	3.5
Bromoform	U	3.5	ug/Kgdrywt	1	5	7.0	0.98	3.5
Isopropylbenzene	U	3.5	ug/Kgdrywt	1	5	7.0	1.3	3.5
1,1,2,2-Tetrachloroethane	U	3.5	ug/Kgdrywt	1	5	7.0	1.2	3.5
1,3-Dichlorobenzene	U	3.5	ug/Kgdrywt	1	5	7.0	0.87	3.5
1,4-Dichlorobenzene	U	3.5	ug/Kgdrywt	1	5	7.0	0.62	3.5
1,2-Dichlorobenzene	U	3.5	ug/Kgdrywt	1	5	7.0	1.1	3.5
1,2-Dibromo-3-Chloropropane	U	3.5	ug/Kgdrywt	1	5	7.0	2.1	3.5
1,2,4-Trichlorobenzene	U	3.5	ug/Kgdrywt	1	5	7.0	1.1	3.5
1,2,3-Trichlorobenzene	U	3.5	ug/Kgdrywt	1	5	7.0	1.1	3.5
Bromochloromethane	U	3.5	ug/Kgdrywt	1	5	7.0	1.3	3.5
M+P-Xylenes	U	7.0	ug/Kgdrywt	1	10	14.	2.4	7.0
O-Xylene	U	3.5	ug/Kgdrywt	1	5	7.0	1.8	3.5
Methyl Acetate	U	4.2	ug/Kgdrywt	1	5	7.0	3.8	4.2
Methylcyclohexane	U	3.5	ug/Kgdrywt	1	5	7.0	1.3	3.5
p-Bromofluorobenzene	*	65.3	%					
Toluene-D8		104.	%					
1,2-Dichloroethane-D4	*	144.	%					
Dibromofluoromethane	*	139.	%					

JAC 6/19/13

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042

Katahdin
ANALYTICAL SERVICES

Cert No E87604

Report of Analytical Results

Client: CH2MHill
Lab ID: SG2698-9RA
Client ID: VEP21-SB04A-011H
Project: NTR Vieques East CTO-037 I
SDG: SG2698
Lab File ID: T8174.D

Sample Date: 23-APR-13
Received Date: 24-APR-13
Extract Date: 26-APR-13
Extracted By: REC
Extraction Method: SW846 5035
Lab Prep Batch: WG123249

Analysis Date: 26-APR-13
Analyst: REC
Analysis Method: SW846 8260B
Matrix: SL
% Solids: 88.
Report Date: 09-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Dichlorodifluoromethane	U WSSL	8.0	ug/Kgdrywt	1	10	16.	1.5	8.0
Chloromethane	U	8.0	ug/Kgdrywt	1	10	16.	2.2	8.0
Vinyl Chloride	U	8.0	ug/Kgdrywt	1	10	16.	1.4	8.0
Bromomethane	U	8.0	ug/Kgdrywt	1	10	16.	1.8	8.0
Chloroethane	U	8.0	ug/Kgdrywt	1	10	16.	2.1	8.0
Trichlorofluoromethane	U	8.0	ug/Kgdrywt	1	10	16.	1.4	8.0
1,1-Dichloroethene	U	4.0	ug/Kgdrywt	1	5	8.0	1.5	4.0
Carbon Disulfide	U	4.0	ug/Kgdrywt	1	5	8.0	1.2	4.0
Freon-113	U	4.0	ug/Kgdrywt	1	5	8.0	1.4	4.0
Methylene Chloride	U	20	ug/Kgdrywt	1	25	40.	13.	20.
Acetone	UL	20	ug/Kgdrywt	1	25	40.	8.2	20.
trans-1,2-Dichloroethene	U	4.0	ug/Kgdrywt	1	5	8.0	1.1	4.0
Methyl tert-butyl Ether	U	4.0	ug/Kgdrywt	1	5	8.0	1.8	4.0
1,1-Dichloroethane	U	4.0	ug/Kgdrywt	1	5	8.0	2.7	4.0
cis-1,2-Dichloroethene	U	4.0	ug/Kgdrywt	1	5	8.0	1.4	4.0
Chloroform	U	4.0	ug/Kgdrywt	1	5	8.0	0.56	4.0
Carbon Tetrachloride	U	4.0	ug/Kgdrywt	1	5	8.0	2.1	4.0
1,1,1-Trichloroethane	U	4.0	ug/Kgdrywt	1	5	8.0	0.67	4.0
2-Butanone	U	20	ug/Kgdrywt	1	25	40.	9.4	20.
Benzene	U	4.0	ug/Kgdrywt	1	5	8.0	1.5	4.0
Cyclohexane	U	4.0	ug/Kgdrywt	1	5	8.0	2.2	4.0
1,2-Dichloroethane	U	4.0	ug/Kgdrywt	1	5	8.0	1.6	4.0
Trichloroethene	U	4.0	ug/Kgdrywt	1	5	8.0	0.94	4.0
1,2-Dichloropropane	U	4.0	ug/Kgdrywt	1	5	8.0	2.2	4.0
Bromodichloromethane	U	4.0	ug/Kgdrywt	1	5	8.0	0.96	4.0
cis-1,3-Dichloropropene	U	4.0	ug/Kgdrywt	1	5	8.0	1.2	4.0
Toluene	U	4.0	ug/Kgdrywt	1	5	8.0	2.2	4.0
4-Methyl-2-Pentanone	U	20	ug/Kgdrywt	1	25	40.	9.4	20.
Tetrachloroethene	U	4.0	ug/Kgdrywt	1	5	8.0	1.9	4.0
trans-1,3-Dichloropropene	U	4.0	ug/Kgdrywt	1	5	8.0	1.4	4.0
1,1,2-Trichloroethane	U	4.0	ug/Kgdrywt	1	5	8.0	1.6	4.0
Dibromochloromethane	U	4.0	ug/Kgdrywt	1	5	8.0	1.6	4.0
1,2-Dibromoethane	U	4.0	ug/Kgdrywt	1	5	8.0	1.9	4.0
2-Hexanone	U	20	ug/Kgdrywt	1	25	40.	7.7	20.
Chlorobenzene	U	4.0	ug/Kgdrywt	1	5	8.0	0.82	4.0

JLC 6/19/13

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Katahdin
ANALYTICAL SERVICES

Certificated in accordance with nelac
Cert No E87604

Report of Analytical Results

Client: CH2MHill
Lab ID: SG2698-9RA
Client ID: VEP21-SB04A-011H
Project: NTR Vieques East CTO-037 I
SDG: SG2698
Lab File ID: T8174.D

Sample Date: 23-APR-13
Received Date: 24-APR-13
Extract Date: 26-APR-13
Extracted By: REC
Extraction Method: SW846 5035
Lab Prep Batch: WG123249

Analysis Date: 26-APR-13
Analyst: REC
Analysis Method: SW846 8260B
Matrix: SL
% Solids: 88.
Report Date: 09-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Ethylbenzene	U UJSSL	4.0	ug/Kgdrywt	1	5	8.0	1.0	4.0
Xylenes (total)	UL	12	ug/Kgdrywt	1	15	24.	2.1	12.
Styrene	U	4.0	ug/Kgdrywt	1	5	8.0	0.82	4.0
Bromoform	U	4.0	ug/Kgdrywt	1	5	8.0	1.1	4.0
Isopropylbenzene	U	4.0	ug/Kgdrywt	1	5	8.0	1.5	4.0
1,1,2,2-Tetrachloroethane	U	4.0	ug/Kgdrywt	1	5	8.0	1.3	4.0
1,3-Dichlorobenzene	U	4.0	ug/Kgdrywt	1	5	8.0	0.99	4.0
1,4-Dichlorobenzene	U	4.0	ug/Kgdrywt	1	5	8.0	0.70	4.0
1,2-Dichlorobenzene	U	4.0	ug/Kgdrywt	1	5	8.0	1.2	4.0
1,2-Dibromo-3-Chloropropane	U	4.0	ug/Kgdrywt	1	5	8.0	2.4	4.0
1,2,4-Trichlorobenzene	U	4.0	ug/Kgdrywt	1	5	8.0	1.3	4.0
1,2,3-Trichlorobenzene	U	4.0	ug/Kgdrywt	1	5	8.0	1.2	4.0
Bromochloromethane	U	4.0	ug/Kgdrywt	1	5	8.0	1.4	4.0
M+P-Xylenes	U	8.0	ug/Kgdrywt	1	10	16.	2.7	8.0
O-Xylene	UL	4.0	ug/Kgdrywt	1	5	8.0	2.1	4.0
Methyl Acetate	U	4.8	ug/Kgdrywt	1	5	8.0	4.3	4.8
Methylcyclohexane	U	4.0	ug/Kgdrywt	1	5	8.0	1.5	4.0
p-Bromofluorobenzene	*	37.8	%					
Toluene-D8	*	72.1	%					
1,2-Dichloroethane-D4		122.	%					
Dibromofluoromethane		115.	%					

JAC 6/9/13

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044

Katahdin
ANALYTICAL SERVICES

Cert No E87604

Report of Analytical Results

Client: CH2MHill
Lab ID: SG2698-10
Client ID: VEP21-SS05A-0001
Project: NTR Vieques East CTO-037 I
SDG: SG2698
Lab File ID: T8156.D

Sample Date: 23-APR-13
Received Date: 24-APR-13
Extract Date: 25-APR-13
Extracted By: REC
Extraction Method: SW846 5035
Lab Prep Batch: WG123190

Analysis Date: 25-APR-13
Analyst: REC
Analysis Method: SW846 8260B
Matrix: SL
% Solids: 93.
Report Date: 19-AUG-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Dichlorodifluoromethane	U UJ SSL	7.0	ug/Kgdrywt	1	10	14.	1.3	7.0
Chloromethane	U	7.0	ug/Kgdrywt	1	10	14.	2.0	7.0
Vinyl Chloride	U	7.0	ug/Kgdrywt	1	10	14.	1.2	7.0
Bromomethane	U	7.0	ug/Kgdrywt	1	10	14.	1.5	7.0
Chloroethane	U	7.0	ug/Kgdrywt	1	10	14.	1.8	7.0
Trichlorofluoromethane	U	7.0	ug/Kgdrywt	1	10	14.	1.3	7.0
1,1-Dichloroethene	U	3.5	ug/Kgdrywt	1	5	7.0	1.3	3.5
Carbon Disulfide	U	3.5	ug/Kgdrywt	1	5	7.0	1.1	3.5
Freon-113	U	3.5	ug/Kgdrywt	1	5	7.0	1.3	3.5
Methylene Chloride	U	18	ug/Kgdrywt	1	25	35.	11.	18.
Acetone	U	18	ug/Kgdrywt	1	25	35.	7.1	18.
trans-1,2-Dichloroethene	U	3.5	ug/Kgdrywt	1	5	7.0	0.99	3.5
Methyl tert-butyl Ether	U	3.5	ug/Kgdrywt	1	5	7.0	1.5	3.5
1,1-Dichloroethane	U	3.5	ug/Kgdrywt	1	5	7.0	2.4	3.5
cis-1,2-Dichloroethene	U	3.5	ug/Kgdrywt	1	5	7.0	1.3	3.5
Chloroform	U	3.5	ug/Kgdrywt	1	5	7.0	0.49	3.5
Carbon Tetrachloride	U	3.5	ug/Kgdrywt	1	5	7.0	1.8	3.5
1,1,1-Trichloroethane	U	3.5	ug/Kgdrywt	1	5	7.0	0.59	3.5
2-Butanone	U	18	ug/Kgdrywt	1	25	35.	8.3	18.
Benzene	U	3.5	ug/Kgdrywt	1	5	7.0	1.3	3.5
Cyclohexane	U	3.5	ug/Kgdrywt	1	5	7.0	2.0	3.5
1,2-Dichloroethane	U	3.5	ug/Kgdrywt	1	5	7.0	1.4	3.5
Trichloroethene	U	3.5	ug/Kgdrywt	1	5	7.0	0.83	3.5
1,2-Dichloropropane	U	3.5	ug/Kgdrywt	1	5	7.0	2.0	3.5
Bromodichloromethane	U	3.5	ug/Kgdrywt	1	5	7.0	0.84	3.5
cis-1,3-Dichloropropene	U	3.5	ug/Kgdrywt	1	5	7.0	1.0	3.5
Toluene	U	3.5	ug/Kgdrywt	1	5	7.0	2.0	3.5
4-Methyl-2-Pentanone	U	18	ug/Kgdrywt	1	25	35.	8.3	18.
Tetrachloroethene	U	3.5	ug/Kgdrywt	1	5	7.0	1.7	3.5
trans-1,3-Dichloropropene	U	3.5	ug/Kgdrywt	1	5	7.0	1.2	3.5
1,1,2-Trichloroethane	U	3.5	ug/Kgdrywt	1	5	7.0	1.4	3.5
Dibromochloromethane	U	3.5	ug/Kgdrywt	1	5	7.0	1.4	3.5
1,2-Dibromoethane	U	3.5	ug/Kgdrywt	1	5	7.0	1.7	3.5
2-Hexanone	U	18	ug/Kgdrywt	1	25	35.	6.7	18.
Chlorobenzene	U	3.5	ug/Kgdrywt	1	5	7.0	0.71	3.5

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045

REISSUE

Katahdin
ANALYTICAL SERVICES

Cert No E87604

Report of Analytical Results

Client: CH2MHill
Lab ID: SG2698-10
Client ID: VEP21-SS05A-0001
Project: NTR Vieques East CTO-037 I
SDG: SG2698
Lab File ID: T8156.D

Sample Date: 23-APR-13
Received Date: 24-APR-13
Extract Date: 25-APR-13
Extracted By: REC
Extraction Method: SW846 5035
Lab Prep Batch: WG123190

Analysis Date: 25-APR-13
Analyst: REC
Analysis Method: SW846 8260B
Matrix: SL
% Solids: 93.
Report Date: 19-AUG-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Ethylbenzene	U UJ SSL	3.5	ug/Kgdrywt	1	5	7.0	0.91	3.5
Xylenes (total)	U	10	ug/Kgdrywt	1	15	21.	1.8	10.
Styrene	U	3.5	ug/Kgdrywt	1	5	7.0	0.71	3.5
Bromoform	U	3.5	ug/Kgdrywt	1	5	7.0	0.98	3.5
Isopropylbenzene	U	3.5	ug/Kgdrywt	1	5	7.0	1.3	3.5
1,1,2,2-Tetrachloroethane	U	3.5	ug/Kgdrywt	1	5	7.0	1.2	3.5
1,3-Dichlorobenzene	U	3.5	ug/Kgdrywt	1	5	7.0	0.87	3.5
1,4-Dichlorobenzene	U	3.5	ug/Kgdrywt	1	5	7.0	0.62	3.5
1,2-Dichlorobenzene	U	3.5	ug/Kgdrywt	1	5	7.0	1.1	3.5
1,2-Dibromo-3-Chloropropane	U	3.5	ug/Kgdrywt	1	5	7.0	2.1	3.5
1,2,4-Trichlorobenzene	U	3.5	ug/Kgdrywt	1	5	7.0	1.1	3.5
1,2,3-Trichlorobenzene	U	3.5	ug/Kgdrywt	1	5	7.0	1.1	3.5
Bromochloromethane	U	3.5	ug/Kgdrywt	1	5	7.0	1.3	3.5
M+P-Xylenes	U	7.0	ug/Kgdrywt	1	10	14.	2.4	7.0
O-Xylene	U	3.5	ug/Kgdrywt	1	5	7.0	1.8	3.5
Methyl Acetate	U	4.2	ug/Kgdrywt	1	5	7.0	3.8	4.2
Methylcyclohexane	U	3.5	ug/Kgdrywt	1	5	7.0	1.3	3.5
p-Bromofluorobenzene	*	63.8	%					
Toluene-D8		86.5	%					
1,2-Dichloroethane-D4		121.	%					
Dibromofluoromethane		112.	%					

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046

REISSUE

Katahdin
ANALYTICAL SERVICES

Cert No E87604

Report of Analytical Results

Client: CH2MHill
Lab ID: SG2698-10RA
Client ID: VEP21-SS05A-0001
Project: NTR Vieques East CTO-037 1
SDG: SG2698
Lab File ID: T8175.D

Sample Date: 23-APR-13
Received Date: 24-APR-13
Extract Date: 26-APR-13
Extracted By: REC
Extraction Method: SW846 5035
Lab Prep Batch: WG123249

Analysis Date: 26-APR-13
Analyst: REC
Analysis Method: SW846 8260B
Matrix: SL
% Solids: 93.
Report Date: 09-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Dichlorodifluoromethane	U XRE	7.5	ug/Kgdrywt	1	10	15.	1.4	7.5
Chloromethane	U	7.5	ug/Kgdrywt	1	10	15.	2.1	7.5
Vinyl Chloride	U	7.5	ug/Kgdrywt	1	10	15.	1.3	7.5
Bromomethane	U	7.5	ug/Kgdrywt	1	10	15.	1.6	7.5
Chloroethane	U	7.5	ug/Kgdrywt	1	10	15.	2.0	7.5
Trichlorofluoromethane	U	7.5	ug/Kgdrywt	1	10	15.	1.4	7.5
1,1-Dichloroethene	U	3.8	ug/Kgdrywt	1	5	7.5	1.4	3.8
Carbon Disulfide	U	3.8	ug/Kgdrywt	1	5	7.5	1.2	3.8
Freon-113	U	3.8	ug/Kgdrywt	1	5	7.5	1.4	3.8
Methylene Chloride	U	19	ug/Kgdrywt	1	25	38.	12.	19.
Acetone	JL	12	ug/Kgdrywt	1	25	38.	7.6	19.
trans-1,2-Dichloroethene	U	3.8	ug/Kgdrywt	1	5	7.5	1.1	3.8
Methyl tert-butyl Ether	U	3.8	ug/Kgdrywt	1	5	7.5	1.6	3.8
1,1-Dichloroethane	U	3.8	ug/Kgdrywt	1	5	7.5	2.6	3.8
cis-1,2-Dichloroethene	U	3.8	ug/Kgdrywt	1	5	7.5	1.4	3.8
Chloroform	U	3.8	ug/Kgdrywt	1	5	7.5	0.52	3.8
Carbon Tetrachloride	U	3.8	ug/Kgdrywt	1	5	7.5	2.0	3.8
1,1,1-Trichloroethane	U	3.8	ug/Kgdrywt	1	5	7.5	0.63	3.8
2-Butanone	U	19	ug/Kgdrywt	1	25	38.	8.8	19.
Benzene	U	3.8	ug/Kgdrywt	1	5	7.5	1.4	3.8
Cyclohexane	U	3.8	ug/Kgdrywt	1	5	7.5	2.1	3.8
1,2-Dichloroethane	U	3.8	ug/Kgdrywt	1	5	7.5	1.5	3.8
Trichloroethene	U	3.8	ug/Kgdrywt	1	5	7.5	0.88	3.8
1,2-Dichloropropane	U	3.8	ug/Kgdrywt	1	5	7.5	2.1	3.8
Bromodichloromethane	U	3.8	ug/Kgdrywt	1	5	7.5	0.90	3.8
cis-1,3-Dichloropropene	U	3.8	ug/Kgdrywt	1	5	7.5	1.1	3.8
Toluene	U	3.8	ug/Kgdrywt	1	5	7.5	2.1	3.8
4-Methyl-2-Pentanone	U	19	ug/Kgdrywt	1	25	38.	8.8	19.
Tetrachloroethene	U	3.8	ug/Kgdrywt	1	5	7.5	1.8	3.8
trans-1,3-Dichloropropene	U	3.8	ug/Kgdrywt	1	5	7.5	1.3	3.8
1,1,2-Trichloroethane	U	3.8	ug/Kgdrywt	1	5	7.5	1.4	3.8
Dibromochloromethane	U	3.8	ug/Kgdrywt	1	5	7.5	1.5	3.8
1,2-Dibromoethane	U	3.8	ug/Kgdrywt	1	5	7.5	1.8	3.8
2-Hexanone	U	19	ug/Kgdrywt	1	25	38.	7.2	19.
Chlorobenzene	U	3.8	ug/Kgdrywt	1	5	7.5	0.76	3.8

JRC 6/19/13

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047

Katahdin
ANALYTICAL SERVICES

Cert No E87604

Report of Analytical Results

Client: CH2MHill
Lab ID: SG2698-10RA
Client ID: VEP21-SS05A-0001
Project: NTR Vieques East CTO-037 I
SDG: SG2698
Lab File ID: T8175.D

Sample Date: 23-APR-13
Received Date: 24-APR-13
Extract Date: 26-APR-13
Extracted By: REC
Extraction Method: SW846 5035
Lab Prep Batch: WG123249

Analysis Date: 26-APR-13
Analyst: REC
Analysis Method: SW846 8260B
Matrix: SL
% Solids: 93.
Report Date: 09-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Ethylbenzene	U X RE	3.8	ug/Kgdrywt	1	5	7.5	0.98	3.8
Xylenes (total)	UL	11	ug/Kgdrywt	1	15	22.	2.0	11.
Styrene	U	3.8	ug/Kgdrywt	1	5	7.5	0.76	3.8
Bromoform	U	3.8	ug/Kgdrywt	1	5	7.5	1.0	3.8
Isopropylbenzene	U	3.8	ug/Kgdrywt	1	5	7.5	1.4	3.8
1,1,2,2-Tetrachloroethane	U	3.8	ug/Kgdrywt	1	5	7.5	1.3	3.8
1,3-Dichlorobenzene	U	3.8	ug/Kgdrywt	1	5	7.5	0.93	3.8
1,4-Dichlorobenzene	U	3.8	ug/Kgdrywt	1	5	7.5	0.66	3.8
1,2-Dichlorobenzene	U	3.8	ug/Kgdrywt	1	5	7.5	1.2	3.8
1,2-Dibromo-3-Chloropropane	U	3.8	ug/Kgdrywt	1	5	7.5	2.2	3.8
1,2,4-Trichlorobenzene	U	3.8	ug/Kgdrywt	1	5	7.5	1.2	3.8
1,2,3-Trichlorobenzene	U	3.8	ug/Kgdrywt	1	5	7.5	1.1	3.8
Bromochloromethane	U	3.8	ug/Kgdrywt	1	5	7.5	1.4	3.8
M+P-Xylenes	U	7.5	ug/Kgdrywt	1	10	15.	2.6	7.5
O-Xylene	UL	3.8	ug/Kgdrywt	1	5	7.5	2.0	3.8
Methyl Acetate	U	4.5	ug/Kgdrywt	1	5	7.5	4.0	4.5
Methylcyclohexane	U	3.8	ug/Kgdrywt	1	5	7.5	1.4	3.8
p-Bromofluorobenzene	*	67.9	%					
Toluene-D8		100.	%					
1,2-Dichloroethane-D4	*	137.	%					
Dibromofluoromethane	*	136.	%					

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048

Katahdin
ANALYTICAL SERVICES

Cert No E87604

Report of Analytical Results

Client: CH2MHill
Lab ID: SG2698-11
Client ID: VEP21-SB05A-011H
Project: NTR Vieques East CTO-037 1
SDG: SG2698
Lab File ID: T8157.D

Sample Date: 23-APR-13
Received Date: 24-APR-13
Extract Date: 25-APR-13
Extracted By: REC
Extraction Method: SW846 5035
Lab Prep Batch: WG123190

Analysis Date: 25-APR-13
Analyst: REC
Analysis Method: SW846 8260B
Matrix: SL
% Solids: 89.
Report Date: 09-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Dichlorodifluoromethane	U XRE	6.0	ug/Kgdrywt	1	10	12.	1.1	6.0
Chloromethane	U	6.0	ug/Kgdrywt	1	10	12.	1.7	6.0
Vinyl Chloride	U	6.0	ug/Kgdrywt	1	10	12.	1.0	6.0
Bromomethane	U	6.0	ug/Kgdrywt	1	10	12.	1.3	6.0
Chloroethane	U	6.0	ug/Kgdrywt	1	10	12.	1.6	6.0
Trichlorofluoromethane	U	6.0	ug/Kgdrywt	1	10	12.	1.1	6.0
1,1-Dichloroethene	U	3.0	ug/Kgdrywt	1	5	6.0	1.1	3.0
Carbon Disulfide	U	3.0	ug/Kgdrywt	1	5	6.0	0.94	3.0
Freon-113	U	3.0	ug/Kgdrywt	1	5	6.0	1.1	3.0
Methylene Chloride	U	15	ug/Kgdrywt	1	25	30.	9.5	15.
Acetone	J	9.0	ug/Kgdrywt	1	25	30.	6.1	15.
trans-1,2-Dichloroethene	U	3.0	ug/Kgdrywt	1	5	6.0	0.85	3.0
Methyl tert-butyl Ether	U	3.0	ug/Kgdrywt	1	5	6.0	1.3	3.0
1,1-Dichloroethane	U	3.0	ug/Kgdrywt	1	5	6.0	2.0	3.0
cis-1,2-Dichloroethene	U	3.0	ug/Kgdrywt	1	5	6.0	1.1	3.0
Chloroform	U	3.0	ug/Kgdrywt	1	5	6.0	0.42	3.0
Carbon Tetrachloride	U	3.0	ug/Kgdrywt	1	5	6.0	1.6	3.0
1,1,1-Trichloroethane	U	3.0	ug/Kgdrywt	1	5	6.0	0.50	3.0
2-Butanone	U	15	ug/Kgdrywt	1	25	30.	7.1	15.
Benzene	U	3.0	ug/Kgdrywt	1	5	6.0	1.1	3.0
Cyclohexane	U	3.0	ug/Kgdrywt	1	5	6.0	1.7	3.0
1,2-Dichloroethane	U	3.0	ug/Kgdrywt	1	5	6.0	1.2	3.0
Trichloroethene	U	3.0	ug/Kgdrywt	1	5	6.0	0.71	3.0
1,2-Dichloropropane	U	3.0	ug/Kgdrywt	1	5	6.0	1.7	3.0
Bromodichloromethane	U	3.0	ug/Kgdrywt	1	5	6.0	0.72	3.0
cis-1,3-Dichloropropene	U	3.0	ug/Kgdrywt	1	5	6.0	0.86	3.0
Toluene	U	3.0	ug/Kgdrywt	1	5	6.0	1.7	3.0
4-Methyl-2-Pentanone	U	15	ug/Kgdrywt	1	25	30.	7.1	15.
Tetrachloroethene	U	3.0	ug/Kgdrywt	1	5	6.0	1.4	3.0
trans-1,3-Dichloropropene	U	3.0	ug/Kgdrywt	1	5	6.0	1.0	3.0
1,1,2-Trichloroethane	U	3.0	ug/Kgdrywt	1	5	6.0	1.2	3.0
Dibromochloromethane	U	3.0	ug/Kgdrywt	1	5	6.0	1.2	3.0
1,2-Dibromoethane	U	3.0	ug/Kgdrywt	1	5	6.0	1.4	3.0
2-Hexanone	U	15	ug/Kgdrywt	1	25	30.	5.8	15.
Chlorobenzene	U	3.0	ug/Kgdrywt	1	5	6.0	0.61	3.0

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Katahdin
ANALYTICAL SERVICES

Cert No E87604

Report of Analytical Results

Client: CH2MHill
Lab ID: SG2698-11
Client ID: VEP21-SB05A-011H
Project: NTR Vieques East CTO-037 I
SDG: SG2698
Lab File ID: T8157.D

Sample Date: 23-APR-13
Received Date: 24-APR-13
Extract Date: 25-APR-13
Extracted By: REC
Extraction Method: SW846 5035
Lab Prep Batch: WG123190

Analysis Date: 25-APR-13
Analyst: REC
Analysis Method: SW846 8260B
Matrix: SL
% Solids: 89.
Report Date: 09-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Ethylbenzene	U XRE	3.0	ug/Kgdrywt	1	5	6.0	0.78	3.0
Xylenes (total)	U	9.0	ug/Kgdrywt	1	15	18.	1.6	9.0
Styrene	U	3.0	ug/Kgdrywt	1	5	6.0	0.61	3.0
Bromoform	U	3.0	ug/Kgdrywt	1	5	6.0	0.84	3.0
Isopropylbenzene	U	3.0	ug/Kgdrywt	1	5	6.0	1.1	3.0
1,1,2,2-Tetrachloroethane	U	3.0	ug/Kgdrywt	1	5	6.0	1.0	3.0
1,3-Dichlorobenzene	U	3.0	ug/Kgdrywt	1	5	6.0	0.74	3.0
1,4-Dichlorobenzene	U	3.0	ug/Kgdrywt	1	5	6.0	0.53	3.0
1,2-Dichlorobenzene	U	3.0	ug/Kgdrywt	1	5	6.0	0.94	3.0
1,2-Dibromo-3-Chloropropane	U	3.0	ug/Kgdrywt	1	5	6.0	1.8	3.0
1,2,4-Trichlorobenzene	U	3.0	ug/Kgdrywt	1	5	6.0	0.95	3.0
1,2,3-Trichlorobenzene	U	3.0	ug/Kgdrywt	1	5	6.0	0.91	3.0
Bromochloromethane	U	3.0	ug/Kgdrywt	1	5	6.0	1.1	3.0
M+P-Xylenes	U	6.0	ug/Kgdrywt	1	10	12.	2.0	6.0
O-Xylene	U	3.0	ug/Kgdrywt	1	5	6.0	1.6	3.0
Methyl Acetate	U	3.6	ug/Kgdrywt	1	5	6.0	3.2	3.6
Methylcyclohexane	U	3.0	ug/Kgdrywt	1	5	6.0	1.2	3.0
p-Bromofluorobenzene	*	73.6	%					
Toluene-D8		104.	%					
1,2-Dichloroethane-D4	*	135.	%					
Dibromofluoromethane		129.	%					

JAC 6/9/13

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053

Katahdin
ANALYTICAL SERVICES

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Cert No E87604

Report of Analytical Results

Client: CH2MHill
Lab ID: SG2698-11RA
Client ID: VEP21-SB05A-011H
Project: NTR Vieques East CTO-037 1
SDG: SG2698
Lab File ID: T8176.D

Sample Date: 23-APR-13
Received Date: 24-APR-13
Extract Date: 26-APR-13
Extracted By: REC
Extraction Method: SW846 5035
Lab Prep Batch: WG123249

Analysis Date: 26-APR-13
Analyst: REC
Analysis Method: SW846 8260B
Matrix: SL
% Solids: 89.
Report Date: 09-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Dichlorodifluoromethane	U UJ SSL	6.0	ug/Kgdrywt	1	10	12.	1.1	6.0
Chloromethane	U	6.0	ug/Kgdrywt	1	10	12.	1.7	6.0
Vinyl Chloride	U	6.0	ug/Kgdrywt	1	10	12.	1.0	6.0
Bromomethane	U	6.0	ug/Kgdrywt	1	10	12.	1.3	6.0
Chloroethane	U	6.0	ug/Kgdrywt	1	10	12.	1.6	6.0
Trichlorofluoromethane	U	6.0	ug/Kgdrywt	1	10	12.	1.1	6.0
1,1-Dichloroethene	U	3.0	ug/Kgdrywt	1	5	6.0	1.1	3.0
Carbon Disulfide	U	3.0	ug/Kgdrywt	1	5	6.0	0.94	3.0
Freon-113	U	3.0	ug/Kgdrywt	1	5	6.0	1.1	3.0
Methylene Chloride	U	15	ug/Kgdrywt	1	25	30.	9.5	15.
Acetone	UJ, SSL ~~JL UJ, MBL~~	~~10~~ 15	ug/Kgdrywt	1	25	30.	6.1	15.
trans-1,2-Dichloroethene	U UJ SSL	3.0	ug/Kgdrywt	1	5	6.0	0.85	3.0
Methyl tert-butyl Ether	U	3.0	ug/Kgdrywt	1	5	6.0	1.3	3.0
1,1-Dichloroethane	U	3.0	ug/Kgdrywt	1	5	6.0	2.0	3.0
cis-1,2-Dichloroethene	U	3.0	ug/Kgdrywt	1	5	6.0	1.1	3.0
Chloroform	U	3.0	ug/Kgdrywt	1	5	6.0	0.42	3.0
Carbon Tetrachloride	U	3.0	ug/Kgdrywt	1	5	6.0	1.6	3.0
1,1,1-Trichloroethane	U	3.0	ug/Kgdrywt	1	5	6.0	0.50	3.0
2-Butanone	U	15	ug/Kgdrywt	1	25	30.	7.1	15.
Benzene	U	3.0	ug/Kgdrywt	1	5	6.0	1.1	3.0
Cyclohexane	U	3.0	ug/Kgdrywt	1	5	6.0	1.7	3.0
1,2-Dichloroethane	U	3.0	ug/Kgdrywt	1	5	6.0	1.2	3.0
Trichloroethene	U	3.0	ug/Kgdrywt	1	5	6.0	0.71	3.0
1,2-Dichloropropane	U	3.0	ug/Kgdrywt	1	5	6.0	1.7	3.0
Bromodichloromethane	U	3.0	ug/Kgdrywt	1	5	6.0	0.72	3.0
cis-1,3-Dichloropropene	U	3.0	ug/Kgdrywt	1	5	6.0	0.86	3.0
Toluene	U	3.0	ug/Kgdrywt	1	5	6.0	1.7	3.0
4-Methyl-2-Pentanone	U	15	ug/Kgdrywt	1	25	30.	7.1	15.
Tetrachloroethene	U	3.0	ug/Kgdrywt	1	5	6.0	1.4	3.0
trans-1,3-Dichloropropene	U	3.0	ug/Kgdrywt	1	5	6.0	1.0	3.0
1,1,2-Trichloroethane	U	3.0	ug/Kgdrywt	1	5	6.0	1.2	3.0
Dibromochloromethane	U	3.0	ug/Kgdrywt	1	5	6.0	1.2	3.0
1,2-Dibromoethane	U	3.0	ug/Kgdrywt	1	5	6.0	1.4	3.0
2-Hexanone	U	15	ug/Kgdrywt	1	25	30.	5.8	15.
Chlorobenzene	U	3.0	ug/Kgdrywt	1	5	6.0	0.61	3.0

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Katahdin
ANALYTICAL SERVICES

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Report of Analytical Results

Client: CH2MHill
Lab ID: SG2698-11RA
Client ID: VEP21-SB05A-011H
Project: NTR Vieques East CTO-037 I
SDG: SG2698
Lab File ID: T8176.D

Sample Date: 23-APR-13
Received Date: 24-APR-13
Extract Date: 26-APR-13
Extracted By: REC
Extraction Method: SW846 5035
Lab Prep Batch: WG123249

Analysis Date: 26-APR-13
Analyst: REC
Analysis Method: SW846 8260B
Matrix: SL
% Solids: 89.
Report Date: 09-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Ethylbenzene	U WJ SSL	3.0	ug/Kgdrywt	1	5	6.0	0.78	3.0
Xylenes (total)	UL	9.0	ug/Kgdrywt	1	15	18.	1.6	9.0
Styrene	U	3.0	ug/Kgdrywt	1	5	6.0	0.61	3.0
Bromoform	U	3.0	ug/Kgdrywt	1	5	6.0	0.84	3.0
Isopropylbenzene	U	3.0	ug/Kgdrywt	1	5	6.0	1.1	3.0
1,1,2,2-Tetrachloroethane	U	3.0	ug/Kgdrywt	1	5	6.0	1.0	3.0
1,3-Dichlorobenzene	U	3.0	ug/Kgdrywt	1	5	6.0	0.74	3.0
1,4-Dichlorobenzene	U	3.0	ug/Kgdrywt	1	5	6.0	0.53	3.0
1,2-Dichlorobenzene	U	3.0	ug/Kgdrywt	1	5	6.0	0.94	3.0
1,2-Dibromo-3-Chloropropane	U	3.0	ug/Kgdrywt	1	5	6.0	1.8	3.0
1,2,4-Trichlorobenzene	U	3.0	ug/Kgdrywt	1	5	6.0	0.95	3.0
1,2,3-Trichlorobenzene	U	3.0	ug/Kgdrywt	1	5	6.0	0.91	3.0
Bromochloromethane	U	3.0	ug/Kgdrywt	1	5	6.0	1.1	3.0
M+P-Xylenes	U	6.0	ug/Kgdrywt	1	10	12.	2.0	6.0
O-Xylene	UL	3.0	ug/Kgdrywt	1	5	6.0	1.6	3.0
Methyl Acetate	U	3.6	ug/Kgdrywt	1	5	6.0	3.2	3.6
Methylcyclohexane	U	3.0	ug/Kgdrywt	1	5	6.0	1.2	3.0
p-Bromofluorobenzene	*	63.6	%					
Toluene-D8		99.1	%					
1,2-Dichloroethane-D4	*	137.	%					
Dibromofluoromethane		129.	%					

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Katahdin
ANALYTICAL SERVICES

Cert No E87604

Report of Analytical Results

Client: CH2MHill
Lab ID: SG2698-12
Client ID: VEP21-TB01-042313
Project: NTR Vieques East CTO-037 1
SDG: SG2698
Lab File ID: C0722.D

Sample Date: 23-APR-13
Received Date: 24-APR-13
Extract Date: 30-APR-13
Extracted By: REC
Extraction Method: SW846 5030
Lab Prep Batch: WG123436

Analysis Date: 30-APR-13
Analyst: REC
Analysis Method: SW846 8260B
Matrix: AQ
% Solids: NA
Report Date: 09-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Dichlorodifluoromethane	U	1.0	ug/L	1	2	2.0	0.24	1.0
Chloromethane	U	1.0	ug/L	1	2	2.0	0.36	1.0
Vinyl Chloride	U	1.0	ug/L	1	2	2.0	0.25	1.0
Bromomethane	U	1.0	ug/L	1	2	2.0	0.49	1.0
Chloroethane	U	1.0	ug/L	1	2	2.0	0.55	1.0
Trichlorofluoromethane	U	1.0	ug/L	1	2	2.0	0.24	1.0
1,1-Dichloroethene	U	0.50	ug/L	1	1	1.0	0.35	0.50
Carbon Disulfide	JB	0.39	ug/L	1	1	1.0	0.25	0.50
Freon-113	U	0.50	ug/L	1	1	1.0	0.31	0.50
Methylene Chloride	J	1.7	ug/L	1	5	5.0	1.1	2.5
Acetone	U	2.5	ug/L	1	5	5.0	2.2	2.5
trans-1,2-Dichloroethene	U	0.50	ug/L	1	1	1.0	0.25	0.50
Methyl tert-butyl Ether	U	0.50	ug/L	1	1	1.0	0.36	0.50
1,1-Dichloroethane	U	0.50	ug/L	1	1	1.0	0.21	0.50
cis-1,2-Dichloroethene	U	0.50	ug/L	1	1	1.0	0.21	0.50
Chloroform	U	0.50	ug/L	1	1	1.0	0.32	0.50
1,1,1-Trichloroethane	U	0.50	ug/L	1	1	1.0	0.20	0.50
2-Butanone	U	2.5	ug/L	1	5	5.0	1.3	2.5
Cyclohexane	~~U~~ UJ cu	0.50	ug/L	1	1	1.0	0.31	0.50
Carbon Tetrachloride	U	0.50	ug/L	1	1	1.0	0.22	0.50
Benzene	U	0.50	ug/L	1	1	1.0	0.26	0.50
1,2-Dichloroethane	U	0.50	ug/L	1	1	1.0	0.20	0.50
Trichloroethene	U	0.50	ug/L	1	1	1.0	0.28	0.50
1,2-Dichloropropane	U	0.50	ug/L	1	1	1.0	0.25	0.50
Bromodichloromethane	U	0.50	ug/L	1	1	1.0	0.33	0.50
cis-1,3-Dichloropropene	U	0.50	ug/L	1	1	1.0	0.19	0.50
Toluene	U	0.50	ug/L	1	1	1.0	0.27	0.50
4-Methyl-2-Pentanone	U	2.5	ug/L	1	5	5.0	1.3	2.5
trans-1,3-Dichloropropene	U	0.50	ug/L	1	1	1.0	0.20	0.50
1,1,2-Trichloroethane	U	0.50	ug/L	1	1	1.0	0.33	0.50
Tetrachloroethene	U	0.50	ug/L	1	1	1.0	0.40	0.50
Dibromochloromethane	U	0.50	ug/L	1	1	1.0	0.30	0.50
1,2-Dibromoethane	U	0.50	ug/L	1	1	1.0	0.22	0.50
2-Hexanone	U	2.5	ug/L	1	5	5.0	1.7	2.5
Chlorobenzene	U	0.50	ug/L	1	1	1.0	0.22	0.50

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053

Katahdin
ANALYTICAL SERVICES

Cert No E87604

Report of Analytical Results

Client: CH2MHill
Lab ID: SG2698-12
Client ID: VEP21-TB01-042313
Project: NTR Vieques East CTO-0371
SDG: SG2698
Lab File ID: C0722.D

Sample Date: 23-APR-13
Received Date: 24-APR-13
Extract Date: 30-APR-13
Extracted By: REC
Extraction Method: SW846 5030
Lab Prep Batch: WG123436

Analysis Date: 30-APR-13
Analyst: REC
Analysis Method: SW846 8260B
Matrix: AQ
% Solids: NA
Report Date: 09-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Ethylbenzene	U	0.50	ug/L	1	1	1.0	0.21	0.50
Styrene	U	0.50	ug/L	1	1	1.0	0.23	0.50
Bromoform	U	0.50	ug/L	1	1	1.0	0.23	0.50
Isopropylbenzene	U	0.50	ug/L	1	1	1.0	0.23	0.50
1,1,2,2-Tetrachloroethane	U	0.50	ug/L	1	1	1.0	0.38	0.50
1,3-Dichlorobenzene	U	0.50	ug/L	1	1	1.0	0.26	0.50
1,4-Dichlorobenzene	U	0.50	ug/L	1	1	1.0	0.24	0.50
1,2-Dichlorobenzene	U	0.50	ug/L	1	1	1.0	0.15	0.50
1,2-Dibromo-3-Chloropropane	U	1.0	ug/L	1	2	2.0	0.50	1.0
1,2,4-Trichlorobenzene	U	0.50	ug/L	1	1	1.0	0.37	0.50
Methyl Acetate	U	0.75	ug/L	1	1	1.0	0.53	0.75
Methylcyclohexane	U	0.50	ug/L	1	1	1.0	0.30	0.50
Xylenes (Total)	U	1.5	ug/L	1	3	3.0	0.25	1.5
M+P-Xylenes	U	1.0	ug/L	1	2	2.0	0.59	1.0
O-Xylene	U	0.50	ug/L	1	1	1.0	0.25	0.50
Bromochloromethane	U	0.50	ug/L	1	1	1.0	0.21	0.50
1,2,3-Trichlorobenzene	U	0.50	ug/L	1	1	1.0	0.27	0.50
P-Bromofluorobenzene		96.3	%					
Toluene-d8		93.1	%					
1,2-Dichloroethane-d4		107.	%					
Dibromofluoromethane		90.7	%					

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Katahdin
ANALYTICAL SERVICES

Cert No E87604

Report of Analytical Results

Client: CH2MHill
Lab ID: SG2698-13
Client ID: VEP21-EB01-042313
Project: NTR Vieques East CTO-037 I
SDG: SG2698
Lab File ID: C0723.D

Sample Date: 23-APR-13
Received Date: 24-APR-13
Extract Date: 30-APR-13
Extracted By: REC
Extraction Method: SW846 5030
Lab Prep Batch: WG123436

Analysis Date: 30-APR-13
Analyst: REC
Analysis Method: SW846 8260B
Matrix: AQ
% Solids: NA
Report Date: 09-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Dichlorodifluoromethane	U	1.0	ug/L	1	2	2.0	0.24	1.0
Chloromethane	U	1.0	ug/L	1	2	2.0	0.36	1.0
Vinyl Chloride	U	1.0	ug/L	1	2	2.0	0.25	1.0
Bromomethane	U	1.0	ug/L	1	2	2.0	0.49	1.0
Chloroethane	U	1.0	ug/L	1	2	2.0	0.55	1.0
Trichlorofluoromethane	U	1.0	ug/L	1	2	2.0	0.24	1.0
1,1-Dichloroethene	U	0.50	ug/L	1	1	1.0	0.35	0.50
Carbon Disulfide	~~JB~~	0.45	ug/L	1	1	1.0	0.25	0.50
Freon-113	U	0.50	ug/L	1	1	1.0	0.31	0.50
Methylene Chloride	U	2.5	ug/L	1	5	5.0	1.1	2.5
Acetone	U	2.5	ug/L	1	5	5.0	2.2	2.5
trans-1,2-Dichloroethene	U	0.50	ug/L	1	1	1.0	0.25	0.50
Methyl tert-butyl Ether	U	0.50	ug/L	1	1	1.0	0.36	0.50
1,1-Dichloroethane	U	0.50	ug/L	1	1	1.0	0.21	0.50
cis-1,2-Dichloroethene	U	0.50	ug/L	1	1	1.0	0.21	0.50
Chloroform	U	0.50	ug/L	1	1	1.0	0.32	0.50
1,1,1-Trichloroethane	U	0.50	ug/L	1	1	1.0	0.20	0.50
2-Butanone	U	2.5	ug/L	1	5	5.0	1.3	2.5
Cyclohexane	~~U~~ UJ CCV	0.50	ug/L	1	1	1.0	0.31	0.50
Carbon Tetrachloride	U	0.50	ug/L	1	1	1.0	0.22	0.50
Benzene	U	0.50	ug/L	1	1	1.0	0.26	0.50
1,2-Dichloroethane	U	0.50	ug/L	1	1	1.0	0.20	0.50
Trichloroethene	U	0.50	ug/L	1	1	1.0	0.28	0.50
1,2-Dichloropropane	U	0.50	ug/L	1	1	1.0	0.25	0.50
Bromodichloromethane	U	0.50	ug/L	1	1	1.0	0.33	0.50
cis-1,3-Dichloropropene	U	0.50	ug/L	1	1	1.0	0.19	0.50
Toluene	U	0.50	ug/L	1	1	1.0	0.27	0.50
4-Methyl-2-Pentanone	U	2.5	ug/L	1	5	5.0	1.3	2.5
trans-1,3-Dichloropropene	U	0.50	ug/L	1	1	1.0	0.20	0.50
1,1,2-Trichloroethane	U	0.50	ug/L	1	1	1.0	0.33	0.50
Tetrachloroethene	U	0.50	ug/L	1	1	1.0	0.40	0.50
Dibromochloromethane	U	0.50	ug/L	1	1	1.0	0.30	0.50
1,2-Dibromoethane	U	0.50	ug/L	1	1	1.0	0.22	0.50
2-Hexanone	U	2.5	ug/L	1	5	5.0	1.7	2.5
Chlorobenzene	U	0.50	ug/L	1	1	1.0	0.22	0.50

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055

Katahdin
ANALYTICAL SERVICES

Cert No E87604

Report of Analytical Results

Client: CH2MHill
Lab ID: SG2698-13
Client ID: VEP21-EB01-042313
Project: NTR Vieques East CTO-037 I
SDG: SG2698
Lab File ID: C0723.D

Sample Date: 23-APR-13
Received Date: 24-APR-13
Extract Date: 30-APR-13
Extracted By: REC
Extraction Method: SW846 5030
Lab Prep Batch: WG123436

Analysis Date: 30-APR-13
Analyst: REC
Analysis Method: SW846 8260B
Matrix: AQ
% Solids: NA
Report Date: 09-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Ethylbenzene	U	0.50	ug/L	1	1	1.0	0.21	0.50
Styrene	U	0.50	ug/L	1	1	1.0	0.23	0.50
Bromoform	U	0.50	ug/L	1	1	1.0	0.23	0.50
Isopropylbenzene	U	0.50	ug/L	1	1	1.0	0.23	0.50
1,1,2,2-Tetrachloroethane	U	0.50	ug/L	1	1	1.0	0.38	0.50
1,3-Dichlorobenzene	U	0.50	ug/L	1	1	1.0	0.26	0.50
1,4-Dichlorobenzene	U	0.50	ug/L	1	1	1.0	0.24	0.50
1,2-Dichlorobenzene	U	0.50	ug/L	1	1	1.0	0.15	0.50
1,2-Dibromo-3-Chloropropane	U	1.0	ug/L	1	2	2.0	0.50	1.0
1,2,4-Trichlorobenzene	U	0.50	ug/L	1	1	1.0	0.37	0.50
Methyl Acetate	U	0.75	ug/L	1	1	1.0	0.53	0.75
Methylcyclohexane	U	0.50	ug/L	1	1	1.0	0.30	0.50
Xylenes (Total)	U	1.5	ug/L	1	3	3.0	0.25	1.5
M+P-Xylenes	U	1.0	ug/L	1	2	2.0	0.59	1.0
O-Xylene	U	0.50	ug/L	1	1	1.0	0.25	0.50
Bromochloromethane	U	0.50	ug/L	1	1	1.0	0.21	0.50
1,2,3-Trichlorobenzene	U	0.50	ug/L	1	1	1.0	0.27	0.50
P-Bromofluorobenzene		88.7	%					
Toluene-d8		91.1	%					
1,2-Dichloroethane-d4		103.	%					
Dibromofluoromethane		97.3	%					

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056

YES NO N/A

I. PACKAGE COMPLETENESS AND DELIVERABLES

CASE NUMBER: SG2698 LAB: Katahdin

SITE NAME: NTR Vieques East PI-21

1.0 Data Completeness and Deliverables

1.1 Has all data been submitted in CLP deliverable format or CLP Forms Equivalent? [✓] ___ ___

ACTION: If not, note the effect on review of the data in the Data Assessment narrative.

2.0 Cover Letter, SDG Narrative

2.1 Is a laboratory narrative, and/or cover letter signed release present? [✓] ___ ___

2.2 Are case number and SDG number(s) contained in the narrative or cover letter? [✓] ___ ___

ACTION: If not, note the effect on review of the data in the Data Assessment narrative.

II. VOLATILE ANALYSES

1.0 Traffic Reports and Laboratory Narrative

1.1 Are the Traffic Reports, and/or Chain of Custodies from the field samplers present for all samples sign release present? [✓] ___ ___

ACTION: If no, contact the laboratory/sampling team for replacement of missing or illegible copies.

1.2 Is a sampling trip report present (if required)? [✓] ___ ___

1.3 Sample Conditions/Problems

YES NO N/A

1.3.1 Do the Traffic Reports, Chain of Custodies, or Lab Narrative indicate any problems with sample receipt, condition of samples, analytical problems or special notations affecting the quality of the data? ___ ✓ ___

ACTION: If all the VOA vials for a sample have air bubbles or the VOA vial analyzed had air bubbles, flag all positive results "J" and all non-detects "R".

ACTION: If any sample analyzed as a soil, other than TCLP, contains 50%-90% water, all data should be flagged as estimated ("J"). If a soil sample, other than TCLP, contains more than 90% water, flag all positive results "J" and all non-detects "R".

ACTION: If samples were not iced or if the ice was melted upon receipt at the laboratory and the temperature of the cooler was elevated (>10°C), flag all positive results "J" and all non-detects non"UJ".

Sampled 4/23/13 Analy 4/24-30/13
Rec'd 4/24/13 temp 1.4

2.0 Holding Times

2.1 Have any volatile holding times, determined from date of collection to date of analysis, been exceeded? ___ ✓ ___

The maximum holding time for aqueous samples is 14 days.

The maximum holding time for soils non aqueous samples is 14 days.

NOTE: If unpreserved, aqueous samples maintained at 4°C for aromatic hydrocarbons analysis must be analyzed within 7 days. If preserved with HCL acid to a pH<2 and stored at 4°C, then aqueous samples must be analyzed within 14 days from time of collection. For non-aqueous samples for volatile components that are frozen (less than 7°C) or are properly cooled (4°C ± 2°C) and perserved with $NaHSO_4$, the maximum holding time is 14 days from sample collection. If

YES NO N/A

uncertain about preservation, contact the laboratory /sampling team to determine whether or not samples were preserved.

ACTION: Qualify sample results according to Table 1:

Table 1. Holding Time Actions for Trace Volatile Analysis

Matrix	Preserved	Criteria	Action	
			Detected Associated Compounds	Non-Detected Associated Compounds
Aqueous	No	≤7 days	No qualifications	
	No	> 7 days	J	R
	Yes	≤14 days	No qualifications	
	Yes	> 14 days	J	R
Non Aqueous	No	≤ 14 days	J	R
	Yes	≤ 14 days	No qualifications	
	Yes/No	> 14 days	J	R

3.0 Surrogate Recovery (CLP Form II Equivalent)

3.1 Have the volatile surrogate recoveries been listed on Surrogate Recovery forms for each of the following matrices:

a. Water [✓] ___ ___

b. Soil [✓] ___ ___

3.2 If so, are all the samples listed on the appropriate Surrogate Recovery forms for each matrix:

a. Water [✓] ___ ___

b. Soil [✓] ___ ___

ACTION: If large errors exist, deliverables are unavailable or information is missing, document the effect(s) in Data

YES NO N/A

Assessments and contact the laboratory/project officer/appropriate official for an explanation /resubmittal, make any necessary corrections and document effect in the Data Assessment.

3.3 Were the surrogate recovery limits followed per Table 2. If Table 2 criteria were not fcllowed, the laboratory may use in-house performance criteria (per SW-846, Method 8000C, section 9.7). Other compounds may be used as surrogates, depending upon the analysis requirements. [✓] ___ ___

lab

Table 2. Surrogate Spike Recovery Limits for Water and Soil/Sediments

DMC	Recovery Limits (%)Water	Recovery Limits Soil/Sediment
4-Bromofluorobenzene	80-120	70-130
Dibromofluoromethane	80-120	70-130
Toluene-d_8	80-120	70-130
Dichloroethane-d_4	80-120	70-130

Note: Use above table if laboratory did not provide in house recovery criteria.

Note: Other compounds may be used as surrogated depending upon the analysis requirements.

3.4 Were outliers marked correctly with an asterisk? [✓] ___ ___

ACTION: Circle all outliers with a red pencil.

3.5 Were one or more volatile surrogate recoveries out of specification for any sample or method blank. Table 2. [✓] ___ ___

If yes, were samples reanalyzed? [✓] ___ ___

Were method blanks reanalyzed? [✓] ___ ___

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Form 2
System Monitoring Compound Recovery

Lab Name: Katahdin Analytical Services **Project:** NTR Vieques East CTO-037 PI-21 **Matrix:** SL
Lab Code: KAS **SDG:** SG2698

Client Sample ID	Lab Sample ID	Col. ID BFB	#	DBF	#	DCA	#	TOL	#	
VEP21-SS01A-0001	SG2698-1	76.8	*	118.		122.		97.5		J/UJ
VEP21-SS05A-0001	SG2698-10	63.8	*	112.		121.		86.5		J/UJ
VEP21-SS05A-0001	SG2698-10RA	67.9	*	136.	*	137.	*	100.		na
VEP21-SB05A-011H	SG2698-11	73.6	*	129.		135.	*	104.		na
VEP21-SB05A-011H	SG2698-11RA	63.6	*	129.		137.	*	99.1		J/UJ
VEP21-SS01A-0001	SG2698-1RA	77.2	*	129.		128.		102.		na
VEP21-SS01AP-0001	SG2698-2	59.7	*	122.		125.		92.6		J/UJ
VEP21-SS01AP-0001	SG2698-2RA	65.2	*	128.		136.	*	95.7		na
VEP21-SB01A-011H	SG2698-3	66.8	*	120.		127.		89.1		J/UJ
VEP21-SB01A-011H	SG2698-3RA	76.0	*	126.		128.		104.		na
VEP21-SS02A-0001	SG2698-4	69.4	*	126.		134.	OK	82.4	*	na
VEP21-SS02A-0001	SG2698-4RA	81.1	*	130.	*	134.	OK	102.		J/UJ
VEP21-SB02A-011H	SG2698-5	65.9	*	118.		115.		90.3		J/UJ
VEP21-SS03A-0001	SG2698-6	65.0	*	130.	*	130.		101.		na
VEP21-SS03A-0001	SG2698-6RA	92.8		130.	OK	130.		114.		J — no qual
VEP21-SB03A-011H	SG2698-7	98.6		136.	*	142.	*	120.	*	J — no qual
VEP21-SS04A-0001	SG2698-8	64.9	*	125.		130.		96.0		J/UJ
VEP21-SS04A-0001	SG2698-8DL	107.		90.4		95.3		100.		
VEP21-SS04A-0001	SG2698-8RA	61.4	*	131.	*	137.	*	95.5		na
VEP21-SB04A-011H	SG2698-9	65.3	*	139.	*	144.	*	104.		na
VEP21-SB04A-011H	SG2698-9RA	37.8	*	115.		122.		72.1	*	J/UJ
Laboratory Control S	WG123124-1	105.		98.7		101.		108.		
Method Blank Sample	WG123124-2	106.		130.	*	124.		121.	*	
Laboratory Control S	WG123190-1	100.		97.6		97.3		101.		
Method Blank Sample	WG123190-2	107.		128.		130.		119.	*	
Laboratory Control S	WG123249-1	110.		106.		101.		113.		
Method Blank Sample	WG123249-2	104.		126.		124.		118.	*	
Matrix Spike	WG123249-5	71.4	*	90.4		89.5		95.1		
Matrix Spike Duplica	WG123249-6	66.5	*	84.2		86.1		90.2		
Methanol Blank	WG123768-5	105.		91.1		93.5		98.2		

na - sample not used in favor of other analy.

		QC Limits
DBF	DIBROMOFLUOROMETHANE	64-130

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Form 2
System Monitoring Compound Recovery

Lab Name: Katahdin Analytical Services **Project:** NTR Vieques East CTO-037 PI-21 **Matrix:** SL
Lab Code: KAS **SDG:** SG2698

TOL	TOLUENE-D8	85-115
BFB	P-BROMOFLUOROBENZENE	85-120
DCA	1,2-DICHLOROETHANE-D4	58-134

= Column to be used to flag recovery limits.
* = Values outside of contract required QC limits.
D= System Monitoring Compound diluted out.

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Form 2
System Monitoring Compound Recovery

Lab Name: Katahdin Analytical Services **Project:** NTR Vieques East CTO-037 PI-21 **Matrix:** AQ
Lab Code: KAS **SDG:** SG2698

Client Sample ID	Lab Sample ID	Col. ID	BFB	#	DBF	#	DCA	#	TOL	#
VEP21-TB01-042313	SG2698-12		96.3		90.7		107.		93.1	
VEP21-EB01-042313	SG2698-13		88.7		97.3		103.		91.1	
Laboratory Control S	WG123436-1		87.0		94.5		100.		89.7	
Method Blank Sample	WG123436-2		94.8		105.		130.	*	95.5	
Laboratory Control S	WG123768-1		99.4		92.4		92.8		97.5	
Method Blank Sample	WG123768-2		105.		92.1		96.7		98.4	

		QC Limits
DCA	1,2-DICHLOROETHANE-D4	70-120
BFB	P-BROMOFLUOROBENZENE	75-120
DBF	DIBROMOFLUOROMETHANE	85-115
TOL	TOLUENE-D8	85-120

= Column to be used to flag recovery limits.
* = Values outside of contract required QC limits.
D= System Monitoring Compound diluted out.

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063

YES NO N/A

ACTION: If all surrogate recoveries are > 10% but 1 or more compounds do not meet method specifications:

1. Flag all positive results as estimated ("J").
2. Flag all non-detects as estimated detection limits ("UJ") when recoveries are less than the lower acceptance limit.
3. If recoveries are greater than the upper acceptance limit, do not qualify non-detects, but qualify positive results as estimated "J".

If any surrogate has a recovery of < 10%:

1. Positive results are qualified with ("J").
2. Non-detects for that should be qualified as unusable ("R").

NOTE: Professional judgement should be used to qualify data that have method blank surrogate recoveries out of specification in both original and reanalyses. The basic concern is whether the blank problems represent an isolated problem with the blank alone or whether there is a fundamental problem with the analytical process. If one or more samples in the batch show acceptable surrogate recoveries, the reviewer may choose the blank problem to be an isolated occurrence.

3.6 Are there any transcription/calculation errors between raw data and reported data? [ ] [✓] ___

ACTION: If large errors exist, take action as specified in section 3.2 above.

4.0 Laboratory Control Sample(Form III/Equivalent)

4.1 Is the LCS prepared, extracted, analyzed, and reported once for every 20 field samples of a similar matrix, per SDG. [✓] ___ ___

YES NO N/A

Note: LCS consists of an aliquot of a clean (control) matrix similar to the sample matrix and of the same weight or volume.

ACTION: If any Laboratory Control Sample data are missing, call the lab for explanation /resubmittals. Make note in the data assessment.

4.2 Were the Laboratory Control Samples analyzed at the required frequency for each of the following matrices:

A. Water [✓] ___ ___

B. Soil [✓] ___ ___

C. Med Soil [ ] ___ ___

Note: The LCS is spiked with the same analytes at the same concentrations as the matrix spike (SW-846 8000C, Section 9.5). If different make note in data assessment. Matrix/LCS spiking standards should be prepared from volatile organic compounds which are representative of the compounds being investigating. At a minimum, the matrix spike should include 1,1-dichloroethene, trichloroethene, chlorobenzene, toluene, and benzene.

ACTION: If any MS/MD, MS/MSD or replicate data are missing, take the action specified in 3.2 above.

4.3 Have in house LCS recovery limits been developed (Method 8000C, Sect 9.7). [✓] ___ ___

4.4 If in house limits are not developed, are LCS acceptance recovery limits between 70 - 130% (Method 8000c Sect 9.5)? [ ] ___ [✓]

4.5 Were one or more of the volatile LCS recoveries outside the in house laboratory recovery criteria for spiked analytes? If in house limits are not present use 70 - 130% recovery limits.

2 of 4 LCS had high rec for acetone [✓] ___ ___

Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : NTR Vieques East CTO-037 PI-21
Lab File ID : T8129.D
Instrument ID : GCMS-T
Heated Purge : Yes

SDG : SG2698
Lab Sample ID : WG123124-2
Date Analyzed : 24-APR-13
Time Analyzed : 10:47

This Method Blank applies to the following samples, LCS, MS and MSD:

Client Sample ID	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
Laboratory Control S	WG123124-1	T8127.D	04/24/13	09:13
VEP21-SS01A-0001	SG2698-1	T8136.D	04/24/13	15:47
VEP21-SS01AP-0001	SG2698-2	T8137.D	04/24/13	16:29
VEP21-SB01A-011H	SG2698-3	T8138.D	04/24/13	17:10
VEP21-SS02A-0001	~~SG2698-4~~	T8139.D	04/24/13	17:52
VEP21-SB02A-011H	SG2698-5	T8140.D	04/24/13	18:33

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ANALYTICAL SERVICES

Cert No E87604

LCS Recovery Report

Client:
Lab ID: WG123124-1
Client ID: LCS
Project:
SDG: SG2698
LCS File ID: T8127.D

Sample Date:
Received Date:
Extract Date: 24-APR-13
Extracted By: REC
Extraction Method: SW846 5035
Lab Prep Batch: WG123124

Analysis Date: 24-APR-13
Analyst: REC
Analysis Method: SW846 8260B
Matrix: SL
% Solids: NA
Report Date: 09-MAY-13

Compound	Recovery (%)	Conc Added	Conc Recovered	Conc Units	Limits
Dichlorodifluoromethane	130.	50.0	64.8	ug/Kgdrywt	35-135
Chloromethane	111.	50.0	55.4	ug/Kgdrywt	50-130
Vinyl Chloride	111.	50.0	55.3	ug/Kgdrywt	60-125
Bromomethane	113.	50.0	56.3	ug/Kgdrywt	30-160
Chloroethane	106.	50.0	53.0	ug/Kgdrywt	40-155
Trichlorofluoromethane	109.	50.0	54.6	ug/Kgdrywt	25-185
1,1-Dichloroethene	103.	50.0	51.6	ug/Kgdrywt	65-135
Carbon Disulfide	97.2	50.0	48.6	ug/Kgdrywt	45-160
Freon-113	106.	50.0	53.0	ug/Kgdrywt	67-135
Methylene Chloride	72.8	50.0	36.4	ug/Kgdrywt	55-140
Acetone	* 163. J	50.0	81.5	ug/Kgdrywt	20-160
trans-1,2-Dichloroethene	96.2	50.0	48.1	ug/Kgdrywt	65-135
Methyl tert-butyl Ether	107.	100.	107.	ug/Kgdrywt	81-125
1,1-Dichloroethane	99.0	50.0	49.5	ug/Kgdrywt	75-125
cis-1,2-Dichloroethene	100.	50.0	50.2	ug/Kgdrywt	65-125
Chloroform	99.0	50.0	49.5	ug/Kgdrywt	70-125
Carbon Tetrachloride	105.	50.0	52.6	ug/Kgdrywt	65-135
1,1,1-Trichloroethane	102.	50.0	51.2	ug/Kgdrywt	70-135
2-Butanone	124.	50.0	61.9	ug/Kgdrywt	30-160
Benzene	103.	50.0	51.4	ug/Kgdrywt	75-125
Cyclohexane	112.	50.0	56.2	ug/Kgdrywt	75-128
1,2-Dichloroethane	104.	50.0	51.8	ug/Kgdrywt	70-135
Trichloroethene	109.	50.0	54.5	ug/Kgdrywt	75-125
1,2-Dichloropropane	105.	50.0	52.7	ug/Kgdrywt	70-120
Bromodichloromethane	106.	50.0	52.8	ug/Kgdrywt	70-130
cis-1,3-Dichloropropene	102.	50.0	51.0	ug/Kgdrywt	70-125
Toluene	106.	50.0	52.8	ug/Kgdrywt	70-125
4-Methyl-2-Pentanone	107.	50.0	53.4	ug/Kgdrywt	45-145
Tetrachloroethene	104.	50.0	52.0	ug/Kgdrywt	65-140
trans-1,3-Dichloropropene	114.	50.0	57.2	ug/Kgdrywt	65-125
1,1,2-Trichloroethane	108.	50.0	54.0	ug/Kgdrywt	60-125
Dibromochloromethane	107.	50.0	53.3	ug/Kgdrywt	65-130
1,2-Dibromoethane	109.	50.0	54.5	ug/Kgdrywt	70-125
2-Hexanone	114.	50.0	56.9	ug/Kgdrywt	45-145
Chlorobenzene	106.	50.0	52.9	ug/Kgdrywt	75-125

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Cert No E87604

LCS Recovery Report

Client:
Lab ID: WG123124-1
Client ID: LCS
Project:
SDG: SG2698
LCS File ID: T8127.D

Sample Date:
Received Date:
Extract Date: 24-APR-13
Extracted By: REC
Extraction Method: SW846 5035
Lab Prep Batch: WG123124

Analysis Date: 24-APR-13
Analyst: REC
Analysis Method: SW846 8260B
Matrix: SL
% Solids: NA
Report Date: 09-MAY-13

Compound	Recovery (%)	Conc Added	Conc Recovered	Conc Units	Limits
Ethylbenzene	102.	50.0	51.1	ug/Kgdrywt	75-125
Xylenes (total)	109.	150.	164.	ug/Kgdrywt	81-114
Styrene	107.	50.0	53.6	ug/Kgdrywt	75-125
Bromoform	108.	50.0	53.8	ug/Kgdrywt	55-135
Isopropylbenzene	119.	50.0	59.7	ug/Kgdrywt	75-130
1,1,2,2-Tetrachloroethane	107.	50.0	53.6	ug/Kgdrywt	55-130
1,3-Dichlorobenzene	114.	50.0	57.1	ug/Kgdrywt	70-125
1,4-Dichlorobenzene	104.	50.0	52.0	ug/Kgdrywt	70-125
1,2-Dichlorobenzene	112.	50.0	56.0	ug/Kgdrywt	75-120
1,2-Dibromo-3-Chloropropane	115.	50.0	57.4	ug/Kgdrywt	40-135
1,2,4-Trichlorobenzene	115.	50.0	57.3	ug/Kgdrywt	65-130
1,2,3-Trichlorobenzene	108.	50.0	54.0	ug/Kgdrywt	60-135
Bromochloromethane	102.	50.0	50.9	ug/Kgdrywt	70-125
M+P-Xylenes	106.	100.	106.	ug/Kgdrywt	80-125
O-Xylene	114.	50.0	57.2	ug/Kgdrywt	75-125
Methyl Acetate	93.2	50.0	46.6	ug/Kgdrywt	72-133
Methylcyclohexane	102.	50.0	51.0	ug/Kgdrywt	71-127
p-Bromofluorobenzene	105.				85-120
Toluene-D8	108.				85-115
1,2-Dichloroethane-D4	101.				58-134
Dibromofluoromethane	98.7				64-130

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Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : NTR Vieques East CTO-037 PI-21
Lab File ID : T8171.D
Instrument ID : GCMS-T
Heated Purge : Yes

SDG : SG2698
Lab Sample ID : WG123249-2
Date Analyzed : 26-APR-13
Time Analyzed : 11:03

This Method Blank applies to the following samples, LCS, MS and MSD:

Client Sample ID	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
Laboratory Control S	WG123249-1	T8169.D	04/26/13	09:35
VEP21-SS03A-0001	SG2698-6RA	T8172.D	04/26/13	11:45
VEP21-SS04A-0001	~~SG2698-8RA~~	T8173.D	04/26/13	12:26
VEP21-SB04A-011H	SG2698-9RA	T8174.D	04/26/13	13:07
VEP21-SS05A-0001	~~SG2698-10RA~~	T8175.D	04/26/13	13:49
VEP21-SB05A-011H	SG2698-11RA	T8176.D	04/26/13	14:30
Matrix Spike	WG123249-5	T8177.D	04/26/13	15:12
Matrix Spike Duplica	WG123249-6	T8178.D	04/26/13	15:54

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ANALYTICAL SERVICES

Cert No E87604

LCS Recovery Report

Client:
Lab ID: WG123249-1
Client ID: LCS
Project:
SDG: SG2698
LCS File ID: T8169.D

Sample Date:
Received Date:
Extract Date: 26-APR-13
Extracted By: REC
Extraction Method: SW846 5035
Lab Prep Batch: WG123249

Analysis Date: 26-APR-13
Analyst: REC
Analysis Method: SW846 8260B
Matrix: SL
% Solids: NA
Report Date: 09-MAY-13

Compound	Recovery (%)	Conc Added	Conc Recovered	Conc Units	Limits
Dichlorodifluoromethane	127.	50.0	63.4	ug/Kgdrywt	35-135
Chloromethane	113.	50.0	56.4	ug/Kgdrywt	50-130
Vinyl Chloride	111.	50.0	55.5	ug/Kgdrywt	60-125
Bromomethane	116.	50.0	58.0	ug/Kgdrywt	30-160
Chloroethane	110.	50.0	54.9	ug/Kgdrywt	40-155
Trichlorofluoromethane	113.	50.0	56.7	ug/Kgdrywt	25-185
1,1-Dichloroethene	109.	50.0	54.3	ug/Kgdrywt	65-135
Carbon Disulfide	100.	50.0	50.1	ug/Kgdrywt	45-160
Freon-113	120.	50.0	59.8	ug/Kgdrywt	67-135
Methylene Chloride	72.4	50.0	36.2	ug/Kgdrywt	55-140
Acetone	* 180. J	50.0	89.9	ug/Kgdrywt	20-160
trans-1,2-Dichloroethene	101.	50.0	50.6	ug/Kgdrywt	65-135
Methyl tert-butyl Ether	110.	100.	110.	ug/Kgdrywt	81-125
1,1-Dichloroethane	102.	50.0	51.1	ug/Kgdrywt	75-125
cis-1,2-Dichloroethene	101.	50.0	50.5	ug/Kgdrywt	65-125
Chloroform	102.	50.0	51.2	ug/Kgdrywt	70-125
Carbon Tetrachloride	109.	50.0	54.7	ug/Kgdrywt	65-135
1,1,1-Trichloroethane	102.	50.0	50.9	ug/Kgdrywt	70-135
2-Butanone	135.	50.0	67.3	ug/Kgdrywt	30-160
Benzene	106.	50.0	53.0	ug/Kgdrywt	75-125
Cyclohexane	121.	50.0	60.7	ug/Kgdrywt	75-128
1,2-Dichloroethane	105.	50.0	52.4	ug/Kgdrywt	70-135
Trichloroethene	113.	50.0	56.5	ug/Kgdrywt	75-125
1,2-Dichloropropane	107.	50.0	53.5	ug/Kgdrywt	70-120
Bromodichloromethane	106.	50.0	52.8	ug/Kgdrywt	70-130
cis-1,3-Dichloropropene	105.	50.0	52.3	ug/Kgdrywt	70-125
Toluene	109.	50.0	54.7	ug/Kgdrywt	70-125
4-Methyl-2-Pentanone	102.	50.0	51.1	ug/Kgdrywt	45-145
Tetrachloroethene	108.	50.0	54.0	ug/Kgdrywt	65-140
trans-1,3-Dichloropropene	113.	50.0	56.7	ug/Kgdrywt	65-125
1,1,2-Trichloroethane	111.	50.0	55.4	ug/Kgdrywt	60-125
Dibromochloromethane	108.	50.0	54.2	ug/Kgdrywt	65-130
1,2-Dibromoethane	106.	50.0	52.9	ug/Kgdrywt	70-125
2-Hexanone	120.	50.0	60.2	ug/Kgdrywt	45-145
Chlorobenzene	110.	50.0	54.9	ug/Kgdrywt	75-125

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070

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ANALYTICAL SERVICES

Cert No E87604

LCS Recovery Report

Client:
Lab ID: WG123249-1
Client ID: LCS
Project:
SDG: SG2698
LCS File ID: T8169.D

Sample Date:
Received Date:
Extract Date: 26-APR-13
Extracted By: REC
Extraction Method: SW846 5035
Lab Prep Batch: WG123249

Analysis Date: 26-APR-13
Analyst: REC
Analysis Method: SW846 8260B
Matrix: SL
% Solids: NA
Report Date: 09-MAY-13

Compound	Recovery (%)	Conc Added	Conc Recovered	Conc Units	Limits
Ethylbenzene	104.	50.0	52.2	ug/Kgdrywt	75-125
Xylenes (total)	* 117. J⊕ *	150.	175.	ug/Kgdrywt	81-114
Styrene	110.	50.0	55.0	ug/Kgdrywt	75-125
Bromoform	110.	50.0	55.1	ug/Kgdrywt	55-135
Isopropylbenzene	126.	50.0	62.9	ug/Kgdrywt	75-130
1,1,2,2-Tetrachloroethane	109.	50.0	54.4	ug/Kgdrywt	55-130
1,3-Dichlorobenzene	119.	50.0	59.5	ug/Kgdrywt	70-125
1,4-Dichlorobenzene	108.	50.0	54.0	ug/Kgdrywt	70-125
1,2-Dichlorobenzene	116.	50.0	58.0	ug/Kgdrywt	75-120
1,2-Dibromo-3-Chloropropane	119.	50.0	59.5	ug/Kgdrywt	40-135
1,2,4-Trichlorobenzene	118.	50.0	58.9	ug/Kgdrywt	65-130
1,2,3-Trichlorobenzene	111.	50.0	55.4	ug/Kgdrywt	60-135
Bromochloromethane	104.	50.0	52.1	ug/Kgdrywt	70-125
M+P-Xylenes	112.	100.	112.	ug/Kgdrywt	80-125
O-Xylene	* 125. J⊕ *	50.0	62.5	ug/Kgdrywt	75-125
Methyl Acetate	94.4	50.0	47.2	ug/Kgdrywt	72-133
Methylcyclohexane	115.	50.0	57.5	ug/Kgdrywt	71-127
p-Bromofluorobenzene	110.				85-120
Toluene-D8	113.				85-115
1,2-Dichloroethane-D4	101.				58-134
Dibromofluoromethane	106.				64-130

* no ⊕ in assoc samples – no qual

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YES NO N/A

Table 3. LCS Actions for Volatile Analysis

Criteria	Action	
	Detected Spiked Compounds	**Non-Detected Spiked Compounds**
%R > Upper Acceptance Limit	J	No Qualifiers
%R < Lower Acceptance Limit	J	UJ
Lower Acceptance Limit ≤ %R	No Qualifications	

5.0 Matrix Spikes(Form III or equivalent)

5.1 Are all data for matrix spike and matrix duplicate or matrix spike duplicate (MS/MD or MS/MSD) present and complete for each matrix? ✓ ___ ___

NOTE: The laboratory should use one matrix spike and a duplicate analysis of an unspiked field sample if target analytes are expected in the sample. If the sample is not expected to contain target analytes, a MS/MSD should be analyzed (SW-846, Method 8260B, Sect 8.4.2).

5.2 Have MS/MD or MS/MSD results been summarized on modified CLP Form III? ✓ ___ ___

ACTION: If any data are missing take action as specified in section 3.2 above.

5.3 Were matrix spikes analyzed at the required frequency for each of the following matrices? (One MS/MD, MS/MSD or laboratory replicate must be performed for every 20 samples

YES NO N/A

of similar matrix or concentration level. Laboratories analyzing one to ten samples per month are required to analyze at least one MS per month [page 8000C, section 9.5.])

a. Water [ ] ___ ___

b. Waste [ ] ___ ___

c. Soil/Solid [✓] ___ ___

Note: The LCS is spiked with the same analytes at the same concentrations as the matrix spike (SW-846 8000C, Section 9.5). If different make note in data assessment. Matrix/LCS spiking standards should be prepared from volatile organic compounds which are representative of the compounds being investigating. At a minimum, the matrix spike should include 1,1-dichloroethene, trichloroethene, chlorobenzene, toluene, and benzene. The concentration of the LCS should be determined as described SW-Method 8000C Section 9.5.

ACTION: If any MS/MD, MS/MSD or replicate data are missing, take the action specified in 3.2 above.

5.4 Have in house MS recovery limits been developed (Method 8000C, Sect 9.7)for each matrix. [✓] ___ ___

5.5 Were one or more of the volatile MS/MSD recoveries outside of the in-house laboratory recovery criteria for spiked analytes? If none are present, then use 70-130% recovery as per SW-846, 8000C, Sect. 9.5.4. [✓] ___ ___

ACTION: Circle all outliers with a red pencil.

NOTE: If any individual % recovery in the MS (or MSD) falls outside the designated range for recovery the reviewer should determine if there is a matrix effect. A matrix effect is indicated if the LCS data are within limits but the MS data exceeds the limits.

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Cert No E87604

MS/MSD Recovery Report

MS ID: WG123249-5
MSD ID: WG123249-6
Sample ID: SG2698-5
Client ID: VEP21-SB02A-011H
Project:
SDG: SG2698
MS File ID: T8177.D

Received Date:
Extract Date: 26-APR-13
Extracted By: REC
Extraction Method: SW846 5035
Lab Prep Batch: WG123249
Report Date: 09-MAY-13
MSD File ID: T8178.D

Analysis Date: 26-APR-13
Analyst: REC
Analysis Method: SW846 8260B
Matrix: SL
% Solids: 95.

Compound	MS Spike	MSD Spike	Conc Units	Samp Conc	MS Conc	MSD Conc	MS Rec (%)	MSD Rec (%)	RPD (%)	RPD Limit	Limits
Dichlorodifluoromethane	55.0	58.0	ug/Kgdrywt	U5.0	70.	75.	127.	130.	7	30	35-135
Chloromethane	55.0	58.0	ug/Kgdrywt	U5.0	51.	60.	93.1	104.	16	30	50-130
Vinyl Chloride	55.0	58.0	ug/Kgdrywt	U5.0	56.	64.	101.	110.	14	30	60-125
Bromomethane	55.0	58.0	ug/Kgdrywt	U5.0	41.	50.	75.1	85.7	18	30	30-160
Chloroethane	55.0	58.0	ug/Kgdrywt	U5.0	53.	62.	95.8	106.	16	30	40-155
Trichlorofluoromethane	55.0	58.0	ug/Kgdrywt	U5.0	62.	63.	113.	108.	1	30	25-185
1,1-Dichloroethene	55.0	58.0	ug/Kgdrywt	U2.5	58.	61.	105.	105.	6	30	65-135
Carbon Disulfide	55.0	58.0	ug/Kgdrywt	U2.5	41.	47.	74.7	80.3	12	30	45-160
Freon-113	55.0	58.0	ug/Kgdrywt	U2.5	60.	61.	109.	105.	1	30	67-135
Methylene Chloride	55.0	58.0	ug/Kgdrywt	U12	34.	36.	61.3	62.2	7	30	55-140
Acetone	55.0	58.0	ug/KgdrywtULMM12		110	120	196.*	200.*	7	30	20-160 J *
trans-1,2-Dichloroethene	55.0	58.0	ug/Kgdrywt	U2.5	52.	52.	94.9	90.3	0	30	65-135
Methyl tert-butyl Ether	110.	120.	ug/Kgdrywt	U2.5	110	120	98.2	95.8	6	30	81-125
1,1-Dichloroethane	55.0	58.0	ug/Kgdrywt	U2.5	51.	54.	92.4	93.8	7	30	75-125
cis-1,2-Dichloroethene	55.0	58.0	ug/Kgdrywt	U2.5	51.	53.	92.4	90.9	4	30	65-125
Chloroform	55.0	58.0	ug/Kgdrywt	U2.5	52.	52.	93.6	90.2	2	30	70-125
Carbon Tetrachloride	55.0	58.0	ug/Kgdrywt	U2.5	54.	56.	97.6	97.2	5	30	65-135
1,1,1-Trichloroethane	55.0	58.0	ug/Kgdrywt	U2.5	51.	53.	92.7	91.6	4	30	70-135
2-Butanone	55.0	58.0	ug/Kgdrywt	U12	67.	73.	122.	126.	8	30	30-160
Benzene	55.0	58.0	ug/Kgdrywt	U2.5	51.	55.	93.1	95.0	7	30	75-125
Cyclohexane	55.0	58.0	ug/Kgdrywt	U2.5	53.	54.	97.1	92.9	1	30	75-128
1,2-Dichloroethane	55.0	58.0	ug/Kgdrywt	U2.5	55.	57.	100.	97.9	3	30	70-135
Trichloroethene	55.0	58.0	ug/Kgdrywt	U2.5	54.	57.	97.3	98.6	7	30	75-125
1,2-Dichloropropane	55.0	58.0	ug/Kgdrywt	U2.5	51.	55.	93.3	95.0	7	30	70-120
Bromodichloromethane	55.0	58.0	ug/Kgdrywt	U2.5	50.	53.	91.4	91.9	6	30	70-130
cis-1,3-Dichloropropene	55.0	58.0	ug/Kgdrywt	U2.5	40.	44.	72.4	76.0	10	30	70-125
Toluene	55.0	58.0	ug/Kgdrywt	U2.5	51.	53.	92.7	91.4	4	30	70-125
4-Methyl-2-Pentanone	55.0	58.0	ug/Kgdrywt	U12	47.	49.	84.9	84.6	5	30	45-145
Tetrachloroethene	55.0	58.0	ug/Kgdrywt	U2.5	57.	58.	104.	99.1	1	30	65-140
trans-1,3-Dichloropropene	55.0	58.0	ug/Kgdrywt	U2.5	49.	50.	88.7	86.0	2	30	65-125
1,1,2-Trichloroethane	55.0	58.0	ug/Kgdrywt	U2.5	52.	55.	94.7	95.5	6	30	60-125
Dibromochloromethane	55.0	58.0	ug/Kgdrywt	U2.5	48.	51.	87.8	88.6	6	30	65-130
1,2-Dibromoethane	55.0	58.0	ug/Kgdrywt	U2.5	47.	51.	86.2	87.8	7	30	70-125

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* - no ⊕ in assoc sample - no qual

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ANALYTICAL SERVICES

Cert No E87604

MS/MSD Recovery Report

MS ID: WG123249-5
MSD ID: WG123249-6
Sample ID: SG2698-5
Client ID: VEP21-SB02A-011H
Project:
SDG: SG2698
MS File ID: T8177.D

Received Date:
Extract Date: 26-APR-13
Extracted By: REC
Extraction Method: SW846 5035
Lab Prep Batch: WG123249
Report Date: 09-MAY-13
MSD File ID: T8178.D

Analysis Date: 26-APR-13
Analyst: REC
Analysis Method: SW846 8260B
Matrix: SL
% Solids: 95.

Compound	MS Spike	MSD Spike	Conc Units	Samp Conc	MS Conc	MSD Conc	MS Rec (%)	MSD Rec (%)	RPD (%)	RPD Limit	Limits
2-Hexanone	55.0	58.0	ug/Kgdrywt	U12	56.	62.	101.	107.	11	30	45-145
Chlorobenzene	55.0	58.0	ug/Kgdrywt	U2.5	49.	50.	88.5	85.3	2	30	75-125
Ethylbenzene	55.0	58.0	ug/Kgdrywt	U2.5	46.	46.	84.0	79.3	0	30	75-125
Xylenes (total)	160.	170.	ug/Kgdrywt	U7.5	140	140	90.6	84.7	1	30	81-114
Styrene	55.0	58.0	ug/Kgdrywt	U2.5	45.	44.	81.4	76.6	1	30	75-125
Bromoform	55.0	58.0	ug/Kgdrywt	U2.5	42.	46.	76.2	78.6	8	30	55-135
Isopropylbenzene	55.0	58.0	ug/Kgdrywt	U2.5	49.	48.	88.5	83.4	1	30	75-130
1,1,2,2-Tetrachloroethane	55.0	58.0	ug/Kgdrywt	U2.5	46.	48.	84.2	82.8	4	30	55-130
1,3-Dichlorobenzene	55.0	58.0	ug/Kgdrywt	UM2.5	39.	36.	71.1	62.4*	8	30	70-125
1,4-Dichlorobenzene	55.0	58.0	ug/Kgdrywt	UMM2.5	36.	33.	64.9*	56.9*	8	30	70-125
1,2-Dichlorobenzene	55.0	58.0	ug/Kgdrywt	UMM2.5	36.	34.	65.4*	59.0*	5	30	75-120
1,2-Dibromo-3-Chloropropane	55.0	58.0	ug/Kgdrywt	U2.5	49.	50.	88.7	85.9	2	30	40-135
1,2,4-Trichlorobenzene	55.0	58.0	ug/Kgdrywt	UMM2.5	18.	16.	32.9*	27.2*	14	30	65-130
1,2,3-Trichlorobenzene	55.0	58.0	ug/Kgdrywt	UMM2.5	17.	15.	30.5*	26.0*	11	30	60-135
Bromochloromethane	55.0	58.0	ug/Kgdrywt	U2.5	51.	55.	93.4	94.5	6	30	70-125
M+P-Xylenes	110.	120.	ug/Kgdrywt	UM5.0	95.	95.	86.7	78.9*	1	30	80-125
O-Xylene	55.0	58.0	ug/Kgdrywt	U2.5	50.	50.	90.9	85.5	1	30	75-125
Methyl Acetate	55.0	58.0	ug/Kgdrywt	UMM3.0	7.2	6.6	13.1*	11.4*	9	30	72-133
Methylcyclohexane	55.0	58.0	ug/Kgdrywt	UM2.5	42.	37.	77.3	63.6*	14	30	71-127
p-Bromofluorobenzene							71.4*	66.5*			85-120
Toluene-D8							95.1	90.2			85-115
1,2-Dichloroethane-D4							89.5	86.1			58-134
Dibromofluoromethane							90.4	84.2			64-130

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YES NO N/A

NOTE: No qualification of data is necessary on MS and MSD data alone. However, using informed professional judgement, the data reviewer may use MS and MSD results in conjunction with other QC criteria to determine the need for some qualification.

Note: The data reviewer should first try to determine to what extent the results of the MS and MSD affect the associated data. This determination should be made with regard to he MS and MSD sample itself, as well as specific analytes for all samples associated with the MS and MSD.

Note: In those instances where it can be determine that the results of the MS and MSD affect only the sample spiked, limit qualification to this sample only. However, it may be determined through the MS and MSD results that a laboratory is having a systematic problem in the analysis of one or more analytes that affect all associated samples, and the reviewer must use professional judgement to qualify the data from all associated samples.

Note: The reviewer must use professional judgement to determine the need for qualification of non-spiked compounds.

ACTION: Follow criteria in Table 4 when professional judgement deems qualification of sample.

Table 4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Actions for Volatile Analysis

Criteria	Action	
	Detected Spiked Compounds	Non-Detected Spiked Compounds
%R > Upper Acceptance Limit	J	No Qualifiers
%R < Lower Acceptance Limit	J	UJ
Lower Acceptance Limit ≤ %R	No Qualifications	

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YES NO N/A

6.0 Blank (CLP Form IV Equivalent)

6.1 Is the Method Blank Summary form present? [✓] ___ ___

6.2 Frequency of Analysis: Has a method blank been analyzed for every 20 (or less) samples of similar matrix or concentration or each extraction batch? [✓] ___ ___

6.3 Has a method blank been analyzed for each GC/MS system used ? [✓] ___ ___

ACTION: If any blank data are missing, take action as specified above (section 3.2). If blank data is not available, reject ® all associated positive data. However, using professional judgement, the data reviewer may substitute field blank data for missing method blank data.

6.4 Chromatography: review the blank raw data - chromatograms, quant reports or data system printouts.

Is the chromatographic performance (baseline stability) for each instrument acceptable for volatile organic compounds? [✓] ___ ___

7.0 Contamination

NOTE: "Water blanks", "drill blanks" and "distilled water blanks" are validated like any other sample and are not used to qualify the data. Do not confuse them with the other QC blanks discussed below.

7.1 Do any method/instrument/reagent blanks have positive results for target analytes and/or TICs? When applied as described below, the contaminant concentration in these blanks are multiplied by the sample dilution factor and corrected for percent moisture where necessary. [✓] ___ ___

	YES	NO	N/A
7.2 Do any field/rinse blanks have positive volatile organic compound results?	✓	[ ]	

ACTION: Prepare a list of the samples associated with each of the contaminated blanks. (Attach a separate sheet.)

NOTE: All field blank results associated to a particular group of samples (may exceed one per case or one per day) may be used to qualify data. Blanks may not be qualified because of contamination in another blank. Field blanks must be qualified for surrogate, or calibration QC problems.

ACTION: Follow the directions in Table 5 below to qualify sample results due to contamination. Use the largest value from all the associated blanks.

VEP21-TB01-042313

VEP21-EB01-042313

Additional Region II Worksheet listing blank qualifications due to method and/or QC Blank Contamination

SDG# SG2698

VOA

The associated method and/or QC blanks exhibited contamination as noted in the following table.

Blank ID	Compound	Concentration	Reporting Limit
Methanol Blank	bromomethane	110J ug/Kg	250 ug/Kg
Method Blank WG123190-2	acetone	8.8	12
Method Blank WG123249-2	acetone	6.2	12
VEP21-TB01-042313	carbon disulfide	0.39 ug/L	0.50 ug/L
	methylene chloride	1.7J	2.5
VEP21-EB01-042313	carbon disulfide	0.45	0.50

Associated samples and required qualifications are noted in the following table.

Sample ID	Compound	Q Flag	Qual Code
VEP21-SS04A-0001, VEP21-SB05A-011H	acetone	U at LOD	MBL

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Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : NTR Vieques East CTO-037 PI-21
Lab File ID : T8151.D
Instrument ID : GCMS-T
Heated Purge : Yes

SDG : SG2698
Lab Sample ID : WG123190-2
Date Analyzed : 25-APR-13
Time Analyzed : 13:40

This Method Blank applies to the following samples, LCS, MS and MSD:

Client Sample ID	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
Laboratory Control S	WG123190-1	T8149.D	04/25/13	12:10
VEP21-SS03A-0001	~~SG2698-6~~	T8152.D	04/25/13	14:21
VEP21-SB03A-011H	SG2698-7	T8153.D	04/25/13	15:03
VEP21-SS04A-0001	SG2698-8	T8154.D	04/25/13	15:44
VEP21-SB04A-011H	~~SG2698-9~~	T8155.D	04/25/13	16:25
VEP21-SS05A-0001	SG2698-10	T8156.D	04/25/13	17:07
VEP21-SB05A-011H	~~SG2698-11~~	T8157.D	04/25/13	17:48
VEP21-SS01A-0001	~~SG2698-1RA~~	T8160.D	04/25/13	19:53
VEP21-SS01AP-0001	~~SG2698-2RA~~	T8161.D	04/25/13	20:35
VEP21-SB01A-011H	~~SG2698-3RA~~	T8162.D	04/25/13	21:16
VEP21-SS02A-0001	SG2698-4RA	T8163.D	04/25/13	21:58

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Katahdin
ANALYTICAL SERVICES

Cert No E87604

Report of Analytical Results

Client:
Lab ID: WG123190-2
Client ID: Method Blank Sample
Project:
SDG: SG2698
Lab File ID: T8151.D

Sample Date:
Received Date:
Extract Date: 25-APR-13
Extracted By: REC
Extraction Method: SW846 5035
Lab Prep Batch: WG123190

Analysis Date: 25-APR-13
Analyst: REC
Analysis Method: SW846 8260B
Matrix: SL
% Solids: NA
Report Date: 09-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Dichlorodifluoromethane	U	5.0	ug/Kgdrywt	1	10	10.	0.92	5.0
Chloromethane	U	5.0	ug/Kgdrywt	1	10	10.	1.4	5.0
Vinyl Chloride	U	5.0	ug/Kgdrywt	1	10	10.	0.87	5.0
Bromomethane	U	5.0	ug/Kgdrywt	1	10	10.	1.1	5.0
Chloroethane	U	5.0	ug/Kgdrywt	1	10	10.	1.3	5.0
Trichlorofluoromethane	U	5.0	ug/Kgdrywt	1	10	10.	0.91	5.0
1,1-Dichloroethene	U	2.5	ug/Kgdrywt	1	5	5.0	0.93	2.5
Carbon Disulfide	U	2.5	ug/Kgdrywt	1	5	5.0	0.78	2.5
Freon-113	U	2.5	ug/Kgdrywt	1	5	5.0	0.90	2.5
Methylene Chloride	U	12	ug/Kgdrywt	1	25	25.	7.9	12.
Acetone	J	8.8	ug/Kgdrywt	1	25	25.	5.1	12.
trans-1,2-Dichloroethene	U	2.5	ug/Kgdrywt	1	5	5.0	0.71	2.5
Methyl tert-butyl Ether	U	2.5	ug/Kgdrywt	1	5	5.0	1.1	2.5
1,1-Dichloroethane	U	2.5	ug/Kgdrywt	1	5	5.0	1.7	2.5
cis-1,2-Dichloroethene	U	2.5	ug/Kgdrywt	1	5	5.0	0.91	2.5
Chloroform	U	2.5	ug/Kgdrywt	1	5	5.0	0.35	2.5
Carbon Tetrachloride	U	2.5	ug/Kgdrywt	1	5	5.0	1.3	2.5
1,1,1-Trichloroethane	U	2.5	ug/Kgdrywt	1	5	5.0	0.42	2.5
2-Butanone	U	12	ug/Kgdrywt	1	25	25.	5.9	12.
Benzene	U	2.5	ug/Kgdrywt	1	5	5.0	0.92	2.5
Cyclohexane	U	2.5	ug/Kgdrywt	1	5	5.0	1.4	2.5
1,2-Dichloroethane	U	2.5	ug/Kgdrywt	1	5	5.0	1.0	2.5
Trichloroethene	U	2.5	ug/Kgdrywt	1	5	5.0	0.59	2.5
1,2-Dichloropropane	U	2.5	ug/Kgdrywt	1	5	5.0	1.4	2.5
Bromodichloromethane	U	2.5	ug/Kgdrywt	1	5	5.0	0.60	2.5
cis-1,3-Dichloropropene	U	2.5	ug/Kgdrywt	1	5	5.0	0.72	2.5
Toluene	U	2.5	ug/Kgdrywt	1	5	5.0	1.4	2.5
4-Methyl-2-Pentanone	U	12	ug/Kgdrywt	1	25	25.	5.9	12.
Tetrachloroethene	U	2.5	ug/Kgdrywt	1	5	5.0	1.2	2.5
trans-1,3-Dichloropropene	U	2.5	ug/Kgdrywt	1	5	5.0	0.86	2.5
1,1,2-Trichloroethane	U	2.5	ug/Kgdrywt	1	5	5.0	0.97	2.5
Dibromochloromethane	U	2.5	ug/Kgdrywt	1	5	5.0	1.0	2.5
1,2-Dibromoethane	U	2.5	ug/Kgdrywt	1	5	5.0	1.2	2.5
2-Hexanone	U	12	ug/Kgdrywt	1	25	25.	4.8	12.

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ANALYTICAL SERVICES

Cert No E87604

Report of Analytical Results

Client:
Lab ID: WG123190-2
Client ID: Method Blank Sample
Project:
SDG: SG2698
Lab File ID: T8151.D

Sample Date:
Received Date:
Extract Date: 25-APR-13
Extracted By: REC
Extraction Method: SW846 5035
Lab Prep Batch: WG123190

Analysis Date: 25-APR-13
Analyst: REC
Analysis Method: SW846 8260B
Matrix: SL
% Solids: NA
Report Date: 09-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Chlorobenzene	U	2.5	ug/Kgdrywt	1	5	5.0	0.51	2.5
Ethylbenzene	U	2.5	ug/Kgdrywt	1	5	5.0	0.65	2.5
Xylenes (total)	U	7.5	ug/Kgdrywt	1	15	15.	1.3	7.5
Styrene	U	2.5	ug/Kgdrywt	1	5	5.0	0.51	2.5
Bromoform	U	2.5	ug/Kgdrywt	1	5	5.0	0.70	2.5
Isopropylbenzene	U	2.5	ug/Kgdrywt	1	5	5.0	0.92	2.5
1,1,2,2-Tetrachloroethane	U	2.5	ug/Kgdrywt	1	5	5.0	0.84	2.5
1,3-Dichlorobenzene	U	2.5	ug/Kgdrywt	1	5	5.0	0.62	2.5
1,4-Dichlorobenzene	U	2.5	ug/Kgdrywt	1	5	5.0	0.44	2.5
1,2-Dichlorobenzene	U	2.5	ug/Kgdrywt	1	5	5.0	0.78	2.5
1,2-Dibromo-3-Chloropropane	U	2.5	ug/Kgdrywt	1	5	5.0	1.5	2.5
1,2,4-Trichlorobenzene	U	2.5	ug/Kgdrywt	1	5	5.0	0.79	2.5
1,2,3-Trichlorobenzene	U	2.5	ug/Kgdrywt	1	5	5.0	0.76	2.5
Bromochloromethane	U	2.5	ug/Kgdrywt	1	5	5.0	0.91	2.5
M+P-Xylenes	U	5.0	ug/Kgdrywt	1	10	10.	1.7	5.0
O-Xylene	U	2.5	ug/Kgdrywt	1	5	5.0	1.3	2.5
Methyl Acetate	U	3.0	ug/Kgdrywt	1	5	5.0	2.7	3.0
Methylcyclohexane	U	2.5	ug/Kgdrywt	1	5	5.0	0.96	2.5
p-Bromofluorobenzene		107.	%					
Toluene-D8	*	119.	%					
1,2-Dichloroethane-D4		130.	%					
Dibromofluoromethane		128.	%					

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Cert No E87604

Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : NTR Vieques East CTO-037 PI-21
Lab File ID : T8171.D
Instrument ID : GCMS-T
Heated Purge : Yes

SDG : SG2698
Lab Sample ID : WG123249-2
Date Analyzed : 26-APR-13
Time Analyzed : 11:03

This Method Blank applies to the following samples, LCS, MS and MSD:

Client Sample ID	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
Laboratory Control S	WG123249-1	T8169.D	04/26/13	09:35
VEP21-SS03A-0001	SG2698-6RA	T8172.D	04/26/13	11:45
VEP21-SS04A-0001	~~SG2698-8RA~~	T8173.D	04/26/13	12:26
VEP21-SB04A-011H	SG2698-9RA	T8174.D	04/26/13	13:07
VEP21-SS05A-0001	~~SG2698-10RA~~	T8175.D	04/26/13	13:49
VEP21-SB05A-011H	SG2698-11RA	T8176.D	04/26/13	14:30
Matrix Spike	WG123249-5	T8177.D	04/26/13	15:12
Matrix Spike Duplica	WG123249-6	T8178.D	04/26/13	15:54

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Report of Analytical Results

Client:
Lab ID: WG123249-2
Client ID: Method Blank Sample
Project:
SDG: SG2698
Lab File ID: T8171.D

Sample Date:
Received Date:
Extract Date: 26-APR-13
Extracted By: REC
Extraction Method: SW846 5035
Lab Prep Batch: WG123249

Analysis Date: 26-APR-13
Analyst: REC
Analysis Method: SW846 8260B
Matrix: SL
% Solids: NA
Report Date: 09-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Dichlorodifluoromethane	U	5.0	ug/Kgdrywt	1	10	10.	0.92	5.0
Chloromethane	U	5.0	ug/Kgdrywt	1	10	10.	1.4	5.0
Vinyl Chloride	U	5.0	ug/Kgdrywt	1	10	10.	0.87	5.0
Bromomethane	U	5.0	ug/Kgdrywt	1	10	10.	1.1	5.0
Chloroethane	U	5.0	ug/Kgdrywt	1	10	10.	1.3	5.0
Trichlorofluoromethane	U	5.0	ug/Kgdrywt	1	10	10.	0.91	5.0
1,1-Dichloroethene	U	2.5	ug/Kgdrywt	1	5	5.0	0.93	2.5
Carbon Disulfide	U	2.5	ug/Kgdrywt	1	5	5.0	0.78	2.5
Freon-113	U	2.5	ug/Kgdrywt	1	5	5.0	0.90	2.5
Methylene Chloride	U	12	ug/Kgdrywt	1	25	25.	7.9	12.
Acetone	J	6.2	ug/Kgdrywt	1	25	25.	5.1	12.
trans-1,2-Dichloroethene	U	2.5	ug/Kgdrywt	1	5	5.0	0.71	2.5
Methyl tert-butyl Ether	U	2.5	ug/Kgdrywt	1	5	5.0	1.1	2.5
1,1-Dichloroethane	U	2.5	ug/Kgdrywt	1	5	5.0	1.7	2.5
cis-1,2-Dichloroethene	U	2.5	ug/Kgdrywt	1	5	5.0	0.91	2.5
Chloroform	U	2.5	ug/Kgdrywt	1	5	5.0	0.35	2.5
Carbon Tetrachloride	U	2.5	ug/Kgdrywt	1	5	5.0	1.3	2.5
1,1,1-Trichloroethane	U	2.5	ug/Kgdrywt	1	5	5.0	0.42	2.5
2-Butanone	U	12	ug/Kgdrywt	1	25	25.	5.9	12.
Benzene	U	2.5	ug/Kgdrywt	1	5	5.0	0.92	2.5
Cyclohexane	U	2.5	ug/Kgdrywt	1	5	5.0	1.4	2.5
1,2-Dichloroethane	U	2.5	ug/Kgdrywt	1	5	5.0	1.0	2.5
Trichloroethene	U	2.5	ug/Kgdrywt	1	5	5.0	0.59	2.5
1,2-Dichloropropane	U	2.5	ug/Kgdrywt	1	5	5.0	1.4	2.5
Bromodichloromethane	U	2.5	ug/Kgdrywt	1	5	5.0	0.60	2.5
cis-1,3-Dichloropropene	U	2.5	ug/Kgdrywt	1	5	5.0	0.72	2.5
Toluene	U	2.5	ug/Kgdrywt	1	5	5.0	1.4	2.5
4-Methyl-2-Pentanone	U	12	ug/Kgdrywt	1	25	25.	5.9	12.
Tetrachloroethene	U	2.5	ug/Kgdrywt	1	5	5.0	1.2	2.5
trans-1,3-Dichloropropene	U	2.5	ug/Kgdrywt	1	5	5.0	0.86	2.5
1,1,2-Trichloroethane	U	2.5	ug/Kgdrywt	1	5	5.0	0.97	2.5
Dibromochloromethane	U	2.5	ug/Kgdrywt	1	5	5.0	1.0	2.5
1,2-Dibromoethane	U	2.5	ug/Kgdrywt	1	5	5.0	1.2	2.5
2-Hexanone	U	12	ug/Kgdrywt	1	25	25.	4.8	12.

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Report of Analytical Results

Client:
Lab ID: WG123249-2
Client ID: Method Blank Sample
Project:
SDG: SG2698
Lab File ID: T8171.D

Sample Date:
Received Date:
Extract Date: 26-APR-13
Extracted By: REC
Extraction Method: SW846 5035
Lab Prep Batch: WG123249

Analysis Date: 26-APR-13
Analyst: REC
Analysis Method: SW846 8260B
Matrix: SL
% Solids: NA
Report Date: 09-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Chlorobenzene	U	2.5	ug/Kgdrywt	1	5	5.0	0.51	2.5
Ethylbenzene	U	2.5	ug/Kgdrywt	1	5	5.0	0.65	2.5
Xylenes (total)	U	7.5	ug/Kgdrywt	1	15	15.	1.3	7.5
Styrene	U	2.5	ug/Kgdrywt	1	5	5.0	0.51	2.5
Bromoform	U	2.5	ug/Kgdrywt	1	5	5.0	0.70	2.5
Isopropylbenzene	U	2.5	ug/Kgdrywt	1	5	5.0	0.92	2.5
1,1,2,2-Tetrachloroethane	U	2.5	ug/Kgdrywt	1	5	5.0	0.84	2.5
1,3-Dichlorobenzene	U	2.5	ug/Kgdrywt	1	5	5.0	0.62	2.5
1,4-Dichlorobenzene	U	2.5	ug/Kgdrywt	1	5	5.0	0.44	2.5
1,2-Dichlorobenzene	U	2.5	ug/Kgdrywt	1	5	5.0	0.78	2.5
1,2-Dibromo-3-Chloropropane	U	2.5	ug/Kgdrywt	1	5	5.0	1.5	2.5
1,2,4-Trichlorobenzene	U	2.5	ug/Kgdrywt	1	5	5.0	0.79	2.5
1,2,3-Trichlorobenzene	U	2.5	ug/Kgdrywt	1	5	5.0	0.76	2.5
Bromochloromethane	U	2.5	ug/Kgdrywt	1	5	5.0	0.91	2.5
M+P-Xylenes	U	5.0	ug/Kgdrywt	1	10	10.	1.7	5.0
O-Xylene	U	2.5	ug/Kgdrywt	1	5	5.0	1.3	2.5
Methyl Acetate	U	3.0	ug/Kgdrywt	1	5	5.0	2.7	3.0
Methylcyclohexane	U	2.5	ug/Kgdrywt	1	5	5.0	0.96	2.5
p-Bromofluorobenzene		104.	%					
Toluene-D8	*	118.	%					
1,2-Dichloroethane-D4		124.	%					
Dibromofluoromethane		126.	%					

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Katahdin
ANALYTICAL SERVICES

Cert No E87604

Report of Analytical Results

Client:
Lab ID: WG123768-5
Client ID: Methanol Blank
Project:
SDG: SG2698
Lab File ID: F9634.D

Sample Date:
Received Date:
Extract Date: 07-MAY-13
Extracted By: REC
Extraction Method: SW846 5030
Lab Prep Batch: WG123768

Analysis Date: 07-MAY-13
Analyst: REC
Analysis Method: SW846 8260B
Matrix: SL
% Solids: NA
Report Date: 09-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Dichlorodifluoromethane	U	250	ug/Kgdrywt	1	10	500	46.	250
Chloromethane	U	250	ug/Kgdrywt	1	10	500	70.	250
Vinyl Chloride	U	250	ug/Kgdrywt	1	10	500	44.	250
Bromomethane	J	110	ug/Kgdrywt	1	10	500	55.	250
Chloroethane	U	250	ug/Kgdrywt	1	10	500	65.	250
Trichlorofluoromethane	U	250	ug/Kgdrywt	1	10	500	46.	250
1,1-Dichloroethene	U	120	ug/Kgdrywt	1	5	250	46.	120
Carbon Disulfide	U	120	ug/Kgdrywt	1	5	250	39.	120
Freon-113	U	120	ug/Kgdrywt	1	5	250	45.	120
Methylene Chloride	U	620	ug/Kgdrywt	1	25	1200	400	620
Acetone	U	620	ug/Kgdrywt	1	25	1200	260	620
trans-1,2-Dichloroethene	U	120	ug/Kgdrywt	1	5	250	36.	120
Methyl tert-butyl Ether	U	120	ug/Kgdrywt	1	5	250	55.	120
1,1-Dichloroethane	U	120	ug/Kgdrywt	1	5	250	85.	120
cis-1,2-Dichloroethene	U	120	ug/Kgdrywt	1	5	250	46.	120
Chloroform	U	120	ug/Kgdrywt	1	5	250	18.	120
Carbon Tetrachloride	U	120	ug/Kgdrywt	1	5	250	65.	120
1,1,1-Trichloroethane	U	120	ug/Kgdrywt	1	5	250	21.	120
2-Butanone	U	620	ug/Kgdrywt	1	25	1200	300	620
Benzene	U	120	ug/Kgdrywt	1	5	250	46.	120
Cyclohexane	U	120	ug/Kgdrywt	1	5	250	70.	120
1,2-Dichloroethane	U	120	ug/Kgdrywt	1	5	250	50.	120
Trichloroethene	U	120	ug/Kgdrywt	1	5	250	30.	120
1,2-Dichloropropane	U	120	ug/Kgdrywt	1	5	250	70.	120
Bromodichloromethane	U	120	ug/Kgdrywt	1	5	250	30.	120
cis-1,3-Dichloropropene	U	120	ug/Kgdrywt	1	5	250	36.	120
Toluene	U	120	ug/Kgdrywt	1	5	250	70.	120
4-Methyl-2-Pentanone	U	620	ug/Kgdrywt	1	25	1200	300	620
Tetrachloroethene	U	120	ug/Kgdrywt	1	5	250	60.	120
trans-1,3-Dichloropropene	U	120	ug/Kgdrywt	1	5	250	43.	120
1,1,2-Trichloroethane	U	120	ug/Kgdrywt	1	5	250	48.	120
Dibromochloromethane	U	120	ug/Kgdrywt	1	5	250	50.	120
1,2-Dibromoethane	U	120	ug/Kgdrywt	1	5	250	60.	120
2-Hexanone	U	620	ug/Kgdrywt	1	25	1200	240	620

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ANALYTICAL SERVICES

Cert No E87604

Report of Analytical Results

Client:
Lab ID: WG123768-5
Client ID: Methanol Blank
Project:
SDG: SG2698
Lab File ID: F9634.D

Sample Date:
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Extract Date: 07-MAY-13
Extracted By: REC
Extraction Method: SW846 5030
Lab Prep Batch: WG123768

Analysis Date: 07-MAY-13
Analyst: REC
Analysis Method: SW846 8260B
Matrix: SL
% Solids: NA
Report Date: 09-MAY-13

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Chlorobenzene	U	120	ug/Kgdrywt	1	5	250	26.	120
Ethylbenzene	U	120	ug/Kgdrywt	1	5	250	32.	120
Xylenes (total)	U	380	ug/Kgdrywt	1	15	750	65.	380
Styrene	U	120	ug/Kgdrywt	1	5	250	26.	120
Bromoform	U	120	ug/Kgdrywt	1	5	250	35.	120
Isopropylbenzene	U	120	ug/Kgdrywt	1	5	250	46.	120
1,1,2,2-Tetrachloroethane	U	120	ug/Kgdrywt	1	5	250	42.	120
1,3-Dichlorobenzene	U	120	ug/Kgdrywt	1	5	250	31.	120
1,4-Dichlorobenzene	U	120	ug/Kgdrywt	1	5	250	22.	120
1,2-Dichlorobenzene	U	120	ug/Kgdrywt	1	5	250	39.	120
1,2-Dibromo-3-Chloropropane	U	120	ug/Kgdrywt	1	5	250	75.	120
1,2,4-Trichlorobenzene	U	120	ug/Kgdrywt	1	5	250	40.	120
1,2,3-Trichlorobenzene	U	120	ug/Kgdrywt	1	5	250	38.	120
Bromochloromethane	U	120	ug/Kgdrywt	1	5	250	46.	120
M+P-Xylenes	U	250	ug/Kgdrywt	1	10	500	85.	250
O-Xylene	U	120	ug/Kgdrywt	1	5	250	65.	120
Methyl Acetate	U	150	ug/Kgdrywt	1	5	250	140	150
Methylcyclohexane	U	120	ug/Kgdrywt	1	5	250	48.	120
p-Bromofluorobenzene		105.	%					
Toluene-D8		98.2	%					
1,2-Dichloroethane-D4		93.5	%					
Dibromofluoromethane		91.1	%					

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Table 5. Volatile Organic Analysis Blank Contamination Criteria

Blank Type	Blank Result	Sample Result	Action for Samples
Method, Storage, Field, Trip, Instrument**	Detects	Not detected	No qualification
	< CRQL*	< CRQL	Report CRQL value with a U
		≥ CRQL	Use professional judgement
	> CRQL*	< CRQL	Report CRQL value with a U
		≥ CRQL and < blank contamination	Report the concentration for the sample with a U, or qualify the data as unusable R
		≥ CRQL and ≥ blank contamination	Use professional judgement
	= CRQL*	< CRQL	Report CRQL value with a U
		≥ CRQL	Use professional judgement
	Gross contam-ination	Detects	Qualify results as unusable R

* 2x the CRQL for methylene chloride, 2-butanone, and acetone

** Qualifications based on instrument blank results affect only the sample analyzed immediately after the sample that has target compounds that exceed the calibration range or non-target compounds that exceed 100 ug/L.

NOTE: If gross blank contamination exists(e.g., saturated peaks, "hump-o-grams," "junk" peaks), all affected positive compounds in the associated samples should be qualified as unusable "R", due to interference. Non-detected volatile organic target compounds do not require qualification unless the contamination is so high that it interferes with the analyses of non-detected compounds.

YES NO N/A

7.3 Are there field/rinse/equipment blanks associated with every sample? [✓] ___ ___

ACTION: For low level samples, note in data assessment that there is no associated field/rinse/equipment blank. Exception: samples taken from a drinking water tap do not have associated field blanks.

8.0 GC/MS Apparatus and Materials

8.1 Did the lab use the proper gas chromatographic column(s) for analysis of volatiles by Method 8260B? Check raw data, instrument logs or contact the lab to determine what type of column(s) was (were) used. [✓] ___ ___

NOTE: For the analysis of volatiles, the method requires the use of 60 m. x 0.75 mm capillary column, coated with VOCOL(Supelco) or equivalent column. (see SW-846, page 8260B-7, section 4.9.2)

ACTION: If the specified column, or equivalent, was not used, document the effects in the Data Assessment. Use professional judgement to determine the acceptability of the data.

9.0 GC/MS Instrument Performance Check (CLP Form V Equivalent)

9.1 Are the GC/MS Instrument Performance Check forms present for Bromofluorobenzene (BFB), and do these forms list the associated samples with date/time analyzed? [✓] ___ ___

9.2 Are the enhanced bar graph spectrum and mass/charge (m/z) listing for the BFB provided for each twelve hour shift? [✓] ___ ___

9.3 Has an instrument performance check solution (BFB)

YES NO N/A

been analyzed for every twelve hours of sample analysis per instrument?(see Table 4, SW-846, page 8260B-36) [✓] ___ ___

ACTION: List date, time, instrument ID, and sample analyses for which no associated GC/MS GC/MS tuning data are available.

ACTION: If the laboratory/project officer cannot provide missing data, reject ("R") all data generated outside an acceptable twelve hour calibration interval.

ACTION: If mass assignment is in error, flag all associated sample data as unusable, "R".

9.4 Have the ion abundances been normalized to m/z 95? [✓] ___ ___

9.5 Have the ion abundance criteria been met for each instrument used? [✓] ___ ___

ACTION: List all data which do not meet ion abundance criteria (attach a separate sheet).

ACTION: If ion abundance criteria are not met, take action as specified in section 3.2.

9.6 Are there any transcription/calculation errors between mass lists and reported values? (Check at least two values but if errors are found, check more.) ___ [✓] ___

9.7 Have the appropriate number of significant figures (two) been reported? [✓] ___ ___

ACTION: If large errors exist, take action as specified in section 3.2.

9.8 Are the spectra of the mass calibration compounds acceptable. [✓] ___ ___

ACTION: Use professional judgement to determine whether associated data should be accepted, qualified, or rejected.

YES NO N/A

10.0 Target Analytes (CLP Form I Equivalent)

10.1 Are the Organic Analysis reporting forms present with required header information on each page, for each of the following:

a. Samples and/or fractions as appropriate [✓] ___ ___

b. Matrix spikes and matrix spike duplicates [✓] ___ ___

c. Blanks [✓] ___ ___

d. Laboratory Control Samples [✓] ___ ___

10.2 Are the reconstructed Ion Chromatograms, mass spectra for the identified compounds, and the data system printouts (Quant Reports) included in the sample package for each of the following?

a. Samples and/or fractions as appropriate [✓] ___ ___

b. Matrix spikes and matrix spike duplicates (Mass spectra not required) [✓] ___ ___

c. Blanks [✓] ___ ___

d. Laboratory Control Samples [✓] ___ ___

ACTION: If any data are missing, take action specified in 3.2 above.

10.3 Is chromatographic performance acceptable with respect to:

Baseline stability? [✓] ___ ___

	YES	NO	N/A
Resolution?	[✓]	___	___
Peak shape?	[✓]	___	___
Full-scale graph (attenuation)?	[✓]	___	___

Other:_____

ACTION: Use professional judgement to determine the acceptability of the data.

10.4 Are the lab-generated standard mass spectra of identified volatile compounds present for each sample? [✓] ___ ___

ACTION: If any mass spectra are missing, take action specified in 3.2 above. If the lab does not generate their own standard spectra, make a note in the Data Assessment. If spectra are missing, contact the lab for missing spectra.

10.5 Is the RRT of each reported compound within 0.06 RRT units of the standard RRT in the continuing calibration? [✓] ___ ___

10.6 Are all ions present in the standard mass spectrum at a relative intensity greater than 10% (of the most abundant ion) also present in the sample mass spectrum? [✓] ___ ___

10.7 Do the relative intensities of the characteristic ions in the sample agree within ± 30% of the corresponding relative intensities in the reference spectrum? [✓] ___ ___

ACTION: Use professional judgement to determine acceptability of data. If it is determined that incorrect identifications were made, all such data should be rejected ("R"), flagged ("N") - Presumptive evidence of the presence of the compound) or changed to non detected ("U") at the calculated detection limit. In order to be

YES NO N/A

positively identified, the data must comply with the criteria listed in 9.6, 9.7, and 9.8.

ACTION: When sample carry-over is a possibility, professional judgement should be used to determine if instrument cross-contamination has affected any positive compound identification.

No TICs

11.0 Tentatively Identified Compounds (TIC) (CLP Form I/TIC Equivalent)

11.1 If Tentatively Identified Compound were required for this project, are all Tentatively Identified Compound reporting forms present; and do listed TICs include scan number or retention time, estimated concentration and a qualifier? [ ] ___ ✓

NOTE: Add "N" qualifier to all TICs which have CAS number, if missing.

NOTE: Have the project officer/appropriate official check the project plan to determine if lab was required to identify non-target analytes (SW-846, page 8260B-23, Sect. 7.6.2).

11.2 Are the mass spectra for the tentatively identified compounds and associated "best match" spectra included in the sample package for each of the following:

a. Samples and/or fractions as appropriate [ ] ___ ✓

b. Blanks [ ] ___ ✓

ACTION: If any TIC data are missing, take action specified in 3.2 above.

ACTION: Add "JN" qualifier only to analytes identified by a CAS#.

NOTE: If TICs are present in the associated blanks take action as specified in section 3.2 above.

YES NO N/A

11.3 Are any priority pollutants listed as TIC compounds (i.e., an BNA compound listed as a VOA TIC)? [ ] ___ ✓

ACTION: 1. Flag with "R" any target compound listed as a TIC.

2. Make sure all rejected compounds are properly reported if they are target compounds.

11.4 Are all ions present in the reference mass spectrum with a relative intensity greater than 10% (of the most abundant ion) also present in the sample mass spectrum? [ ] ___ ✓

11.5 Do TIC and "best match" standard relative ion intensities agree within ± 20%? [ ] ___ ✓

ACTION: Use professional judgement to determine acceptability of TIC identifications. If it is determined that an incorrect identification was made, change the identification to "unknown" or to some less specific identification (example: "C3 substituted benzene") as appropriate. Also, when a compound is not found in any blank, but is a suspected artifact of a common laboratory contaminant, the result should be qualified as unusable, "R". (Common lab contaminants: CO_2(M/E 44), Siloxanes (M/E 73), Hexane, Aldol Condensation Products, Solvent Preservatives, and related byproducts).

12.0 Compound Quantitation and Reported Detection Limits

12.1 Are there any transcription/calculation errors in organic analysis reporting form results? Check at least two positive values. Verify that the correct internal standard, quantitation ion, and average initial RRF/CF were used to calculate organic analysis reporting form result. Were any errors found? [ ] ✓ ___

NOTE: Structural isomers with similar mass spectra, but insufficient GC resolution (i.e. percent valley between the two peaks > 25%) should be

YES NO N/A

reported as isomeric pairs. The reviewer should check the raw data to ensure that all such isomers were included in the quantitation (i.e., add the areas of the two coeluting peaks to calculate the total concentration).

12.2 Are the method CRQL's adjusted to reflect sample dilutions and, for soils, sample moisture? [✓] ___ ___

ACTION: If errors are large, take action as specified in section 3.2 above.

ACTION: When a sample is analyzed at more than one dilution, the lowest detection limits are used (unless a QC accedence dictates the use of the higher detection limit from the diluted sample data). Replace concentrations that exceed the calibration range in the original analysis by crossing out the "E" and it's associated value on the original reporting form (if present) and substituting the data from the analysis of the diluted sample. Specify which organic analysis reporting form is to be used, then draw a red "X" across the entire page of all reporting forms that should not be used, including any in the summary package.

13.0 Standards Data (GC/MS)

13.1 Are the Reconstructed Ion Chromatograms, and data system printouts (Quant Reports) present for initial and continuing calibration? [✓] ___ ___

ACTION: If any calibration standard data are missing, take action specified in section 3.2 above.

14.0 GC/MS Initial Calibration (CLP Form VI Equivalent)

YES NO N/A

14.1 Are the Initial Calibration reporting forms present and complete for the volatile fraction? [✓] ___ ___

ACTION: If any calibration forms or standard raw data are missing, take action specified in section 3.2 above.

ACTION: If the percent relative standard deviation (% RSD) is > 20%, (8000C-39)qualify positive results for that analyte "J". When % RSD > 90%,. Qualify all positive results for that analyte "J" and all non-detects results for that analyte "R".

14.2 Are all average RRFs > 0.050? [✓] ___ ___

NOTE: (Method Requirement) For SPCC compounds, the individual RRF values must be ≥ the values in the following list. If individual RRF values reported are below the listed values document in the Data Assessment.

Chloromethane	0.10
1,1-Dichloroethane	0.10
Bromoform	0.10
Chlorobenzene	0.30
1,1,2,2-Tetrachloroethane	0.30

ACTION: Circle all outliers with red pencil.

ACTION: For any target analyte with average RRF < 0.05, or for the requirements for the 5 compounds in 14.2 above, qualify all positive results for that analyte "J" and all non-detect results for that analyte "R".

14.3 Are response factors stable over the concentration range of the calibration. [ ] [✓] ___

NOTE: (Method Requirement) For the following CCC compounds, the %RSD values must be ≤ 30.0%. If %RSD values reported are > 30.0% document in the Data Assessment.

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YES NO N/A

1,1-Dichloroethene
Chloroform
1,2-Dichloropropane
Toluene
Ethylbenzene
Vinyl chloride

ACTION: Circle all outliers with a red pencil.

ACTION: If the % RSD is > 20.0%, or > 30% for the 6 compounds in 14.3 above, qualify positive results for that analyte "J" and non-detects using professional judgement. When RSD > 90%, qualify all positive results for that analyte "J" and all non-detect results for that analyte "R".

NOTE: The above data qualification action applies regardless of method requirements.

NOTE: Analytes previously qualified "U" due to blank contamination are still considered as "hits" when qualifying for calibration criteria.

14.4 Was the % RSD determined using RRF or CF? [✓] ___ ___

If no, what method was used to determine the linearity of the initial calibration? Document any effects to the case in the Data Assessment.

14.5 Are there any transcription/calculation errors in the reporting of RRF or % RSD? (Check at least two values but if errors are found, check more.) [ ] [✓] ___

ACTION: Circle errors with a red pencil.

ACTION: If errors are large, take action as specified in section 3.2 above.

15.0 GC/MS Calibration Verification (CLP Form VII Equivalent)

Katahdin
ANALYTICAL SERVICES

Cert No E87604

Form 5
Volatile Organic Instrument Performance Check

Lab Name : Katahdin Analytical Services
Project : NTR Vieques East CTO-037 PI-21
Lab File ID : CB546.D
Instrument ID : GCMS-C

SDG : SG2698
Date Analyzed : 30-APR-13
Time Analyzed : 08:16
Heated Purge : No

m/e	Ion Abundance Criteria	% Relative Abundance		
50	15.0 - 40.0% of mass 95	20.5		
75	30.0 - 60.0% of mass 95	55.2		
95	Base Peak, 100% relative abundance	100		
96	5.0 - 9.0% of mass 95	6.5		
173	Less than 2.0% of mass 174	0.4	0.46	1
174	Greater than 50.0% of mass 95	78.3		
175	5.0 - 9.0% of mass 174	6.2	7.92	1
176	95.0 - 101.0% of mass 174	77.7	99.23	1
177	5.0 - 9.0% of mass 176	5.5	7.10	2

1-Value is % mass 174 2-Value is % mass 176

This check applies to the following samples, LCS, MS, MSD and standards:

Client Sample ID	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
Continuing Calibrati	WG123436-4	C0715.D	04/30/13	08:39
Laboratory Control S	WG123436-1	C0716.D	04/30/13	09:22
Method Blank Sample	WG123436-2	C0720.D	04/30/13	11:38
VEP21-TB01-042313	SG2698-12	C0722.D	04/30/13	12:40
VEP21-EB01-042313	SG2698-13	C0723.D	04/30/13	13:11

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ANALYTICAL SERVICES

Cert No E87604

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : NTR Vieques East CTO-037 PI-21 **SDG:** SG2698
Lab ID : WG123436-4 **Analytical Date:** 04/30/13 08:39
Lab File ID : C0715.D **Instrument ID:** GCMS-C
Initial Calibration Date(s): 04/23/13 09:42 04/23/13 12:20 **Column ID:**

Compound	$\overline{RRF}$/Amount	RF50	CCAL RRF50	Min	%D/ %Drift	Max %D/ %Drift	Curve Type	
1 Dichlorodifluoromethane	50.00000	59.74191	0.61901	0.010	19.48382	20.00000	Linear	
2 Chloromethane	0.55983	0.52467	0.52467	0.100	-6.27944	20.00000	Averaged	
3 Vinyl chloride	0.41825	0.46423	0.46423	0.010	10.99223	20.00000	Averaged	
4 Bromomethane	0.32085	0.36969	0.36969	0.010	15.22229	20.00000	Averaged	
5 Chloroethane	0.23960	0.27752	0.27752	0.010	15.82261	20.00000	Averaged	
6 Trichlorofluoromethane	50.00000	59.44361	0.99144	0.010	18.88721	20.00000	Linear	
9 1,1-Dichloroethene	0.32530	0.30313	0.30313	0.100	-6.81552	20.00000	Averaged	
10 Carbon Disulfide	1.13756	1.10594	1.10594	0.010	-2.77985	20.00000	Averaged	
11 Freon-113	0.23603	0.26303	0.26303	0.010	11.43854	20.00000	Averaged	
14 Methylene Chloride	50.00000	41.57488	0.41079	0.010	-16.85023	20.00000	Quadratic	
15 Acetone	0.16856	0.16574	0.16574	0.010	-1.67409	20.00000	Averaged	
17 trans-1,2-Dichloroethene	0.39591	0.37717	0.37717	0.010	-4.73365	20.00000	Averaged	
19 Methyl tert-butyl ether	1.11681	1.18523	1.18523	0.010	6.12704	20.00000	Averaged	
25 1,1-Dichloroethane	0.77279	0.73804	0.73804	0.100	-4.49642	20.00000	Averaged	
29 cis-1,2-Dichloroethene	0.44581	0.41395	0.41395	0.010	-7.14535	20.00000	Averaged	
33 Bromochloromethane	0.20942	0.19456	0.19456	0.010	-7.09306	20.00000	Averaged	
34 Chloroform	0.81448	0.85495	0.85495	0.010	4.96866	20.00000	Averaged	
35 Carbon Tetrachloride	50.00000	48.60886	0.41581	0.010	-2.78228	20.00000	Quadratic	
38 1,1,1-Trichloroethane	0.73372	0.81291	0.81291	0.010	10.79330	20.00000	Averaged	
40 2-Butanone	0.21601	0.21683	0.21683	0.010	0.37633	20.00000	Averaged	
41 Benzene	0.95832	0.87966	0.87966	0.010	-8.20783	20.00000	Averaged	
43 Cyclohexane	50.00000	38.98699	0.58661	0.010	-22.02603	20.00000	Quadratic	* JVJ
47 1,2-Dichloroethane	0.43389	0.44909	0.44909	0.010	3.50358	20.00000	Averaged	
48 Trichloroethene	0.26385	0.25877	0.25877	0.010	-1.92757	20.00000	Averaged	
51 1,2-Dichloropropane	0.24467	0.21712	0.21712	0.010	-11.26039	20.00000	Averaged	
52 Bromodichloromethane	0.40106	0.41951	0.41951	0.010	4.60009	20.00000	Averaged	
53 cis-1,3-dichloropropene	0.45471	0.44900	0.44900	0.010	-1.25572	20.00000	Averaged	
57 Toluene	0.63400	0.58982	0.58982	0.010	-6.96773	20.00000	Averaged	
58 4-methyl-2-pentanone	0.24857	0.26157	0.26157	0.010	5.23282	20.00000	Averaged	
59 Tetrachloroethene	0.24218	0.22439	0.22439	0.010	-7.34557	20.00000	Averaged	
60 trans-1,3-Dichloropropene	0.41853	0.42939	0.42939	0.010	2.59498	20.00000	Averaged	
61 1,1,2-Trichloroethane	0.20327	0.19607	0.19607	0.010	-3.54221	20.00000	Averaged	
62 Dibromochloromethane	0.31021	0.32093	0.32093	0.010	3.45335	20.00000	Averaged	
64 1,2-Dibromoethane	0.28125	0.26671	0.26671	0.010	-5.16978	20.00000	Averaged	
65 2-Hexanone	0.19450	0.19057	0.19057	0.010	-2.01868	20.00000	Averaged	
67 Chlorobenzene	0.73035	0.68003	0.68003	0.300	-6.88938	20.00000	Averaged	
68 Ethylbenzene	0.40641	0.37530	0.37530	0.010	-7.65400	20.00000	Averaged	
70 Xylenes (total)	++++	0.45126	0.45126	0.010	++++	20.00000	Averaged	*
71 m+p-Xylenes	0.48242	0.46273	0.46273	0.010	-4.08089	20.00000	Averaged	
72 o-Xylene	0.44881	0.42833	0.42833	0.010	-4.56386	20.00000	Averaged	
73 Styrene	0.81470	0.78616	0.78616	0.010	-3.50287	20.00000	Averaged	

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Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : NTR Vieques East CTO-037 PI-21 **SDG:** SG2698
Lab ID : WG123436-4 **Analytical Date:** 04/30/13 08:39
Lab File ID : C0715.D **Instrument ID:** GCMS-C
Initial Calibration Date(s): 04/23/13 09:42 04/23/13 12:20 **Column ID:**

Compound	RRF/Amount	RF50	CCAL RRF50	Min	%D/ %Drift	Max %D/ %Drift	Curve Type
74 Bromoform	0.21945	0.22529	0.22529	0.100	2.66097	20.00000	Averaged
75 Isopropylbenzene	2.15331	2.00571	2.00571	0.010	-6.85496	20.00000	Averaged
81 1,1,2,2-Tetrachloroethane	0.66210	0.56964	0.56964	0.300	-13.96478	20.00000	Averaged
90 1,3-Dichlorobenzene	1.11473	1.01573	1.01573	0.010	-8.88122	20.00000	Averaged
92 1,4-Dichlorobenzene	1.26232	1.12977	1.12977	0.010	-10.50017	20.00000	Averaged
95 1,2-Dichlorobenzene	1.07306	0.96916	0.96916	0.010	-9.68266	20.00000	Averaged
96 1,2-Dibromo-3-Chloropropane	0.14026	0.14266	0.14266	0.010	1.70759	20.00000	Averaged
99 1,2,4-Trichlorobenzene	0.82223	0.71808	0.71808	0.010	-12.66623	20.00000	Averaged
102 1,2,3-Trichlorobenzene	0.69150	0.56194	0.56194	0.010	-18.73602	20.00000	Averaged
103 Methyl Acetate	0.38560	0.37317	0.37317	0.010	-3.22469	20.00000	Averaged
104 Methylcyclohexane	0.58636	0.61322	0.61322	0.010	4.58238	20.00000	Averaged
37 Dibromofluoromethane	0.44274	0.42023	0.42023	0.010	-5.08384	20.00000	Averaged
45 1,2-Dichloroethane-D4	0.58876	0.59742	0.59742	0.010	1.47010	20.00000	Averaged
55 Toluene-D8	0.91950	0.81682	0.81682	0.010	-11.16672	20.00000	Averaged
76 P-Bromofluorobenzene	0.42427	0.37372	0.37372	0.010	-11.91425	20.00000	Averaged

*** = Compound out of QC criteria**

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Form 5
Volatile Organic Instrument Performance Check

Lab Name : Katahdin Analytical Services
Project : NTR Vieques East CTO-037 PI-21
Lab File ID : TB596.D
Instrument ID : GCMS-T

SDG : SG2698
Date Analyzed : 23-APR-13
Time Analyzed : 11:23
Heated Purge : Yes

m/e	Ion Abundance Criteria	% Relative Abundance		
50	15.0 - 40.0% of mass 95	21.7		
75	30.0 - 60.0% of mass 95	56.7		
95	Base Peak, 100% relative abundance	100		
96	5.0 - 9.0% of mass 95	7.1		
173	Less than 2.0% of mass 174	0.0	0.0	1
174	Greater than 50.0% of mass 95	88.1		
175	5.0 - 9.0% of mass 174	6.3	7.16	1
176	95.0 - 101.0% of mass 174	86.5	98.20	1
177	5.0 - 9.0% of mass 176	7.1	8.17	2

1-Value is % mass 174 2-Value is % mass 176

This check applies to the following samples, LCS, MS, MSD and standards:

Client Sample ID	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
Initial Calibration	WG123113-6	T8115.D	04/23/13	11:53
Initial Calibration	WG123113-5	T8116.D	04/23/13	12:34
Initial Calibration	WG123113-4	T8117.D	04/23/13	13:16
Initial Calibration	WG123113-3	T8118.D	04/23/13	13:57
Initial Calibration	WG123113-2	T8119.D	04/23/13	14:39
Initial Calibration	WG123113-1	T8120.D	04/23/13	15:20

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Form 6
Initial Calibration Summary

Lab Name : Katahdin Analytical Services **SDG:** SG2698
Project : NTR Vieques East CTO-037 PI-21 **Instrument ID:** GCMS-T
Lab File IDs : T8120.D T8119.D T8118.D T8117.D T8116.D T8115.D **Column ID:**
Calibration Date(s): 23-APR-13 11:53 23-APR-13 15:20

	5.0000 Level 1	10.0000 Level 2	20.0000 Level 3	50.0000 Level 4	80.0000 Level 5	100.0000 Level 6	New Crv	b	m1	m2	%RSD	Max %RSD	
Dichlorodifluoromethane	0.77386	0.77846	0.72532	0.71158	0.69841	0.70312	AVG		0.73179		4.86369	15.00000	O
Chloromethane	0.76515	0.77373	0.76295	0.68703	0.67856	0.54854	AVG		0.70266		12.2704	15.00000	O
Vinyl chloride	0.73772	0.69787	0.72462	0.68335	0.65928	0.58872	AVG		0.68193		7.86792	15.00000	O
Bromomethane	0.43376	0.44897	0.41669	0.38778	0.37809	0.29918	AVG		0.39408		13.6178	15.00000	O
Chloroethane	0.47599	0.44787	0.48303	0.44318	0.42882	0.38057	AVG		0.44324		8.32822	15.00000	O
Trichlorofluoromethane	1.22201	1.15106	1.13605	1.04303	1.06679	1.05998	AVG		1.11315		6.18543	15.00000	O
1,1-Dichloroethene	0.51061	0.52025	0.50410	0.47622	0.48960	0.43197	AVG		0.48879		6.52606	15.00000	O
Carbon Disulfide	2.02528	1.81909	1.81113	1.73844	1.84553	1.60527	AVG		1.80746		7.61366	15.00000	O
Freon-113	0.29091	0.40695	0.37856	0.34435	0.37933	0.34330	AVG		0.35723		11.3179	15.00000	O
Methylene Chloride	1.57197	1.22501	0.89284	0.62280	0.65085	0.56516	AVG		0.92144		43.5591	15.00000	W
Acetone	0.15759	0.13437	0.13241	0.11983	0.12907	0.13233	AVG		0.13427		9.34199	15.00000	O
trans-1,2-Dichloroethene	0.59284	0.66293	0.59869	0.56628	0.56899	0.49910	AVG		0.58147		9.17571	15.00000	O
Methyl tert-butyl ether	1.19248	1.26610	1.31285	1.29311	1.36893	1.23527	AVG		1.27812		4.82184	15.00000	O
1,1-Dichloroethane	1.27405	1.30427	1.22182	1.13308	1.18431	1.03540	AVG		1.19216		8.24269	15.00000	O
cis-1,2-Dichloroethene	0.54131	0.57520	0.59837	0.57498	0.60294	0.53917	AVG		0.57199		4.75017	15.00000	O
Bromochloromethane	0.26869	0.27742	0.25944	0.23127	0.26204	0.22309	AVG		0.25366		8.51047	15.00000	O
Chloroform	1.32494	1.31414	1.24306	1.16022	1.19393	1.09878	AVG		1.22251		7.25359	15.00000	O
Carbon Tetrachloride	0.61360	0.55344	0.57203	0.55702	0.57300	0.57638	AVG		0.57424		3.72642	15.00000	O
1,1,1-Trichloroethane	1.14328	1.11049	1.14537	1.06201	1.15226	1.09373	AVG		1.11786		3.18603	15.00000	O
2-Butanone	0.13092	0.13727	0.16245	0.14969	0.16592	0.15801	AVG		0.15071		9.36339	15.00000	O
Benzene	1.53161	1.55722	1.54773	1.51279	1.53739	1.40663	AVG		1.51556		3.65927	15.00000	O
Cyclohexane	0.62276	0.73595	0.82900	0.88183	0.93630	0.90088	AVG		0.81779		14.4592	15.00000	O
1,2-Dichloroethane	0.68924	0.68340	0.61851	0.59758	0.61350	0.59225	AVG		0.63241		6.78570	15.00000	O
Trichloroethene	0.42148	0.46350	0.51680	0.42141	0.46512	0.42807	AVG		0.45273		8.22917	15.00000	O
1,2-Dichloropropane	0.34060	0.34835	0.33579	0.35255	0.36522	0.33076	AVG		0.34554		3.62048	15.00000	O
Bromodichloromethane	0.58262	0.61352	0.58106	0.59040	0.60244	0.56959	AVG		0.58994		2.68969	15.00000	O
cis-1,3-dichloropropene	0.43158	0.47767	0.52467	0.56755	0.61736	0.56921	AVG		0.53134		12.7708	15.00000	O
Toluene	0.87800	0.97712	0.98450	0.98094	0.99932	0.93597	AVG		0.95931		4.70272	15.00000	O
4-methyl-2-pentanone	0.18898	0.21192	0.23079	0.24047	0.25024	0.24342	AVG		0.22763		10.1628	15.00000	O
Tetrachloroethene	0.38252	0.39493	0.36476	0.37222	0.36552	0.36108	AVG		0.37350		3.46320	15.00000	O
trans-1,3-Dichloropropene	0.43459	0.46573	0.49357	0.52144	0.54442	0.52500	AVG		0.49746		8.29426	15.00000	O
1,1,2-Trichloroethane	0.25271	0.24910	0.24405	0.24967	0.25488	0.24377	AVG		0.24903		1.80193	15.00000	O
Dibromochloromethane	0.33755	0.37920	0.38817	0.39009	0.41000	0.36595	AVG		0.37849		6.53079	15.00000	O
1,2-Dibromoethane	0.25611	0.25948	0.28282	0.28074	0.29326	0.27090	AVG		0.27388		5.25204	15.00000	O
2-Hexanone	17430	43401	110806	314142	531588	674215	LNR	0.20750	0.19591		0.99934	0.99000	O
Chlorobenzene	1.21906	1.17483	1.08848	1.08249	1.09027	0.96001	AVG		1.10252		8.09935	15.00000	O
Ethylbenzene	0.68401	0.78628	0.69623	0.70876	0.73060	0.65418	AVG		0.71001		6.36938	15.00000	O

JNS

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Form 6
Initial Calibration Summary

Lab Name : Katahdin Analytical Services
SDG: SG2698
Project : NTR Vieques East CTO-037 PI-21
Instrument ID: GCMS-T
Lab File IDs : T8120.D T8119.D T8118.D T8117.D T8116.D T8115.D
Column ID:
Calibration Date(s): 23-APR-13 11:53
23-APR-13 15:20

Xylenes (total)	+++++	+++++	+++++	+++++	+++++	+++++	AVG		0.000e+00		0.000e+(	15.00000	M (
m+p-Xylenes	0.77771	0.84657	0.84234	0.82105	0.83022	0.75308	AVG		0.81183		4.66696	15.00000	O
o-Xylene	0.52926	0.61529	0.67142	0.73199	0.77141	0.68429	AVG		0.66728		12.90747	15.00000	O
Styrene	0.93856	1.27698	1.29948	1.37302	1.39083	1.24779	AVG		1.25444		13.09995	15.00000	O
Bromoform	0.22368	0.23700	0.23324	0.24364	0.25394	0.23655	AVG		0.23801		4.27101	15.00000	O
Isopropylbenzene	2.68801	3.14072	3.29264	3.43602	3.53624	2.99122	AVG		3.18081		9.78512	15.00000	O
1,1,2,2-Tetrachloroethane	0.73505	0.75707	0.68814	0.67829	0.69406	0.59500	AVG		0.69127		8.10599	15.00000	O
1,3-Dichlorobenzene	1.59078	1.87915	1.76399	1.63903	1.69883	1.45697	AVG		1.67146		8.71151	15.00000	O
1,4-Dichlorobenzene	1.97934	2.08709	1.86294	1.78982	1.82680	1.56650	AVG		1.85208		9.58629	15.00000	O
1,2-Dichlorobenzene	1.53828	1.68038	1.65378	1.56827	1.59062	1.38513	AVG		1.56941		6.67134	15.00000	O
1,2-Dibromo-3-Chloropropane	0.09072	0.14590	0.13721	0.13246	0.14205	0.12638	AVG		0.12912		15.5195(	15.00000	W(
1,2,4-Trichlorobenzene	1.01682	1.09537	1.09802	1.13964	1.17657	1.05294	AVG		1.09656		5.24227	15.00000	O
1,2,3-Trichlorobenzene	0.91158	1.07810	1.10815	1.06358	1.06036	0.94670	AVG		1.02808		7.70952	15.00000	O
Methyl Acetate	0.33784	0.31537	0.33332	0.30225	0.30269	0.27912	AVG		0.31176		7.02124	15.00000	O
Methylcyclohexane	10311	31061	75146	213647	386003	451173	LNR	0.06072	0.93878		0.99641	0.99000	O
Dibromofluoromethane	0.57053	0.55759	0.53538	0.53648	0.55684	0.49163	AVG		0.54141		5.14980	15.00000	
1,2-Dichloroethane-D4	0.80968	0.83167	0.80018	0.71509	0.77681	0.71717	AVG		0.77510		6.31630	15.00000	
Toluene-D8	1.22092	1.29410	1.33906	1.37162	1.43500	1.29231	AVG		1.32550		5.57723	15.00000	
P-Bromofluorobenzene	0.51312	0.54450	0.54366	0.53676	0.59287	0.55139	AVG		0.54705		4.76221	15.00000	

Legend: O = Kept Original Curve
Y = Failed Minimum RF
W = Failed %RSD Value

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Form 5
Volatile Organic Instrument Performance Check

Lab Name : Katahdin Analytical Services
Project : NTR Vieques East CTO-037 PI-21
Lab File ID : TB597.D
Instrument ID : GCMS-T

SDG : SG2698
Date Analyzed : 24-APR-13
Time Analyzed : 07:51
Heated Purge : Yes

m/e	Ion Abundance Criteria	% Relative Abundance		
50	15.0 - 40.0% of mass 95	22.8		
75	30.0 - 60.0% of mass 95	54.1		
95	Base Peak, 100% relative abundance	100		
96	5.0 - 9.0% of mass 95	7.2		
173	Less than 2.0% of mass 174	0.8	1.03	1
174	Greater than 50.0% of mass 95	79.5		
175	5.0 - 9.0% of mass 174	5.2	6.58	1
176	95.0 - 101.0% of mass 174	79.2	99.65	1
177	5.0 - 9.0% of mass 176	5.1	6.44	2

1-Value is % mass 174 2-Value is % mass 176

This check applies to the following samples, LCS, MS, MSD and standards:

Client Sample ID	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
Continuing Calibrati	WG123124-4	T8126.D	04/24/13	08:25
Laboratory Control S	WG123124-1	T8127.D	04/24/13	09:13
Independent Source	WG123124-5	T8127A.D	04/24/13	09:13
Method Blank Sample	WG123124-2	T8129.D	04/24/13	10:47
VEP21-SS01A-0001	SG2698-1	T8136.D	04/24/13	15:47
VEP21-SS01AP-0001	SG2698-2	T8137.D	04/24/13	16:29
VEP21-SB01A-011H	SG2698-3	T8138.D	04/24/13	17:10
VEP21-SS02A-0001	~~SG2698-4~~	T8139.D	04/24/13	17:52
VEP21-SB02A-011H	SG2698-5	T8140.D	04/24/13	18:33

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Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : NTR Vieques East CTO-037 PI-21 **SDG:** SG2698
Lab ID : WG123124-4 **Analytical Date:** 04/24/13 08:25
Lab File ID : T8126.D **Instrument ID:** GCMS-T
Initial Calibration Date(s): 04/23/13 11:53 04/23/13 15:20 **Column ID:**

Compound	RRF/Amount	RF50	CCAL RRF50	Min	%D/ %Drift	Max %D/ %Drift	Curve Type	
1 Dichlorodifluoromethane	0.73179	0.72760	0.72760	0.010	-0.57258	20.00000	Averaged	
2 Chloromethane	0.70266	0.60610	0.60610	0.100	-13.74209	20.00000	Averaged	
3 Vinyl chloride	0.68193	0.62027	0.62027	0.010	-9.04114	20.00000	Averaged	
4 Bromomethane	0.39408	0.36515	0.36515	0.010	-7.34009	20.00000	Averaged	
5 Chloroethane	0.44324	0.41908	0.41908	0.010	-5.45129	20.00000	Averaged	
6 Trichlorofluoromethane	1.11315	1.15065	1.15065	0.010	3.36836	20.00000	Averaged	
9 1,1-Dichloroethene	0.48879	0.47611	0.47611	0.010	-2.59531	20.00000	Averaged	
10 Carbon Disulfide	1.80746	1.70234	1.70234	0.010	-5.81586	20.00000	Averaged	
11 Freon-113	0.35723	0.38082	0.38082	0.010	6.60244	20.00000	Averaged	
14 Methylene Chloride	0.92144	0.64320	0.64320	0.010	-30.19610	20.00000	Averaged	* JWS
15 Acetone	0.13427	0.16743	0.16743	0.010	24.69757	20.00000	Averaged	* JWS
17 trans-1,2-Dichloroethene	0.58147	0.56809	0.56809	0.010	-2.30084	20.00000	Averaged	
19 Methyl tert-butyl ether	1.27812	1.29051	1.29051	0.010	0.96891	20.00000	Averaged	
25 1,1-Dichloroethane	1.19216	1.15547	1.15547	0.100	-3.07760	20.00000	Averaged	
29 cis-1,2-Dichloroethene	0.57199	0.58368	0.58368	0.010	2.04324	20.00000	Averaged	
33 Bromochloromethane	0.25366	0.24729	0.24729	0.010	-2.51193	20.00000	Averaged	
34 Chloroform	1.22251	1.23873	1.23873	0.010	1.32649	20.00000	Averaged	
35 Carbon Tetrachloride	0.57424	0.60919	0.60919	0.010	6.08528	20.00000	Averaged	
38 1,1,1-Trichloroethane	1.11786	1.15774	1.15774	0.010	3.56774	20.00000	Averaged	
40 2-Butanone	0.15071	0.16624	0.16624	0.010	10.30624	20.00000	Averaged	
41 Benzene	1.51556	1.52341	1.52341	0.010	0.51784	20.00000	Averaged	
43 Cyclohexane	0.81779	0.92372	0.92372	0.010	12.95327	20.00000	Averaged	
47 1,2-Dichloroethane	0.63241	0.65778	0.65778	0.010	4.01145	20.00000	Averaged	
48 Trichloroethene	0.45273	0.49358	0.49358	0.010	9.02245	20.00000	Averaged	
51 1,2-Dichloropropane	0.34554	0.34496	0.34496	0.010	-0.17013	20.00000	Averaged	
52 Bromodichloromethane	0.58994	0.60633	0.60633	0.010	2.77932	20.00000	Averaged	
53 cis-1,3-dichloropropene	0.53134	0.57207	0.57207	0.010	7.66637	20.00000	Averaged	
57 Toluene	0.95931	1.03863	1.03863	0.010	8.26828	20.00000	Averaged	
58 4-methyl-2-pentanone	0.22763	0.25111	0.25111	0.010	10.31080	20.00000	Averaged	
59 Tetrachloroethene	0.37350	0.39839	0.39839	0.010	6.66390	20.00000	Averaged	
60 trans-1,3-Dichloropropene	0.49746	0.55461	0.55461	0.010	11.48935	20.00000	Averaged	
61 1,1,2-Trichloroethane	0.24903	0.25831	0.25831	0.010	3.72786	20.00000	Averaged	
62 Dibromochloromethane	0.37849	0.39953	0.39953	0.010	5.55859	20.00000	Averaged	
64 1,2-Dibromoethane	0.27388	0.27709	0.27709	0.010	1.17196	20.00000	Averaged	
65 2-Hexanone	250	260	0.19585	0.010	4.12011	20.00000	Linear	
67 Chlorobenzene	1.10252	1.12954	1.12954	0.300	2.45071	20.00000	Averaged	
68 Ethylbenzene	0.71001	0.77075	0.77075	0.010	8.55447	20.00000	Averaged	
70 Xylenes (total)	++++	0.83088	0.83088	0.010	++++	20.00000	Averaged	*
71 m+p-Xylenes	0.81183	0.87001	0.87001	0.010	7.16631	20.00000	Averaged	
72 o-Xylene	0.66728	0.75262	0.75262	0.010	12.78911	20.00000	Averaged	
73 Styrene	1.25444	1.41643	1.41643	0.010	12.91324	20.00000	Averaged	

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Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : NTR Vieques East CTO-037 PI-21 **SDG:** SG2698
Lab ID : WG123124-4 **Analytical Date:** 04/24/13 08:25
Lab File ID : T8126.D **Instrument ID:** GCMS-T
Initial Calibration Date(s): 04/23/13 11:53 04/23/13 15:20 **Column ID:**

Compound	RRF/Amount	RF50	CCAL RRF50	Min	%D/ %Drift	Max %D/ %Drift	Curve Type
74 Bromoform	0.23801	0.25331	0.25331	0.100	6.42898	20.00000	Averaged
75 Isopropylbenzene	3.18081	3.67844	3.67844	0.010	15.64486	20.00000	Averaged
81 1,1,2,2-Tetrachloroethane	0.69127	0.70116	0.70116	0.300	1.43133	20.00000	Averaged
90 1,3-Dichlorobenzene	1.67146	1.82417	1.82417	0.010	9.13619	20.00000	Averaged
92 1,4-Dichlorobenzene	1.85208	1.96218	1.96218	0.010	5.94478	20.00000	Averaged
95 1,2-Dichlorobenzene	1.56941	1.69547	1.69547	0.010	8.03256	20.00000	Averaged
96 1,2-Dibromo-3-Chloropropane	0.12912	0.13840	0.13840	0.010	7.18804	20.00000	Averaged
99 1,2,4-Trichlorobenzene	1.09656	1.25489	1.25489	0.010	14.43844	20.00000	Averaged
102 1,2,3-Trichlorobenzene	1.02808	1.11403	1.11403	0.010	8.36021	20.00000	Averaged
103 Methyl Acetate	0.31176	0.29800	0.29800	0.010	-4.41421	20.00000	Averaged
104 Methylcyclohexane	50.00000	50.08252	0.88333	0.010	0.16503	20.00000	Linear
37 Dibromofluoromethane	0.54141	0.54621	0.54621	0.010	0.88677	20.00000	Averaged
45 1,2-Dichloroethane-D4	0.77510	0.79037	0.79037	0.010	1.96965	20.00000	Averaged
55 Toluene-D8	1.32550	1.45969	1.45969	0.010	10.12333	20.00000	Averaged
76 P-Bromofluorobenzene	0.54705	0.60810	0.60810	0.010	11.15925	20.00000	Averaged

*** = Compound out of QC criteria**

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Form 5
Volatile Organic Instrument Performance Check

Lab Name : Katahdin Analytical Services
Project : NTR Vieques East CTO-037 PI-21
Lab File ID : TB599.D
Instrument ID : GCMS-T

SDG : SG2698
Date Analyzed : 26-APR-13
Time Analyzed : 08:11
Heated Purge : Yes

m/e	Ion Abundance Criteria	% Relative Abundance		
50	15.0 - 40.0% of mass 95	22.0		
75	30.0 - 60.0% of mass 95	52.1		
95	Base Peak, 100% relative abundance	100		
96	5.0 - 9.0% of mass 95	6.4		
173	Less than 2.0% of mass 174	1.0	1.37	1
174	Greater than 50.0% of mass 95	73.8		
175	5.0 - 9.0% of mass 174	6.5	8.75	1
176	95.0 - 101.0% of mass 174	71.7	97.10	1
177	5.0 - 9.0% of mass 176	4.9	6.81	2

1-Value is % mass 174 2-Value is % mass 176

This check applies to the following samples, LCS, MS, MSD and standards:

Client Sample ID	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
Continuing Calibrati	WG123249-4	T8168.D	04/26/13	08:45
Laboratory Control S	WG123249-1	T8169.D	04/26/13	09:35
Method Blank Sample	WG123249-2	T8171.D	04/26/13	11:03
VEP21-SS03A-0001	SG2698-6RA	T8172.D	04/26/13	11:45
VEP21-SS04A-0001	~~SG2698-8RA~~	T8173.D	04/26/13	12:26
VEP21-SB04A-011H	SG2698-9RA	T8174.D	04/26/13	13:07
VEP21-SS05A-0001	~~SG2698-10RA~~	T8175.D	04/26/13	13:49
VEP21-SB05A-011H	SG2698-11RA	T8176.D	04/26/13	14:30
Matrix Spike	WG123249-5	T8177.D	04/26/13	15:12
Matrix Spike Duplica	WG123249-6	T8178.D	04/26/13	15:54

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Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : NTR Vieques East CTO-037 PI-21 **SDG:** SG2698
Lab ID : WG123249-4 **Analytical Date:** 04/26/13 08:45
Lab File ID : T8168.D **Instrument ID:** GCMS-T
Initial Calibration Date(s): 04/23/13 11:53 04/23/13 15:20 **Column ID:**

Compound	RRF/Amount	RF50	CCAL RRF50	Min	%D/ %Drift	Max %D/ %Drift	Curve Type	
1 Dichlorodifluoromethane	0.73179	0.86889	0.86889	0.010	18.73430	20.00000	Averaged	
2 Chloromethane	0.70266	0.67439	0.67439	0.100	-4.02302	20.00000	Averaged	
3 Vinyl chloride	0.68193	0.66470	0.66470	0.010	-2.52701	20.00000	Averaged	
4 Bromomethane	0.39408	0.40163	0.40163	0.010	1.91605	20.00000	Averaged	
5 Chloroethane	0.44324	0.45038	0.45038	0.010	1.60972	20.00000	Averaged	
6 Trichlorofluoromethane	1.11315	1.21127	1.21127	0.010	8.81411	20.00000	Averaged	
9 1,1-Dichloroethene	0.48879	0.44718	0.44718	0.010	-8.51263	20.00000	Averaged	
10 Carbon Disulfide	1.80746	1.71042	1.71042	0.010	-5.36886	20.00000	Averaged	
11 Freon-113	0.35723	0.40980	0.40980	0.010	14.71567	20.00000	Averaged	
14 Methylene Chloride	0.92144	0.64037	0.64037	0.010	-30.50349	20.00000	Averaged	* JWJ
15 Acetone	0.13427	0.16646	0.16646	0.010	23.97802	20.00000	Averaged	* JWJ
17 trans-1,2-Dichloroethene	0.58147	0.55147	0.55147	0.010	-5.15993	20.00000	Averaged	
19 Methyl tert-butyl ether	1.27812	1.31288	1.31288	0.010	2.71916	20.00000	Averaged	
25 1,1-Dichloroethane	1.19216	1.11138	1.11138	0.100	-6.77530	20.00000	Averaged	
29 cis-1,2-Dichloroethene	0.57199	0.56757	0.56757	0.010	-0.77286	20.00000	Averaged	
33 Bromochloromethane	0.25366	0.25504	0.25504	0.010	0.54627	20.00000	Averaged	
34 Chloroform	1.22251	1.20746	1.20746	0.010	-1.23110	20.00000	Averaged	
35 Carbon Tetrachloride	0.57424	0.60322	0.60322	0.010	5.04524	20.00000	Averaged	
38 1,1,1-Trichloroethane	1.11786	1.13839	1.13839	0.010	1.83664	20.00000	Averaged	
40 2-Butanone	0.15071	0.17420	0.17420	0.010	15.58831	20.00000	Averaged	
41 Benzene	1.51556	1.50835	1.50835	0.010	-0.47590	20.00000	Averaged	
43 Cyclohexane	0.81779	0.90341	0.90341	0.010	10.46991	20.00000	Averaged	
47 1,2-Dichloroethane	0.63241	0.65776	0.65776	0.010	4.00844	20.00000	Averaged	
48 Trichloroethene	0.45273	0.50424	0.50424	0.010	11.37900	20.00000	Averaged	
51 1,2-Dichloropropane	0.34554	0.34378	0.34378	0.010	-0.51150	20.00000	Averaged	
52 Bromodichloromethane	0.58994	0.60329	0.60329	0.010	2.26286	20.00000	Averaged	
53 cis-1,3-dichloropropene	0.53134	0.57558	0.57558	0.010	8.32665	20.00000	Averaged	
57 Toluene	0.95931	1.01977	1.01977	0.010	6.30230	20.00000	Averaged	
58 4-methyl-2-pentanone	0.22763	0.26757	0.26757	0.010	17.54546	20.00000	Averaged	
59 Tetrachloroethene	0.37350	0.39370	0.39370	0.010	5.40822	20.00000	Averaged	
60 trans-1,3-Dichloropropene	0.49746	0.55530	0.55530	0.010	11.62747	20.00000	Averaged	
61 1,1,2-Trichloroethane	0.24903	0.27095	0.27095	0.010	8.80326	20.00000	Averaged	
62 Dibromochloromethane	0.37849	0.39656	0.39656	0.010	4.77238	20.00000	Averaged	
64 1,2-Dibromoethane	0.27388	0.28998	0.28998	0.010	5.87514	20.00000	Averaged	
65 2-Hexanone	250	273	0.20552	0.010	9.05345	20.00000	Linear	
67 Chlorobenzene	1.10252	1.09024	1.09024	0.300	-1.11385	20.00000	Averaged	
68 Ethylbenzene	0.71001	0.75573	0.75573	0.010	6.43962	20.00000	Averaged	
70 Xylenes (total)	++++	0.80744	0.80744	0.010	++++	20.00000	Averaged	*
71 m+p-Xylenes	0.81183	0.84736	0.84736	0.010	4.37619	20.00000	Averaged	
72 o-Xylene	0.66728	0.72761	0.72761	0.010	9.04188	20.00000	Averaged	
73 Styrene	1.25444	1.37008	1.37008	0.010	9.21817	20.00000	Averaged	

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Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : NTR Vieques East CTO-037 PI-21 **SDG:** SG2698
Lab ID : WG123249-4 **Analytical Date:** 04/26/13 08:45
Lab File ID : T8168.D **Instrument ID:** GCMS-T
Initial Calibration Date(s): 04/23/13 11:53 04/23/13 15:20 **Column ID:**

Compound	RRF/Amount	RF50	CCAL RRF50	Min	%D/ %Drift	Max %D/ %Drift	Curve Type
74 Bromoform	0.23801	0.25514	0.25514	0.100	7.19956	20.00000	Averaged
75 Isopropylbenzene	3.18081	3.56762	3.56762	0.010	12.16078	20.00000	Averaged
81 1,1,2,2-Tetrachloroethane	0.69127	0.71017	0.71017	0.300	2.73351	20.00000	Averaged
90 1,3-Dichlorobenzene	1.67146	1.76914	1.76914	0.010	5.84398	20.00000	Averaged
92 1,4-Dichlorobenzene	1.85208	1.91510	1.91510	0.010	3.40300	20.00000	Averaged
95 1,2-Dichlorobenzene	1.56941	1.60957	1.60957	0.010	2.55903	20.00000	Averaged
96 1,2-Dibromo-3-Chloropropane	0.12912	0.14108	0.14108	0.010	9.26550	20.00000	Averaged
99 1,2,4-Trichlorobenzene	1.09656	1.17787	1.17787	0.010	7.41544	20.00000	Averaged
102 1,2,3-Trichlorobenzene	1.02808	1.04546	1.04546	0.010	1.69026	20.00000	Averaged
103 Methyl Acetate	0.31176	0.30983	0.30983	0.010	-0.61919	20.00000	Averaged
104 Methylcyclohexane	50.00000	54.92474	0.97425	0.010	9.84948	20.00000	Linear
37 Dibromofluoromethane	0.54141	0.55299	0.55299	0.010	2.13952	20.00000	Averaged
45 1,2-Dichloroethane-D4	0.77510	0.78521	0.78521	0.010	1.30489	20.00000	Averaged
55 Toluene-D8	1.32550	1.42325	1.42325	0.010	7.37485	20.00000	Averaged
76 P-Bromofluorobenzene	0.54705	0.58324	0.58324	0.010	6.61609	20.00000	Averaged

*** = Compound out of QC criteria**

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Form 5
Volatile Organic Instrument Performance Check

Lab Name : Katahdin Analytical Services
Project : NTR Vieques East CTO-037 PI-21
Lab File ID : TB598.D
Instrument ID : GCMS-T

SDG : SG2698
Date Analyzed : 25-APR-13
Time Analyzed : 10:53
Heated Purge : Yes

m/e	Ion Abundance Criteria	% Relative Abundance		
50	15.0 - 40.0% of mass 95	23.0		
75	30.0 - 60.0% of mass 95	56.4		
95	Base Peak, 100% relative abundance	100		
96	5.0 - 9.0% of mass 95	7.1		
173	Less than 2.0% of mass 174	0.0	0.0	1
174	Greater than 50.0% of mass 95	72.0		
175	5.0 - 9.0% of mass 174	5.0	6.92	1
176	95.0 - 101.0% of mass 174	70.7	98.21	1
177	5.0 - 9.0% of mass 176	4.9	6.89	2

1-Value is % mass 174 2-Value is % mass 176

This check applies to the following samples, LCS, MS, MSD and standards:

Client Sample ID	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
Continuing Calibrati	WG123190-4	T8148.D	04/25/13	11:23
Laboratory Control S	WG123190-1	T8149.D	04/25/13	12:10
Method Blank Sample	WG123190-2	T8151.D	04/25/13	13:40
VEP21-SS03A-0001	~~SG2698-6~~	T8152.D	04/25/13	14:21
VEP21-SB03A-011H	SG2698-7	T8153.D	04/25/13	15:03
VEP21-SS04A-0001	SG2698-8	T8154.D	04/25/13	15:44
VEP21-SB04A-011H	~~SG2698-9~~	T8155.D	04/25/13	16:25
VEP21-SS05A-0001	SG2698-10	T8156.D	04/25/13	17:07
VEP21-SB05A-011H	~~SG2698-11~~	T8157.D	04/25/13	17:48
VEP21-SS01A-0001	~~SG2698-1RA~~	T8160.D	04/25/13	19:53
VEP21-SS01AP-0001	~~SG2698-2RA~~	T8161.D	04/25/13	20:35
VEP21-SB01A-011H	~~SG2698-3RA~~	T8162.D	04/25/13	21:16
VEP21-SS02A-0001	SG2698-4RA	T8163.D	04/25/13	21:58

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Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : NTR Vieques East CTO-037 PI-21 **SDG:** SG2698
Lab ID : WG123190-4 **Analytical Date:** 04/25/13 11:23
Lab File ID : T8148.D **Instrument ID:** GCMS-T
Initial Calibration Date(s): 04/23/13 11:53 04/23/13 15:20 **Column ID:**

Compound	RRF/Amount	RF50	CCAL RRF50	Min	%D/ %Drift	Max %D/ %Drift	Curve Type	
1 Dichlorodifluoromethane	0.73179	0.63211	0.63211	0.010	-13.62202	20.00000	Averaged	
2 Chloromethane	0.70266	0.53715	0.53715	0.100	-23.55443	20.00000	Averaged	* JVJ
3 Vinyl chloride	0.68193	0.58651	0.58651	0.010	-13.99246	20.00000	Averaged	
4 Bromomethane	0.39408	0.36415	0.36415	0.010	-7.59507	20.00000	Averaged	
5 Chloroethane	0.44324	0.41181	0.41181	0.010	-7.09255	20.00000	Averaged	
6 Trichlorofluoromethane	1.11315	1.06409	1.06409	0.010	-4.40791	20.00000	Averaged	
9 1,1-Dichloroethene	0.48879	0.44559	0.44559	0.010	-8.83838	20.00000	Averaged	
10 Carbon Disulfide	1.80746	1.65108	1.65108	0.010	-8.65169	20.00000	Averaged	
11 Freon-113	0.35723	0.33480	0.33480	0.010	-6.27873	20.00000	Averaged	
14 Methylene Chloride	0.92144	0.60016	0.60016	0.010	-34.86675	20.00000	Averaged	* JVJ
15 Acetone	0.13427	0.13960	0.13960	0.010	3.97219	20.00000	Averaged	
17 trans-1,2-Dichloroethene	0.58147	0.54861	0.54861	0.010	-5.65219	20.00000	Averaged	
19 Methyl tert-butyl ether	1.27812	1.21798	1.21798	0.010	-4.70533	20.00000	Averaged	
25 1,1-Dichloroethane	1.19216	1.09256	1.09256	0.100	-8.35413	20.00000	Averaged	
29 cis-1,2-Dichloroethene	0.57199	0.52126	0.52126	0.010	-8.87013	20.00000	Averaged	
33 Bromochloromethane	0.25366	0.23696	0.23696	0.010	-6.58460	20.00000	Averaged	
34 Chloroform	1.22251	1.12803	1.12803	0.010	-7.72828	20.00000	Averaged	
35 Carbon Tetrachloride	0.57424	0.58876	0.58876	0.010	2.52803	20.00000	Averaged	
38 1,1,1-Trichloroethane	1.11786	1.08852	1.08852	0.010	-2.62442	20.00000	Averaged	
40 2-Butanone	0.15071	0.16121	0.16121	0.010	6.97106	20.00000	Averaged	
41 Benzene	1.51556	1.46763	1.46763	0.010	-3.16243	20.00000	Averaged	
43 Cyclohexane	0.81779	0.83411	0.83411	0.010	1.99617	20.00000	Averaged	
47 1,2-Dichloroethane	0.63241	0.65004	0.65004	0.010	2.78706	20.00000	Averaged	
48 Trichloroethene	0.45273	0.47822	0.47822	0.010	5.63073	20.00000	Averaged	
51 1,2-Dichloropropane	0.34554	0.34395	0.34395	0.010	-0.46254	20.00000	Averaged	
52 Bromodichloromethane	0.58994	0.59292	0.59292	0.010	0.50484	20.00000	Averaged	
53 cis-1,3-dichloropropene	0.53134	0.56203	0.56203	0.010	5.77599	20.00000	Averaged	
57 Toluene	0.95931	1.00020	1.00020	0.010	4.26238	20.00000	Averaged	
58 4-methyl-2-pentanone	0.22763	0.26668	0.26668	0.010	17.15205	20.00000	Averaged	
59 Tetrachloroethene	0.37350	0.37258	0.37258	0.010	-0.24860	20.00000	Averaged	
60 trans-1,3-Dichloropropene	0.49746	0.53537	0.53537	0.010	7.62214	20.00000	Averaged	
61 1,1,2-Trichloroethane	0.24903	0.26628	0.26628	0.010	6.92712	20.00000	Averaged	
62 Dibromochloromethane	0.37849	0.38780	0.38780	0.010	2.45838	20.00000	Averaged	
64 1,2-Dibromoethane	0.27388	0.28508	0.28508	0.010	4.08588	20.00000	Averaged	
65 2-Hexanone	250	263	0.19813	0.010	5.28439	20.00000	Linear	
67 Chlorobenzene	1.10252	1.06449	1.06449	0.300	-3.44959	20.00000	Averaged	
68 Ethylbenzene	0.71001	0.71700	0.71700	0.010	0.98462	20.00000	Averaged	
70 Xylenes (total)	++++	0.79108	0.79108	0.010	++++	20.00000	Averaged	*
71 m+p-Xylenes	0.81183	0.82995	0.82995	0.010	2.23262	20.00000	Averaged	
72 o-Xylene	0.66728	0.71334	0.71334	0.010	6.90295	20.00000	Averaged	
73 Styrene	1.25444	1.32730	1.32730	0.010	5.80813	20.00000	Averaged	

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Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : NTR Vieques East CTO-037 PI-21 **SDG:** SG2698
Lab ID : WG123190-4 **Analytical Date:** 04/25/13 11:23
Lab File ID : T8148.D **Instrument ID:** GCMS-T
Initial Calibration Date(s): 04/23/13 11:53 04/23/13 15:20 **Column ID:**

Compound	RRF/Amount	RF50	CCAL RRF50	Min	%D/ %Drift	Max %D/ %Drift	Curve Type
74 Bromoform	0.23801	0.25064	0.25064	0.100	5.30569	20.00000	Averaged
75 Isopropylbenzene	3.18081	3.41519	3.41519	0.010	7.36876	20.00000	Averaged
81 1,1,2,2-Tetrachloroethane	0.69127	0.71053	0.71053	0.300	2.78585	20.00000	Averaged
90 1,3-Dichlorobenzene	1.67146	1.65618	1.65618	0.010	-0.91417	20.00000	Averaged
92 1,4-Dichlorobenzene	1.85208	1.85112	1.85112	0.010	-0.05190	20.00000	Averaged
95 1,2-Dichlorobenzene	1.56941	1.57142	1.57142	0.010	0.12826	20.00000	Averaged
96 1,2-Dibromo-3-Chloropropane	0.12912	0.14477	0.14477	0.010	12.12307	20.00000	Averaged
99 1,2,4-Trichlorobenzene	1.09656	1.14139	1.14139	0.010	4.08866	20.00000	Averaged
102 1,2,3-Trichlorobenzene	1.02808	1.01669	1.01669	0.010	-1.10787	20.00000	Averaged
103 Methyl Acetate	0.31176	0.27909	0.27909	0.010	-10.48182	20.00000	Averaged
104 Methylcyclohexane	50.00000	45.34673	0.79441	0.010	-9.30653	20.00000	Linear
37 Dibromofluoromethane	0.54141	0.51014	0.51014	0.010	-5.77482	20.00000	Averaged
45 1,2-Dichloroethane-D4	0.77510	0.73771	0.73771	0.010	-4.82384	20.00000	Averaged
55 Toluene-D8	1.32550	1.35509	1.35509	0.010	2.23199	20.00000	Averaged
76 P-Bromofluorobenzene	0.54705	0.56198	0.56198	0.010	2.72907	20.00000	Averaged

*** = Compound out of QC criteria**

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YES NO N/A

15.1 Are the Calibration Verification reporting forms present and complete for all compounds of interest? [✓] ___ ___

15.2 Has a calibration verification standard been analyzed for every twelve hours of sample analysis per instrument? [✓] ___ ___

ACTION: List below all sample analyses that were not within twelve hours of a calibration verification analysis for each instrument used.

_____

ACTION: If any forms are missing or no calibration verification standard has been analyzed twelve hours prior to sample analysis, take action as specified in section 3.2 above. If calibration verification data are not available, flag all associated sample data as unusable ("R").

15.3 Was the % D determined from the calibration verification determined using RRF or CF? [✓] ___ ___

If no, what method was used to determine the calibration verification? Document any effects to the case in the Data Assessment.

15.4 Do any volatile compounds have a % D (difference or drift) between the initial and continuing RRF or CF which exceeds 20% (SW-846, page 8260B-19, section 7.4.5.2). [✓] ___ ___

NOTE: (Method Requirement) For the following CCC compounds, the %D values must be ≤ 20.0%. If %D values reported are > 20.0% document in the Data Assessment.

1,1-Dichloroethene
Chloroform
1,2-Dichloropropane
Toluene
Ethylbenzene
Vinyl chloride

YES NO N/A

ACTION: Circle all outliers with a red pencil.

ACTION: Qualify both positive results and non-detects for the outlier compound(s) as estimated, "J". When %D is above 90%, qualify all positive results for that analyte "J" and all non-detect results for that analyte "R".

NOTE: The above data qualification action applies regardless of method requirements.

15.5 Do any volatile compounds have a RRF < 0.05? [ ] ✓ ___ ___

NOTE: (Method Requirement) For SPCC compounds, the individual RRF values must be ≥ the values in the following list for each calibration verification. If average RRF values reported are below the listed values document in the data assessment.

Chloromethane	0.10
1,1-Dichloroethane	0.10
Bromoform	0.10
Chlorobenzene	0.30
1,1,2,2-Tetrachloroethane	0.30

ACTION: Circle all outliers with a red pencil.

ACTION: If RRF < 0.05, or < the requirements for the 5 compounds is section 15.5 above, qualify all positive results for that analyte "J" and all non-detect results for that analyte "R".

NOTE: The above data qualification action applies regardless of method requirements.

16.0 Internal Standards (CLP Form VIII Equivalent)

16.1 Are the internal standard (IS) areas on the internal standard reporting forms of every sample and blank within the upper and lower limits (-50% to + 100%) for each initial mid-point calibration (SW-846, 8260B-20, Sect. 7.4.7)? [ ] ✓ ___ ___

YES NO N/A

ACTION: If errors are large or information is missing, take action as specified in section 3.2 above.

ACTION: List each outlying internal standard below.

Sample ID	IS #	Area Lower Limit	Area Upper Limit
All attached forms			

(Attach additional sheets if necessary.)

ACTION:

1. If the internal standard area count is outside the upper or lower limit, flag with "J" all positive results quantitated with this internal standard.

2. Do not qualify non-detects when the associated IS are counts area > + 100%.

3. If the IS area is below the lower limit (< -50%), qualify all associated non-detects (U-values) "J".

4. If extremely low area counts are reported (< -25%) or if performance exhibits a major abrupt drop off, flag all associated non-detects as unusable "R" and positive results as estimated "J".

16.2 Are the retention times of all internal standards within 30 seconds of the associated initial mid-point calibration standard (SW-846, 8260B-20, Sect. 7.4.6)? [✓] ___ ___

ACTION: Professional judgement should be used to qualify data if the retention times differ by more than 30 seconds.

Katahdin
ANALYTICAL SERVICES

Cert No E87604

Form 8
Internal Standard Area and RT Summary

Lab Name : Katahdin Analytical Services
Project : NTR Vieques East CTO-037 PI-:
Lab ID : WG123113-4
Lab File ID : T8117.D

SDG: SG2698
Analytical Date: 04/23/13 13:16
Instrument ID: GCMS-T

		PENTAFLUOROBENZENE		1,4-DIFLUOROBENZENE		CHLOROBENZENE-D5		
		Area #	RT #	Area #	RT #	Area #	RT #	
	Std.	254245	8.77	362979	9.46	334027	13.14	
	Upper Limit	508490	9.27	725958	9.96	668054	13.64	
	Lower Limit	127122.5	8.27	181489.5	8.96	167013.5	12.64	
Client Sample ID	Lab Sample ID							
Continuing Calibrati	WG123124-4	229381	8.77	324676	9.46	305373	13.14	
Laboratory Control S	WG123124-1	239781	8.77	333058	9.46	318852	13.14	
Method Blank Sample	WG123124-2	156121	8.77	238381	9.46	232804	13.14	
VEP21-SS01A-0001	SG2698-1	149417	8.77	228823	9.46	214894	13.14	
VEP21-SS01AP-0001	SG2698-2	129965	8.77	198983	9.46	186031	13.14	
VEP21-SB01A-011H	SG2698-3	136129	8.77	219377	9.46	210320	13.14	
VEP21-SS02A-0001	SG2698-4	103663 *	8.77	168897 *	9.46	161818 *	13.14	Na
VEP21-SB02A-011H	SG2698-5	138710	8.77	220862	9.46	211760	13.14	
Continuing Calibrati	WG123190-4	234946	8.77	324493	9.46	311547	13.14	
Laboratory Control S	WG123190-1	227028	8.77	327948	9.46	305218	13.14	
Method Blank Sample	WG123190-2	155889	8.77	235271	9.46	229638	13.14	
VEP21-SS03A-0001	SG2698-6	136909	8.77	215950	9.46	194455	13.14	
VEP21-SB03A-011H	SG2698-7	138700	8.77	221104	9.46	205571	13.14	
VEP21-SS04A-0001	SG2698-8	134899	8.77	210601	9.46	211034	13.14	
VEP21-SB04A-011H	SG2698-9	115050 *	8.77	185345	9.46	164254 *	13.14	Na
VEP21-SS05A-0001	SG2698-10	130190	8.77	199670	9.46	191416	13.14	
VEP21-SB05A-011H	SG2698-11	125820 *	8.77	204532	9.46	182967	13.14	Na
VEP21-SS01A-0001	SG2698-1RA	128585	8.77	201802	9.46	194404	13.14	
VEP21-SS01AP-0001	SG2698-2RA	125067 *	8.77	198856	9.46	192479	13.15	Na
VEP21-SB01A-011H	SG2698-3RA	129733	8.77	207454	9.46	197558	13.15	
VEP21-SS02A-0001	SG2698-4RA	130202	8.77	203052	9.46	184758	13.14	
Continuing Calibrati	WG123249-4	222016	8.77	312450	9.45	300987	13.14	
Laboratory Control S	WG123249-1	232079	8.77	331826	9.45	307402	13.14	
Method Blank Sample	WG123249-2	147076	8.77	227887	9.46	228515	13.14	
VEP21-SS03A-0001	SG2698-6RA	128110	8.77	199598	9.46	191578	13.14	
VEP21-SS04A-0001	SG2698-8RA	121000 *	8.77	188445	9.46	173240	13.14	Na
VEP21-SB04A-011H	SG2698-9RA	127648	8.77	201485	9.46	184602	13.14	
VEP21-SS05A-0001	SG2698-10RA	123534 *	8.77	192669	9.46	167858	13.14	Na
VEP21-SB05A-011H	SG2698-11RA	128300	8.77	204659	9.46	187218	13.14	
Matrix Spike	WG123249-5	217412	8.77	304560	9.46	281487	13.14	
Matrix Spike Duplica	WG123249-6	225894	8.77	308376	9.46	281563	13.14	

Na - sample not used in favor of other analy.

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Katahdin
ANALYTICAL SERVICES

Cert No E87604

Form 8
Internal Standard Area and RT Summary

Lab Name : Katahdin Analytical Services
Project : NTR Vieques East CTO-037 PI-:
Lab ID : WG123113-4
Lab File ID : T8117.D

SDG: SG2698
Analytical Date: 04/23/13 13:16
Instrument ID: GCMS-T

		1,4-DICHLOROBENZENE-D4				
		Area	#	RT	#	
	Std .	196857		16.62		
	Upper Limit	393714		17.12		
	Lower Limit	98428.5		16.12		
Client Sample ID	Lab Sample ID					
Continuing Calibrati	WG123124-4	180701		16.62		
Laboratory Control S	WG123124-1	185959		16.62		
Method Blank Sample	WG123124-2	124916		16.62		
VEP21-SS01A-0001	SG2698-1	117701		16.62		
VEP21-SS01AP-0001	SG2698-2	86250	*	16.62		JVJ
VEP21-SB01A-011H	SG2698-3	110504		16.62		
VEP21-SS02A-0001	SG2698-4	74153	*	16.62		Na
VEP21-SB02A-011H	SG2698-5	115774		16.62		
Continuing Calibrati	WG123190-4	182936		16.62		
Laboratory Control S	WG123190-1	185603		16.62		
Method Blank Sample	WG123190-2	130473		16.62		
VEP21-SS03A-0001	SG2698-6	96969	*	16.62		Na
VEP21-SB03A-011H	SG2698-7	107844		16.62		
VEP21-SS04A-0001	SG2698-8	112565		16.62		
VEP21-SB04A-011H	SG2698-9	69150	*	16.62		Na
VEP21-SS05A-0001	SG2698-10	97953	*	16.62		JVJ
VEP21-SB05A-011H	SG2698-11	86595	*	16.62		Na
VEP21-SS01A-0001	SG2698-1RA	103784		16.62		
VEP21-SS01AP-0001	SG2698-2RA	91588	*	16.62		Na
VEP21-SB01A-011H	SG2698-3RA	102470		16.63		
VEP21-SS02A-0001	SG2698-4RA	82265	*	16.62		JVJ
Continuing Calibrati	WG123249-4	179009		16.62		
Laboratory Control S	WG123249-1	180237		16.62		
Method Blank Sample	WG123249-2	125327		16.62		
VEP21-SS03A-0001	SG2698-6RA	94614	*	16.62		JVJ
VEP21-SS04A-0001	SG2698-8RA	88806	*	16.62		Na
VEP21-SB04A-011H	SG2698-9RA	94862	*	16.62		JVJ
VEP21-SS05A-0001	SG2698-10RA	70244	*	16.62		Na
VEP21-SB05A-011H	SG2698-11RA	99955		16.62		
Matrix Spike	WG123249-5	156662		16.62		
Matrix Spike Duplica	WG123249-6	159423		16.62		

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Katahdin
ANALYTICAL SERVICES

Cert No E87604

Form 8
Internal Standard Area and RT Summary

Lab Name : Katahdin Analytical Services
Project : NTR Vieques East CTO-037 Pl-:
Lab ID : WG123113-4
Lab File ID : T8117.D

SDG: SG2698
Analytical Date: 04/23/13 13:16
Instrument ID: GCMS-T

Area Upper Limit = +100% of internal standard area
Area Lower Limit = - 50% of internal standard area
RT Upper Limit = + 0.50 minutes of internal standard RT
RT Lower Limit = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

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YES NO N/A

17.0 Field Duplicates

17.1 Were any field duplicates submitted for volatile analysis? ☑ ___ ___

ACTION: Compare the reported results for field duplicates and calculate the relative percent difference.

ACTION: Any gross variation between field duplicate results must be addressed in the Data Assessment. However, if large differences exist, take action specified in section 3.2 above.

VEP21-SS01A-0001 } no ⊕ above LOD - no qual
VEP21-SS01AP-0001

Following samples not used due to non-compliant surr or ISTD rec, the initial analy or RA used instead due to more compliant results:

VEP21-SS01A-0001 RA
VEP21-SS01AP-0001 RA
VEP21-SB01S-011H RA
VEP21-SS02A-0001
VEP21-SS03A-0001
VEP21-SS04A-0001 DL and RA
VEP21-SB04A-011H
VEP21-SS05A-0001 RA
VEP21-SB05A-011H

Initial Calibration Date: 4/23/2013

RRF and %RSD Calculations:

Compound Name: vinyl chloride
Lab Value: 0.337

Area of Compound	1082354
Area of Internal STD	803159
Conc. of Internal STD	50
Conc. of Compound	200
Calculated RRF	0.337

Compound Name: toluene
Lab Value: 9.41

RRF of STD 1	0.577
RRF of STD 2	0.695
RRF of STD 3	0.674
RRF of STD 4	0.652
RRF of STD 5	0.662
RRF of STD 6	0.544
Calculated % RSD	9.41

Continuing Calibration File ID: 4/30/2013

RRF and %D Calculations:

Compound Name: styrene
Lab Value: 0.786

Area of Compound	667561
Area of Internal STD	849137
Conc. of Internal STD	50
Conc. of Compound	50
Calculated RRF	0.786

Compound Name: chloroform
Lab Value: 5.0

Average RRF	0.814
Calibration Check RRF	0.855
Calculated % D	-5.0

SDG NARRATIVE
KATAHDIN ANALYTICAL SERVICES
CH2M HILL
NTR VIEQUES EAST CTO-037 PI-21
SG2698

Sample Receipt

The following samples were received on April 24, 2013 and were logged in under Katahdin Analytical Services work order number SG2698 for a hardcopy due date of May 20, 2013.

KATAHDIN Sample No.	CH2M HILL Sample Identification
SG2698-1	VEP21-SS01A-0001
SG2698-2	VEP21-SS01AP-0001
SG2698-3	VEP21-SB01S-011H
SG2698-4	VEP21-SS02A-0001
SG2698-5	VEP21-SB02A-011H
SG2698-6	VEP21-SS03A-0001
SG2698-7	VEP21-SB03A-11H
SG2698-8	VEP21-SS04A-0001
SG2698-9	VEP21-SB04A-011H
SG2698-10	VEP21-SS05A-0001
SG2698-11	VEP21-SB05A-011H
SG2698-12	VEP21-TB01-042313
SG2698-13	VEP21-EB01-042313

The samples were logged in for the analyses specified on the chain of custody form. All problems encountered and resolved during sample receipt have been documented on the applicable chain of custody forms.

We certify that the test results provided in this report meet all the requirements of the NELAC standards unless otherwise noted in this narrative or in the Report of Analysis.

Sample analyses have been performed by the methods as noted herein.

Should you have any questions or comments concerning this Report of Analysis, please do not hesitate to contact your Katahdin Analytical Services Project Manager, Ms. Jennifer Obrin. This narrative is an integral part of the Report of Analysis.

Organics Analysis

The samples of Work Order SG2698 were analyzed in accordance with "Test Methods for Evaluating Solid Wastes: Physical/Chemical Methods." SW-846, 2nd edition, 1982 (revised 1984), 3rd edition, 1986, and Updates I, II, IIA, III, IIIA, and IIIB 1996, 1998 & 2004, Office of Solid Waste and Emergency Response, U.S. EPA, and/or for the specific methods listed below or on the Report of Analysis.

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Sample SG2698-5 was used for the Matrix Spike (MS) and Matrix Spike Duplicate (MSD), as per client request.

8260 Analysis

Samples SSG2698-1RA, 8, and 10RA were manually integrated for the target analyte acetone. The specific reasons for the manual integrations are indicated on the raw data by the manual integration codes (M1-M11). These codes are further explained in the attachment following this narrative.

All of the samples had low or high recoveries for one or more surrogates that were outside the DoD QSM acceptance limits. Some of the samples also had low responses for one or more internal standards that were outside the DoD QSM acceptance limits of -50% to +100% of the responses of the internal standards of the ICAL midpoint standard. All the samples, except SG2698-5, were reanalyzed and had similar deviations confirming a matrix effect. The results from both analyses are reported.

Sample SG2698-5 and the MS/MSD WG123249-5 and 6 had low recoveries for one surrogate, which were outside of the DoD QSM acceptance limits. Since sample SG2698-5 is the native sample for the MS/MSD and the surrogate deviations confirm a matrix effect, the samples were not reanalyzed.

The method blanks WG123436-2, WG123124-2, WG123190-2, and WG123249-2 had recoveries for one or more surrogates that were high and outside DoD QSM acceptance limits. Since a high recovery would indicate a high bias and no target analytes were detected above the LOQ, no further action was taken.

Sample SG2698-8 had a low recovery of one surrogate. The sample was reanalyzed and had similar surrogate deviations that confirmed a matrix effect. The reanalysis had a high concentration for acetone that was outside of the calibration range. Since there was no additional low-concentration soil sample (DI water) vial, the sample was reanalyzed as a high-concentration soil sample (methanol). The results from all three analyses are reported.

The target analyte carbon disulfide was detected above ½ the reporting limit in the method blank WG123436-2. According to the DoD QSM section D.1.1.1, a method blank is considered to be contaminated if the concentration of any target analyte in the blank exceeds ½ the reporting limit. Since carbon disulfide was not detected in any of the associated samples, no further action was taken.

The target analyte bromomethane was detected below ½ the reporting limit in the methanol blank WG123768-5. According to the DoD QSM section D.1.1.1, a method blank is considered to be contaminated if the concentration of any target analyte in the blank exceeds ½ the reporting limit. Since the methanol blank was acceptable, no further action was taken.

The target analyte acetone was detected below ½ the reporting limit in the method blanks WG123190-2 and WG123249-2. According to the DoD QSM section D.1.1.1, a method blank is

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considered to be contaminated if the concentration of any target analyte in the blank exceeds ½ the reporting limit. Since the method blanks were acceptable, no further action was taken.

The reported percent recovery acceptance limits for the Laboratory Control Samples (LCSs) are based on the DoD QSM for the full list of spiked compounds and all additional compounds are statistically derived. The recoveries of the spiked analytes in the LCS, Matrix Spike (MS) and Matrix Spike Duplicate (MSD) are compared to these acceptance limits. Katahdin standard operating procedure is to take corrective action only if the number of spiked analytes in the LCS that are outside of the QC limits is greater than the DoD QSM allowable number of exceedances. If the associated MS/MSD has greater than the allowable number of exceedances, no corrective action is taken, as long as the LCS is acceptable.

The independent check standard (file C0594A), associated with the initial calibration analyzed on the C instrument on 4/23/2013, had high concentrations for the target analytes dichlorodifluoromethane, vinyl chloride, which exceeded the DoD QSM acceptance limit of ±20% of the expected value from the ICAL.

The independent check standard (file F9564), associated with the initial calibration analyzed on the F instrument on 5/2/2013, had low concentrations for the target analytes bromomethane, 1,2,4-trichlorobenzene, 1,2,3-trichlorobenzene, and methyl acetate along with a high concentration for acetone, which exceeded the DoD QSM acceptance limit of ±20% of the expected value from the ICAL. The only associated sample was SG2698-8 that was analyzed as a methanol prepped sample for acetone. Since acetone was acceptable, the sample was not reanalyzed as a methanol prepped sample.

The initial calibration analyzed on the T instrument on 4/23/2013 had %RSD values for some target analytes that exceeded the method acceptance limit of 15%. For these analytes, either a linear or quadratic model was used for quantitation instead of an average response factor. The target analytes methylene chloride and 1,2-dibromo-3-chloropropane failed for both the linear and quadratic models in the initial calibration curve due to the correlation coefficient and the coefficient of determination being less than the method acceptance criteria of 0.995 and 0.990, respectively. The target analytes were calibrated using the average model. The corresponding independent check standard (file T8127A) had a low concentration for the target analyte methylene chloride and high concentrations for acetone, 2-butanone, tert-butylbenzene, dichlorodifluoromethane, and p-isopropyltoluene, which exceeded the DoD QSM acceptance limit of ±20% of the expected value from the ICAL.

The calibration verification standard (CV) (file C0715) had a low response for the target analyte cyclohexane. The CV (file F9626) had a low response for the target analyte bromomethane and high responses for acetone, 2-butanone, 2-hexanone, and 1,2-dibromo-3-chloropropane. The CVs (files T8126, T8148, and T8168) had low responses for the target analytes methylene chloride, chloromethane and/or a high response for acetone. These responses resulted in %D's that were greater than the DoD QSM version 4.1 acceptance limits of 20%.

There were no protocol deviations or observations noted by the organics laboratory staff for this analysis.

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Wet Chemistry Analysis

The samples of Work Order SG2698 were analyzed in accordance with the specific methods listed on the Report of Analysis.

Analyses for total solids were performed according to "Standard Methods for the Examination of Water and Wastewater", 15th, 16th, 17th, 18th, 19th, and 20th editions, 1980, 1985, 1989, 1992, 1995, 1999. APHA-AWWA-WPCF.

All Wet Chemistry results were evaluated to Katahdin Analytical Services' Method Detection Limits (MDL). Measured concentrations that fall between the MDL and Katahdin's Limit of Quantitation (LOQ) are flagged "J". Measured concentrations that are below the MDL are flagged "U" and reported as "U LOD", where "LOD" is the numerical value of the Limit of Detection.

All analyses were performed within analytical holding times. All quality control criteria were met.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the Operations Manager or the Quality Assurance Officer as verified by the following signature.

Leslie Dimond
051713

Leslie Dimond
Quality Assurance Officer

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Katahdin Analytical Services, Inc.

Manual Integration Codes For GC/MS, GC, HPLC and/or IC

M1	Peak splitting.
M2	Well defined peaks on the shoulders of the other peaks.
M3	There is additional area due to a coeluting interferant.
M4	There are negative spikes in the baseline.
M5	There are rising or falling baselines.
M6	The software has failed to detect a peak or misidentified a peak.
M7	Excessive peak tailing.
M8	Analysis such as GRO, DRO and TPH require a baseline hold.
M9	Peak was not completely integrated as in GC/MS.
M10	Primary ion was correctly integrated, but secondary or tertiary ion needed manual integration as in GC/MS.
M11	For GC analysis, when a sample is diluted by 1:10 or more, the surrogate is set to undetected and then the area under the surrogate is manually integrated.
M12	Manual integration saved in method due to TurboChrom floating point error.

Jennifer Obrin

From: Juliana.Dean@ch2m.com
Sent: Wednesday, April 24, 2013 12:53 PM
To: jobrin@katahdinlab.com; Michael.Zamboni@CH2M.com; John.Swenfurth@CH2M.com
Subject: RE: COC for samples received 4/24-Vieques East CTO-037 PI-21-SG2698

Thanks! Please leave the EB logged in as is.

From: Jennifer Obrin [mailto:jobrin@katahdinlab.com]
Sent: Wednesday, April 24, 2013 11:30 AM
To: Dean, Juliana/VBO; Zamboni, Michael/WDC; Swenfurth, John/TPA
Subject: COC for samples received 4/24-Vieques East CTO-037 PI-21-SG2698

Please find attached the COC for samples received 4/24 for the project Vieques East CTO-037 PI-21 under the work order SG2698. Please note that the equipment blank was filled for all parameters. We only logged the equipment blank in for VOA since that was how it was marked on the chain and it was the only parameter that we were analyzing for in this work order. If you would like me to change this, please let me know.

Thanks and have a great day!

Jennifer Obrin
Federal Programs Project Manager
Katahdin Analytical Services
A Woman-Owned Small Business Enterprise
DoD ELAP Accredited
600 Technology Way
Scarborough, Maine 04074
Direct - 207.874.2400 x17
Fax - 207.775.4029

PLEASE NOTE: This message, including any attachments, may include privileged, confidential and/or inside information. Any distribution or use of this communication by anyone other than the intended recipient is strictly prohibited and may be unlawful. If you are not the intended recipient, please notify the sender by replying to this message and then delete it from your system.

No virus found in this message.
Checked by AVG - www.avg.com
Version: 2013.0.3272 / Virus Database: 3162/6268 - Release Date: 04/23/13

MEMORANDUM **CH2MHILL**

Corrections to COCs

TO: Jennifer Obrin, Katahdin

COPIES: File
Data Validation Package
Laboratory Package to be received 4/24/13

FROM: Juliana Dean
Project Chemist

DATE: April 24, 2013

This memo is to document corrections made to entries on the Chains of Custody (COC) for Vieques East, PI-21, CTO-037.

The corrections include changes to the sample IDs on the COC:

Sample ID on COC	Correct Sample ID	Date Collected	Time Collected	SDG
VEP21-SS01-0001	VEP21-SS01A-0001	4/23/2013	8:10	Not yet assigned
VEP21-SS01P-0001	VEP21-SS01AP-0001	4/23/2013	8:15	Not yet assigned
VEP21-SB01-011H	VEP21-SB01A-011H	4/23/2013	8:35	Not yet assigned
VEP21-SS02-0001	VEP21-SS02A-0001	4/23/2013	8:50	Not yet assigned
VEP21-SB02-011H	VEP21-SB02A-011H	4/23/2013	9:15	Not yet assigned
VEP21-SS03-0001	VEP21-SS03A-0001	4/23/2013	9:35	Not yet assigned
VEP21-SB03-011H	VEP21-SB03A-011H	4/23/2013	10:00	Not yet assigned
VEP21-SS04-0001	VEP21-SS04A-0001	4/23/2013	10:15	Not yet assigned
VEP21-SB04-011H	VEP21-SB04A-011H	4/23/2013	10:30	Not yet assigned
VEP21-SS05-0001	VEP21-SS05A-0001	4/23/2013	10:50	Not yet assigned
VEP21-SB05-011H	VEP21-SB05A-011H	4/23/2013	11:05	Not yet assigned
VEPI21-TB01-042313	VEP21-TB01-042313	4/23/2013	6:30	Not yet assigned
VEPI21-EB01-042313	VEP21-EB01-042313	4/23/2013	6:15	Not yet assigned

Katahdin Analytical Services, Inc. — Sample Receipt Condition Report

Client: CH2MHill		KAS PM: JO		Sampled By: Client	
Project:		KIMS Entry By: GV		Delivered By: Fed-Ex	
KAS Work Order#: 562698		KIMS Review By:		Received By: GV	
SDG #:	Cooler: 1 of 1			Date/Time Rec.: 4-24-13/0900	

Receipt Criteria	Y	N	EX*	NA	Comments and/or Resolution
1. Custody seals present / intact?	✓				
2. Chain of Custody present in cooler?	✓				
3. Chain of Custody signed by client?	✓				
4. Chain of Custody matches samples?	✓				
5. Temperature Blanks present? If not, take temperature of any sample w/ IR gun.	✓				Temp (°C): 1.4
Samples received at <6 °C w/o freezing?	✓				Note: Not required for metals analysis.
Ice packs or ice present?	✓				The lack of ice or ice packs (i.e. no attempt to begin cooling process) may not meet certain regulatory requirements and may invalidate certain data.
If temp. out, has the cooling process begun (i.e. ice or packs present) and sample collection times <6hrs., but samples are not yet cool?				✓	Note: No cooling process required for metals analysis.
6. Volatiles free of headspace: **Aqueous:** No bubble larger than a pea				✓	Encores
Soil/Sediment: Received in airtight container?				✓	
Received in methanol?				✓	
Methanol covering soil?				✓	
7. Trip Blank present in cooler?	✓				
8. Proper sample containers and volume?	✓				
9. Samples within hold time upon receipt?	✓				
10. Aqueous samples properly preserved? Metals, COD, NH3, TKN, O/G, phenol, TPO4, N+N, TOC, DRO, TPH – pH <2				✓	
Sulfide - >9				✓	
Cyanide – pH >12				✓	

* Log-In Notes to Exceptions: document any problems with samples or discrepancies or pH adjustments

EB included for all parameters

Katahdin Analytical Services, Inc
562698

600 Technology Way
Scarborough, ME 04074

ELECTRONIC CHAIN OF CUSTODY RECORD

TEL: 207.874.2400
FAX: 207.775.4029

C.O.C. 20130423-PI21-SS-SB-KATAH-01

Report to: PLEASE PRINT
Company Name: CH2M HILL
Phone: 703.376.5301
Address: 15010 Conference Dr. ;200
Chantilly, VA 20151
Fax: 703.376.5801
Attn: Mike Zamboni

Invoice to: PLEASE PRINT
Company Name: See Contact
Phone:
Address:
Fax:
Attn:

Project Name/Number: CTO-037
Purchase Order Number:
Sampler (Print): not required
Sampler (Signature): not required

Date Shipped: 4/23/1313
Carrier: FedEx
Waybill No.: 799590321632
Comments:

Sample Identification	Location	Date Collected	Time Collected	Time Zone	No. of Containers	Matrix: Aq	Matrix: Sed.	Matrix: Soil		SW-846 8260B	SW-846 8270C	SW-846 8270C_SIM	SW-846 8081A	SW-846 8082	SW-846 6020	SW-846 7471	SW-846 9012	SW-846 9045	Lloyd Kahn	ASTM D422		
VEP21-SS01-0001		4/23/13	08:10	AST	4			✓		X												
VEP21-SS01P-0001		4/23/13	08:15	AST	4			✓		X												
VEP21-SB01-011H		4/23/13	08:35	AST	4			✓		X												
VEP21-SS02-0001		4/23/13	08:50	AST	4			✓		X												
VEP21-SB02-011H		4/23/13	09:15	AST	4			✓		X												
VEP21-SB02-011H-MS		4/23/13	09:15	AST	4			✓		X												
VEP21-SB02-011H-SD		4/23/13	09:15	AST	4			✓		X												
VEP21-SS03-0001		4/23/13	09:35	AST	4			✓		X												
VEP21-SB03-011H		4/23/13	10:00	AST	4			✓		X												
VEP21-SS04-0001		4/23/13	10:15	AST	4			✓		X												
VEP21-SB04-011H		4/23/13	10:30	AST	4			✓		X												

Shuttle Temperature:

Turnaround Requested: Check one
☐ Standard 2-3 wk ☐ One week ☐ 24/48 Hrs. ☐ Other

Sample Disposal:
☐ Return to client ☐ Disposal by Lab (30-day retention)

Relinquished by sampler:	Date	Time	Received by:	Relinquished by:	Date	Time	Received by:
	4/23/13	12:50	4-24-13 0900				
Relinquished by:	**Date**	**Time**	**Received by:**	**Relinquished by:**	**Date**	**Time**	**Received at lab by:**

White: Return to client with report Yellow: Laboratory Copy Pink: Sampler

Note: The first sampled date of the ARF will be used as the COC number unless indicated otherwise.

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Katahdin Analytical Services, Inc

600 Technology Way
Scarborough, ME 04074

ELECTRONIC CHAIN OF CUSTODY RECORD

TEL: 207.874.2400
FAX: 207.775.4029

C.O.C. 20130423-PI21-SS-SB-KATAH-02

Report to: PLEASE PRINT
Company Name: CH2M HILL
Phone: 703.376.5301
Address: 15010 Conference Dr. ;200
Chantilly, VA 20151
Fax: 703.376.5801
Attn: Mike Zamboni

Invoice to: PLEASE PRINT
Company Name: See Contact
Phone:
Address:
Fax:
Attn:

Project Name/Number: CTO-037
Sampler (Print): not required
Purchase Order Number
Sampler (Signature): not required

Date Shipped: 4/23/13
Carrier: FedEx
Waybill No.: 799590321632
Comments:

Sample Identification	Location	Date Collected	Time Collected	Time Zone	No. of Containers	Matrix: Aq	Sed.	Soil		SW-846 8260B	SW-846 8270C	SW-846 8270C_SIM	SW-846 8081A	SW-846 8082	SW-846 8020	SW-846 7471	SW-846 9012	SW-846 9045	Lloyd Kahn	ASTM D422		
VEP21-SS05-0001		4/23/13	10:50	AST	4			✓		x												
VEP21-SB05-011H		4/23/13	11:05	AST	4			✓		x												
VEPI21-TB01-042313		4/23/13	06:30	AST	3	✓				x												
VEPI21-EB01-042313		4/23/13	06:15	AST	3	✓				x												
									✓													
									✓													
									✓													
									✓													

Shuttle Temperature:

Turnaround Requested: Check one
☐ Standard 2-3 wk ☐ One week ☐ 24/48 Hrs. ☐ Other

Sample Disposal:
☐ Return to client ☐ Disposal by Lab (30-day retention)

Relinquished by sampler:	Date	Time	Received by:	Relinquished by:	Date	Time	Received by:
	4/23/13	1250	4-2443 0900				
Relinquished by:	**Date**	**Time**	**Received by:**	**Relinquished by:**	**Date**	**Time**	**Received at lab by:**

White: Return to client with report Yellow: Laboratory Copy Pink: Sampler

Note: The first sampled date of the ARF will be used as the COC number unless indicated otherwise.

Katahdin
ANALYTICAL SERVICES

Katahdin Analytical Services

Login Chain of Custody Report (lno1)

Apr. 24, 2013
10:53 AM

Login Number: SG2698

Account: CH2MVA001 Web
CH2MHill

Project: CH2MVACTO37-PI21
NTR Vieques East CTO-037 PI-21

Primary Report Address:
Michael Zamboni
CH2MHill
15010 Conference Center Drive
Suite 200
Chantilly,VA 20151
michael.zamboni@ch2m.com

Primary Invoice Address:
Accounts Payable
CH2M Hill, Inc.
PO Box 241329

Denver,CO 80224

Report CC Addresses:
Invoice CC Addresses:

Quote/Incoming: CH2MVACTO37-PI2

Login Information:

ANALYSIS INSTRUCTIONS	:	DoD QSM 4.2 with DoD limits. ND to LOD. "J" flag between DL and LOQ. VOA soils will be EnCores. Extrude:1 MEOH, 2 DI, 1 TS
CHECK NO.	:	
CLIENT PO#	:	948949
CLIENT PROJECT MANAGE	:	John Swenfurth
CONTRACT	:	N62470-08-D-1000
COOLER TEMPERATURE	:	1.4
DELIVERY SERVICES	:	Fedex
EDD FORMAT	:	KAS106QC-XLS
LOGIN INITIALS	:	GN
PM	:	JO
PROJECT NAME	:	NTR Vieques East CTO-037 PI-21
QC LEVEL	:	IV
REGULATORY LIST	:	
REPORT INSTRUCTIONS	:	Data summary needs all forms. Send HC, CD and invoice copy to Mike.
SDG ID	:	
SDG STATUS	:	

Laboratory Sample ID	Client Sample Number	Collect Date/Time	Receive Date	PR	Verbal Date	Due Date	Mailed
SG2698-1	VEP21-SS01A-0001	23-APR-13 08:10	24-APR-13			20-MAY-13	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Solid	S	ENCORE				
Solid	S	SW8260-S	07-MAY-13	40 mL Vial+DI+MEOH		
Solid	S	TS	23-MAY-13			

SG2698-2	VEP21-SS01AP-0001	23-APR-13 08:15	24-APR-13			20-MAY-13	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Solid	S	ENCORE				
Solid	S	SW8260-S	07-MAY-13	40 mL Vial+DI+MEOH		
Solid	S	TS	23-MAY-13			

SG2698-3	VEP21-SB01A-011H	23-APR-13 08:35	24-APR-13			20-MAY-13	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Solid	S	ENCORE				
Solid	S	SW8260-S	07-MAY-13	40 mL Vial+DI+MEOH		
Solid	S	TS	23-MAY-13			

SG2698-4	VEP21-SS02A-0001	23-APR-13 08:50	24-APR-13			20-MAY-13	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Solid	S	ENCORE				
Solid	S	SW8260-S	07-MAY-13	40 mL Vial+DI+MEOH		
Solid	S	TS	23-MAY-13			

SG2698-5	VEP21-SB02A-011H	23-APR-13 09:15	24-APR-13			20-MAY-13	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Solid	S	ENCORE				**MS/MSD**
Solid	S	SW8260-S	07-MAY-13	40 mL Vial+DI+MEOH		
Solid	S	TS	23-MAY-13			

SG2698-6	VEP21-SS03A-0001	23-APR-13 09:35	24-APR-13			20-MAY-13	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Solid	S	ENCORE				
Solid	S	SW8260-S	07-MAY-13	40 mL Vial+DI+MEOH		
Solid	S	TS	23-MAY-13			

SG2698-7	VEP21-SB03A-011H	23-APR-13 10:00	24-APR-13			20-MAY-13	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Solid	S	ENCORE				
Solid	S	SW8260-S	07-MAY-13	40 mL Vial+DI+MEOH		
Solid	S	TS	23-MAY-13			

04-24-13
04131

Appendix E
Final Responses to USEPA and PREQB Comments

Final Responses to EPA Comments on the

Draft No Action Decision Document
Photo-Identified (PI) Site 21

Atlantic Fleet Weapons Training Area—Vieques
Former Vieques Naval Training Range
Vieques, Puerto Rico

November 2013

Presented below are review comments on the *Draft No Action Decision Document, Photo-Identified (PI) Site 21, Former Vieques Naval Training Range, Vieques, Puerto Rico;* dated November 2013 (hereinafter referred to as the Decision Document).

General Comments

1. The detection limits for the data collected during the 2002 Environmental Baseline Survey are not discussed and it appears that certain analytes had detection limits that exceeded screening levels. For example, Table 2-1, PI 21 Surface Soil Detection and Exceedance Results, indicates that the detection limits for antimony (4.55 to 5.88 milligrams/kilogram [mg/kg]) exceeded the soil screening level (SSL; 0.27 mg/kg) and Residential Screening Level (RSL; 3.1 mg/kg). Revise the Decision Document to discuss when the detection limits for results from the 2002 EBS exceeded screening levels.

   Navy Response:

   Section 2.4, Step 5, under surface soil, the following text was revised/added as follows:

   "Benzo(b)fluoranthene: For the 2002 EBS data, the non-detect reporting limit (333 µg/kg) was above the SSL at a DAF of 1 (35 µg/kg) and the RSL (150 µg/kg) in all four samples.

   "Methylene chloride: Two detections (EBS samples VNTR-PI21-3 and VNTR-PI21-3D) at concentrations (5.4 µg/kg for both detected samples and 5 µg/kg for both RLs) and non-detect reporting limits (5 to 19 µg/kg) above the Soil Screening Level (SSL) at a Dilution Attenuation Factor (DAF) of 1 (1.3 µg/kg)."

   "Antimony: One detection (SI sample VEP21-SS04-0001) at a concentration (0.34 mg/kg) above the SSL at a DAF of 1 (0.27 mg/kg). In addition, although antimony was not detected in the 2002 EBS samples, the antimony reporting limits were above the SSL and the adjusted RSL. There is no background concentration for this constituent."

   "Silver: Although silver was not detected in the 2002 EBS samples, the silver reporting limits were above the SSL at a DAF of 1 and background."

   Section 2.4, Step 6, under Human Health Evaluation, the following paragraph was added as the last paragraph: "Although the non-detect reporting limits for antimony in the 2002 EBS samples exceeded the adjusted residential RSL (3.1 mg/kg), they did not exceed the residential RSL based on a HQ of 1. Since the target organs/critical effects for antimony (longevity, blood glucose, and cholesterol) are different than the target organs for site COPCs presented in Table 2-5, an unadjusted RSL based on a HQ of 1 is appropriate for evaluating antimony reporting limits. In addition, although the reporting limit for benzo(b)fluoranthene exceeded the residential RSL (150

µg/kg) based on a target ELCR of 1x10-6 in all four samples, it is within the USEPA's acceptable risk range and is associated with an ELCR less than 1x10-5. Therefore, the elevated reporting limits for antimony and benzo(b)fluoranthene are not a concern from a human health risk standpoint."

Under Section 2.4, Step 6, Additional Comparisons, the following was revised/added:

"Although the non-detect reporting limit for benzo(b)fluoranthene in the 2002 EBS samples were above the SSL at a DAF of 1, it is unlikely the constituent was present at the location of the samples because no SVOCs were detected at this location."

"Antimony was detected in only two soil samples (one surface and one subsurface) above the SSL at a DAF of 1. However, it was not detected above the SSL at DAFs of between 2 and 3. Further, although antimony does not have a background value, its low detections at PI 21 (i.e., less than 1 mg/kg) are comparable to antimony detections elsewhere on Vieques that were not attributed to a CERCLA-related release. Therefore, the presence of antimony is likely due to natural conditions."

"Although silver was not detected in the 2002 EBS samples, the reporting limits were just above the SSL at a DAF of 1; however, the reporting limits are less than the SSL at a DAF of 2."

2. The Data Usability Evaluation (DUE) in Appendix B is insufficiently detailed. The following are examples of where further detail is needed:

   a. The DUE does not identify the specific quality control (QC) issues or the extent of exceedances that led to qualification of the data. The DUE should discuss the exceedances of acceptance criteria and the range of these exceedances, so it can be verified that the samples were properly qualified and so that the impact on data usability is clear. Revise the DUE to provide this information.

      Navy Response:

      The data validation reports, which contain the requested information, were inadvertently not attached to the draft document. Appendix D, "Data Validation Reports," has been added.

   b. The DUE does not discuss any overall trends or bias in the data and whether they impact project decisions. The SAP Addendum indicates in Worksheet #37 of Appendix A that biases will be evaluated and also states, "the distribution of applied data validation qualifiers will be examined to determine if there are patterns that negatively affect the usability of data." However, overall biases and patterns in qualified data are not discussed. Instead, Section B.3, PARCC Considerations, states that there are no negative impacts because there were no rejected data or very few rejected data points. Revise the DUE to discuss whether significant trends and biases were noted in the data, how the trends and biases were evaluated, and to provide sufficient information to verify all conclusions on the data, including but not limited to usability, trends, and biases.

      Navy Response:

      Biases and patterns are presented in sections B.2.1, B.2.2, B.2.3, B.2.4, B.2.5, and B.2.6, accompanied by Table B-2. Table B-2 headers have been updated from "DV_Qual" to "Validator Qualifier" and from "DV_Qual_Code" to "QC Narrative" for consistency with sections B.2.1 through B.2.6 . The section B.2.1 table header has been updated from "Reason Code" to "QC Narrative" for consistency. The Table B-2 header "QC Narrative" has been footnoted to indicate that "SSL, MSL, CCL, and ISL suggest a potential low bias. ICH and CCH suggest a potential high bias."

c. Field completeness is not discussed in Section B.3.4, Completeness. Worksheet #37 in Appendix A of the SAP Addendum indicates the 95% completeness goal includes both laboratory and field completeness. However, it is unclear if any samples were not able to be collected or if collected samples were unable to be analyzed. Revise Section B.3.4 to discuss whether all planned samples were collected and analyzed.

Navy Response:

A new final sentence "All planned samples were collected and analyzed." was added to section B.3.4.

3. A figure(s) should be provided showing the location of all samples collected as part of the investigation of PI 21. This will be helpful to ensure complete coverage of the area.

Navy Response:

Figure 2-1 identifies the locations of all 13 samples collected at PI 21.

Specific Comments

1. **Section 2.2.1, Environmental Baseline Survey, page 2-1:** It reference that evaluation of the analytical data is provided in Section 2.3, it should be revised to reference Section 2.4 where the data are actually discussed.

Navy Response:

The above mentioned edit has been made.

2. **Section 2.4, PI 7 Release Assessment Decision Analysis, Page 2-7:** The discussion for antimony states that the detections of antimony at PI 21 are similar to concentrations detected elsewhere on Vieques, but the supporting data are not provided as is done for pesticides in Tables 2-3 and 2-4. Revise the Decision Document to provide supporting data for antimony.

Navy Response:

The antimony paragraph under "Additional Comparisons" has been revised as follows:

"Antimony was detected in only two soil samples (one surface and one subsurface) above the SSL at a DAF of 1. However, it was not detected above the SSL at DAFs of between 2 and 3. Further, although antimony does not have a background value, its low detections at PI 21 (i.e., maximum of 0.34 mg/kg) are comparable to antimony detections elsewhere on Vieques that were not attributed to a CERCLA-related release (i.e., 0.02 mg/kg to 4.7 mg/kg, as shown in Table 2-6)."

3. **Appendix B, Section B.2.2, Soil SVOA and Section B.2.4, Soil Metals, Pages B-8 to B-9:** The semivolatile organic compounds and metals tables summarizing validation qualifiers each contain an entry indicating results were qualified, but the qualifiers applied are not provided. Revise these sections to provide the v

Navy Response:

Where qualifiers are applicable, they have already been provided. For clarity, all empty cells in sections B.2.1 through B.2.4 have been filled with "[NONE]," indicating there are no applicable qualifiers. The corresponding change has also been made to Table B-2.

Final Responses to PREQB Comments on

The Draft No Action Decision Document
Photo-Identified (PI) Site 21

Former Vieques Naval Training Range
Vieques, Puerto Rico

November 2013

Table 2-5: This table presents cancer risks for arsenic and chromium of 7E-06 and 6E-05; however, the cumulative site risk is presented as 6E-05. The sum of the cancer risks would be 6.708E-05, which would be reported to one significant digit as 7E-05. Please revise this table and the text to reflect the cumulative cancer risk estimate for the site.

Navy Response:

The risk estimates for arsenic, chromium, and cumulative risk in Table 2-5 are presented with one significant figure. The risk estimates for arsenic, chromium, and cumulative risk, presented as two significant figures, are:

Arsenic – 7.4E-6

Chromium – 5.5E-5

Cumulative – 6.3E-5

Therefore, the cumulative cancer risk estimate presented as one significant figure is 6E-5.